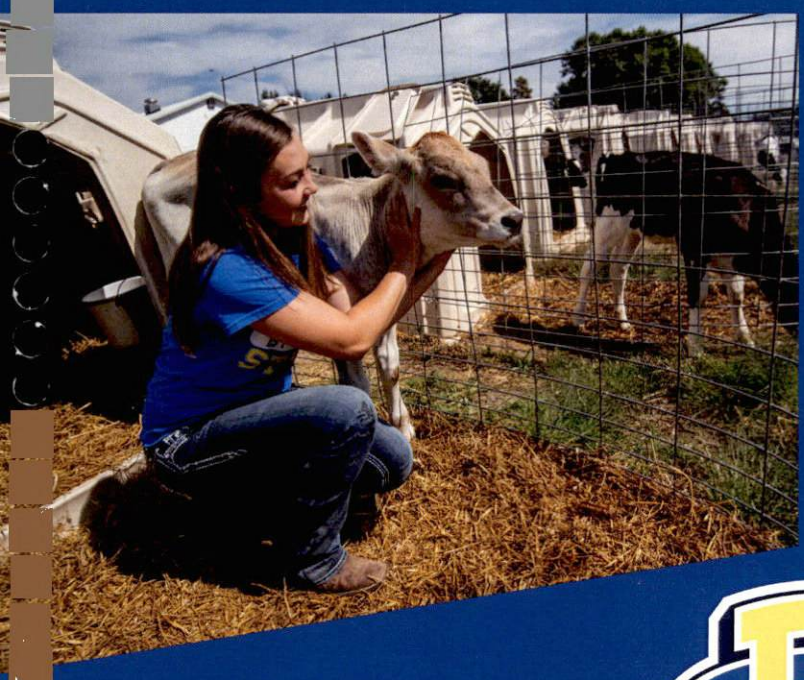

South Dakota State University

2020-2021 GRADUATE CATALOG

South Dakota State University

Graduate Catalog 2020-2021

Per SDBOR Policy 2:20:

The information contained in this catalog is the most accurate available at the time of publication, but changes may become effective before the next catalog is published. It is ultimately the student's responsibility to stay abreast of current regulations, curricula, and the status of specific programs being offered. Further, the university reserves the right, as approved by the Board of Regents, to modify requirements, curricula offerings, and charges, and to add, alter, or delete courses and programs through appropriate procedures. While reasonable efforts will be made to publicize such changes, a student is encouraged to seek current information from appropriate offices.

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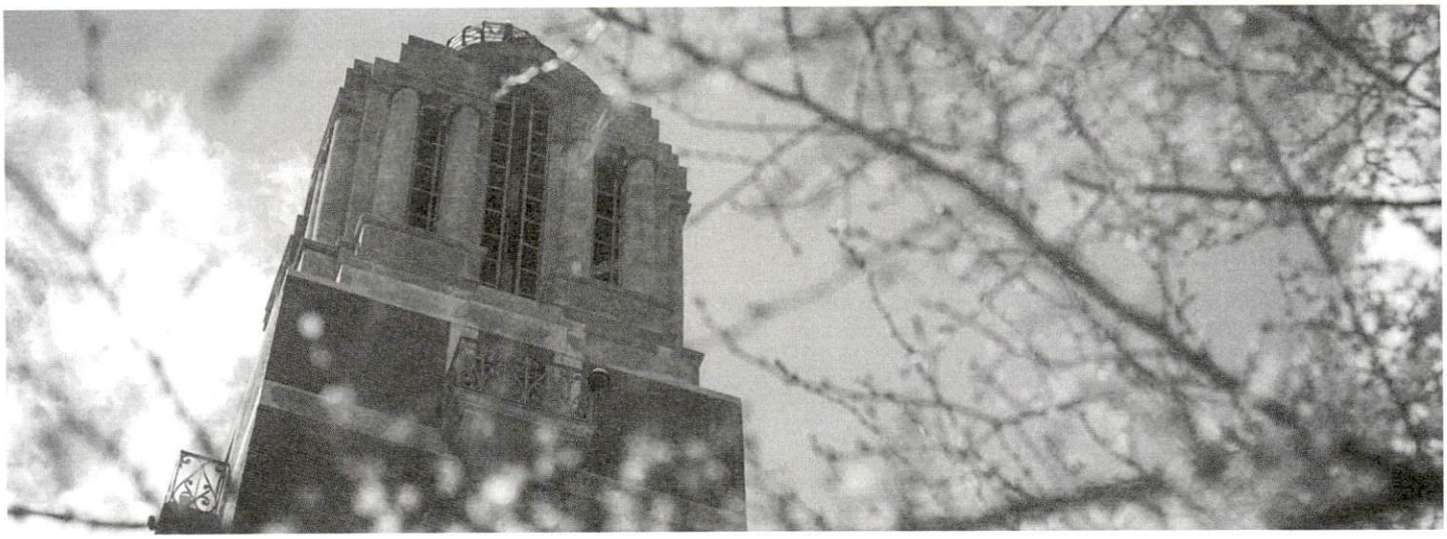


SDSU in Review

General Information

An act of the Territorial Legislature approved in 1881 provided for the establishment of what is now South Dakota State University. As a Land-Grant institution, the University subscribes to the philosophy of education, research, and extension as its three-fold mission. The Graduate School is a separate administrative unit composed of selected scholars within the University engaged in work to further the land-grant mission. The institution granted its first Master of Science degree in 1891, its first Master of Education degree and Doctor of Philosophy degree in 1958. All graduate work was supervised by a committee until 1957, when the Graduate School was established.

A **Graduate Council** of twenty-one (21) elected members from the Graduate Faculty assists the Graduate Director. The council includes the Graduate Director (chair); and (14) members, with seven (7) alternates from each of the seven (7) colleges: Agriculture, Food and Environmental Sciences; Arts, Humanities and Social Sciences; Education and Human Sciences; Engineering; Natural Sciences; Nursing; and Pharmacy and Allied Health Professions. The Dean of the Library serves as an ex-officio voting member.

The **Graduate Faculty** is composed of the University President, Provost and Vice President for Academic Affairs, college deans, and heads of departments in which graduate courses are offered. Tenure-track faculty with a terminal degree are eligible for graduate faculty status. Faculty who are not tenure-track and/or do not have a terminal degree will follow the nomination process for associate graduate faculty status and must be approved by the Graduate Council. All matters of policy and standards are acted on by the Graduate Faculty. In addition, Graduate Faculty are authorized to serve on graduate student committees, advise graduate students, and teach graduate-level courses.

The Graduate School provides an atmosphere for qualified students to obtain rigorous advanced education in a variety of fields in preparation for service and leadership in their professions and society. The Graduate School promotes scholarly pursuits and scientific research for the advancement of knowledge within a climate of freedom of inquiry. For material on undergraduate programs and for general information concerning South Dakota State University, refer to the Undergraduate Catalog.

This Catalog is printed to provide information about the graduate programs of South Dakota State University. Every effort has been made to provide as complete and accurate information as possible; however, it should be noted that changes may occur at any time and that the catalog does not represent a contractual agreement. The university reserves the right, as approved by the Board of Regents, to modify requirements, curricula offerings, and charges, and to add, alter, or delete courses and programs through appropriate procedures. While reasonable efforts will be made to publicize such changes, a student is encouraged to seek current information from appropriate offices.

Students are allowed to fulfill the degree requirements in effect at the time of initial enrollment as a degree-seeking student, provided the student completes the degree requirements within the stated time frame through continuous enrollment. If a student needs to re-apply to a degree program, the guidelines in effect at the time of re-application must then be followed. It is the student's responsibility to become familiar with and complete the requirements for the degree being sought.

Accreditations & Affiliations

Accreditations

The University holds institutional membership in a number of educational associations: the Association of Public and Land-grant Universities (1307 New York Avenue NW, Suite 400, Washington, D.C. 20005-4722; Phone: 202-478-6040) promotes the aims expressed in the Morrill Act of 1862, and in the subsequent acts of Congress relating to Land-Grant Colleges.

South Dakota State University Academic Accreditations and Certifications

Academic Accredited Programs

Accrediting Agency	Degree	Frequency	Last Decision	Next Visit
Accreditation Council for Pharmacy Education (ACPE)				
190 S LaSalle Street, Suite 2850, Chicago, IL 60603-4810; Phone: 312-664-3575				
Pharmacy	Pharm.D.	8 years	2015	2023
Accreditation Council for the Education of Nutrition and Dietetics (ACEND)				
120 South Riverside Plaza, Suite 2190, Chicago, IL 60606-6995; Phone: 312-899-0040 ext. 5400				
Dietetic Internship	NA	3 years	2019	2026
Accrediting Council on Education in Journalism & Mass Communication (ACEJMC)				
201 Bishop Hall, University, MS 38677-1848; Phone: 662-915-5550				
Mass Communications	M.M.C.	4 years	2018	2023
American Society of Health-System Pharmacists (ASHP)				
4500 East-West Hwy, Suite 900, Bethesda, MD 20814; Phone: 866-279-0681				
Pharmacy - PGY1 Residency Program	Certificate	3 years	2018	2021
Commission on Accreditation of Athletic Training Education (CAATE)				
6850 Austin Center Blvd., Suite 100, Austin, TX 78731-3184; Phone: 512-733-9700				
Athletic Training	M.S.	10 years	2012	2021-2022
Commission on Accreditation of Programs in Applied and Clinical Sociology (CAPACS)				
3 Fieldstone Drive, Morris Township, NJ 07960; Phone: 973-290-9334				
Sociology	Ph.D.	2 years	2017	2019

Commission on Collegiate Nursing Education (CCNE)
655 K Street, NW, Washington, D.C. 20001; Phone: 202-887-6791

Nursing	M.S.	10 years	2011	2021
Nursing	D.N.P.	10 years	2016	2026
Nursing - APRN Post-Graduate	Certificate	10 years	2016	2026

Council for the Accreditation of Counseling and Related Educational Programs (CACREP)
500 Montgomery Street, Suite 350, Alexandria, VA 22314; Phone: 703-535-5990

Counseling and Human Resource Development	M.S.	7 years	2017	2025

Council for Accreditation of Educator Preparation (CAEP)*
1140 19th Street NW, Suite 400, Washington, D.C. 20036; Phone: 202-223-0077

Principal	M.Ed.	2 years	2020	2022
School Counselor	M.S.	2 years	2020	2022

*Formerly known as NCATE (name changed in 2019)
**Granted Probationary Accreditation Spring 2020

Council on Rehabilitation Education (CORE)
1699 E. Woodfield Road, Suite 300, Schaumburg, IL 60173; Phone: 847-944-1325

Counseling and Human Resource Development Specialization in Counseling in Rehabilitation and Mental Health Setting	M.S.	8 years	2015	2023

National Architectural Accrediting Board, Inc (NAAB)
1735 New York Ave NW, Washington, D.C. 20006; Phone: 202-783-2007

Architecture	M.Arch.	8 years	2019	2027

Academic Accredited Units

Accrediting Agency	Degree	Frequency	Last Decision	Next Visit
American Association of Museums Accreditation Commission (AAM)				
2451 Crystal Drive, Suite 1005, Arlington, VA 22202; Phone: 202-289-1818				
South Dakota Art Museum	NA	10 years	2014	2024
American Association of Veterinary Lab Diagnosticians (AAVLD)				
PO Box 6396, Visalia, CA 93290; Phone: 559-781-8900				
Animal Disease Research and Diagnostic Lab	NA	5 years	2018	2023
National Association for Education of Young Children (NAEYC)				
1313 L Street NW, Suite 500, Washington, D.C. 20005; Phone: 800-424-2460				
Fishback Center for Early Childhood Education	NA	5 years	2017	2022
Society for Simulation in Healthcare (SSH)				
2021 L Street, NW, Suite 400, Washington, D.C. 20036; Phone: 866-730-6127				
Nursing Healthcare Simulation Center		5 years	2018	2023

Academic Certified Programs/Units

Accrediting Agency	Degree	Frequency	Last Decision	Next Visit
American Association of Museums Accreditation Commission (AAM)				
2451 Crystal Drive, Suite 1005, Arlington, VA 22202; Phone: 202-289-1818				
South Dakota Art Museum	NA	10 years	2014	2024
American Association of Veterinary Lab Diagnosticians (AAVLD)				
PO Box 6396, Visalia, CA 93290; Phone: 559-781-8900				
Animal Disease Research and Diagnostic Lab	NA	5 years	2018	2023
American Chemical Society				
1155 Sixteenth Street, NW, Washington, DC 20036; Phone: 800-333-9511				
Chemistry	B.S.	NA	2016	2021
Nonprofit Leadership Alliance (formerly American Humanics)				
1801 Main Street, Ste 200, Kansas City, MO 64108; Phone: 816-561-6415				
Leadership and Management of Non-Profit Organizations	Minor		2003	

National Collegiate Honors Council

University of Nebraska-Lincoln, 250 Knoll Residence Center, 440 N 17th Street, Lincoln, NE 68588; Phone: 402-472-9150

Van D. and Barbara B. Fishback Honors College		2018	TBD

Department of the Army

Army ROTC

College Reading and Learning Association

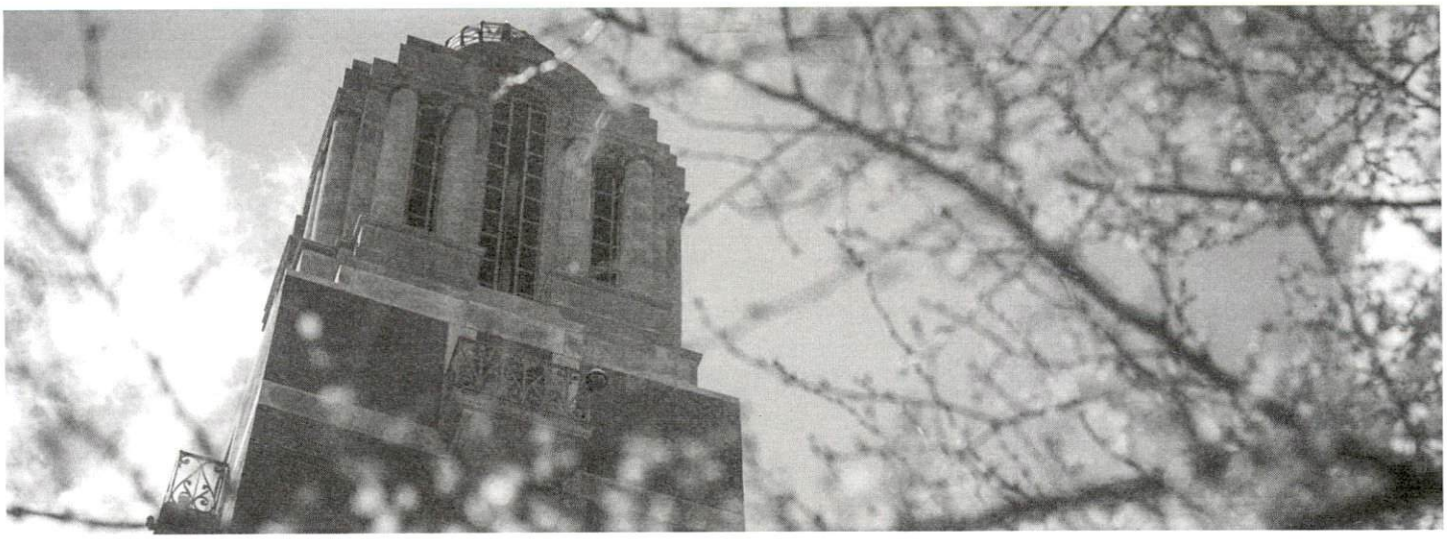
Tutoring/Supplemental Instruction (SI) Program	5 years	2016	2020

University Accreditation

Accrediting Agency	Degree	Frequency	Last Decision	Next Visit
Higher Learning Commission (HLC)				
230 South LaSalle Street, Suite 7-500, Chicago, IL 60604; Phone: 800-621-7440				
Institution	NA	10 years	2019	2029

Affiliations

The University also holds membership in the American Council on Education, the American Council on Education's Internationalization Collaborative, the American Society for Information Science & Technology, the Council on International Educational Exchange (CIEE), the College Consortium for International Studies (CCIS), the Cooperative Center for Study Abroad (CCSA), the International Student Exchange Program (ISEP), the American Association of Colleges for Teacher Education, the American Association of University Women, the American Association of Colleges of Pharmacy, the American Society for Engineering Education, the Association of Schools of Journalism and Mass Communication, the American Association of Colleges of Nursing, the American Library Association, Associated Western Universities, Inc., the Association of American Veterinary Medical Colleges, Association for Supervision & Curriculum Development, Council of Graduate Schools in the United States, Educause, National Association for Foreign Student Affairs, and several others which are concerned with more limited phases of college work. Through the Board of Regents, the University also participates in the Western Interstate Commission for Higher Education (WICHE).



Admission Information

This section outlines Graduate School admission policies at South Dakota State University. The South Dakota State University Policy and Procedure Manual is the definitive source for the most current South Dakota State University policies. Policies duplicated on other websites or in print may not be the most current version. All policies documented on the site are official and supersede policies located elsewhere. South Dakota State University is governed by state and federal law, administrative regulations, and policies of the South Dakota Board of Regents (SDBOR) and the State of South Dakota.

Admission to Graduate School

For pursuit of an advanced degree or certificate, students must be admitted to the Graduate School before enrolling in graduate courses. A completed application must be filed with the Graduate School. **Students should check with their program of interest for specific admission deadlines.** Students not pursuing an advanced degree, but wishing to enroll in graduate coursework should apply as a non-degree seeking student by completing a non-degree seeking application prior to the start of the semester.

Application for Admission

Application Form

A completed online application must be submitted and accompanied by a non-refundable application fee of $35.00.

Official Transcripts

Applicants must provide official academic transcripts from all post-secondary institutions where a degree was earned, or will be earned, and where graduate level coursework was completed. As a courtesy to the applicant, the Graduate School will retrieve all required South Dakota regental transcripts.

Applicants who have completed a degree outside the United States must provide a professional transcript evaluation from an evaluation service accredited by the National Association of Credential Evaluation Services (NACES) or Association of International Credential Evaluators (AICE). Examples of acceptable services include, but are not limited to: Educational Perspectives, World Education Services (WES), and Foreign Credits. Evaluations must include transcript authenticity, Grade Point Average (GPA) calculation, and U.S. degree equivalency and be sent directly from the evaluation service. Applications will not be processed until the evaluation is received from the service. If an evaluation is required, this then replaces the requirement for official transcripts. Submitted transcripts become the property of South Dakota State University and will not be returned. Official transcripts/transcript evaluations can be sent electronically (gradschl@sdstate.edu) or by mail. The Graduate School mailing address is as follows:

Graduate School
South Dakota State University
130 Morrill Hall, Box 2201
Campanile Drive
Brookings, SD USA 57007

Baccalaureate Degree

Admission to the Graduate School requires that the applicant have a baccalaureate degree, or equivalent, from an institution of higher learning. The baccalaureate-granting institution must be one of recognized standing (including U.S. institutions accredited by agencies recognized by the U.S. Department of Education) whose requirements are substantially the same as those of South Dakota State University program(s) in which the advanced degree will be taken.

If applicants are enrolled in U.S. institutions, and if the application is submitted before the Bachelor's degree is complete, an incomplete transcript must be filed. However, a transcript indicating the Bachelor's degree has been awarded must be received no later than the end of the first semester of graduate work.

Program Requirements

Individual programs may have additional admission requirements. Applicants should inquire about such requirements from the program of interest. Additional admission requirements for each program are provided under Academic Programs.

Graduate Record Examination (GRE)

The Graduate Record Examination is not a Graduate School requirement; however, some programs may require test scores to be submitted. Please review the admission requirements for the program of interest. For the location of testing centers and more information regarding the GRE, please contact the Educational Testing Service.

Immunization Requirements

All university students (domestic and international) must provide documentation proving two (2) properly administered measles (rubeola), mumps, rubella (MMR) immunizations OR immune titers for measles, mumps and rubella. Exemptions to this requirement are considered. Furthermore, all international students are required to submit to a tuberculosis skin test upon arrival. For more information contact: Student Health Clinic and Counseling Services, Box 2818, Wellness Center, South Dakota State University, Brookings, SD USA 57007, Telephone: 605-688-4157, Fax: 605-688-6450 or the Office of International Affairs & Outreach, Briggs Library (SBL) Suite 119, Box: 2115, Brookings, SD USA 57007, Telephone: 605-688-4122.

International Students must also submit the following:

TOEFL/IELTS Scores

A score of 525 paper-based or 71 Internet-based or higher is required by the Graduate School for the Test of English as a Foreign Language (TOEFL). A minimum score of 5.5 is required for the International English Language Testing System (IELTS). Some programs may require higher test scores for admission and are listed within each program section in this catalog. Also, programs may require additional testing upon arrival.

Financial Support

Evidence of available financial support for at least one year must be submitted to the Office of International Affairs & Outreach, Briggs Library (SBL) Suite 119, Box: 2115, Brookings, SD USA 57007, Telephone: 605-688-4122. Applicant must also show evidence that the financial support will be continued throughout their program, at least two years for master's degrees or four years for doctoral degrees. For any financial assistance from this institution, the applicant must contact the program.

Documentation

Documents for entry into the U.S. will be issued by the Office of International Affairs and Outreach after academic admission and financial certification are complete. Students applying for a visa cannot be admitted conditionally into any graduate program. For inquiries please contact: Office of International Affairs & Outreach, Briggs Library (SBL) Suite 119, Box: 2115, Brookings, SD USA 57007, Telephone: 605-688-4122.

Application Processing

When all required admissions documents are received, the application and supporting documentation are forwarded to the program for review. The program makes a recommendation of acceptance or denial to the Dean of the Graduate School who, in turn, acts on the recommendation and notifies all concerned parties of the decision in the form of a letter of acceptance or a letter of denial.

Admission Status

Admission

An applicant may be admitted without condition if a Bachelor's degree, or equivalent, has been earned, all undergraduate prerequisites for major and minor (if required) fields of study have been satisfactorily completed, and the applicant has an average of 3.0 or higher on a 4-point grading system (A = 4, B = 3, C = 2, D = 1) . Admission to all degree programs is competitive and limited by the availability of personnel, facilities, and funding.

Conditional Admission

Conditional admission may be granted if the applicant:

1. meets the requirements for admission but has not completed the last semester of undergraduate study. Admission is conditional until the Bachelor's degree is granted, OR
2. lacks prerequisite undergraduate courses specified by the major program. Admission is conditional until these courses have been completed to the satisfaction of the program, OR
3. has a grade point average between 2.75 and 3.0 cumulative for the junior and senior years.

A student admitted conditionally must satisfy any conditions within the first semester of enrollment in the graduate program. Performance required to meet conditions will be provided to the student in the letter of acceptance. Failure of a student to meet the stated conditions may result in dismissal from the program. International students cannot be conditionally admitted.

Non-Degree Seeking Student

Students who are not pursuing a degree may register as a non-degree seeking student. There is no application fee to register as a non-degree seeking student, though the student is responsible for tuition and fees. Non-degree seeking students may not receive graduate assistantships, financial aid, or enroll for thesis/dissertation credits. A non-degree seeking student may apply for admission into a graduate program using the normal procedures outlined in this document. No more than twelve credits acquired under non-degree seeking student status may be applied toward a degree.

Readmission

Students formerly enrolled as graduate students at South Dakota State University and who have not maintained continuous enrollment (excluding summer semesters) must apply for readmission to their program. Graduate School policies in effect for the term of readmission will apply. Official transcripts must be furnished for graduate work taken at other institutions since last enrolled at South Dakota State University. Programs may require the student to update supporting documents for the application. Readmitted students are encouraged to contact their graduate advisor prior to registration. Students who are readmitted may be required to change their advisory committee, file a new plan of study or resubmit other matriculation documents. The application fee will be waived for those applicants applying for readmission as long as they were active within the past three terms; excluding summer.

Residency Requirements

South Dakota State University is required to establish residency status of all applicants. Please review the residency requirements prior to completing an application. A full description of qualifications is available in the Residency Application.

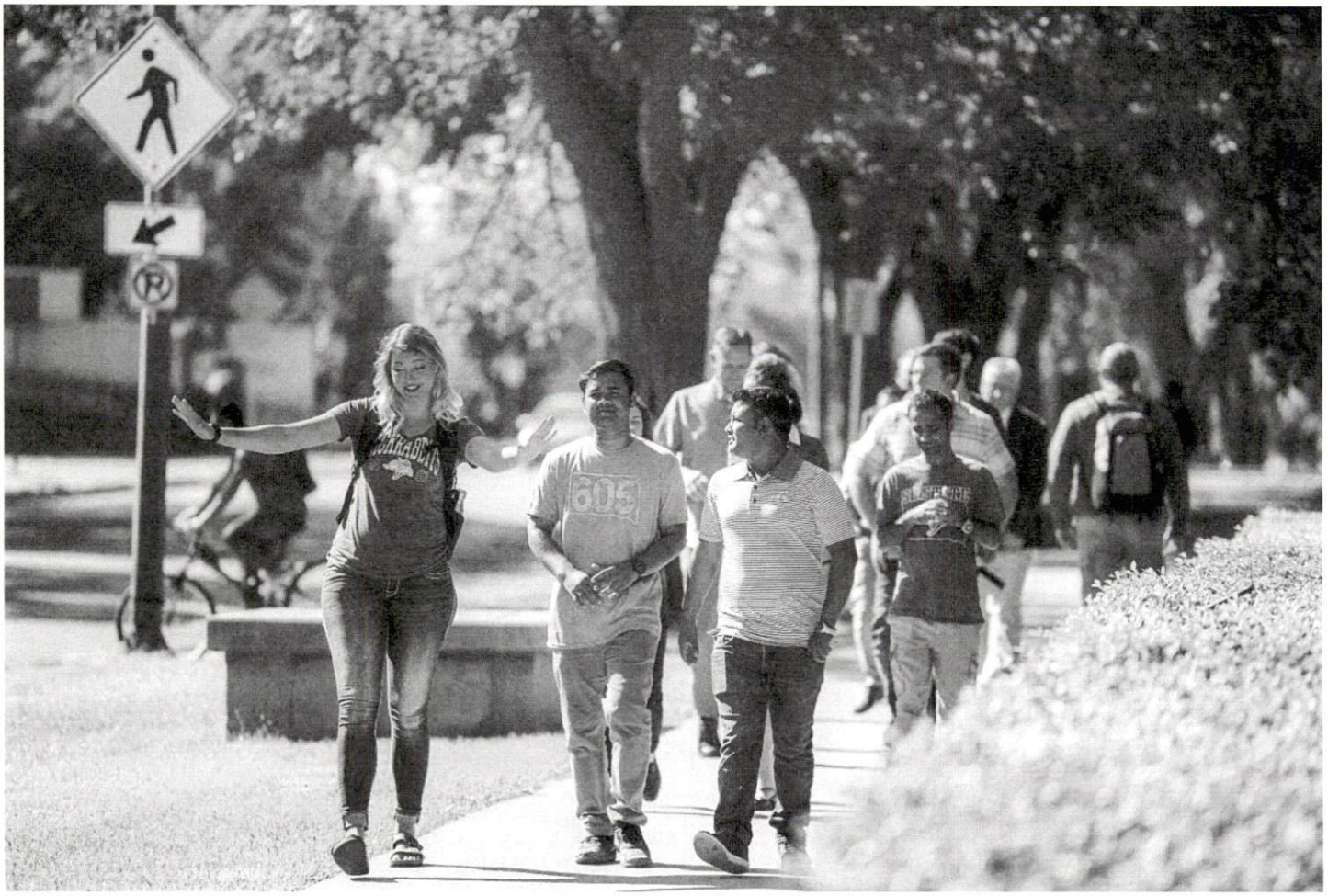
Appeal of Denied Admission Decision

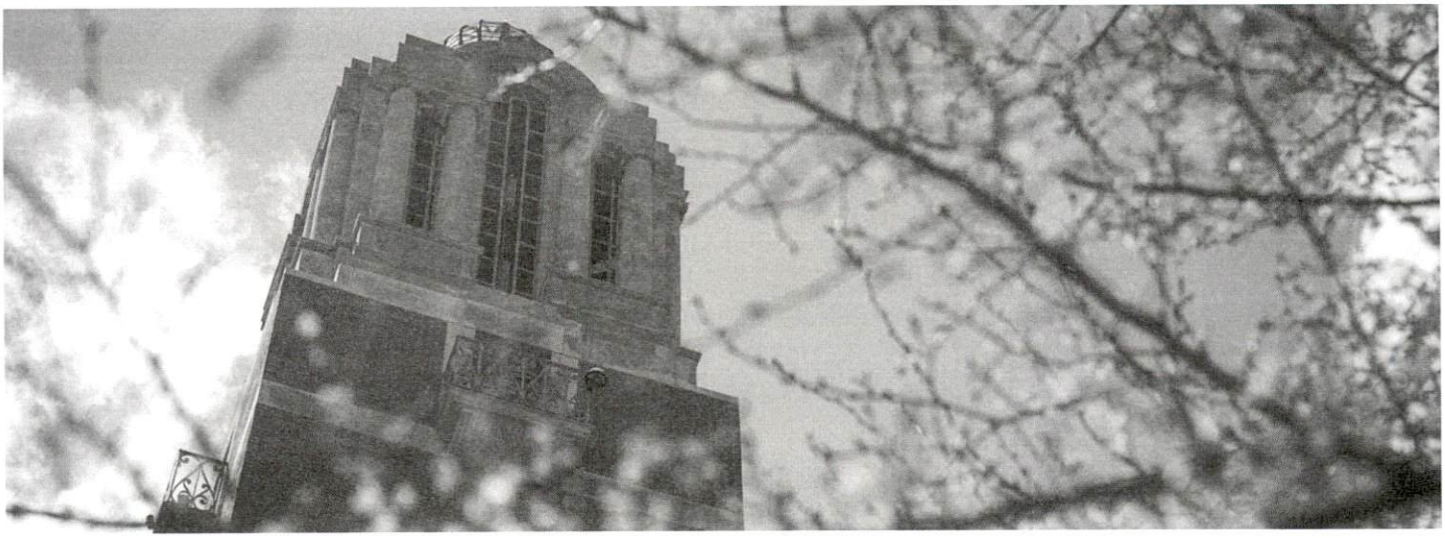
(SDSU Policy 2:26)

Any applicant who is denied admission may request a reconsideration of the decision as follows:

1. The applicant shall contact the Dean of the Graduate School within thirty calendar (30) days of receipt of the admission decision to seek informal reconsideration.
2. In the request for reconsideration, the denied applicant must cite one or more of the following reasons as the basis for the reconsideration:
   a. The admission decision resulted from administrative error or from misapprehension of some material fact or circumstance; or
   b. The admission decision departed substantially from accepted academic standards for the discipline and/or the University; or
   c. Circumstances suggested that the admission decision reflected the prejudiced or capricious consideration of applicant opinions or conduct unrelated to admission or academic standards, of student status protected under SDBOR policy, state or federal civil rights law, or of other considerations that are inconsistent with the bona fide exercise of academic judgment.

   The denied applicant must then explain in detail how one or more of the above bases for reconsideration describe the admissions decision. If none of the above bases for reconsideration are specifically cited in the request, or if the request offers no explanation as to how the admission decision fits one of the above bases for reconsideration, the request for reconsideration shall be dismissed by the Dean of the Graduate School. The Dean shall otherwise review the applicant's concerns, shall provide explanation, and shall reconsider the admission decision if the student provides convincing argument for doing so. The Dean shall document the contact date, decision, and rationale for the decision by and submit the same to the Provost and Vice President for Academic Affairs, or designee, within fifteen (15) working days after the applicant makes the contact. A copy of the document shall be sent to the applicant and Program Officials.
3. If, after discussion with the Dean of the Graduate School, the applicant's concerns remain unresolved, the applicant may appeal the matter in writing to the Provost and Vice President for Academic Affairs, or designee. The written request for reconsideration must be submitted to the Provost and Vice President for Academic Affairs, or designee, within ten (10) working days from the date the applicant received the response of the Dean of the Graduate School. The Vice President for Academic Affairs will render a decision within fifteen (15) working days of receipt.





Tuition, Fees, & Financial Assistance

This section outlines policies and general information on tuition, fees, and financial aid at South Dakota State University. The South Dakota State University Policy and Procedure Manual is the definitive source for the most current South Dakota State University policies. Policies duplicated on other websites or in print may not be the most current version. All policies documented on the site are official and supersede policies located elsewhere. South Dakota State University is governed by state and federal law, administrative regulations, and policies of the South Dakota Board of Regents (SDBOR) and the State of South Dakota.

Tuition & Fees

Tuition and fee rates are set according to the policies of the South Dakota Board of Regents and are subject to change without prior notice. For current information view the SDSU Financial Aid or SDBOR Tuition and Fees website.

Residency Requirements

In order to establish residency for tuition purposes you must live in South Dakota for twelve (12) consecutive months immediately preceding the first scheduled day of classes of the semester. Attendance at the college or university controlled by the Board of Regents does not count in determining the twelve (12) month period of residence.

Residency qualifications for tuition purposes may be obtained by contacting the Admissions Office at 605-688-4121.

Billing & Payment of Student Accounts

All tuition, fees, housing, food service and miscellaneous charges to student accounts will be on an electronic billing (eBilling) system and can be viewed on SDePay, a secured website via the Internet. Payment of the student account can also be made electronically (ePayment) through SDePay. Students can authorize parents, spouse and other individuals to view the eBill and make ePayment on their student account.

By the day after census date, each student makes a full payment of charges based on the number of registered credits, residency status, and campus housing. Late fees will be assessed starting on the day after the established payment due date. SDSU encourages students to mail payments before the due date. Payment of tuition and fees can be made by cash, check or electronic bank transfer directly to the University Cashier's Office SAD 136 PO Box 2201, Brookings, SD 57007-2098.

Payment of tuition and fees using a debit or credit card can only be made through SDePay, electronic billing and payment system. American Express, Visa, MasterCard and Discover cards are accepted by SDePay. A 2.75 percent service fee is assessed by and payable to NelNet, host provider of SDePay. Authorized payers may view and pay the students' account by going to the South Dakota Public Universities Authorized Payer login at SDePay. Students may link to SDePay through their secure account on MyState.

Late Charges

A fee is charged if tuition and fees are not paid during the regular established payment periods. Failure to satisfy financial obligations when due may result in a student's administrative withdrawal from the University.

Indebtedness

If you are indebted to the University and do not satisfy financial obligations when due, you may be denied admission to the University. You may be administratively withdrawn from the University after notice from the University and you will not be permitted to register or receive a transcript of grades until the indebtedness is paid. This applies to your indebtedness to the University for tuition, fees, required deposits, room and board, financial aid, but not obligations due to student organizations. All accounts that the University is unable to collect will be submitted for collection and forwarded to a credit reporting bureau. The University will recover from the debtor all collection fees and attorney's fees that result from collection of an account.

Fees for Auditing Courses

Regular tuition and fees, per credit, will be charged for auditing a course. Registration as an auditor is by petition. Auditing courses will be a matter of record (recorded on the academic transcript). Grades will be designated by the instructor as Audit Pass (AUP) or Audit Fail (AUF). Audit courses are not counted in calculating undergraduate or graduate full-time student status.

Thesis & Dissertation Fees

Students are responsible for following all deposition protocols and paying all archiving fees associated with a thesis or dissertation.

Refunds

(SDBOR Policy 5:7)

SDSU processes student withdrawals in compliance with federal and Board of Regents policies. A petition process does exist for students or parents who feel that individual circumstances warrant exception from the published refund policy. Contact the Registrar, Enrollment Services Center, for information.

Tuition & Fees Refund Policy

The end of the drop/add period for standard (those that conform to the regular semester schedule) and non-standard courses offered in a semester is the date the first 10 percent of the term ends or the day following the first class meeting, whichever is later.

Refunds for Dropped Courses

A student receives a 100 percent refund of tuition and per-credit-hour fees for courses dropped within the drop/add period. No refund shall be provided for courses dropped after that time, except by administrative action. Any course meeting within a standard semester but for less time than the standard semester shall be treated as a non-standard semester course for refund purposes. Courses offered during summer school session and correspondence courses are considered non-standard courses.

Students who withdraw, drop out, or are expelled within the drop/add period receive a 100 percent refund of tuition and per-credit-hour fees. Students who withdraw, drop out, or are expelled after the drop/add period for which they are assessed may be entitled to a pro-rated refund as set forth herein.

Refunds for Withdrawals

Students who withdraw from the University may be entitled to a refund of tuition and fees and institutional charges calculated through 60 percent of an enrollment period. The refund shall be determined by computing the percentage of an enrollment period remaining after the date of withdrawal multiplied times the tuition and fees originally assessed the student. At no time will refunds be awarded after the 60 percent point of the enrollment period.

Cancelled Registration

If a student's registration is cancelled, no tuition and fee payment is due. If payments have been made, a student is eligible for a full refund.

Extensions & Waivers

The University President, or a designee, may extend or waive the time periods in the following circumstances:

- the death of the student;
- the student's disabling condition or severe illness;
- the death, disability, or severe illness of immediate family members causing severe financial hardship to the student; or
- other extenuating circumstances beyond the student's control.

Refunds for Residence Hall Fees

Students with a room contract who withdraw from the Regental system will receive a proportional refund at the time of withdrawal up to the 60 percent point after which no refund is available.

Refunds for Food Service Fees

Students with a food service contract who withdraw from the Regental system will receive a proportional refund of their food service plan and 100 percent of the unused flex dollars at the time of withdrawal up to the 60 percent point. After the 60 percent point no refund is available.

Refunds for First Day Access Charges

Refunds for First Day Access charges arising from a dropped course or withdrawal from the Regental system will be treated the same as refunds of tuition and fees. Access to the First Day content will be removed upon a student's drop date or date of withdrawal.

Refunds for Parking Permits

A student holding a valid parking permit for fall and spring semesters may receive a refund after the completion of the fall semester provided the student withdraws from the university and returns the actual permit or terminates the virtual permit prior to the beginning of the second semester.

Military Service - Withdrawal without Penalty

Refund of Tuition & Fees

Students required to withdraw from the Regental system before completing a semester may receive credit or refund privileges if:

- they are regularly enrolled and belong to a military unit called for duty, or
- they are drafted and not eligible for deferment, and
- the discontinuance of class attendance is on the last practicable day before reporting for duty as determined by the student's Home University.

Eligible students who receive credit, or an incomplete, in progress, or normal progress grade for any course for which they are enrolled shall not be entitled to any refund of tuition or fees paid.

Eligible students who do not receive an incomplete, in progress, or normal progress grade or credit for a course in which they are enrolled shall be entitled to a full refund of tuition and academic fees.

The following table determines the eligibility for a grade or refund.

Options for Final Grades and Refunds

	Weeks Remaining in Standard Semester	
	More Than 4 Weeks	Less Than 4 Weeks
Course Grade	Refund	Student Options
A	Refund	A or Refund
B	Refund	B or Refund
C	Refund	C or Refund
D	Refund	Refund
F	Refund	Refund
S	Refund	S or Refund
U	Refund	Refund
I, IP, NP	Refund	I, IP, NP or Refund

Note: Course Grade is as determined by the instructor, either the grade to date or the final grade earned to date.

Refunds for Room & Board

Refunds for room and board shall be pro-rata refunds for the entire semester. Board flex plans will be refunded at 100% of the unused value.

Refunds for Books

Refunds for books for military personnel called up for active duty is as follows:

- New books with no markings or writing – 100% of purchase price
- New books with highlighting or writing – 75% of purchase price
- Books purchased used – 100% of used price

Books must be returned within the semester. Normal campus refund policies apply to books that are not returned prior to the end of the semester.

Federal Financial Aid Recipients

U.S. Department of Education regulations define the process institutions must use to calculate financial aid that has been earned by students who withdraw and the financial aid that must be returned to the Federal Financial Aid Programs. When an SDSU student who is receiving Federal Title IV Financial Aid withdraws, the SDSU

Financial Aid Office processes a Return of Title IV Funds Calculation for the student. Title IV Financial Aid includes Federal Direct Loans, Federal Pell Grants, and Federal Supplemental Grants.

For purposes of the Return of Title IV Funds calculation, a student's withdrawal date is the date the student began the withdrawal process by contacting the SDSU Registrar's Office; or the midpoint of the period for a student who leaves during the term without notifying SDSU, or at SDSU's discretion, the student's last documented date of academically-related activity.

Return of Title IV Funds

When a student receiving Federal Title IV financial aid withdraws from SDSU, the amount of the Title IV funds (not including Federal Work-Study) that the student earned during the enrollment period is prorated as of the student's withdrawal date. Students earn Title IV funds based on the percentage of days completed through the 60 percent point in the enrollment period. Once a student has completed more than 60 percent of the enrollment period, the student has earned 100 percent of Title IV funds.

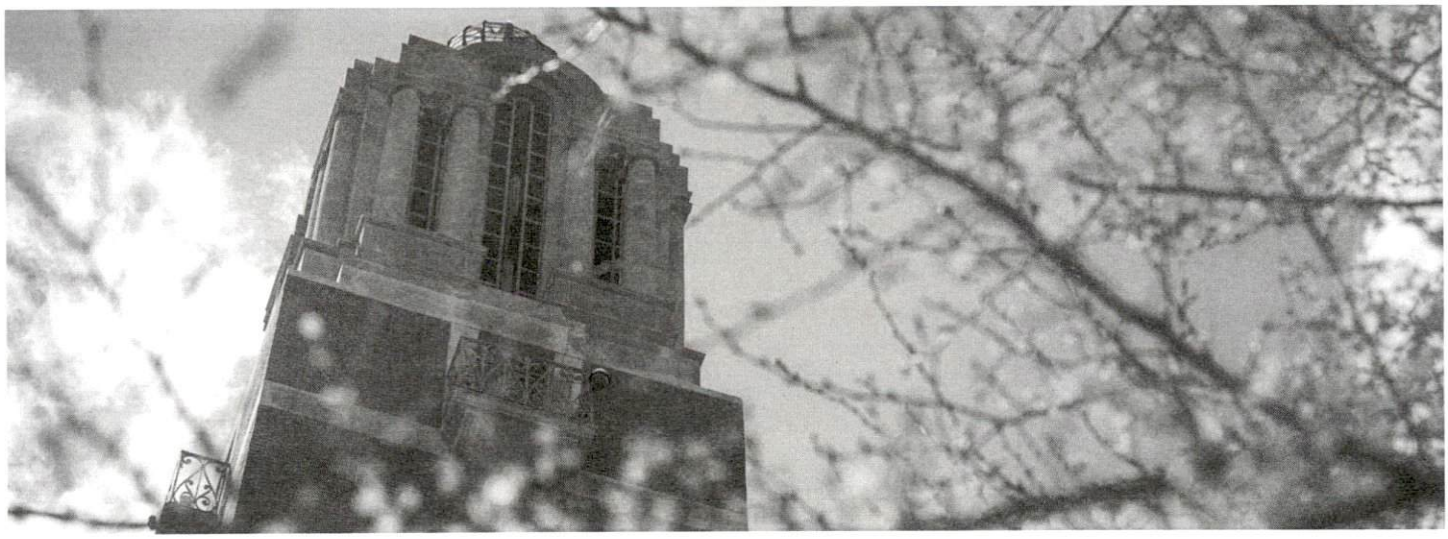
If a student withdraws before completing 60 percent of the enrollment period, SDSU calculates the portion of the aid disbursed that was earned by the student before the withdrawal date. The unearned Title IV funds are returned to the respective federal aid programs. Unearned aid is the amount of disbursed Title IV aid that exceeds the amount of Title IV aid earned.

For students who fail to officially withdraw when they stop attending classes and are assigned "F" grades for all courses for the semester, the Return to Title IV Funds policy requires SDSU to calculate the earned financial aid amounts based on the 50 percent point of the semester. Unearned federal aid is returned as described above. If the aid was disbursed after the 50 percent point of the semester, the student will be required to return the funds.

SDSU is required to provide information on the Return of Title IV Funds policy and procedure to students. This information is available at on SDSU's website and from the SDSU Financial Aid Office. SDSU is also required to calculate the Return of Title IV Funds for federal financial aid recipients who withdraw from SDSU and to return any Title IV funds to the respective Title IV funds account. The student is responsible to repay any Title IV funds that the student was determined to be ineligible for via the Return to Title IV funds calculation.

Financial Aid

Student financial assistance programs are administered through the SDSU Office of Financial Aid and Scholarships located in the Enrollment Services Center. The Financial Aid Office may be contacted at 605-688-4695 or by e-mail for specific applications, forms, and information. Graduate assistantships, fellowships, and traineeships are administered by the SDSU Departments offering the programs. Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. Qualifying graduate students who complete the FAFSA are eligible to receive Unsubsidized Federal Direct Loans and, with credit approval, Federal Direct Graduate PLUS Loans. Students may also borrow private or alternative loans through a bank, credit union or state agency. SDSU does not have a preferred lender list, and students may obtain a private education loan from any eligible lender. Visit SDSU's Private Lender page and click on FastChoice for a list of lenders commonly used by SDSU students.



Student Services & Support

American Indian Student Center

920 Campanile Ave

605-688-6416

American Indian Student Center Email

The American Indian Student Center (AISC) is committed to providing a welcome home-place to support those who have courageously chosen to walk the path of higher education. The AISC understands that a vital part of our function involves nation building and works to encourage students to recognize and develop their voice and help prepare Native students to respond to the call to return home. The AISC also offers retention advising, recruitment for Native American students, and cultural programming.

Bookstore

Student Union

605-688-4136

Bookstore Email

The SDSU Bookstore, located within the University Student Union, sells books, textbooks and school supplies along with a wide variety of SDSU and Jackrabbit apparel and merchandise. The SDSU Bookstore also houses HoboTech, an Apple Authorized Campus Store. HoboTech carries a full lineup of Apple computers and accessories. HoboTech's qualified staff is available to answer Apple related questions and to offer one-on-one training sessions if desired.

The University Bookstore offers interest-free financing for up to 24 months up to $4000 on iPad and Mac.
This offer is available to qualified SDSU employees who are full-time or part-time 9 or 12 month employees. Choose from one of the three payment plans.
1. Six months: Purchases greater than or equal to $300
2. 12 months: Purchases greater than or equal to $300
3. 24 months: Purchases greater than or equal to $600
More information about this payroll deduction plan or hour of operation please visit our website www.jackrabbitcentral.com.

Career Development

Student Union 136

605-688-4425

Facilitating the transition from student to professional and helping students and employers connect are two goals that drive the services of the Office of Career Development. Whether an incoming student trying to choose a major, a sophomore preparing to attend a career fair, a junior searching for an internship, a senior applying to graduate school, or a master's student interviewing for an entry-level job, Career Development is here to help, both in person and online. FOCUS 2 Career is an online assessment tool that empowers students to make informed decisions about their major, education and career path. SDSU students may use the code "jacks" for 24/7 access. Handshake is an online career management tool that students can use to search for jobs, internships and career fair information, plus sign up for on-campus interviews, schedule appointments with career coaches, and more. Students should use their MyState credentials to log into Handshake.

Cashier's Office

Morrill Hall 136

605-688-6116

Cashier's Office Email

SDSU Cashier's Office manages tuition and fee related processes and questions including: assisting students with questions about their accounts, providing information on all charges and payments applied to student accounts, processing student payments and refunds, and managing student accounts receivable related holds. The Cashier's Office is also the depository office for the funds of all University departments. The Cashier's Office will establish cash funds for University departments when it is necessary.

Continuing & Distance Education

West Hall 120

605-688-4154

Continuing and Distance Education Email

The Office of Continuing and Distance Education works to broaden the reach of SDSU, with a commitment to providing quality education no matter where students reside. The office serves students on campus and across the globe. In addition to online education, the Office of Continuing and Distance Education coordinates the program offerings at several off-campus locations. The off-campus centers effectively extend the reach of SDSU by offering the same quality education to students who want to earn their degree while living and working in their home community.

Dining Services

Student Union 073

605-697-2550

Campus Dining is a large part of the college experience. Their goal is to make each customer's dining experience the best it can be by providing good, nutritious food in a relaxed atmosphere. They also strive to deliver superior service each day. As you browse the Campus Dining site, you will get a taste of the innovative creations they have in store for you at their locations on campus which include Larson Commons, The Market, Chick-fil-a, Dairy Bar, Einsteins Bros Bagels, Erbert and Gerbert's, Extreme Pita, Panda Express, Java City, Starbucks, Weary Wil's, and Jacks' C-Store.

Locations/Hours

Meal Plan Options/Costs

Disability Services

Student Union 271

605-688-4504

Disability Services Email

The Office of Disability Services recognizes that disability is a natural part of the human experience and an aspect of diversity that is integral to society and to the campus community. To this end, the office collaborates with students, faculty and staff across the University community to create usable, equitable, inclusive and sustainable learning environment. To receive accommodations, students must contact the office and complete the Student Information Form. Some of the accommodations Disability Services can provide are alternative text formats, sign language interpreters, notetakes, assistive technology, alternative accommodations for exams, extended time for testing and referrals to other resources.

ADA Information

Financial Aid & Scholarships

Enrollment Service Center

605-688-4695

FAFSA

Financial Aid Email

The Financial Aid Office administers student financial assistance programs, including federal and state financial aid, SDSU scholarships and governmental agency awards. Students must complete and submit the FAFSA to be considered for most state and federal assistance. The SDSU Financial Aid Office is available to answer your FAFSA questions.

Financial Aid

View our Financial Aid Policy for an explanation of the different types of financial aid available to students and for information about financial aid processing.

Financial Aid Satisfactory Academic Progress Standards

Federal regulations require the University to define and evaluate Satisfactory Academic Progress ("SAP") for federal student financial aid applicants to ensure that the federal aid given to a student is used in a constructive manner and that the student is maintaining satisfactory advancement toward achieving a degree. This policy and its procedures set forth the SAP standards for students receiving financial aid at the University.

Scholarships

SDSU offers a variety of academic scholarships. Awards are based on academic achievement, participation in activities and leadership. Returning students can fill out the continuing student scholarship application each year to deem their eligibility for SDSU scholarships by logging on to their MyState to complete and submit the application. The freshman scholarship application can be submitted by setting up an SDSU Self Service Account.

Work Study

605-688-4695

Work Study Email

The Federal Work-Study Program provides eligible students the opportunity to earn money for educational expenses. To be considered for Federal Work-Study, students must complete the FAFSA on or before March 1 indicating that they are interested in Work Study and meet additional need-based requirements established by the University. Students are responsible for obtaining employment to earn their Work-Study funds. Students are encouraged to inquire directly with any departments or facilities which they are interested in working at. If students should need assistance obtaining a Work-Study position, they can contact the SDSU Department of Labor Office at (605)688-6668.

Hilton M. Briggs Library

605-688-5107

Hilton M. Briggs Library Email

The Hilton M. Briggs Library is a center for learning, research, preservation, and discovery. It is committed to inspiring academic excellence, collaborative endeavor, creative scholarship, student engagement, and lifelong curiosity. The Briggs Library houses the University Archives and Special Collections and the Senator Thomas A. Daschle Congressional Research Study. The library is a welcoming environment with staff who provide in-depth research assistance. Resources for student use in the building include group study rooms, conference and seminar rooms, over 400 individual study carrels, 70 public access computer stations, scanners, photocopiers, and microform readers, as well as vending machines including Caribou Coffee.

Ask@Briggs

Open PRAIRIE

Research Guides

Reserve a Study Room

International Affairs

Briggs Library 119

605-688-4122

International Affairs Email

The Office of International Affairs is the comprehensive home for international student and scholar services, international undergraduate admission, study abroad planning and community connections programs. All services and activities are intended to help enrich the experience of international students here at SDSU and to expand global engagement for all students, faculty and staff.

Resources include:

- International Student Orientation
- Interpreting Immigration Regulations
- Advising
- Issuing Official Documents
- Maintaining Records

English Language & Culture Institute

The primary mission of the English Language and Culture Institute at SDSU is to prepare and educate English language learners to engage in academic contexts in the American higher education system, engage in civic and critical dialogues, and become empowered global citizens. Improve academic and professional English proficiency in the Intensive ESL Program.

Study Abroad

Study abroad programs come in many different forms. Short-term programs are one to six weeks up to full semesters or an academic year. Find programs, schedules, financial information, faculty and parent resources and more.

Study Abroad and U.S. Department of State Travel Warnings Policy

Jack's Cupboard

SE Side of Ben Reifel Hall

Jack's Cupboard combats food insecurity by ensuring those students who struggle financially to purchase food are provided this free resource supported by students, faculty and staff. It is available to all students with a student ID and a bag to collect food items (although Jack's Cupboard can supply students with a bag, if needed). Hours of operation can be found on the Jack's Cupboard website or the Jack's Cupboard Facebook page. Students, with a meal plan, can also donate block meals for Larson Commons by visiting Card Services in the Student Union. Students with leftover flex dollars or monetary donations can contribute at Card Services as well. Jack's Cupboard has a Foundation account and students, faculty, and staff are invited to make a monetary donation at the Foundation for support of the Cupboard. Donations of nonperishable food items are accepted at Jack's Cupboard during hours of operation, at the Housing & Residential Life Office weekdays from 8:00 a.m.–5:00 p.m. or at the University Police Station (24/7). or in the Student Union (by the Information desk) whenever the Union is open.

Multicultural Center

Student Union 271

605-688-5585

Multicultural Center Email

The Multicultural Center at South Dakota State University develops campus initiatives that demonstrate the valued practice and philosophy of multiculturalism within the university community. Programs and activities developed by the office promote high achievement among the increasing number of minority students at SDSU. The office enhances the University mission by broadening the social, cultural, educational, and recreational experience of students. The Multicultural Center provides academic advising, tutorial services, study space, computer resources, personal support, weekend programs, and social activities. For more information on programming, please view the calendar of events.

MyJacks Card

Student Union 140

605-688-6943

Card Services Email

The Campus Card Office at SDSU supports the SDSU community daily life and student success through an identification and transaction system that enhances security, adds convenience, provides seamless operation across campus and furthers the reputation of the University. MyJacks ID cards allow students access to their dining plan, Hobo Dough, and campus events, as well as door access to certain halls and buildings.

Lost/Stolen Cards

Mobile App for MyJacks Card

https://www.sdstate.edu/card-services-office/myjacks-card-mobile-credential

MyJacks Card Policy

This policy and its procedures set forth the protocols to ensure proper protection of identity of the cardholder, personal funds, card system equipment, and the integrity of the door access security system for the MyJacks Card.

Office of Diversity, Inclusion, Equity & Access

Morrill Hall 124

605-688-4033

The mission of the Office of Diversity, Inclusion, Equity, and Access (ODIEA) is to enrich the university community's understanding and appreciation of diversity, practice of inclusion, advancement of equity, and integration of access. ODIEA is committed to promoting diversity in every sector of SDSU and the Brookings community. ODIEA leads and facilitates the development of institutional policies and protocols intended to create a more representative, equitable, and inclusive university. The ADA Coordinator, as part of the ODIEA, guides SDSU's efforts to comply with the Americans with Disabilities Act (ADA) and move towards seamless access and inclusion of individuals with disabilities. As the primary planning coordinator for SDSU disability-related initiatives and procedures, the ADA Coordinator helps to address accessibility issues, conduct trainings, inform compliance-related decision making, and be a resource for questions and concerns about university-wide services, policies, and accommodations for individuals with disabilities, including students, faculty, staff, employees, and visitors.. For more information about diversity events around campus, please view the calendar of events.

LGBTQA+ Resources

GSA Office - Student Union 055

Parking Services

1601 Stadium Road - SDSU Campus

605-688-7275

Transportation Services Email

The SDSU Transportation Services Office is responsible for the administration and enforcement of the Parking & Traffic Regulations. To order a parking permit, view and edit vehicles associated to your permit, or to view, appeal or pay citations, please login to your Online Parking Account.

Parking Rules & Regulations

The SDSU Parking Rules and Regulations have been recommended and approved by the SDSU Parking and Traffic Committee, the Vice President of Finance & Business and the final approval of the President of South Dakota State University. To better familiarize yourself with parking on campus and to avoid citations, please review the Parking & Traffic Regulations prior to parking your vehicle on campus.

Printing Services

Yeager Hall

605-688-5111

Printing Services Email

SDSU Printing Services provides complete printing solutions for the campus community and its affiliates. We offer excellent service at competitive prices. Our experienced professionals are dedicated to providing quality work for the SDSU community.

With the advent of desktop publishing programs, creating publications such as newsletters, brochures, posters, flyers, etc., has become much easier. Generally a project designed in-house does not necessarily mean it is "print ready", nor does it mean it meets the graphic standards of university materials.

The Office of University Marketing and Communications is charged with overseeing logo usage and university trademarks, for both internal and external audiences. Projects being produced at Printing Services must first be routed through University Marketing and Communications to be approved or files prepared for printing.

A recent extension of the Print Lab, the SDSU Imaging Center is housed in the same building and uses state-of-the-art technology to bring new imaging capabilities to campus. 3D printing, laser engraving, mechanical cutting and printing on adhesive substrates are just a few of the options available to help students create more realistic and professional projects, and accommodate the innovation of new ideas to support the faculty and staff as well.

Printing Services is also in the process of installing, tracking and maintaining a number of networked student facing print devices throughout campus. Students can 'print" files to the cloud and securely release them by swiping their MyJacks card at the print terminal. This is commonly referred to as "follow me" print. Files can also be deleted thereby saving students the cost of printing them.

Registrar

Enrollment Services Center

605-688-6195

Records and Registration Email

This one-stop-shop for university records stores all official information on enrollment and grades. But that's not all we do. Aside from keeping track of 12,000-plus students, the Office of Records and Registration also coordinates class schedules, maintains WebAdvisor (every student's online portal of information), processes transcripts and assists students in the very important task of updating their own information, including address and name changes.

Records and Registration Forms

Residential Life

Caldwell Hall 167

605-688-5148

Residential Life Email

Residential Life provides students with opportunities to grow personally, become globally aware, succeed academically, and realize answers to their questions in a residential campus setting. Residence halls include furnished rooms, lounge areas, kitchens and laundry facilities. In addition, the residence halls are located close to most academic buildings, dining options, and SDSU activities and events. The residential experience is also a great way to meet other students; with an open mind and an open door, students can develop lifelong friendships.

Apply for Housing

Housing Costs/Options

Residential Life Handbook

Living Learning Communities

Living-Learning Communities at SDSU provide an environment for residents to connect their academics with life outside the classroom. Students who are accepted to live and participate in these communities have the opportunity to live with others whose academic interests match their own, be supported both academically and socially through intentional programs geared toward their learning community, and interact meaningfully with faculty and staff members.

Student Complaints

South Dakota State University's primary objective is to assist students meet their academic goals through a positive and rigorous academic experience. In the case that a student has a concern, the University's procedures should be followed to address these concerns and/or complaints. We strive to resolve these issues at the University level quickly and fairly.

Students' Association

University Student Union 128, Box 2815

605-688-5181

The Students' Association is the official student government association of SDSU. The SA Senate is made up of representatives from each academic college and meets every Monday night at 7:00pm in the Lewis & Clark Room of the Student Union.

SA is the voice of the students of SDSU. As such, SA serves as a liaison between the student body, administration, the South Dakota Board of Regents, the state legislature, the city of Brookings, and other stakeholders.

All SDSU students who pay the General Activity Fee (all students enrolled in on-campus credits) are members of the Students' Association. The SA Senate is comprised of representatives from each academic college as well as the student body. President and Vice President. The SA Senate meets weekly on Monday's at 7:00pm in the Lewis & Clark Room of the Student Union to hear student concerns, talk about important campus issues, debate new policies, pass legislation, and allocate student fees. All SA Senate meetings are open to the public.

Student Conduct

Caldwell Hall 167

605-688-5148

The function of Student Conduct is to sustain a quality educational environment throughout campus. SDSU has specific rules and regulations, as well as general guidelines for good citizenship and responsible behavior. The primary purpose of these standards is to protect the rights and property of all persons within the University community, and to ensure student success.

Student Academic Misconduct and Academic Appeals

Student Code

Student Employment

Student Union 136

605-688-4425

A variety of part-time job opportunities, both on- and off-campus, are available for students during the academic year and summer. Employers on campus and in the community rely on students to fill their workforce needs and offer flexible work hours to accommodate students' schedules. The SDSU Office of Career Development partners with the South Dakota Department of Labor and Regulation (SDDLR) to provide students assistance with their job search. Two online job boards available to students are:

- Handshake, offered by Career Development. Students should use their MyState credentials to log in and search jobs.
- South Dakota Works, offered by SDDLR.

Please contact the Office of Career Development for more information.

Payroll Office: Morrill Hall 306, 605-688-5781

Graduate Assistants

605-688-4173

Graduate Assistants Email

Assistantships for graduate students provide outstanding students with financial resources to help them complete their degrees. Assistantships offer varying educational and professional benefits. The Graduate School administers and oversees the Guidelines for Graduate Assistantships.

Work Study

605-688-4695

Work Study Email

The Federal Work-Study Program provides eligible students the opportunity to earn money for educational expenses. To be considered for Federal Work-Study, students must complete the FAFSA on or before March 1 and they must select that they are interested in Work Study on their FAFSA. Students are responsible for obtaining employment to earn their Work-Study funds. Students are encouraged to inquire directly with any departments or facilities which they are interested in working at. If students should need assistance obtaining a Work-Study position, they can contact the SDSU Department of Labor Office at (605)688-6668.

Student Legal Aid

Student Union 128

605-688-5181

Student Legal Aid Email

The SDSU Students' Association employs legal counsel, who can provide legal aid to students. This legal counsel cannot go to court with you, however, they can advise you on legal practices. They can assist you with rental agreements, citizenship procedures, and other legal matters. Academic year hours are Wednesdays between 10:00 - 3:00. Summer hours are by appointment only. To book an appointment, please stop by or call the Students' Association Office or send an email. After visiting the legal aid, please fill out this form to share your experience.

Student Ombudsperson

Morrill Hall 312

605-688-4493

In the role of the "Ombuds," the Dean of Students acts as a mentor or arbitrator rather than a conduct hearing officer. The goal is to help a student resolve an issue before it becomes a problem.

What does an Ombuds Office do?

- Listens to problems and concerns
- Reviews possible options
- Explains policies and procedures
- Provides information regarding available resources
- Provides information about formal and informal grievance reporting options
- Makes referrals
- Facilitates communication between people

What an Ombuds Office does NOT do:

- Take sides in a dispute
- Determine guilt or innocence
- Give legal advice
- Offer psychological counseling
- Participate in any formal grievance process
- Represent or advocate for any individual or group

Student Outcome Data

In keeping with federal requirements and other expectations of accreditation, the Higher Learning Commission (HLC) requires that student outcome data be made public and available to students and their families. To satisfy this requirement the following data is to be made public: graduation rates, retention rates, licensure rates, and data about students after graduation (such as graduate school enrollment, employment, etc.) for undergraduate and graduate-level students, and other similar information.

Support Desk

Morrill Hall 131

605-688-6776

Support Desk Email

The Support Desk provides free technology support for students, staff, and faculty. They are able to help with computer issues, gaining internet access, software and programming issues, and other technology issues. If you have any technology-based problems or any technology related questions, contact the Support Desk at 605-688-6776.

Sustainability

Facilities & Services

605-688-6821

Sustainability creates a society that can provide for itself today and for future generations. To reach this ideal, sustainability considers three deeply interconnected concepts- environmental health, social equity, and economic vitality. Maintaining environmental health requires caring for the natural environment so that it can produce resources such as clean air, unpolluted water, oil, minerals, and quality farmland. A healthy planet leads to healthy societies that can offer a high quality of life. this is key to social equity which guarantees that all people have access to basic human needs, such as, quality education, sufficient healthcare, proper sanitation, shelter, a meaningful livelihood, access to nutritious food, and the opportunity to pursue aspirations. People who have access to basic human needs have more opportunities to care for the Earth, which in turn cares for people. Finally, economic sustainability guides both environmental and social sustainability efforts so that they maintain a viable economy.

By including sustainability on campus, SDSU joins the world's efforts to provide a better future. Here at SDSU, Facilities & Services – Sustainability promotes and encourages sustainable lifestyles through the integration of sustainability concepts in academics, engagement, operations, and administration.

All students play an important role in improving SDSU sustainability. Each student is encouraged to practice sustainability in their daily Jackrabbit life from doing simple actions like recycling and using a reusable water bottle to more committed actions like commuting to campus by bike or enrolling in the sustainability minor program. Additional suggestions for how to practices sustainability at SDSU are on the SDSU sustainability website. Students interested in getting more involved in campus sustainability efforts should contact the Sustainability Specialist.

*** Recycling also plays a role in campus sustainability. While living in the residential halls, students are responsible for properly recycling and for emptying their recycling bins in the outside recycling dumpsters. Please do not bag your recyclables, but instead place the items directly into the dumpster. Recycling bins should not be removed from rooms. Students living off campus should work with their property manager regarding how to recycle. Students owning their home can request a recycling bin from the City of Brookings.

Technology

MyState is used for changing your minor, applying for graduation, and has many other useful shortcuts.

D2L is SDSU's online learning platform which provides access to course materials.

WebAdvisor is used for accepting financial aid, registering for classes, and paying tuition bills.

ConnectState is used to make advising appointments, send messages to instructors or advisors, and access information about courses, progress reports and campus resources.

Jacks Email is your official University email that can be used for writing messages, keeping a personal address book, organizing your schedule and saving important documents, pictures, messages and contacts with unlimited amount of storage.

Student wireless network can be accessed through the SDSUStudent network with an active student account.

For technology support and technology related questions, please contact the Technology Support Desk at 605-688-6776.

Testing Center

1100 College Ave.- SDSU Campus

605-688-6460

Testing Center Email

The Testing Center's mission is to assist you in reaching your academic and professional goals by providing you with a secure, friendly and comfortable place to take your exams. They have several workstations in private, semi-private and small group settings that are quiet and distraction free. Appointments can be made for placement exams, CLEP exams, online exams, accommodated exams and make-up exams through the online appointment site Register Blast, which can be found on MyState. Payment to have prior learning credit (i.e., CLEP credit, IB, etc.) placed on your transcript can now be made online at MyState under the Application for Placement Credit Form tab. The Testing Center is located south of the Dairy Bar, between the Barn and Ag Hall.

University Police Department

University Police Department

605-688-5117

University Police Department Email

The University Police Department serves an important role in the safety and security of the campus community. We have assembled a strong team of law enforcement professionals, communications specialists, and student patrol officers to provide for a safe and secure environment. Our law enforcement division includes the Chief of Police, Deputy Chief, 3 Sergeants, 1 Corporal, 8 full time police officers and 4 part time police officers. Collectively, our full time law enforcement staff represents more than 150 years of experience and thousands of hours of advanced law enforcement and public safety training.

Firearm Storage Information

Jackrabbits Guardian

- Setting up friends and family as guardians
- Creating a Safety Timer Session
- Emergency Call Button

University Student Union

University Student Union (USU)

605-688-4960

Designed with students in mind, the SDSU University Student Union in the heart of campus is constantly buzzing. This Union is so much more than meeting rooms. Where else can you grab a bite to eat, curl up with a good book next to the fireplace, buy books and clothes, check your email, or dance the night away with a few hundred of your closest friends—all in one place?

BluePrint

Student Union 056

605-688-5496

BluePrint Email

BluePrint is a student-driven design and print center that is committed to customer service and quality design and print products. Interior banners, exterior banners, T-stands and digital displays in The Union are all advertising areas reserved and designed by staff. BluePrint can assist with any walk-in printing needs along with custom orders such as logo design (logo books), buttons, brochures, event programs and invitations. Located in the lower level of The Union, we have a homework-printing station for convenient and fast printing needs.

Central Reservations

Student Union 150

605-688-4022

Central Reservation Email

Central Reservations, located in the Student Union, provides reservation services for students, staff, alumni, and guests. To make a reservation, call 605-688-4022 or email sdsu.centralreservations@sdstate.edu to schedule your event today.

Event Services

Student Union 150

605-688-4960

Event Services strives to provide SDSU students, faculty, staff, and the surrounding community with friendly, efficient and dependable full service special events, meeting and conference coordination. Our goal is to provide accurate and efficient reservation information and scheduling, and to educate them about the planning process. This will help ensure a successful event as well as provide the individual with the resources necessary to plan and execute events successfully.

Information Exchange

Student Union 150

605-688-6127

Information Exchange is located on the Main level of the University Student Union near the west entrance. We offer sales and services such as faxing, cashing checks, laptop rental, poster approval, stamp & envelope sales, campus maps, event ticket sales, and hunting and fishing license sales. Information Exchange attendants can also assist you with meeting room reservations and advise you on the event planning process.

State Tech

Student Union 150

605-688-4960

State Tech provides party packages at affordable prices, quality PA concert sound systems to make your event a success, as well as professional lighting so it can be seen. State Tech operates and maintains lighting, stage and sound equipment to service students and University needs across campus ranging from lectures, dances, movies and major concerts.

Verification of Student Identity

SDSU requires that students utilize a secure username and password to access their online courses through the course management system, Desire2Learn (D2L). Students enrolled in SDSU online courses may incur additional costs associate with online learning; such as, but not limited, test proctoring and technology (software/hardware). Any requirements regarding proctoring or other tools of verification will be noted in the course syllabus and/or outline. Click here for more information regarding online tuition and fees.

Veterans Affairs

Brown Hall 134

605-688-4700

Veterans Affairs Email

The mission of South Dakota State University Veterans Affairs Office is to assist military veterans, their family members and their survivors in obtaining all federal and state educational benefits and entitlements they have earned by serving in the United States military, and to provide guidance and support services that will aid veterans in their transition to academic and civilian life. Veteran Affairs office hosts events throughout the school year to provide connection and comradery with fellow student veterans and services members.

South Dakota State became the state's first, and the nation's ninth Purple Heart Campus. A dedication ceremony was held at Grove Hall on November 9, 2018. Honored attendees were students, staff, retired faculty and community members who have received Purple Hearts.

Wellness Center

Wellness Center

605-697-9355

Wellness Center Email

The Wellness Center is dedicated to supporting academic success and personal development by promoting and encouraging a healthy lifestyle for the members of the SDSU community. The Wellness Center houses state of the art fitness equipment, a variety of recreational and intramural programs, effective wellness education, and a student health clinic and counseling services.

Wellness Center Policies and Guidelines

South Dakota State University Wellness Center Assumption of Risk, Waiver of Liability, Indemnification and Release Agreement, and Consent to Medical Treatment

Wellness Center Employee Application

Fitness & Recreation

Wellness Center

605-697-9355

The Wellness Center provides access to many services and opportunities to help you meet your goals and have fun doing it! We offer Sport Clubs, Intramurals, Nutrition services, Outdoor Programs, Group fitness, Personal training, and Youth camps. Be sure to check out the details and contact us with any questions!

Student Health Clinic & Counseling

Wellness Center

605-688-4157

The mission of South Dakota State University Student Health Clinic and Counseling Services is to promote the health and wellness of the university community, to enhance student retention, and to support the academic and personal success of all students. Appointments are also available online by going to your MyState account and accessing your Jackrabbits Health Clinic and Counseling Portal. The Student Health Clinic and Counseling Services provides primary care, reproductive health, adult immunizations, nutrition counseling, student flu shots, and counseling services.

You@College

You@College emphasizes individual well-being and self-awareness in order to connect students to information, campus resources, peers and opportunities. From academics and social life, to mental and physical health, You@College is a new kind of solution, focused on skill-building for holistic wellness rather than specific deficiencies. Depending on the need, the want, or the will, students can connect with hundreds of pieces of content within each section of You@College. Students can also use the system-wide search function to locate more specific assistance in the moment.

Jackrabbit Pharmacy

The SDSU Jackrabbit Pharmacy serves all eligible SDSU students, faculty/staff, their family members, and Family Planning patients. The SDSU Jackrabbit Pharmacy accepts prescriptions from doctors outside of the student health clinic. We offer competitively priced over-the-counter and prescription medications along with discounted birth control.

Immunization Requirements & Forms

Insurance Billing

The Student Health Clinic charges for all services incurred at the clinic and will submit charges to your insurance. Examples of charges include: office visits, lab work, injections, physicals, and procedures. You will be required to provide a current copy of your insurance card at the time of your visit. For questions about billing at the Student Health Clinic please see our insurance page.

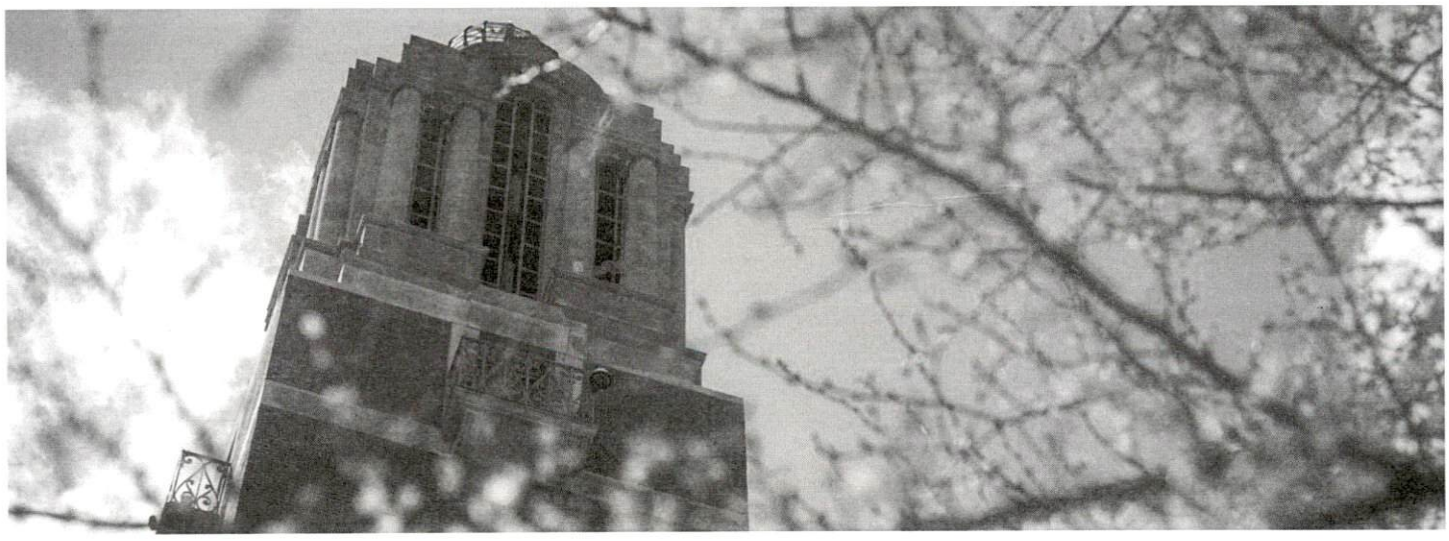
Writing Center

Briggs Library 103

605-688-4155

The SDSU Writing Center serves all students enrolled in the university, both graduate and undergraduate. Students can chat about an essay for a composition or history class, a research paper, abstracts for a human development or sociology paper, or a job or graduate school application letter-in short, any type of writing that they have concerns about. Consultations take place during any stage of the writing process - from determining the ideas, focus, and framework to citing sources and figuring out how semi-colons work and polishing the style.

Schedule an Appointment



Policies & General Academic Information

This section outlines academic policies as well as general information related to academics at South Dakota State University. The South Dakota State University Policy and Procedure Manual is the definitive source for the most current South Dakota State University policies. Policies duplicated on other websites or in print may not be the most current version. All policies documented on the site are official and supersede policies located elsewhere. South Dakota State University is governed by state and federal law, administrative regulations, and policies of the South Dakota Board of Regents (SDBOR) and the State of South Dakota.

Academic Integrity & Academic Appeals

(SDSU Policy 2:4, SDSU Policy 3:1, SDBOR Policy 2:33, SDBOR Policy 3:4)

South Dakota State University has taken a strong and clear stand regarding academic dishonesty. Academic integrity embodies ethical principles to act responsibly and take responsibility for one's actions. Integrity and honor function as forms of a "social contract" where individuals have a duty to follow the rules and norms of academia as well as a duty to ensure their peers also follow such rules and norms. Undergraduate and graduate students at the University are expected to maintain the highest standards of academic conduct; if violated, the University takes a strong and clear stand regarding academic dishonesty. The consequence of academic dishonesty ranges from disciplinary probation to expulsion. For additional information on the academic dishonesty and academic appeals process and procedure reference SDSU Policy 2:4, SDSU Policy 3:1, SDBOR Policy 2:33, and SDBOR Policy 3:4.

Academic Performance & Progression

Credit Load

Full time students are required to take a minimum of 9 credits. Half-time students are required to take a minimum of 5 credits. Three-fourths time students are required to take a minimum of 7 credits. Students may take a maximum of 12 credits per semester. Domestic students must be enrolled at least half-time (5 credits) to receive Federal Aid. Loan deferment may also require full or part-time status. Eligibility varies with financial aid programs and students should contact their lender for requirements.

Graduate Assistants

(SDSU Policy 2:16)

All graduate assistants must register for a minimum of one (1) credit (including summer) in order to receive an assistantship.

Credits needed for full-time student status for graduate assistants:

	Spring/Fall	Summer
25% time assistantship	7	5
49% time assistantship	5	3

*For financial purposes, students need to be enrolled in at least 5 credits regardless of semester of study. Students with financial aid questions should e-mail the Financial Aid Office or visit their website.

Graduate assistantships are designed to provide financial support and intellectual guidance in support of the student's education. The primary goal of an assistantship is to facilitate progress toward the graduate degree. Assistantships are not the form of compensation for the time graduate students spend on their thesis or dissertation research. Students on research assistantships are expected to work on their own research over and above the time for which they are compensated. Graduate Research Assistants must complete a work log documenting compensable hours.

See the Graduate Assistant website for more specific criteria, guidelines, and more information regarding Graduate Assistantships.

International Graduate Student Credit Requirements

Fall/Spring Semester

International graduate students are required to pursue a full time course of study to maintain non-immigrant status in accordance with the U.S. Code of Federal Regulations. International students without an assistantship must register for nine (9) credit hours per semester to pursue a full course of study. Students with an assistantship would need to enroll in the appropriate number of credits corresponding with the percentage of their assistantship. Students who fail to maintain a full course of study will be considered out of status and may be terminated. The exceptions to a full course of study are limited but very important. Students must seek the approval of the International Student Affairs office for authorization to drop below nine (9) credits per semester. See the International Student Handbook for more information.

Summer Semester

Full time enrollment is required when the summer session is an international student's first semester. According to the United States Citizenship and Immigration Services (USCIS), international students who begin their studies during a summer session must be enrolled full time in order to maintain their F1/J1 status. It is a violation of USCIS regulations to permit an international student to begin a program and only register for 1 credit the first semester they are here. Graduate programs that intend to admit international students for the summer session/term must ensure that students will be able to enroll in enough credits to maintain their full time status. Students without an assistantship would need to register for 9 credits. Students with an assistantship would need to enroll in the appropriate number of credits corresponding with the percentage of their assistantship. International students are allowed to register for less than a full time course load during all subsequent summer terms. This policy only pertains to international students who are beginning their programs during a summer term.

Registration & Status

To maintain active status, students must be registered each semester of the academic year (excluding summer). Students completing their final oral exam or other degree requirements during a summer semester must be registered. All graduate assistants must register for a minimum of one (1) credit (including summer) in order to receive an assistantship.

Students who are not registered each semester (excluding summer) will be moved to inactive status and will be required to reapply before continuing their graduate studies.

Continual Registration for Dissertation, Thesis, Research/Design Paper

All graduate students who have completed the dissertation/thesis/research-design paper credits specified on their plan of study are required to do one of the following each semester during the academic year and summer term until the degree is awarded:

1. Students who have completed the required number of dissertation/thesis/research-design paper credits on the plan of study, but are still involved in research work as part of the degree requirement, must continue to register for one credit for each succeeding semester, including summer.

2. Students who miss the deadline for graduation in a given semester, but successfully complete their final oral exam and all other requirements prior to the start of the next semester, do not have to enroll in that semester in order to graduate.

Registration is the student's responsibility and must be completed and payment made by the appropriate deadline each semester. Failure to register may delay award of the degree and thereby require additional registrations.

Academic Probation

(SDSU Policy 2:26)

Graduate students whose plan of study cumulative grade point average drops to less than 3.0 will be placed on academic probation and a hold will be placed on his/her registration for the subsequent semester. This hold can be removed only after the student and his/her advisor submit a plan of improvement form to the Dean of the Graduate School indicating how the GPA will be brought up to 3.0 or better. In the semester following the hold, the student must have a GPA of 3.0 or better. If students do not meet the GPA criteria, they may be subject to dismissal from their program or the University.

Academic Progress of Thesis & Dissertation Coursework

(SDSU Policy 2:26)

All students pursing a master's degree (Option A) or a Doctor of Philosophy degree must complete a thesis and dissertation, respectively. Each semester a student is engaged in activities in support of these objectives the students must be enrolled in the in x798 or x898 (or equivalent). The instructor, in consultation with the student, will determine the goals of the coursework for that semester. The student should be notified of the goals in writing sufficiently early in the semester to allow for completion of the goals. Each x798 or x898 credit hour will be graded with either an "S" or "U", for Satisfactory or Unsatisfactory, respectively. Written explanation of any "U" grade should be delivered to the student no later than the final day of instruction. Students receiving a "U" grade for x798 or x898 in two (2) semesters may be dismissed from the program. Recommendation for dismissal will be communicated from the instructor and Department Head to the Dean of the Graduate School who will conduct the review. The review will consider the student's entire academic performance weighed against a) the necessary research, clinical, and/or scholarly abilities to complete the student's chosen graduate degree and (or) b) the rate of progress toward degree completion.

Annual Evaluations

(SDSU Policy 2:26)

Thesis students (Option A master's) and doctoral students shall be provided written progress evaluations on an annual basis. The Annual Evaluation should address progress toward completion of formal course work and the thesis or dissertation project.

Affirmative Action/Equal Opportunity Policy/Title IX

(SDSU Policy 4:3, SDSU Policy 4:4, SDSU Policy 4:5, SDSU Policy 4:6)

South Dakota State University has a well-established commitment to maintaining a campus environment free from discrimination and harassment, as articulated by federal and state law, and University policy.

Non-Discrimination Policy

The University offers equal opportunities in employment and for access to and participation in education, extension, and other services at the University to all persons qualified by academic preparation, experience, and ability for the various levels of employment or academic program or other University service, without discrimination based on sex, race, color, creed, national origin, ancestry, citizenship, gender, gender identification, transgender, sexual orientation, religion, age, disability, genetic information, veteran status, or any other status that may become protected under law against discrimination.

The University, in conjunction with state and federal law and applicable SDBOR and University policies, is committed to the objectives of equal opportunity, nondiscrimination, and affirmative action. Redress for alleged violations of those laws may be pursued at law, or through the procedures established in University Policy 4:6 through the University Director of Equal Opportunity and Title IX Coordinator.

Michelle Johnson, Ed.D., Director of Equal Opportunity and Title IX Coordinator & Affirmative Action Officer
South Dakota State University
Human Resources, Morrill Hall Room 100
Brookings, SD 57007
605-688-4128

Harassment including Sexual Harassment Policy

Harassment is a particularly harmful and illegal form of discrimination that breaks down trust within the SDSU community and impedes the ability of students, employees, and others to participate in an environment that allows them to achieve their fullest potential. Furthermore, harassment is a violation of the expectation that every individual at SDSU deserves to be treated fairly, with respect for his/her dignity as a person.

Prevention of Sexual Assault, Domestic Violence, Dating Violence, & Stalking Policy

State and federal laws and policies strictly prohibit sexual assault, domestic violence, dating violence, and stalking, often treating such actions as criminal offenses. Such misconduct is not permitted or tolerated at the University. SDSU Policy 4:5 and its procedures set forth standards regarding reports of sexual assault, domestic violence, dating violence, and stalking and the consequences of engaging in such misconduct at the University.

Non-Retaliation/Privacy

Complainants, respondents, witnesses, and other persons who have assisted, testified, or participated in any manner in any phase of a harassment or discrimination investigation will be protected against retaliation. SDSU's policy and applicable Board of Regents, state and federal regulations prohibit retaliation, coercion, harassment, interference and/or intimidation, or any other adverse action taken as a direct result of a complaint being brought forth.

All concerns are responded to and/or investigated in a highly sensitive manner. The privacy of the parties involved is protected. The process is neutral, impartial and fair.

What You Can Do To Address Harassment or Discrimination

- If safe, approach the person you feel has discriminated against or has harassed you and communicate your concern directly, in person or in writing. Ask them to stop the concerning behavior or comments immediately.
- Report harassment or discrimination to the Director of Equal Opportunity and Title IX Coordinator (605-688-4128).

Reporting Complaints

Concerns should be reported directly to the Director of Equal Opportunity and Title IX Coordinator.

Michelle Johnson, Ed.D., Title IX/EO Coordinator & Affirmative Action Officer
Human Resources, Morrill Hall Room 100
Brookings, SD 57007
605-688-4128

SDSU has adopted a Compliance Hotline that offers two additional ways to report concerns, including the option to report anonymously, call 1-844-880-0004 or visit the web reporting website.

If a student or employee confides in you their concern, please encourage them to report the issue or you are required to report on their behalf. The University has a legal obligation to respond to issues, big and small, so SDSU requests that all concerns be brought forth. The University has many resources and wants to support the entire University community.

The complaint process is subject to the South Dakota Board of Regents policies, and will follow the institutional policies listed below:

Policy 4:3 Equal Opportunity, Non-Discrimination, and Affirmative Action
Policy 4:4 Harassment including Sexual Harassment
Policy 4:5 Prevention of Sexual Assault, Domestic Violence, and Stalking
Policy 4:6 Human Rights Complaints

What happens if a violation of the policy occurs?

The University will not tolerate discrimination, harassment or retaliation that violates SDBOR or University policy. Where such violations are investigated and found to have indeed occurred, the University will take steps to end it immediately. An individual found to have engaged in discrimination, harassment or retaliation will be subject to appropriate discipline, depending on the severity of the misconduct. Sanctions for employees include formal reprimands, suspensions without pay, reductions in responsibilities, and termination. Sanctions for students include disciplinary probation, suspension, and expulsion. SDSU will provide the victim with remedies or interim and protective measures to alleviate the negative effects of the harassment or discrimination. Such remedies may be regarding academic, residential, employment, financial and transportation accommodations.

For More Information

For more information on the policies established to promote equal opportunity and eliminate discrimination and harassment at SDSU visit the website.

Attendance Policy

(SDSU Policy 2:5, SDSU Policy 2:12)

Policy

a. Teaching and learning is a reciprocal process involving faculty and students. Faculty members have an obligation of holding classes on a regular basis and students have an expectation to attend and participate in classes on a regular basis. Faculty members determine the specific attendance policy for courses under their direct supervision and instruction. Attendance procedures must be stated in written form, in the course syllabus, and distributed or posted electronically to students at the beginning of each course. If attendance is required and will impact grading, this expectation shall be included in the syllabus.
b. Any exceptions to the faculty member's written attendance policy due to verified medical reasons, death of a family member or significant other, or verified extenuating circumstances judged acceptable by the instructor or the Office of Academic Affairs, will be honored. Absences for vacations, breaks, or personal interviews do not constitute a valid reason for absence.
c. Faculty and administration will honor officially approved absences where individuals are absent in the interest of officially representing the University. Appropriate sanctioned activities include: Collegiate club sports and competitions; Conferences and workshops recognized by the University not related to academics; Commitments on behalf of the University (Students' Association, Band, Choir, etc.); Intercollegiate athletics; and Professional activities recognized by the University related to academics (professional conference attendance, etc.)
d. Students with official excused absences: Students with excused absences will be given appropriate make up work or instructor-determined equivalent opportunities for obtaining grades as students who were in attendance. Students with official excused absences are not to be penalized in course progress or evaluation. However, should excused absences be excessive, the faculty member may recommend withdrawal from the course(s) or award an incomplete grade.
e. Attendance policies apply in the online classroom. Faculty members determine the specific attendance policy for courses under their direct supervision and instruction. Attendance procedures must be stated in written form and made available to students on the first day of the course. Common strategies for demonstrating "attendance" in an online course include login requirements per week, an identified number of discussion postings per week, consistent contact with peers and instructor, and/or other assignments as determined by the instructor. Also, students are expected to login to their class on the first day of the semester.
f. Student-Athlete Class Attendance
    i. No student-athlete may be absent from more than ten (10) class sessions (including required laboratory sessions) of a given course in a semester.
    ii. Athletic excused absences will not be approved during final examination period with the exception of required conference or NCAA activities.
    iii. In the interest of safety for student-athletes and staff, missed class-time resulting from travel delays associated with inclement weather will be excused.

Procedures

a. If a student has an accident, falls ill, or suffers some other emergency over which they have no control, the student needs to gather whatever documentation is available (e.g., copies of repair or towing bills, accident reports, or statements from health care provider) to show the instructor. Such exceptions must be communicated and negotiated between the student and faculty member prior to the absence whenever possible.
b. Requests for excused absences due to approved university-sponsored/recognized trips must be submitted one week prior to the trip or event. Students must present the completed approved trip absence card to the faculty member prior to the trip or event to have an official excused absence. Faculty members are not required to honor incomplete or late cards. Absences for trips or activities will not be approved during finals week.
c. Arrangements regarding attendance should be negotiated with faculty members. If this is not possible, the students should go first to the department head, and if necessary, next to the dean. The student may contact the Office of Academic Affairs if conflict cannot be resolved at these levels.
d. Waivers to the above rules, as they pertain to student athletes, require the approval of the Intercollegiate Athletics Board or its designee at the time of scheduling or as soon thereafter as is reasonably possible (if circumstances dictate the need for finalizing a contract or schedule prior to gaining Intercollegiate Athletics Board approval).

Commitment to Freedom of Expression/Intellectual Diversity

(SDBOR Policy 1:32)

South Dakota State University is committed to the principles of expression protected by the First Amendment to the United States Constitution. Those principles include a commitment to freedom in learning, academic freedom, freedom of expression, and freedom of association. In addition, the University is committed to intellectual diversity - fostering a learning environment that exposes students to and encourages exploration of a variety of ideological and political perspectives. Any complaints about violations of this commitment can be made to the Director of Equal Opportunity and Title IX Coordinator.

Complaints & Concerns

South Dakota State University's primary objective is to assist students meet their academic goals through a positive and rigorous academic experience. In the case that a student has a concern, the University's procedures should be followed to address these concerns and/or complaints. We strive to resolve these issues at the University level quickly and fairly.

Academic Concern &/or Complaint

Where minor concerns arise, we ask students to raise these concerns with the instructor or appropriate staff member with the goal of resolving the issue at this level. If the concern is not resolved at this level, we recommend visiting with the appropriate Department Head and Dean as needed.

If a complaint cannot be handled through these channels, the students may address the concern/complaint formally through the Academic Affairs office.

Academic Affairs
South Dakota State University
Administration (SAD) 230
Brookings, SD 57007
Phone: 605-688-4173

Academic Appeals Policy

Non-Academic Concern &/or Complaint

If you have concerns or complaints unrelated to academics, please select the appropriate option below based on the nature of your concern and/or complaint.

If your concern requires immediate assistance, please dial 911 or contact the University Police Department at 605-688-5117 (111 from any campus phone).

To make an online report, visit the web reporting website. You may also call the toll-free hotline at 844-880-0004. The online report and hotline are provided by Lighthouse Reports. You may choose to remain anonymous when providing information.

To make a report in person, please contact the Vice President for Student Affairs Office at 605-688-4493 or visit us in Morrill Hall room 312 or the Office of Title IX/EO at 605-688-4128 or visit us in Morrill Hall, room 100.

If you would like to talk with someone **confidentially** without making a report, please contact SDSU Counseling Services or Student Health Clinic at 605-688-4157.

Please visit Report It for additional information.

In addition, the following links provide more specific guidance on how to report a concern and/or complaint related to one of the below categories:

EO / Title IX

Crimes or Policy Violations

Grievance Regarding Student Behavior (Contact Dean of Students)

Grievance Regarding Residence Hall Student Behavior (Contact Community Assistant, Residence Hall Director, or University Housing & Residential Life Employee)

State Regulatory Information

Any person may file a complaint with the Executive Director of the South Dakota Board of Regents to obtain a review and appropriate action on allegations that an institution governed by the Board:

- Violated South Dakota consumer protection laws;
- Engaged in fraud or false advertising;
- Violated South Dakota laws relating to the licensure of postsecondary institutions or programs;
- Failed to provide an educational program meeting contemporary standards for content and rigor;
- Failed to assign qualified instructors; or
- Violated one or more accreditation requirements.

Where the institution has not already considered and acted upon the complaint, the Executive Director will refer the matter to the institutional president for review and action. If the complainant challenges an institutional disposition of the complaint, the Executive Director will provide for an independent review and disposition of the allegations. The Executive Director may be contacted at:

The Office of the Executive Director of the South Dakota Board of Regents
306 East Capitol Avenue, Suite 200
Pierre, SD 57501-2545
Phone: 605-773-3455

Consumer Protection

Allegations involving violation of consumer protection laws may also be filed with:

Office of Attorney General
Division of Consumer Protection
1302 E Hwy 14 Ste 3
Pierre, SD 57501
Phone: 605-773-4400, 1-800-300-1986 (in-state only)

Fax: 605-773-7163
Web: online complaint form

Out-of-State Distance Education Students

Pursuant to the United States Department of Education's Program Integrity Rule, South Dakota State University is required to provide all prospective and current students with the contact information of the state agency or agencies that handle complaints against postsecondary education institutions offering distance learning or correspondence education within that state.

For students residing in a SARA state, the complaint must be brought to the institution's home state SARA portal entity. Students may submit complaints to the SD-SARA Portal Entity here.

For students in California, please contact the appropriate entity listed below.

- California Bureau of Private Postsecondary Education - Filing a Complaint

SDSU's Accreditor Complaint Procedure

SDSU is accredited by the Higher Learning Commission (HLC), an independent corporation that was founded in 1895 as one of six regional institutional accreditors in the United States. SDSU's institutional accreditation along with program specific accreditation can be viewed on the University's Accreditation webpage.

For more information regarding filing a complaint with the Higher Learning Commission visit their website.

Courses/Credits

Add/Drop Procedure

1. Dropping or adding courses should be discussed with one's academic advisor. Courses can be dropped on Self-Service or in the Registrar's Office.
2. The drop/add period is the time period during which students may adjust their academic schedule for the term without financial or academic consequences. The last day of the drop/add period for a course is designated as the census date for that course and is the official date for enrollment reporting. The end of the drop and add period for standard and non-standard courses offered in a semester shall be the date the first 10 percent of the term ends or the day following the first class meeting, whichever is later. When calculating 10% of the term, breaks of five or more days are not included when counting the total number of days but Saturdays, Sundays, and holidays are. Student registrations can only be added to courses after the end of the drop and add period by approval of the chief academic officer (or designee) of the university.
3. **Students should not discontinue enrollment in a class without processing discontinuance via the official drop procedure. An "F" will be recorded for an unofficial drop.**

Grades for Dropped Courses

Graduate students who drop a course shall receive a withdrawal grade if that action occurs anytime between the day after the census day for that course and the day that corresponds with the completion of 70 percent of the class days for that course.

Grades for Withdrawals from the Regental System (see "Withdrawals" for additional information)

Students who completely withdraw from the Regental system from the first day of a class(es) through census date of the class(es) will have a comment on the transcript stating Withdrawal and the date of the withdrawal. Graduate students who withdraw from the System shall receive a grade of "W" if that action occurs anytime between the day after the census day for that course and the day that corresponds with the completion of 70 percent of the class days for that course.

A notation of the date of withdrawal will be included on the student's transcript if he/she withdraws from the system. (Refer to SDBOR Policy 5:7, section 2)

Last Day to Drop

For standard classes, the last day to receive a grade of "W" is determined by calculating 70 percent of the class meeting days in the term, counting from the first day of classes in the term and rounding up if the calculation produces a fractional value greater than or equal to 0.5.

For any non-standard course, the last day to receive a grade of "W" is based on the number of class meeting days for the course, using the method described above.

Similar proportional dates would be established by the Registrar's Office for summer, interim and other courses taught outside of the normal nine-month academic year.

Students may not drop a course or withdraw from the System after the time period specified above. (Refer to SDBOR Policy 5:7, section 2)

If extenuating circumstances (i.e., illness) have prevented class participation, a petition for an individual drop may be filed.

Auditing a Course

Registration as an auditor in a course may be permitted. No credit is given. The audit fee is the established tuition and fee rate. **Registration for audit may be accomplished only after registration day by presenting an Audit/Satisfactory/Unsatisfactory form to the Registrar's Office, Enrollment Services Center.**

Auditing courses by graduate students will be a matter of record (recorded on their academic transcript). An AU grade is given for Audit. This grade does not calculate into the semester or cumulative grade point average. Audit courses are counted as part of the 12 hour rule for overloads. **Audit courses are not counted in calculating undergraduate or graduate full-time student status.**

Cancellation of Courses

In general, entry level graduate courses (500 or 600 level courses) will not be offered to fewer than seven (7) students and graduate only (700 or 800 level courses) will not be offered to fewer than four (4) students unless there is some special reason for doing so. Instructors will cancel courses with low enrollment or for other reasons only with the approval of the dean of the academic college concerned.

Repeated Courses

(SDBOR Policy 2:8, section 3.4)

All courses taken appear on the student's academic record, but when a course is repeated, only the most recent grade is calculated into the cumulative GPA. This policy applies to both undergraduate and graduate coursework. Relative to number of repeats allowed:

1. A student may enroll in a graduate course (for which credit is granted only once) no more than two times without permission of the Dean of the Graduate School.
2. A student will be allowed unlimited enrollments in a graduate course for which credit toward graduation may be received more than once. An institution may limit the number of credit hours for courses that may be taken more than once that apply toward the requirements for a major.

Please notify the Registrar's Office, Enrollment Services Center, when a course, whether failed or passed, is repeated.

Transfer of Credits

(SDSU Policy 2:17, SDBOR Policy 2:5)

Graduate credits earned at other institutions may be applied toward an advanced degree if they were awarded a grade of at least "B" (3.0), if they are approved by the advisor or advisory committee and the Dean of the Graduate School, and if they are not part of a conferred degree. Transfer credit is limited to graduate credit as defined by the institution issuing the transcript. In order to be accepted by the Graduate School, the offering institution must accept the credits toward their graduate program without restriction. Dual-numbered courses offered primarily for upper-level undergraduate credit are not transferable as graduate credit. Requests for transfer of credits are usually made at the time a plan of study is approved and must be supported by an official transcript submitted to the Graduate School. A minimum of sixty (60) percent of all credits in the program must be earned at SDSU unless the program is part of an approved joint or cooperative degree. Credits earned at another institution as a part of an approved joint or cooperative degree program will not count as transfer credits for the purposes of this policy.

Undergraduate Students Taking Graduate Courses

(SDSU Policy 2:22, SDBOR Policy 2:8, section 3.3.1, SDBOR Policy 2:10)

Undergraduate students who have completed a minimum of 90 credit hours may request to enroll in 500/600 level. Students will pay graduate tuition and the courses will be recorded on a graduate transcript. A maximum of 12 graduate credits may apply to an undergraduate degree. SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements designates standards concerning the use of graduate credit to fulfill undergraduate degree requirements as allowed by SDBOR Policy 2:8.

Withdrawal

(SDSU Policy 5:28, SDBOR Policy 2:4; SDBOR Policy 2:4:1, SDBOR Policy 2:6.8, SDBOR Policy 2:33, SDBOR Policy 5:5, SDBOR Policy 5:7)

Those finding it necessary to withdraw from the University are urged to consult with a faculty advisor to work out the best plan possible and then contact the Registrar's Office, Enrollment Services Center to process a withdrawal. Those who leave the University without processing an official withdrawal will be reported as having failed the semester's work. Grades transcripted are based on the withdrawal date. A student may withdraw from the University until 70% of instruction has been completed (Contact the Registrar's office for date information). After that date, if extenuating circumstances (i.e., illness) have prevented class participation, a petition for withdrawal may be filed through the Office of Academic Affairs.

A student is considered withdrawn during a term if classes have begun and:

1. The student has registered for at least one course and the student has initiated withdrawal from all on-campus and off-campus courses at all Regental universities in which the student was actively enrolled at the time of withdrawal, including courses in progress as well as those that have not yet begun, or;
2. The Regental Home University has completed withdrawal procedures for administrative reasons including, without limitation, non-payment of tuition and fees or disciplinary sanctions.
3. Students enrolled in two or more Regental universities pursuant to financial aid consortia will be eligible for refunds as set forth herein only if they withdraw, drop out or are expelled from all classes at all Regental universities for which they have enrolled.

Students who withdraw or are administratively withdrawn, suspended or expelled from the Regental system within the drop/add period receive a 100 percent refund of tuition and per credit hour fees. Students who withdraw or are administratively withdrawn, suspended or expelled from the Regental system after the date the first 10 percent of the term ends for the period of enrollment for which they are assessed may be entitled to a refund per BOR Policy 5:7.

Family Education Rights & Privacy Act of 1974

(SDBOR Policy 3:2)

FERPA Rights

The Family Educational Rights and Privacy Act (FERPA) affords eligible students certain rights with respect to their education records. (An "eligible student" under FERPA is a student who is 18 years of age or older or who attends a postsecondary institution at any age.) These rights include:

1. The right to inspect and review the student's education records within 45 days after the day the University receives a request for access. A student should submit to the registrar, dean, head of the academic department, or other appropriate official, a written request that identifies the record(s) the student wishes to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.
2. The right to request the amendment of the student's education records that the student believes is inaccurate, misleading, or otherwise in violation of the student's privacy rights under FERPA. A student who wishes to ask the University to amend a record should write the University official responsible for the record, clearly identify the part of the record the student wants changed, and specify why it should be changed. If the University decides not to amend the record as requested, the University will notify the student in writing of the decision and the student's right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
3. The right to provide written consent before the University discloses personally identifiable information (PII) from the student's education records, except to the extent that FERPA authorizes disclosure without consent. As one example, the University discloses education records without a student's prior written consent under the FERPA exception for disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic, research, or support staff position (including law enforcement unit personnel and health staff); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official also may include a volunteer or contractor outside of the University who performs an institutional service of function for which the school would otherwise use its own employees and who is under the direct control of the school with respect to the use and maintenance of PII from education records, such as an attorney, auditor, or collection agent. A school official typically has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibilities for the University.
4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the University to comply with the requirements of FERPA. The name and address of the office that administers FERPA is:

   Family Policy Compliance Office
   U.S. Department of Education
   400 Maryland Avenue, SW
   Washington, DC 20202

Directory Information

The Federal Privacy Act (FERPA) defines some information as Directory Information. SDSU allows the release of the following Directory Information concerning a student upon request, without the consent of the student.

- student's name
- student class level
- degrees received
- major program of study
- minor program of study
- hometown
- dates of attendance
- student's University e-mail address
- photographic material (not including student ID photo)
- full-time/part-time status
- honors and awards
- athletic participation
- graduation date

Final Examinations

(SDSU Policy 2:1)

Policy

1. Among the tasks of instruction is that of evaluation of a student's performance. Each course has its own particular parameters, and the evaluation procedure in any one course is not necessarily the same as that in another course. However, the most commonly used evaluation technique is that of written examinations or papers periodically due during the course, and a final examination at the end of the course. The final examination procedure has become so universal and accepted that a final examination period is set aside at the end of the semester in most colleges and universities. The Carnegie credit hour is calculated by contact hours with 15 contacts hours equating to 1 credit hour. Finals week is considered an integral part of the 17-week academic semester and critical to the credit hour calculation.
2. It is the policy of South Dakota State University to adhere to the following:
   - i. The final examination schedule will be published in the fall or spring course schedules. Courses offered for 2 or more credits will have an examination time determined by the final examination schedule published in the schedule book.
   - ii. Multiple section final examinations will be scheduled at 7:00 a.m. as published in the schedule book through a request process from the instructor to the Registrar's office.
   - iii. Final exams for evening courses (any course that begins at 5:00 p.m. or later) must be scheduled at the regularly scheduled time (of the course) during finals week.
   - iv. Courses of 1 credit or laboratory only will have the final examination or alternative learning experience during the last week of regular classes before final examination week.
   - v. Every course except as noted in #2, #3, and #4 above is required to follow the final examination schedule.
   - vi. Five days are to be scheduled for final examinations at the end of each semester, fall and spring. Due to the variety of summer sessions and other accelerated course formats, the final day of the term will be reserved for the final examination.
   - vii. A block of 2 hours will be available for administering individual final examinations. Within the final examination time period, instructors may reduce the time limit of an examination by prior announcement.
   - viii. Final examinations are an integral part of the instructional program and should be given in all courses except in some cases such as laboratory, studio, capstone courses, seminars, colloquia and other independent learning credits, where a final examination may not be appropriate. Any instructor wishing to waive the right to a final examination must do so by submitting a request as outlined under Procedures. The right to waive the final examination does not, however, preclude the requirement to hold class during final examination week for an alternative learning experience. The discipline is responsible for defining appropriate alternative learning experiences.
   - ix. Take home final examinations are permissible but the course must still meet during final examination week for alternative learning experience.
   - x. Online and hybrid courses must be held to the same standard for final examinations and can only be administered during final examination week.
   - xi. If a final examination is used, it should not be given early. The published final examination schedule must be followed and the final examination in a course should be given as scheduled and not at other times, even if the faculty member and all students in a course agree to such a change. This is true even if the final examination is an alternative learning experience. It is understood that some culminating learning assessment may be administered during the last week of classes. This does not preclude the requirement however, for these classes to meet during finals week.
   - xii. The week of classes preceding the scheduled final examination period should be used primarily for continued instruction and may include the introduction of new material. No final examinations are to be given during the seven days preceding the start of the examination period (excluding 1 credit courses). However, laboratory practicums, seminar presentations, etc. may be scheduled in that week.
   - xiii. Individual students may petition in writing for a variance from these policies, provided the instructor is satisfied that the exception is based on good and sufficient reasons, and that such an exception for an early or late examination will not prejudice the interests of other students in the course. Reasons for individual students missing a scheduled examination will be handled by the department. Each department will decide what will, or will not, be an acceptable excuse and deal with individual hardship cases. Note that the SDSU Attendance Policy should be consulted for excused absences. In the event of a department approved excuse, the instructor will decide the procedure necessary to complete the course requirement. Instructors must have the consent of the department head in excusing the student.
   - xiv. When students have more than three final examinations on the same day, they are entitled to arrange an alternative examination time for an examination or examinations scheduled on that day. Such arrangements must be made no later than the end of the 12th week of the semester. Students are expected to provide evidence to the Registrar's Office that they have more than three examinations to qualify for exceptions.
   - xv. This policy applies to all undergraduate and graduate students, including seniors. Graduating seniors are not exempted from final examinations.

Procedure

a. Each instructor, department head and dean is responsible for enforcing the above policies. The SDSU Attendance Policy will be used to establish acceptable excuses for missing and retaking a final examination.

b. Any instructor wishing to request a waiver from administering a final examination must do so by submitting a request to the department head for approval. The department head will then forward such requests to the college dean. A course need only be approved once; however, if substantive modifications are made to a course, it should be resubmitted for approval.

Grades

Graduate Academic Standards/Grades

Cumulative 3.0 (B) Average

The student must maintain a 3.0 (B) cumulative grade point average for courses in the graduate plan of study. No credit is given toward a graduate degree for any grade below "C" in 500, 600, 700 or 800 level courses. Students must have a cumulative plan of study GPA of 3.0 in order to graduate.

Dissertation/Thesis/Research or Design Paper Credits

Graduate students usually register for dissertation/thesis/research or design paper credit during several semesters. A grade of satisfactory (S), unsatisfactory (U), or (NP) normal progress may be assigned during the semester of registration, based on progress made. Credits receiving "U" will not be credited toward the plan of study.

Seminars

A letter grade or a grade of Satisfactory (S) or Unsatisfactory (U) may be assigned at the discretion of the instructor.

Incomplete Grades

When a graduate student is given an Incomplete grade (I) for any course in the student's plan of study, the instructor may indicate in writing to the student what additional work must be completed and may establish a date at which such work must be completed. If the work is not completed in either the manner or time prescribed, the instructor may change the Incomplete grade to whatever grade is justified as an evaluation of the student's work or may allow the grade to remain Incomplete. Incomplete grades given without this procedure will remain as Incomplete on the student's record unless changed because of completion of the remaining work in the course. Incomplete coursework must be completed within one calendar year; extensions may be granted by the Graduate Dean.

Repeated Courses

All courses taken appear on the student's academic record, but when a course is repeated, only the most recent grade is calculated into the cumulative GPA. **Students should notify the Registrar's Office, when a course, whether failed or passed, is repeated.**

Grading

(SDBOR Policy 2:10)

Graduate Grades will be assigned to the Graduate Academic Level and to all courses and sections with course numbers of 500 or greater. Plus and minus grades are not used.

A	Exceptional	4.00 grade points per semester hour
B	Above Average	3.00 grade points per semester hour
C	Average	2.00 grade points per semester hour
D	Lowest Passing Grade	1.00 grade points per semester hour
F	Failure	0.00 grade points per semester hour
S	Satisfactory	Does not calculate into any GPA
U	Unsatisfactory	Does not calculate into any GPA
W	Withdrawal	Does not calculate into any GPA, no credit granted
AU	Audit	Does not calculate into any GPA, no credit granted
I	Incomplete	Does not calculate into any GPA
IP	In Progress	Does not calculate into any GPA
NG	No Grade	0 credit tracking course
NP	Normal Progress	Does not calculate into any GPA
NR	Grade not Reported by Instructor	Does not calculate into any GPA
EX	Credit by Exam	Does not calculate into any GPA
CR	Credit	Does not calculate into any GPA
TR	Note for NSE/MEDT	Does not calculate into any GPA, no credit granted
LR	Lab grade linked to Recitation Grade	0 credit course

AU: An audit (AU) grade may be granted only when the student has elected the AU option on or prior to the census date of the term.

CR: A credit (CR) grade may be granted only for non-course credit that is not related to an examination or to equating transfer grades to the BOR grading system. This grade is not used for any Regental university course.

EX: An examination for credit (EX) grade may be granted only for non-course credit validation obtained through a validation process. This grade is not used for any Regental university course.

I: An incomplete (I) grade may be granted at the graduate level only when all of the following conditions apply:

- A student has encountered extenuating circumstances that do not permit him/her to complete the course.
- The student must be earning a passing grade at the time the Incomplete is necessitated. Anticipated course failure is not a justification for an Incomplete.
- The student does not have to repeat the course to meet the requirements.
- The instructor must agree to grant an Incomplete grade.
- The instructor and student must agree on a plan to complete the coursework.
- The coursework must be completed within one calendar year; extensions may be granted by the Graduate Dean.
- If the student completes the course within the specified time, the grades that may be assigned are A, B, C, D, F, S, or U.
- If the student does not complete the course within the specified time, the Incomplete grade remains on the transcript.

IP: An in progress (IP) grade may be granted only when all of the following conditions apply:

- The requirements for the course (for every student enrolled in the course) extend beyond the current term.

- The extension beyond the current term must be defined before the class begins.
- The instructor must request permission to award IP grades for a course from his/her Department Head and Dean, and then approval must be obtained from the Chief Academic Affairs Officer.
- A definite date for completion of the course must be established in the course syllabus.

NG: A grade of NG will be used only with those course sections that are designated as Tracking/Program Sustaining (Q) and those that are assigned the code for Master's Research Problems/Projects Sustaining, Thesis Sustaining, or Dissertation Sustaining (U).

NP: A normal progress (NP) grade may be granted by an instructor when the instructor determines that a graduate student is making normal progress in a graduate Thesis/Dissertation course. If a graduate student does not enroll for a period of one calendar year, the NP grade may change to I (Incomplete) upon approval by the Graduate Dean. The NP grade calculates into attempted credits but does not calculate into completed credits or grade point averages.

S/U: A Satisfactory/Unsatisfactory (S/U) grade may be granted only when the entire course requires the S/U grade or the student has elected the S/U option on or prior to the census date of the term.

With the exception of an "I" that has not been completed within the specified time, any grade reported to the Registrar may be changed by recommendation of the instructor and college dean with approval of the Vice President for Academic Affairs.

Any graduating senior or graduating graduate student who receives an Incomplete or In Progress grade in the final semester in a course required for graduation, or who has not removed an outstanding Incomplete or In Progress from a previous semester in a course required for graduation by the date grades are due for the semester, will not be permitted to graduate that semester. He or she will be required to apply for graduation in a subsequent semester. Emergency situations require the filing of a petition by the student to his/her Academic Dean for approval prior to the final grading deadline for the final semester.

Grades of I (Incomplete), NP (Normal Progress), IP (In Progress) and NR (Not Reported) awarded to thesis/dissertation coursework will be changed to S (Satisfactory) upon completion of all other degree requirements. The change of grade will be conducted without specific consent of the instructor. Completion of course work with the 798 or 898 suffix awarded a U (Unsatisfactory) must be changed by standard processes.

Once a student has graduated and the degree has been recorded, the record is considered officially closed and grades can no longer be changed.

Graduation

Graduation Application

The student must submit a graduation application on MyState by the date specified by the Graduate School for the term in which completion of the advanced degree is expected. Failure to submit this application will result in a delay in graduation. Students who submit an application but fail to graduate will be assessed a $50 charge and a registration hold will be placed on their account. The registration hold will be removed once the charge is paid.

Commencement Attendance

All students are encouraged to participate in the spring commencement ceremony; however, attendance is optional. Graduate students who have not completed all degree requirements for graduation may participate in commencement; however, they will need to submit a request to participate form with advisor's signature approximately 6 weeks prior to commencement. Graduate students will have two opportunities to participate in commencement: 1) the next regularly scheduled ceremony following completion of the degree or 2) the second regularly scheduled ceremony following completion of the degree. Students will only be allowed to attend no more than one commencement ceremony per completed degree. Attendance at commencement or inclusion in the commencement program does not, in itself, constitute completing or receiving a graduate degree.

Diplomas are mailed approximately three months after the degree is awarded.

See the graduation website for more information regarding graduation and commencement guidelines.

Postdoctoral Study

Postdoctoral students or eminent scholars who desire temporary privileges of the research facilities, staff counsel, library or seminars at the institution and who are not candidates for a degree, must obtain approval of the Department Head, Dean and/or Director concerned.

Students Called to Active Military Service

(SDBOR Policy 2:4:1, section 6, SDBOR Policy 2:30, SDBOR Policy 5:7)

Students who belong to a military unit called for duty or who are drafted and not eligible for deferment and who are required to withdraw from state supported institutions before completing an academic program to which they have been duly admitted will be eligible to resume work on the program after their release from active duty. SDBOR Policy 5:7 sets forth Board policies concerning special tuition refunds and related policies that take effect when students are required to report for active duty part-way through an academic term.

Student Code of Conduct

(SDSU Policy 3:1)

South Dakota State University has established standards for expected and acceptable behavior for members of its campus community. Students are expected to be familiar with these standards and related policies so that they know their responsibilities (what they may be held accountable for) and to protect their rights (what they may hold others accountable for).

Academic institutions exist for the transmission of knowledge, the pursuit of truth, the development of students, and the general support for the well-being of society. Free inquiry and expression are indispensable to the attainment of these goals. Freedom to teach and freedom to learn are inseparable facets of academic freedom. The freedom to learn depends upon appropriate opportunities and conditions in the classroom, on campus and in the community. Students are expected to exercise this freedom with responsibility.

The Student Conduct Code is the basic guideline reflecting university-student relations. The Code defines student behavior, expectations and related university conduct procedures. Refer to SDSU Policy 3:1 for the Student Conduct Code policies and procedures.

Student E-Mail

(SDSU Policy 3:8)

Email messages sent by SDSU to students through university-assigned, jacks email addresses will constitute an official means of communication. It is the student's responsibility and obligation to access official university email messages in a timely manner. Students will be responsible for maintaining and managing their University e-mail accounts to ensure timely response to notifications and that storage space allotment is not exceeded. As other email accounts may be blocked by the SDSU firewall, SDSU is only able to monitor student emails coming from university-assigned email accounts.

Inappropriate use of the University student e-mail system will be considered a violation of policy, and students who so violate will be disciplined in accordance with the Student Conduct Code. Student violators may also be subject to revocation or limitation of e-mail privileges as well as referral to appropriate external authorities.

Student Recording of Classroom Lectures, Distribution of Course Materials, & Copyright Violations

(SDSU Policy 2:16, SDSU Policy 7:3, SDSU Policy 9:4)

Recording of Classroom Lectures and Distribution of Course Materials policy prohibits or restricts the recording of classroom lectures or redistribution of classroom materials in order to respect the integrity and effectiveness of the classroom experience, protect students' and faculty members' privacy, respect faculty and University rights in instructional materials, and to comply with copyright laws, including the Digital Millennium Copyright Act of 1998 ("DMCA"). Students are encouraged to report instances of copyright infringement in good faith to the Office of Student Conduct (for students) and SDSU Human Resources (for SDSU employees).

Student Responsibility

Before a degree is granted, the student must meet all the requirements of the advisory committee, the graduate program, and the Graduate School. Students should note that graduate studies represent advanced work and research in a discipline or interdisciplinary area and should be more than a compilation of course work. Students are responsible for conforming to all published academic policies and degree requirements. They are likewise responsible for the regulations concerning the degree they plan to obtain and any special requirements within the program or academic unit. In addition, it is the student's responsibility to conform to the University's policies regarding the standard of work necessary to maintain enrollment in the Graduate School. The University makes every effort to provide accurate advising information. However, it is the student's responsibility to make certain that he/she has fulfilled all graduation requirements.

Students with Disabilities

(SDSU Policy 4:13)

South Dakota State University (SDSU) reaffirms that it is committed to a policy of non-discrimination on the basis of physical or mental disability/impairment in the offering of all benefits, services, educational, and employment opportunities. The ADA Coordinator is designated the SDSU 'Responsible Employee' to coordinate institutional compliance. In that capacity, the ADA Coordinator is committed to ensuring that SDSU provides an inclusive learning environment.

The ADA Coordinator will also be responsible for the effective integration of ADA procedures, and Section 504 of the Rehabilitation Act of 1973. The Coordinator serves as the personal contact for students seeking information concerning the provisions of the ADA and their respective duties and rights provided therein. For information, please e-mail the Office of Disability Services or call 605-688-4504.

Study Abroad & Travel Warnings

(SDSU Policy 2:11)

SDSU Policy 2:11 (Study Abroad and Travel Warnings) addresses the procedures to be followed when the U.S. Department of State or federal government or state agency with authority over aspects of travel issue travel warnings for a country or location in which SDSU undergraduate or graduate students are studying or are planning to study, or where the federal government otherwise takes actions to curtail or prevent international travel.

Textbook Policy

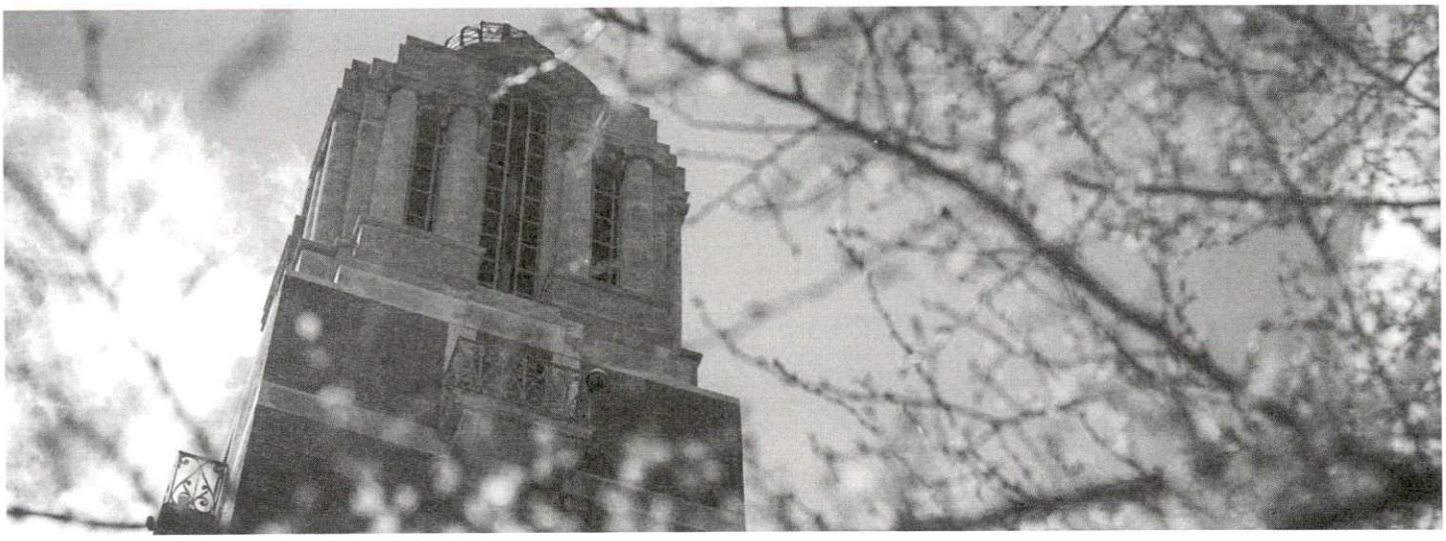
(SDSU Policy 2:10)

The SDSU Textbook policy and related procedures set forth the requirements for selecting and ordering textbooks and course materials and for making all materials available to students in a timely manner. Refer to SDSU Policy 2:10 for the Textbook policy and procedure.

Transferable Skills

Each graduate program emphasizes program content knowledge, communication skills, and transferable skills. Transferable skills are skills and abilities students can use for a variety of jobs and industries.

- Teaching/Training
- Mentoring
- Argument Deconstruction (using the Elements of Thought)
- Diversity Awareness
- Ethics – Moral Decision Making/ Moral Reasoning
- Leadership – Management
- Awareness of Public Policy – Regulatory Affairs (legal aspects of content area)
- Entrepreneurship (e.g. patenting, licensing, intellectual property, marketing, sales)
- Intellectual Traits
- Wellness (e.g. work-life balance, financial preparedness, stress management, time management)
- Career Preparedness (e.g. networking, career explorations, interviewing, writing cover letters and resumes, myIDP)



Master's Degree Requirements

Admission Requirements

The application must include the application fee, all post-secondary transcripts, degree certificate, and other materials as required by specific programs before processing of the application will begin. The Graduate School employs a rolling deadline, however, **students should check with their program of interest for specific admission deadlines.** Master's degree applicants must have an approved Bachelor's degree from an accredited institution (except in approved/accelerated programs). Domestic, international or non-degree seeking students may submit an application online.

Advisory Committee - Option A (Thesis)

All students are required to have a major advisor. As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, any option A (thesis) student will request to the major advisor and Dean of the Graduate School (by submission of the committee approval request form) members of an advisory committee. The advisory committee must be composed of a minimum of three (3) members. Option B, C, and D students may also form an advisory committee; however, it is not a requirement. The committee must include:

- *Committee Chair* – must hold full graduate faculty status at SDSU to chair master's (option A) committees. Lecturer or senior lecturer-rank faculty who hold associate graduate faculty status may chair master's (option A) committees with Department Head approval. This member assists the student in developing a suitable graduate program, provides continuing guidance and counsel, evaluates student progress, informs the student as to who will provide primary research supervision, serves as a contact for the committee, and ensures the completion of the degree requirements to the Dean of the Graduate School.
- *Additional member(s) with expertise within the discipline* - must hold either full graduate faculty or associate graduate faculty status at SDSU. Additional members assist the student in developing a suitable graduate program, provide continuing guidance and counsel, evaluate student progress, and assist with the completion of the degree requirements. Additional members may serve as co-chairs.
- *Graduate Faculty Representative* - graduate faculty member from within a distant, broadly-defined discipline. This member represents the Graduate Council to ensure the supervision of the student is carried out with sufficient integrity. This member ensures that minimal academic standards are maintained and acts as an advocate and counselor for the student. For votes regarding the final oral defense, the graduate faculty representative must vote in the affirmative for the vote to carry.

Professional doctorate degree holders with full graduate faculty status may only serve as chair for a committee for the degree which they hold.

Adjunct faculty members or University employees holding a master's degree who fail to qualify as associate graduate faculty member may serve on graduate student committees. Such committees must contain the minimum number of full/associate graduate faculty in addition to the master's degree holder. A committee may only include one master's degree holder. The master's degree holder is not considered as having associate graduate faculty status and cannot serve as co-chair.

The advisory committee is responsible for approving the content and scope of final examinations. The committee must evaluate the student's performance for the final oral exam and all other degree requirements taken under the auspices of -798 coursework (including those internal to the program).

All committee members must be available for regular meetings with the student and/or committee. Each committee member has voting privileges. Only committee members may vote on business before the committee. For activities requiring committee votes, the chair must ensure due diligence for accommodating all members of the committee. The graduate faculty representative and all but one (1) of the graduate committee must vote in the affirmative to pass the student.

The Department Head is responsible for informing the Graduate School if and when a committee member can no longer fulfill her/his duties consistent with the policies of the University.

Plan of Study/Credit Requirements

The major advisor and the student will develop a plan of study. The plan of study must be submitted using the plan of study form and approved by the major advisor and the Dean of the Graduate School prior to completion of 50 percent of the credits toward graduation. Delay in submitting a plan of study may result in disapproval of courses taken prior to approval and/or registration restrictions. Changes in the approved plan of study must be requested using the change in plan of study form. While devising the plan of study, please refer to specific academic program requirements in the Academic Programs section of the graduate catalog in addition to the following information.

Plan of Study Total Credits Required

Options		Minimum Credit Hours*
A	Thesis	30
B	Research/Design Paper	32
C	Coursework only	35
D	Coursework only (Professional)	30

*Requirements may vary by Graduate Program

Graduate Credit Requirement

Credit applied toward graduate credentials should be at the 500-level and above. At least fifty (50) percent of the credits on a plan of study must be in courses 600-series or above. Please refer to the Graduate Credit Requirements Policy for more information.

Annual Evaluation

A formal review of the progress of degree completion, including performance in coursework and completion of thesis goals should take place annually and be standard in format and timing for all students within a program. The review will include a written evaluation portion, including one opportunity for the student to rebut, followed by a meeting for a discussion. The written portion should take place using a program-standard format and include a synopsis of progress made the previous year, as well as guidance for the upcoming year.

Examinations

Master's programs require completion of a capstone component. The capstone component must be conducted under the supervision of no fewer than two graduate faculty and approved through normal curriculum processes. Capstone components must be associated with graduate coursework.

The capstone component for an option A is the final oral exam. The capstone component for options B, C, and D may include a research paper, oral exam, portfolio of the student's work or other suitable exercise.

Final Oral Exam – Option A (thesis)

The student arranges with his/her advisory committee the time and location for the final oral examination. The student will submit the final oral exam form to the Graduate School no less than two (2) weeks prior to the examination date. A final oral examination will be administered by the advisory committee, covering the student's plan of study and thesis. The graduate faculty representative and all but one (1) of the graduate committee must vote to pass the student. The final oral exam must be completed three (3) weeks prior to the end of the semester in order to graduate. Option B, C, and D students may also choose to complete a final oral exam, but are not required to do so.

Remediation Opportunity: Students who fail an academic exercise will be afforded a remediation opportunity. The student should 1) be provided feedback regarding the deficiencies of his/her performance; 2) be provided resources useful to remediate his/her deficiencies; and 3) be allowed an appropriate length of time to prepare for the next attempt.

Thesis, Research Paper, or Design Paper

Research Paper/Design Paper Requirements

Students following Option B must complete at least two (2) credits for a research problem/design paper in the major field and present a written report. The content, style, and format of the report must meet the requirements of the program. The research report or design paper must be approved by the advisor and filed in the major department. If completing a final exam, a copy of the written report should be provided to each committee member two (2) weeks before the oral exam and be available at the final oral examination.

Thesis Requirements

A thesis must meet the requirements of the program and the Graduate School and must be submitted by each student completing an option A master's degree. The thesis must represent a scholarly contribution to research knowledge in the major field. A research area for the thesis topic should be chosen after consultation with the major advisor as early in the student's program as possible. The thesis accounts for five (5) to ten (10) semester hours in the major.

Thesis Formatting & Deposition

All theses must be submitted for appropriate format checking and deposition with the library. Instructions are found on the Graduate School website.

Use of Human Subjects or Vertebrate Animals in Research

After receiving approval of the research proposal students must also seek approval for the use of human subjects or vertebrate animals in research, when applicable, from the appropriate committee. These approvals must be secured before beginning the study. For more information, visit the Research Compliance website or contact the SDSU Research Compliance Coordinator in the Office of Research & Sponsored Programs, Morrill Hall 200, Telephone: 605-688-6975.

Credit Sharing between Graduate Credentials

(SDSU Policy 2:17)

Credit can be used for the satisfaction of more than one graduate credential (graduate certificate, master's degree) issued by SDSU and may be paired to share credit. Each graduate credential may be paired with itself or any other graduate credential. For example, two master's degrees may be paired or a master's degree and a graduate certificate.

The allowable credit shared between graduate credentials equals the sum of the minimum required credit hours for each credential divided by 6 (six). The maximum allowed is 50% of either credential program. A single graduate certificate may be shared, in entirety, with credits for a master's degree. Once a graduate credential participates in a credit pairing, the graduate credential may not be paired with a third credential. Validated credit or course credit with an x798 or x788 suffix may not be shared between graduate credentials.

Time Limitation

Obsolete Program

If the requirements for the master's degree are not completed within six (6) years from the program start date, the request for extension of the graduate program form must be submitted to the Graduate School. The request will be reviewed and a decision as to whether the student may continue in the program will be made by the Graduate School Dean.

Obsolete Coursework

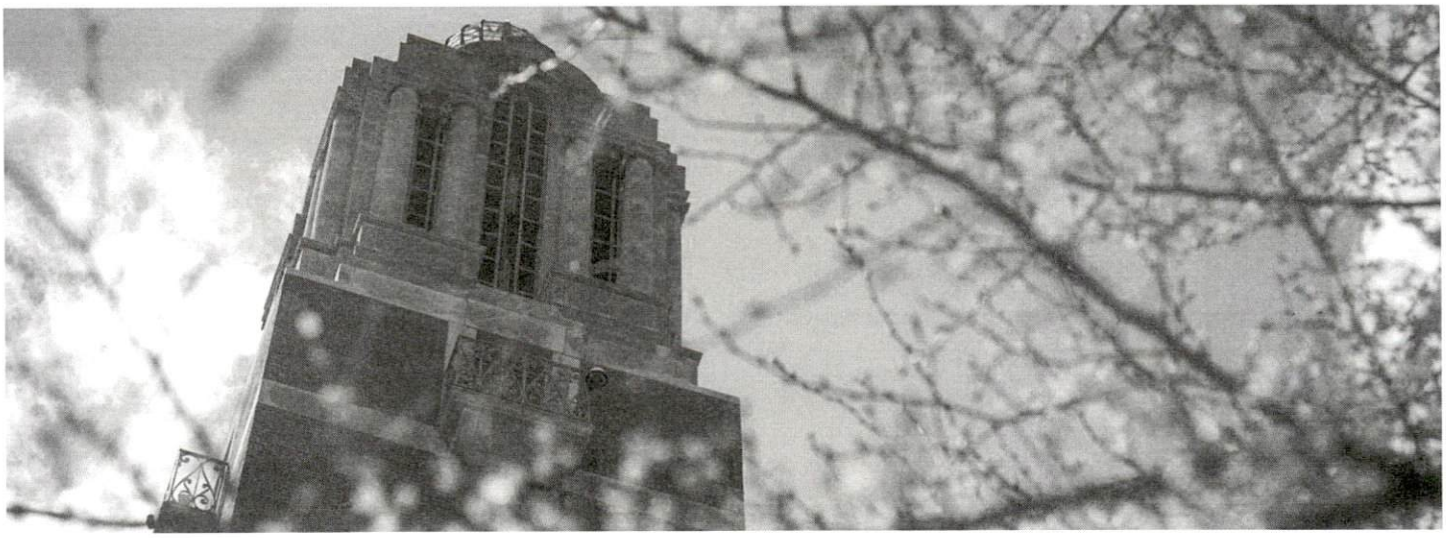
Courses completed more than six (6) years prior to completion of the requirements of the master's degree are regarded as obsolete coursework. Such courses may be used in the master's degree program if validated. Validation is allowed at the discretion of the advisory committee and department involved and can be accomplished by passing validation requirements in the subject matter area and submitting the validation form to the Graduate School. Validated coursework cannot exceed fifty (50) percent of the total coursework (excluding thesis and research paper credits) listed on the plan of study and must be certified by the advisory committee. Course validation may be subject to a processing fee. Only courses taken at SDSU may be validated.

Master's Degree Checklist

Requirements	Timeline
Designation of Major Advisor	Upon acceptance into Graduate School.
Designation of Advisory Committee - Option A	During first semester of graduate work graduate faculty representative will be assigned by the Graduate School.
Plan of Study	During the first semester of graduate work or before 50% of coursework is complete. Must be approved by major advisor and submitted to Graduate School.
Graduation Application	During final semester, by deadline.*
Final Oral Exam - Option A	During final semester, by deadline.* Final oral exam form must be submitted **two (2) weeks** prior to exam date.
Capstone Component	During final semester, by deadline.*
Final Submission of Thesis (Option A Only)	Final submission due by deadline.* Signed acceptance page, copyright form and library fee must also be submitted.

Requirements	Timeline
Final Submission of Research/Design Paper (Option B Only)	Submitted directly to the Department by specified deadline.

*The Graduate School sets deadlines for graduation each semester. Please also consult with your department for other program specific requirements and deadlines. All forms are available on the Graduate School Forms website.



Doctor of Nursing Practice Degree Requirements

Admission Requirements

Two applications are required for the SDSU Graduate Nursing Program:

1. SDSU Graduate School Application (online application)

The application file must be complete with the application form and application fee. References and transcripts are not sent to the Graduate School. These documents will be accessed through the NursingCAS application. A completed application must be filed with the Graduate School by March 15 for fall admission. Applications for domestic, international or non-degree seeking students are found online.

2. SDSU Graduate Nursing Program Application via NursingCAS - online application service

Application to the DNP program option is available at NursingCAS beginning early September. Please refer to the NursingCAS application directions to complete an application.

Applications will be accepted beginning early September for all DNP options. Application deadline will vary dependent upon chosen specialty. Refer to the Graduate Nursing Program website for specific deadlines.

Additional Admission Requirements for Bachelor's to Doctor of Nursing Practice

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Bachelor's to Doctor of Nursing Practice must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Admissions Requirements for Post Master's to Doctor of Nursing Practice - NP, CRNA, CNS, & CNM

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master's to Doctor of Nursing Practice (who possess current certification as a NP, CRNA, CNM or CNS) must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- National certification as a NP, CRNA, CNM, or CNS.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Admissions Requirements for Post Master's to Doctor of Nursing Practice - Family Nurse Practitioner & Psychiatric Mental Health Nurse Practitioner Specializations

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master's to Doctor of Nursing Practice - Family Nurse Practitioner Specialization and Psychiatric Mental Health Nurse Practitioner Specialization must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Advisory Committee

All graduate students are required to have a major advisor. As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, the major advisor will recommend to the Dean of the Graduate School (by submission of the committee approval request form) members of an advisory committee. The advisory committee must be composed of a minimum of four (4) members. The committee must include:

- *Committee Chair* – must hold full Graduate Faculty status at SDSU. This member assists the student in developing a suitable graduate program, provides continuing guidance and counsel, evaluates student progress, informs the student as to who will provide primary project supervision, serves as a contact for the committee and ensures the completion of the degree requirements to the Dean of the Graduate School.
- *Two (2) additional members with expertise within the discipline* – must hold either full Graduate Faculty or Associate Graduate Faculty status at SDSU. Additional members assist the student in developing a suitable graduate program, provide continuing guidance and counsel, evaluate student progress, and assist with the completion of the degree requirements. Additional members may serve as co-chairs.
- *Graduate Faculty Representative* – graduate faculty member from within a distant, broadly-defined discipline. This member represents the Graduate Council to ensure the supervision of the student is carried out with sufficient integrity. This member ensures that minimal academic standards are maintained and acts as an advocate and counselor for the student. For votes regarding the final oral defense, the Graduate Faculty representative must vote in the affirmative for the vote to carry.

Professional doctorate degree holders with full Graduate Faculty status may only serve as chair for a committee for the degree which they hold.

Adjunct faculty members or University employees holding a master's degree who fail to qualify as Associate Graduate Faculty member may serve on graduate student committees. Such committees must contain the minimum number of Full/Associate Graduate Faculty in addition to the master's degree holder. A committee may only include one master's degree holder. Addition of the master's degree holder does not alter the maximum number of committee members allowed. The master's degree holder is not considered as having Associate Graduate Faculty status and cannot serve as co-chair.

The advisory committee is responsible for approving the content and scope of final examinations. The committee must evaluate the student's performance for the comprehensive exams and final defense and all other degree requirements.

All committee members must be available for regular meetings with the student and/or committee. Each committee member has voting privileges. Only committee members may vote on business before the committee. For activities requiring committee votes, the chair must ensure due diligence for accommodating all members of the committee. The Graduate Faculty representative and all but one (1) of the graduate committee must vote in the affirmative to pass the student.

The Department Head is responsible for informing the Graduate School if and when a committee member can no longer discharge her/his duties consistent with the policies of the University.

Plan of Study/Credit Requirements

After the advisory committee is formed, the major advisor will schedule a meeting with the student to develop a plan of study. The plan of study must be submitted using the doctoral plan of study form and approved by the advisory committee and the Dean of the Graduate School prior to completion of 50 percent of the credits toward graduation. Delay in submitting a plan of study may result in disapproval of courses taken prior to approval and/or registration restrictions. Changes in the approved plan of study must be requested using the change in plan of study form. While devising the plan of study, please refer to specific academic program requirements in the Academic Programs section of the catalog in addition to the following information.

Total Credits Required

Options	Credit Hours
Bachelor's to D.N.P.	
Family Nurse Practitioner	78
Psychiatric Mental Health Nurse Practitioner	75
Post Master's to D.N.P.	31-36
Family Nurse Practitioner	69
Psychiatric Mental Health Nurse Practitioner	49

Graduate Credit Requirement - Credit applied toward graduate credentials should be at the 500-level and above. At least fifty (50) percent of the credits on a plan of study must be in courses 600-series or above. Please refer to the Graduate Credit Requirements Policy for more information.

Examinations

Project Proposal Defense

The student arranges with his/her advisory committee the time and location for the DNP Project Proposal Defense. At this time, the student will defend the project topic, evidence-based research and guidelines to support the intervention, and methodology to monitor effectiveness of the health policy change or intervention. The student will discuss the proposed statistical tests to evaluate outcomes of the intervention. The DNP Project Proposal Defense must occur in a different semester than the final oral and project defense. The graduate faculty representative and all but one (1) of the graduate committee must vote to pass the student.

Final Oral Exam

The student arranges with his/her advisory committee the time and location for the final oral examination. The student will submit the final oral exam form to the Graduate School no less than two (2) weeks prior to the examination date. A final oral examination will be administered by the advisory committee, covering the student's plan of study and project. This examination must be comprehensive, testing the student's ability to analyze, integrate, and apply knowledge from the discipline. The graduate faculty representative and all but one (1) of the graduate committee must vote to pass the student. The final oral exam must be completed three (3) weeks prior to the end of the semester in order to graduate.

Time Limitation

Obsolete Program

If the Doctor of Nursing Practice degree is not completed within eight (8) years from the program start date, the request for an extension of the graduate program form must be submitted to the Graduate School. The request will be reviewed and a decision as to whether the student may continue in the program will be made by the Graduate School Dean.

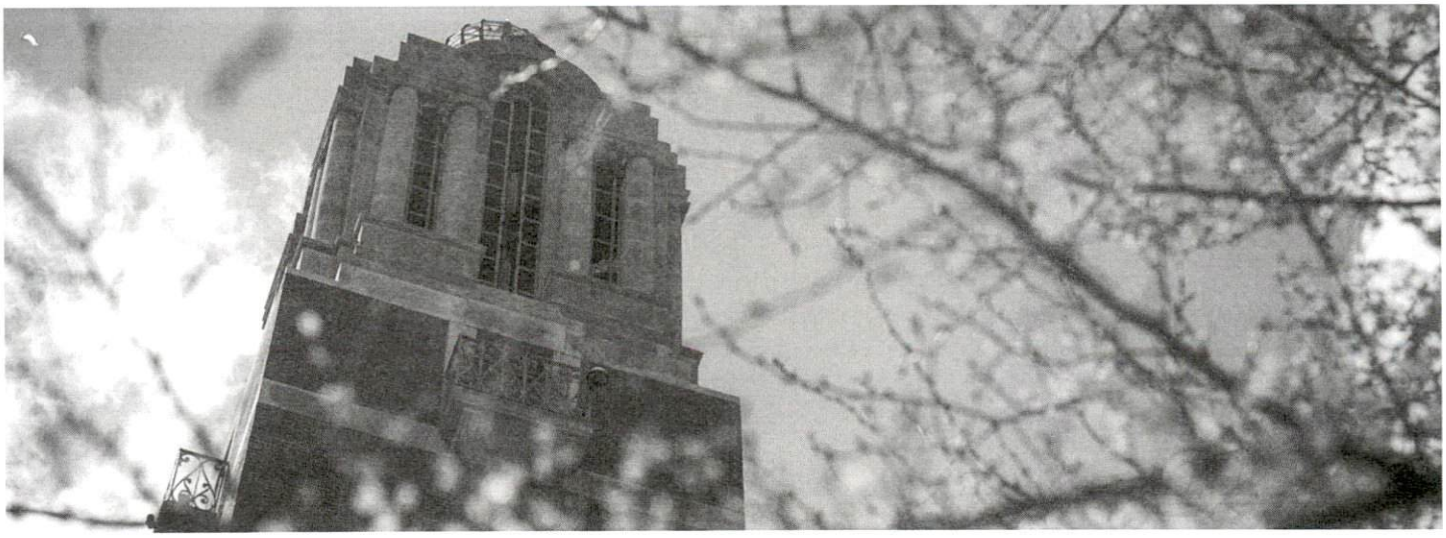
Obsolete Coursework

Courses taken more than eight (8) years before completion of the program are regarded as obsolete coursework. Obsolete courses may be used in the DNP degree program if validated. Validation is allowed at the discretion of the advisory committee and department involved and can be accomplished by passing validation requirements in the subject matter area and submitting the validation form to the Graduate School. Validated coursework cannot exceed fifty (50) percent of the total coursework listed on the plan of study and must be certified by the advisory committee. Course validation may be subject to a processing fee. Only courses taken at SDSU may be validated.

Doctor of Nursing Practice Checklist

Requirements	Timeline
Designation of Major Advisor	During the semester of NURS 850.
Designation of Advisory Committee	As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, the major advisor will recommend to the Dean of the Graduate School members of an advisory committee.
Plan of Study	During the first semester of graduate work or before 50% of coursework is complete. Must be approved by all Advisory Committee members and submitted to Graduate School.
DNP Project Proposal Defense	During NURS 880 and with permission of the Major Advisor.
Graduation Application	During final semester, by deadline.*
Final Oral Exam	Final oral exam follows completion of DNP project. The final oral exam must follow Graduate School deadlines.

* The Graduate School sets deadlines for graduation each semester. Please also consult with your Department for other program specific requirements and deadlines. All forms are available on the Graduate School Forms page.



Doctor of Pharmacy Degree Requirements

Program Application Requirements

Preparation for the Major

A sound, basic education in science and mathematics courses is an essential part of preparation for the study of pharmacy. Good written and verbal communication skills are important. Students planning to transfer from another college or university should consult with the College of Pharmacy and Allied Health Professions early in their academic careers to plan coursework that will transfer to the College of Pharmacy and Allied Health Professions. For more information, visit the website.

Application Process

All students seeking admission to the 4-year professional program leading to the Doctor of Pharmacy degree must submit an application for the professional program. Applications are available from the College of Pharmacy and Allied Health Professions website. The deadline for applying for admission for the fall semester is February 1. Limitations in the size of the physical facilities, the number of faculty and the number of advanced pharmacy practice experience sites make it necessary to limit the class size in the professional program. Each student admitted into the professional program is required to authorize and pay for a criminal background check. The background check report is automatically sent to the student and to the College and must be approved by the Admissions Committee.

Selection is competitive and based upon several factors including pre-pharmacy coursework, ACT or PCAT scores, written and oral communication skills, knowledge of the profession, residency status and other factors. Any student who anticipates successful completion of the pre-pharmacy requirements prior to fall semester is eligible to apply.

Notification of acceptance into the professional program will be made by March 15. Students admitted to the professional program must submit a non-refundable deposit to secure their position for the fall semester. That deposit will be applied to student's account in the fall semester.

Curriculum/Plan of Study

The curriculum is divided into a 2-year pre-pharmacy and a 4-year professional program phase. The pre-pharmacy courses provide a solid knowledge base and ability to use critical thought processes in the biological and physical sciences.

The four years of the professional program incorporate a solid foundation of pharmaceutical science courses as well as a comprehensive sequence of therapeutics and professional practice courses. Students earn a B.S. in Pharmaceutical Sciences after successful completion of the first two years of the professional program. The application of drug knowledge, basic science, and critical thinking to resolve problems of drug distribution and patient care are emphasized throughout the curriculum. In their first three years of the program, students gain initial practice experience through introductory pharmacy practice experiences in settings such as community and hospital pharmacies. In the final year of the program, students have an opportunity to apply knowledge and pharmacy care principles to pharmacy practice situations in a series of advanced pharmacy practice experiences in a variety of patient care settings which include patient care areas of hospitals, nursing homes, community pharmacies, hospital pharmacies, Indian Health Service facilities and clinic pharmacies.

College of Pharmacy & Allied Health Professions Regulations

Students in the College of Pharmacy and Allied Health Professions are governed by the regulations which apply to all students at SDSU but are also governed by requirements established by the College. These requirements are presented in detail in the Pharmacy Student Handbook and include:

Progression

Progression standards for students in the Pharm.D. program are set to assure graduates are prepared to provide pharmacy services to the public. The integrated curriculum relies on information and skills garnered in previous courses and therefore, students' success depends on achieving a minimum level of performance in each course. Minimum level of performance is defined as a grade of C or better based on University Catalog grade definitions. A grade of D is defined in terms of "insufficient" and "inadequate" according to the University Catalog. A grade of F is defined in terms of "failure." D, F, and U (unsatisfactory) grades do not represent a minimum level of performance need to develop skills, abilities, and knowledge of a general practitioner.

Refused Status

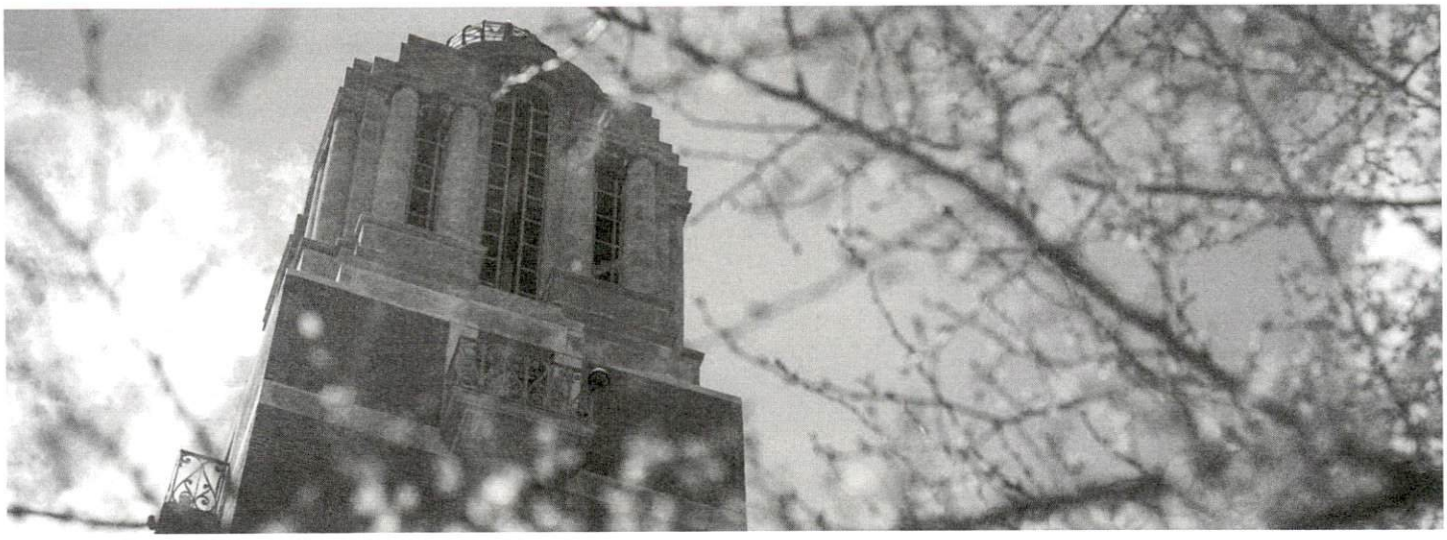
A student will be placed on refused status if the student:

a. Earns a D, F, or U in a pharmacy course.
b. Does not complete the Pharm.D. program within six years of starting the professional program.

Class Standing Requirements

Standing - In order for students to enroll in the fall semester of the pharmacy program, students must meet the class standing requirement. These are defined as follows (note: "completion" means a passing grade in each pharmacy course and maintaining semester and cumulative PHA GPA requirements):

- P1 Year Standing - The student must have been admitted into the professional program.
- P2 Year Standing - Completion of all PHA 300 level required courses and PHA 119/101 and PHA 219.
- P3 Year Standing - Completion of all PHA 400 level required courses. PHA 610, a bachelor's degree, and all capstone activities are required to begin the fall semester. Completion of all required PHA 700, non-advanced pharmacy practice experience courses are required to progress to the subsequent semester.
- P4 Year Standing - Completion of all PHA 600-700 level required, non-advanced pharmacy practice experience courses, and 300 hours of IPPE.



Doctor of Philosophy Degree Requirements

Admission Requirements

The application must include the application fee, all post-secondary transcripts, degree certificates, and other materials as required by specific programs before processing of the application will begin. The Graduate School employs a rolling deadline, however, **students should check with their program of interest for specific admission deadlines.** Applicants for the Doctor of Philosophy degree, 60-credit plan, must have a Master's degree. This degree must be awarded from an approved, accredited institution. In those cases where applicants do not have a Master's degree, departmental requirements will apply, either requiring completion of a Master's degree or permitting an individual to move directly into a doctoral program, 90-credit plan. Domestic, international or non-degree seeking students may submit an application online.

Advisory Committee

All graduate students are required to have a major advisor. As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, the student will request to the major advisor and Dean of the Graduate School (by submission of the committee approval request form) members of an advisory committee. The advisory committee must be composed of a minimum of four (4) members. The committee must include:

- *Committee Chair* – must hold full graduate faculty status at SDSU. This member assists the student in developing a suitable graduate program, provides continuing guidance and counsel, evaluates student progress, informs the student as to who will provide primary research supervision, serves as a contact for the committee and ensures the completion of the degree requirements to the Dean of the Graduate School.
- *Two (2) additional members with expertise within the discipline* – must hold either full graduate faculty or associate graduate faculty status at SDSU. Additional members assist the student in developing a suitable graduate program, provide continuing guidance and counsel, evaluate student progress, and assist with the completion of the degree requirements. Additional members may serve as co-chairs.
- *Graduate Faculty Representative* – graduate faculty member from within a distant, broadly-defined discipline. This member represents the Graduate Council to ensure the supervision of the student is carried out with sufficient integrity. This member ensures that minimal academic standards are maintained and acts as an advocate and counselor for the student. For votes regarding the final oral defense, the graduate faculty representative must vote in the affirmative for the vote to carry.

Professional doctorate degree holders with full graduate faculty status may only serve as chair for a committee for the degree which they hold.

Adjunct faculty members or University employees holding a master's degree who fail to qualify as associate graduate faculty member may serve on graduate student committees. Such committees must contain the minimum number of full/associate graduate faculty in addition to the master's degree holder. A committee may only include one master's degree holder. Addition of the master's degree holder does not alter the maximum number of committee members allowed. The master's degree holder is not considered as having associate graduate faculty status and cannot serve as co-chair.

The advisory committee is responsible for approving the content and scope of comprehensive and final examinations, both written and oral. The committee must evaluate the student's performance for the comprehensive exams and final defense and all other degree requirements taken under the auspices of -898 coursework (including those internal to the program).

All committee members must be available for regular meetings with the student and/or committee. Each committee member has voting privileges. Only committee members may vote on business before the committee. For activities requiring committee votes, the chair must ensure due diligence for accommodating all members of the committee. The graduate faculty representative and all but one (1) of the graduate committee must vote in the affirmative to pass the student.

The Department Head is responsible for informing the Graduate School if and when a committee member can no longer fulfill her/his duties consistent with the policies of the University.

Plan of Study/Credit Requirements

After the advisory committee is formed, the major advisor and the student will develop a plan of study and consider a research area for the dissertation. The plan of study must be submitted using the plan of study form and approved by the advisory committee and the Dean of the Graduate School prior to completion of 50 percent of the credits toward graduation. Delay in submitting a plan of study may result in disapproval of courses taken prior to approval and/or registration restrictions. Student cannot take the comprehensive written examination prior to approval of the plan of study. Changes in the approved plan of study must be requested using the change in plan of study form. While devising the plan of study, please refer to specific academic program requirements in the Academic Programs section of the graduate catalog in addition to the following information.

Total Credits Required

A minimum of 90 semester credits (90-credit plan) beyond a bachelor's degree or a minimum of 60 semester credits (60-credit plan) beyond the master's degree are required for the Doctor of Philosophy degree. Where consideration is given to a master's degree, it must be in the area of the program or a related area, be an academic program from an accredited institution, and be declared at the time the plan of study is submitted. The advisory committee may require more credits if the extra requirements are in the best interest of the student.

Graduate Credit Requirement

Credit applied toward graduate credentials should be at the 500-level and above. At least fifty (50) percent of the credits on a plan of study must be in courses 600-series or above. Please refer to the Graduate Credit Requirements Policy for more information.

Examinations

Annual Evaluation

A formal review of the progress of degree completion, including performance in coursework and completion of dissertation goals should take place annually and be standard in format and timing for all students within a program. The review will include a written evaluation portion, including one opportunity for the student to rebut, followed by a meeting for a discussion. The written portion should take place using a program-standard format and include a synopsis of progress made the previous year, as well as guidance for the upcoming year.

Comprehensive Written & Oral Examinations

Comprehensive examinations are generally administered after coursework on the plan of study has been substantially completed. The comprehensive written examination is followed, upon satisfactory completion, by an oral examination. These examinations are to test the student's breadth of knowledge and his/her ability to integrate this knowledge.

The student arranges with his/her committee the time and location for the comprehensive written and oral examinations. Copies of the written examinations must be kept on file in the major department. Upon successful completion of the comprehensive written examination, the student will arrange with his/her advisor and committee members to take the comprehensive oral examination. The comprehensive oral exam form must be submitted to the Graduate School at least two (2) weeks prior to the exam date. The submission of this form initiates the necessary paperwork to be provided by the Graduate School to the student and committee members. The comprehensive examinations must be completed at least three (3) months before the final oral examination. Upon satisfactory completion of the comprehensive examinations, the student is formally admitted to candidacy for the Ph.D. degree. If the student does not receive the Ph.D. degree within three (3) years after becoming a candidate, comprehensive examinations must be repeated.

Final Oral Exam

The student arranges with his/her advisory committee the time and location for the final oral examination. The student will submit the final oral exam form to the Graduate School no less than two (2) weeks prior to the examination date. While the advisory committee determines the character and length of the examination, sufficient time should be devoted to the dissertation, including literature review, to evaluate the ability of the student to defend the research. In addition, questions to test the student's general knowledge, judgment and critical thinking powers are usually asked. The graduate faculty representative and all but one (1) of the graduate committee must vote to pass the student. The final oral examination cannot be taken earlier than three (3) months following successful completion of the comprehensive examinations and must be completed three (3) weeks prior to the end of the semester in order to graduate.

Remediation Opportunity: Students who fail an academic exercise will be afforded a remediation opportunity. The student should 1) be provided feedback regarding the deficiencies of his/her performance; 2) be provided resources useful to remediate his/her deficiencies; and 3) be allowed an appropriate length of time to prepare for the next attempt.

Dissertation

Proposal

The student in consultation with the major advisor and/or dissertation advisor shall prepare a written dissertation proposal for approval by the advisory committee.

Requirements

The dissertation should represent at least one (1) academic year of full-time research (18-30 credits). Of no specific length, the dissertation should advance or modify knowledge in the discipline and demonstrate the candidate's mastery of the subject. The dissertation should meet discipline standards as required by the program.

Dissertation Formatting & Deposition

All dissertations must be submitted to the Graduate School for appropriate format checking and deposition with the library. Instructions are found on the Graduate School website.

Use of Human Subjects or Vertebrate Animals in Research

After receiving approval of the research proposal students must also seek approval for the use of human subjects or vertebrate animals in research, when applicable, from the appropriate committee. These approvals must be secured before beginning the study. For more information, visit the Research Compliance website or contact the SDSU Research Compliance Coordinator in the Office of Research & Sponsored Programs, Morrill Hall 200, Telephone: 605-688-6975.

Credit Sharing between Graduate Credentials

(SDSU Policy 2:17)

Credit can be used for the satisfaction of more than one graduate credential (graduate certificate, doctoral degree) issued by SDSU and may be paired to share credit. Each graduate credential may be paired with itself or any other graduate credential. For example, a doctoral degree and a graduate certificate may be paired. A doctoral degree using the 60 credit plan may not be paired with a master's degree.

The allowable credit shared between graduate credentials equals the sum of the minimum required credit hours for each credential divided by 6 (six). The maximum allowed is 50% of either credential program. A single graduate certificate may be shared, in entirety, with credits for a doctoral degree. Once a graduate credential participates in a credit pairing, the graduate credential may not be paired with a third credential. Validated credit or course credit with an x898 suffix may not be shared between graduate credentials.

Time Limitation

Obsolete Program

If the Doctor of Philosophy degree is not completed within eight (8) years from the program start date, the request for an extension of the graduate program form must be submitted to the Graduate School. The request will be reviewed and a decision as to whether the student may continue in the program will be made by the Graduate School Dean.

Obsolete Coursework

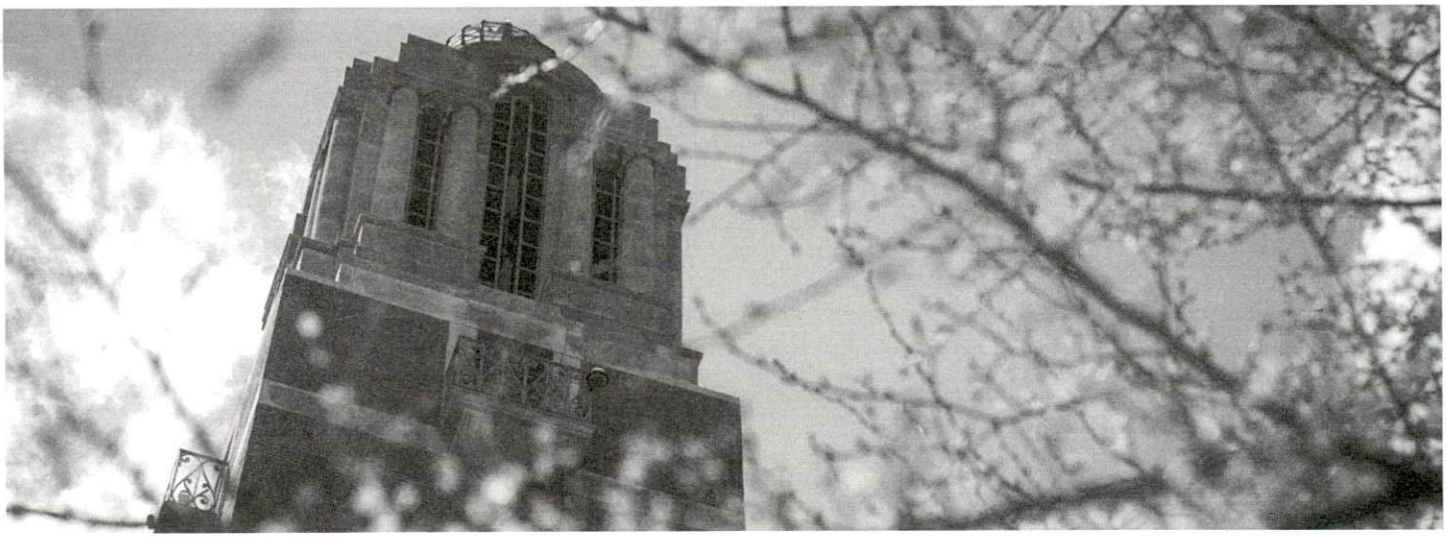
Courses taken more than eight (8) years before completion of the doctorate are regarded as obsolete coursework. Obsolete courses may be used in the doctoral degree program if validated. Validation is allowed at the discretion of the advisory committee and department involved and can be accomplished by passing validation requirements in the subject matter area and submitting the validation form to the Graduate School Validated coursework cannot exceed fifty (50) percent of the total coursework (excluding dissertation credits) listed on the plan of study and must be certified by the advisory committee. Course validation may be subject to a processing fee. Only courses taken at SDSU may be validated.

Doctor of Philosophy Checklist

Requirements	Timeline
Designation of Major Advisor	Upon acceptance into Graduate School.
Designation of Advisory Committee	During first semester of graduate work, graduate faculty representative will be assigned by the Graduate School.
Plan of Study	During the first semester of graduate work or before 50% of coursework is complete. Must be approved by all advisory committee members and submitted to Graduate School.

Requirements	Timeline
Comprehensive Written Exam	Per Department procedures, near completion of coursework.
Comprehensive Oral Exam	Scheduled upon successful completion of written exam. Comprehensive oral exam form due to Graduate School **two (2) weeks** prior to exam date. Must be taken three (3) months prior to final oral exam.
Graduation Application	During final semester, by deadline.*
Final Oral Exam (Dissertation Defense)	During final semester, by deadline.* Final oral exam form must be submitted **two (2) weeks** prior to exam date.
Final Submission of Dissertation	Final submission due by deadline.* Signed acceptance page, copyright form and library fee must also be submitted.

The Graduate School sets deadlines for graduation each semester. Please also consult with your department for other program specific requirements and deadlines. All forms are available on the Graduate School Forms website.



Colleges, Schools, & Departments

College of Agriculture, Food & Environmental Sciences

John Killefer, South Dakota Corn Endowed Dean
College of Agriculture, Food and Environmental Sciences
Berg Agricultural Hall 131, Box 2207
605-688-4148

Vikram V. Mistry, Interim Associate Dean for Academic Programs
College of Agriculture, Food and Environmental Sciences
Berg Agricultural Hall 156, Box 2207
605-688-5133

The College of Agriculture, Food and Environmental Sciences has a three-fold mission to teach, conduct research, and use extension programs to serve people in South Dakota, the nation, and the world.

In addition to the main campus in Brookings and adjacent farm and livestock units, the West River Ag Center in Rapid City is an outreach facility of the college that supports teaching, research, and extension in the western part of the state. Other locations throughout the state include seven additional regional extension centers, three tribal Extension program offices, and six research farms and field stations.

Programs

Biological Sciences Program

Master's Degrees

- Biological Sciences (M.S.)
  - Veterinary Microbiology Emphasis
  - Veterinary Pathology Emphasis
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Department of Agronomy, Horticulture, & Plant Science

Master's Degrees

- Plant Science (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Plant Science (Ph.D.)

Department of Animal Science

Master's Degrees

- Animal Science (M.S.)

Doctoral Degrees

- Animal Science (Ph.D.)

Certificates

- Animal Science Certificate

Department of Dairy & Food Science

Master's Degrees

- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization

Department of Natural Resource Management

Master's Degrees

- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Grassland Management Certificate

Department of Veterinary & Biomedical Sciences

Master's Degrees

- Biological Sciences (M.S.)
  - Veterinary Microbiology Emphasis
  - Veterinary Pathology Emphasis

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Biological Sciences Program

Nicole Lounsbery, Director
Graduate School
130 Morrill Hall, Box 2201
605-688-4181

The masters and doctoral programs in Biological Sciences allow for considerable latitude in the education and training of students. Students interested in advanced studies in the biological sciences will have the opportunity to tailor a program that meets their interest by selecting courses offered by faculty from the participating departments. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available. Generally, identification of a major professor with resources to support the student's dissertation project is required for unconditional acceptance into the program. Therefore, interested persons should make application for program admission well in advance of the anticipated date of enrollment. Please refer to each departmental section for a listing of the graduate faculty and details regarding the areas of study offered in this program. Inquiries should be made directly to the department representing the discipline of interest.

Graduate Faculty

Department of Agricultural & Biosystems Engineering
Department of Animal Science
Department of Biology & Microbiology
Department of Dairy & Food Science
Department of Natural Resource Management
Department of Veterinary & Biomedical Sciences

Programs

Master's Degrees

- Biological Sciences (M.S.)
  - Veterinary Microbiology Emphasis
  - Veterinary Pathology Emphasis
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Department of Agronomy, Horticulture, & Plant Science

David Wright, Department Head
Brent Turnipseed, Assistant Department Head
Senthil Subramanian, Professor/Graduate Coordinator
Department of Agronomy, Horticulture, and Plant Science
244 Berg Hall, Box 2207A
605-688-4600

The department is committed to graduate education in applied and basic plant sciences, as well as to providing experiences in instruction and grant writing towards producing competitive students well-prepared for careers in the plant sciences.

Graduate training includes classroom instruction, seminars designed to hone oral and written skills, and meaningful experience in laboratory and field research techniques. Departmental diversity encourages collaborations among disciplines and research programs that inform graduate training.

The Department of Agronomy, Horticulture, and Plant Science is an integrated department that includes programs in crop production, plant breeding, entomology, plant pathology, soils, GIS, water management, weed science, and biotechnology. The primary goals of the department are to conduct research in the above areas, to disseminate the research to the public, and to help prepare students for quality lives which includes preparation for an occupation in one or more of the below-mentioned disciplines.

Graduate Faculty

Shaukat Ali, Associate Professor
John Ball, Professor
Dwayne Beck, Professor
Bruce Bleakley, Professor
Arvid Boe, Professor
Stephanie Bruggeman, Assistant Professor
Rhoda L Burrows, Professor
Emmanuel Byamukama, Associate Professor
Melanie Caffe-Treml, Associate Professor
C. Gregg Carlson, Professor Emeritus
Jiyul Chang, Lecturer
David Clay, Distinguished Professor
Sharon Clay, Distinguished Professor
Thomas DeSutter, Adjunct Professor
James Doolittle, Associate Vice President for Research and Professor
Anne Fennell, Distinguished Professor
Bryan W. French, Adjunct
Billy Fuller, Professor
Hani Ghosheh, Lecturer
Karl D. Glover, Professor
Jose Luis Gonzalez, Professor
Christopher Graham, Associate Professor
David Graper, Professor Emeritus
Xingyou Gu, Professor
Jose Guzman, Assistant Professor
Louis S. Hesler, Adjunct
Paul J. Johnson, Professor
Péter Kovács, Assistant Professor
Sandeep Kumar, Associate Professor
Marie Langham, Professor
Michael Lehman, Adjunct
Wanlong Li, Professor
Douglas Malo, Distinguished Professor Emeritus
Febina Mathew, Associate Professor
Thandiwe Nleya, Associate Professor
Shannon Osborne, Adjunct
Vance Owens, Professor
Sharon Papiernik, Adjunct
Cheryl Reese, Senior Lecturer
Walter Riedell, Adjunct
Sunish Sehgal, Assistant Professor
Peter Sexton, Associate Professor
Senthil Subramanian, Professor
E. Brent Turnipseed, Assistant Department Head and Professor
Adam Varenhorst, Assistant Professor
David L. Wright, Department Head and Professor
Jixiang Wu, Professor

Programs

Master's Degrees

- Plant Science (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Plant Science (Ph.D.)

Department of Animal Science

Joseph Cassady, Department Head
Jeff Clapper, Professor/Graduate Coordinator
Department of Animal Science
Animal Science Complex 103A
605-688-5166

The Department of Animal Science offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Animal Science, or the Doctor of Philosophy degree in Biological Sciences. An Animal Science Certificate is also offered. Faculty and graduate students are actively involved in basic and/or applied research in the fields of nutrition, reproductive physiology, animal breeding and genetics, meat science, gastrointestinal microbiology and animal production.

The Department is committed to providing graduate students with quality educational and research experiences and preparing them to meet the challenges of a competitive job market upon graduation.

Graduate Faculty

Amanda Blair, Professor
Rebecca C. Bott, Dean and Professor
Joseph Cassady, Department Head and Professor
Jeffrey A. Clapper, Professor
Kyle Coble, Adjunct
Robert Cushman, Adjunct
Jon De Jong, Adjunct
Barry Dunn, President and Professor
Richard Funston, Adjunct
Michael Gonda, Associate Professor
Judson Grubbs, Assistant Professor
Kristin Hales-Paxton, Adjunct
Larry Kuehn, Adjunct
Crystal L. Levesque, Associate Professor
Mike MacNeil, Adjunct
Donald M. Marshall, Vice Provost for Undergraduate Education and Professor
Tara McDaneld, Adjunct
Steven Moeller, Adjunct
Richard Nicolai, Adjunct
Rosemarie Nold, Assistant Department Head and Professor
Kenneth C. Olson, Professor
George A. Perry, Professor
Ryan Samuel, Assistant Professor
Zachary Smith, Assistant Professor
Benoit St-Pierre, Assistant Professor
Robert C. Thaler, Professor
Keith R. Underwood, Associate Professor
Zhongde, Wang, Adjunct
Julie A. Walker, Professor
Cody L. Wright, Professor

Programs

Master's Degrees

- Animal Science (M.S.)

Doctoral Degrees

- Animal Science (Ph.D.)

Certificates

- Animal Science Certificate

Department of Dairy & Food Science

Joseph Cassady, Interim Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

The Dairy and Food Science Department offers graduate programs in Biological Sciences leading to a Master of Science or Doctor of Philosophy degree with specialization in Dairy Science for both Dairy Manufacturing and Dairy Production, and specialization in Food Science. The department is equipped with excellent laboratories; a dairy processing plant which manufactures cheese, butter, ice cream, and other products; and a dairy production research and training facility where a herd of 300 Holstein and Brown Swiss dairy cattle is maintained for teaching and research.

Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment in Chemistry and Biochemistry, Veterinary & Biomedical Sciences, Health & Nutritional Sciences Departments, and the Edgar S. McFadden Biostress laboratories, are also available. Graduate students accepted into the program will have opportunities to utilize these facilities to develop basic and/or applied research programs in dairy product processing and development, microbiology, chemistry, food safety, dairy cattle nutrition, management, and metabolism, while interacting with well qualified faculty. The Food Science specializations offers research opportunities in analytical methods for nutrient measurement, new food processing methods and carbohydrate chemistry.

The SDSU Dairy and Food Science Department, is an active part of the Midwest Dairy Foods Research Center, which is partially supported by National Dairy Council and Midwest Dairy Association. This provides graduate students in the Dairy Manufacturing area a unique opportunity to be involved with current issues and research needs of the dairy industry.

Graduate Faculty

Sanjeev Anand, Professor
Clifford Hall, Professor
Srinivas Janaswamy, Assistant Professor
Padmanaban Krishnan, Professor
Sergio Martinez-Monteagudo, Assistant Professor
Lloyd Metzger, Professor, and Alfred Chair in Dairy Education
Vikram Mistry, Interim Associate Dean for Academic Programs and Professor
Johan Osorio, Assistant Professor
Maristela Rovai, Assistant Professor
Isaac Salfer, Assistant Professor

Programs

Master's Degrees

- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization

Department of Natural Resource Management

Michele Dudash, Department Head
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138, Box 2140B
605-688-6121

The Department of Natural Resource Management provides undergraduate and graduate programs focused on improving the understanding and management of natural resources. The quality of life for many humans is intimately tied to the use and conservation of natural resources. Thus, educational opportunities in natural resource management at SDSU can lead to a diverse array of career opportunities. Departmental faculty and staff conduct research and provide outreach services that contribute to the understanding and management of natural resources on local to global scales.

Graduate Faculty

Charles Berry, Jr., Professor Emeritus
Charles Dieter, Professor Emeritus
Michele Dudash, Department Head and Professor
Krista Ehlert, Assistant Professor
Lester D. Flake, Distinguished Professor Emeritus
Brian Graeb, Adjunct Associate Professor
Kenneth Higgins, Professor Emeritus
Jonathan Jenks, Distinguished Professor
Kent C. Jensen, Associate Professor
Carter Johnson, Distinguished Professor Emeritus
Patricia S. Johnson, Professor Emerita
Carol Johnston, Professor Emeritus
Garry Larson, Professor Emeritus
Maribeth Latvis, Assistant Professor
A. Joshua Leffler, Assistant Professor
Robert Lonsinger, Assistant Professor
Lora Perkins, Associate Professor
Alexander (Sandy) Smart, Assistant Department Head and Professor
Nels H. Troelstrup, Jr., Professor Emeritus
Lan Xu, Professor

Programs

Master's Degrees

- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Grassland Management Certificate

Department of Veterinary & Biomedical Sciences

Jane Christopher-Hennings, Department Head
Christopher Chase, Professor/Graduate Coordinator
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 1105, Box 2175
605-688-5171

Animal infectious disease and biomedical research in the Department of Veterinary and Biomedical Science offer outstanding students the opportunity to conduct basic and/or applied research at both the M.S. and Ph.D. degree level in infectious disease. Students have the opportunity to conduct research in a variety of disciplines with SDSU scientists while earning advanced degrees in one Biological Science. This program has a unique mission, with the primary focus of the research directed to the mechanisms of infectious diseases of food producing animals following infections with bacteria, viruses or parasites. The program uses multidisciplinary approaches. Cooperating scientists work on biological, biochemical and immunological components of animal disease systems involving the host, environment and pathogen in the areas of molecular virology, molecular biology and recombinant DNA technology, developmental diagnostics, cellular immunology, parasitology, pathogenesis, epidemiology, genetics and physiology.

Graduate Faculty

Christopher Chase, Professor
Jane Christopher-Hennings, Department Head and Professor
Larry Holler, Professor
David Knudsen, Professor
Greta Krafsur, Assistant Professor
Eric Nelson, Professor
Angela Pillatzki, Associate Professor
Joy Scaria, Associate Professor
Alan Young, Professor

Programs

Master's Degrees

- Biological Sciences (M.S.)
  - Veterinary Microbiology Emphasis
  - Veterinary Pathology Emphasis

Doctoral Degrees

- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

College of Arts, Humanities & Social Sciences

Lynn Sargeant, Dean
Jason Zimmerman, Associate Dean
College of Arts, Humanities and Social Sciences
Wagner Hall 251, Box 2275A
605-688-4723

The College of Arts, Humanities and Social Sciences is committed to educational excellence driven by experiential learning. The college serves two significant functions within the University. It provides instruction in the University's core requirements for a liberal education and fosters innovation and creativity in numerous disciplines. The college offers high-quality programs that prepare students to be skilled industry leaders, public servants, engaged citizens and lifelong learners.

Programs

Department of Architecture

Master's Degrees

- Architecture (M.Arch.)

Department of English

Master's Degrees

- English (M.A.)

Department of Psychology

Coursework Only

- Psychology

Department of Sociology & Rural Studies

Master's Degrees

- Sociology (M.S.) - Community Development Specialization

Certificates

- Community Development Certificate
- Native Communities and Economic Development Certificate

Ness School of Management & Economics

Master's Degrees

- Economics (M.S.)

School of American & Global Studies

Coursework Only

- French, German, Global Studies, History, Political Science, Philosophy, Religion, and Spanish

School of Communication & Journalism

Master's Degrees

- Communication and Media Studies (M.A.)
- Mass Communication (M.M.C.)

School of Design

Master's Degrees

- Architecture (M.Arch.)

Coursework Only

- Studio Arts

School of Performing Arts

Coursework Only

- Music

Department of Architecture

Brian Rex, Department Head
Department of Architecture
Chicoine Architecture, Mathematics and Engineering 378, Box 2225
605-688-4841

The department (DoArch) provides an NAAB accredited professional education conceptually defined between two sets of studies - "Building Arts" and "Public Works". Professionalism is in the overlap of responsibility to build and civic responsibility for the built environment. Teaching and scholarship in DoArch is focused on the studio, the shop, the classroom, and regional communities. The core mission of professional education at DoArch is to prepare graduates for careers empowered in a socially responsible and civic profession; fostering collaboration and innovation in issues facing contemporary design practice; and building an academic dialog on a long-standing discipline rooted in material culture, place-making, and graphical inquiry.

Graduate Faculty

Jessica Garcia Fritz, Assistant Professor
Federico Garcia Lammers, Associate Professor
Brian Rex, Department Head and Associate Professor

Programs

Master's Degrees

- Architecture (M.Arch.)

Department of English

Jason McEntee, Department Head
Sharon Smith, Associate Professor/Graduate Coordinator
Department of English
Pugsley Continuing Education Center 301, Box 2218
605-688-5191

The English department's M.A program prepares students for professional careers or further graduate study by developing their capacities for textual analysis, research, theory, and creative and critical writing.

Students in the English M.A. program may choose either the Literature track or the Writing and Rhetoric track. The English department offers instruction in a wide range of specialty areas, including British and American literature, women's writing, Native American literature, literary theory, rhetoric, composition, creative writing, professional and technical writing, peace and conflict studies, and film studies.

Graduate Faculty

Paul Baggett, Associate Professor
Nicole Flynn, Associate Professor
Michael Keller, Professor
Kathy Malone, Associate Professor
Jason McEntee, Department Head and Professor
Michael Nagy, Associate Professor
Sharon Smith, Associate Professor
Christine Stewart, Professor
Steven Wingate, Associate Professor

Programs

Master's Degrees

- English (M.A.)

Department of Psychology

Rebecca Martin, Interim Department Head
Department of Psychology
Hansen Hall 029
605-688-4930

The Department of Psychology complements the vision of South Dakota State University and the College of Arts, Humanities and Social Sciences to be nationally distinctive and locally relevant through faculty teaching, scholarship and service. Departmental faculty members encourage and prepare students for graduate programs and professional careers by providing a sound knowledge base of psychology as a science and recognition of the multiplicity of viewpoints, schools of thought and subdivisions within the field. Faculty efforts support a challenging curriculum for the development of research skills and appreciation, to strengthen core competencies and understanding of discipline-related perspectives, and to foster opportunities for formal internships and practicums. This curriculum is presented in a manner that develops and enhances critical thinking and communication skills to prepare students for meaningful employment, further scholarship, sociocultural and international awareness, and civic involvement and engagement.

Graduate Faculty

Alper Kayaalp, Assistant Professor
Tyler Miller, Associate Professor
Brady Phelps, Professor
Debra Spear, Professor

Programs

Coursework Only

- Psychology

Department of Sociology & Rural Studies

Mary Emery, Department Head
Meredith Redlin, Professor/Graduate Coordinator
Department of Sociology and Rural Studies
Hansen Hall 004
605-688-4132

The Department of Sociology and Rural Studies has a long proud history of service, research and educational excellence at South Dakota State University. In keeping with the Land-grant mission, the department is active in education, research and outreach.

The M.S. in Sociology - Community Development Specialization is an interdisciplinary, multi-institution online program focused on community development.

The Department also administers the State Census Data Center, which provides businesses, organizations, news media, and local and county agencies with the latest census and rural life information.

Graduate Faculty

Patricia Ahmed, Lecturer
Abdallah Badahdah, Associate Professor
Mary Emery, Department Head and Professor
Maaz Gardezi, Assistant Professor
Candace May, Assistant Professor
Meredith Redlin, Professor
Weiwei Zhang, Assistant Professor

Programs

Master's Degrees

- Sociology (M.S.) - Community Development Specialization

Certificates

- Community Development Certificate
- Native Communities and Economic Development Certificate

Ness School of Management & Economics

Joseph M. Santos, Professor/Graduate Program Coordinator
Ness School of Management and Economics
Harding Hall
605-688-4141

The graduate program in economics prepares students for professions in business and government as well as for advanced studies in economics and finance. The program offers two curriculum options: an economic theory option and an applied business-economics option.

The economic theory option includes courses in advanced microeconomics, macroeconomics, and econometrics; additionally, this option emphasizes applied economic research - students complete a six-credit research thesis. Students customize their plans of study with elective courses in business economics, agricultural marketing, general economics, and agricultural and resource economics. A number of research and teaching assistantships and scholarships may be available to qualified students enrolled in this curriculum option.

The applied business-economics option includes courses in advanced managerial economics, advanced business decision science, financial management, strategic marketing, and a strategic business decision capstone. Students customize their plans of study with elective courses in finance, marketing, entrepreneurship, agricultural business and marketing, accounting, and risk management. Coursework is offered in flexible formats, including hybrid, evening and weekend courses, which allow students to complete this option in 12 or 24 months, depending on work and other commitments.

The program also offers an accelerated master's degree to qualified undergraduate students who maintain an overall undergraduate cumulative GPA of at least 3.5; these students may begin their graduate studies while they complete their undergraduate degree. Students may apply for admission to the accelerated master's degree program once they have completed 60 undergraduate credits.

Graduate Faculty

David E. Davis, Professor
Matthew A. Diersen, Professor
Lisa Elliot, Associate Professor
Matthew Elliot, Associate Professor
Hailong Jin, Assistant Professor
Eluned Jones, Department Head and Professor
Myoung Gin Keay, Assistant Professor
Nicole Klein, Professor
Deepthi Kolady, Assistant Professor
George Langelett, Professor
Andrea Leschewski, Assistant Professor
David Palmer, Professor
Anna Sadovnikova, Assistant Professor
Craig Silvernagel, Associate Professor
Joseph M. Santos, Professor
Pei-Yu Sun, Assistant Professor
Nacasius Ujah, Assistant Professor
Evert Van der Sluis, Professor
Tong Wang, Assistant Professor
Zhiguang Wang, Professor
Jason Zimmerman, Professor

Programs

Master's Degrees

- Economics (M.S.)

School of American & Global Studies

Christine Garst-Santos, Director
School of American and Global Studies
Wagner Hall 121, Box 2275
605-688-5102

The School of American and Global Studies (AGS) prepares critical thinkers and proficient researchers who are culturally literate and globally engaged. The School brings together many of the core disciplines in the humanities and social sciences. AGS offers majors and minors in American Indian studies, French studies, German, global studies, history, political science and Spanish, along with minors in legal studies, philosophy and religion in addition to a certificate in workplace intercultural competence. More broadly, the school fulfills SDSU's land-grant mission by creating an opportunity for the campus and the community to explore current and historical social, cultural and political issues in-depth. The curriculum provides students with experience in the cultural, historical, linguistic,

philosophical, political, and religious systems that sustain U.S. and global societies.

School faculty efforts support a challenging curriculum that encourages civic participation to strengthen the values and historic traditions of democracy. Its members encourage and prepare students to live in an increasingly interconnected world and to understand and appreciate the human diversity created by cultures, geography, and time. The political science faculty promote an awareness and understanding of global events, while the history faculty identify the historic background and historical trends that influence these events. The modern languages faculty provide critical understanding of the languages, cultures, and histories of specific geopolitical regions. The philosophy and religion faculty deal with the fundamental questions of life, the basis of knowledge and morality and practices of the world's many religious traditions. All faculty contribute to the global studies curriculum, fostering the development of intercultural competence and global citizenship. This curriculum is presented in a manner that develops and enhances critical thinking and communication skills to prepare students for meaningful employment, further scholarship, and community engagement. These efforts facilitate the achievement of national distinction by the school's majors as scholars and engaged citizens. Faculty research crosses academic, disciplinary, and geographic boundaries to advance and disseminate knowledge about key domestic and global issues that are of vital importance to South Dakota and beyond.

Disciplines in the School of AGS offer dual listed, topics, and independent study courses on an as needed basis. Occasional courses are offered for teachers needing in-service or continuing education credit. Graduate degrees are not available in these disciplines, but students may use these courses in an approved plan of study.

Graduate Faculty

Marie-Pierre Baggett, Professor
Molly Enz, Professor
Christine Garst-Santos, Associate Professor
Gregory R. Peterson, Professor
Dale Potts, Associate Professor
María Ramos-García, Professor
Eckhard Rölz, Professor
Charles Vollan, Associate Professor
Dave Wiltse, Associate Professor
Evren Wiltse, Associate Professor
Graham Wrightson, Associate Professor

Programs

Coursework Only

- French, German, Global Studies, History, Political Science, Philosophy, Religion, and Spanish

School of Communication & Journalism

Lyle Olson, Director
School of Communication and Journalism
Yeager Hall 211
605-688-4171

Jenn Anderson, Associate Professor/Graduate Program Coordinator
Pugsley Continuing Education Center 115
605-688-6131

The mission of the School of Communication and Journalism is to foster the development of exemplary communicators as industry leaders, scholars, professionals, and educators through innovative curricula, practice, and opportunities.

Graduate Faculty

Jenn Anderson, Associate Professor
Kelli Chromey, Assistant Professor
Rocky Dailey, Associate Professor
Marina Hendricks, Assistant Professor
Karla Hunter, Professor
Rebecca A. Kuehl, Associate Professor
Lyle Olson, Director and Professor
Joshua Westwick, Associate Director and Associate Professor

Programs

Master's Degrees

- Communication and Media Studies (M.A.)
- Mass Communication (M.M.C.)

School of Design

Pat Crawford, Director
School of Design
Grove Hall 101, Box 2802
605-688-4103

The School of Design provides opportunity for students desiring to study architecture, graphic design, interior design, landscape architecture, studio art and/or art education. These disciplines have come together to form a School of Design that provides a unique collaborative environment leading to better-prepared graduates who are professionally qualified to contribute to the vitality and well being of South Dakota and beyond.

School of Design students enroll in courses that explore design thinking, creativity and professional study while enjoying in depth educational experiences leading to professional licensure, stronger portfolios and increased opportunities following graduation.

The School of Design offers courses in animation, art education, art history, ceramics, computer graphics, drawing, film, interactive design, graphic design, painting, printmaking, sculpture and web design. The School does not offer a graduate level degree in studio art. However, students may enroll in graduate courses provided by the School.

Graduate Faculty

Leda Cempellin, Professor
Jessica Garcia Fritz, Assistant Professor
Richard (Cable) Hardin, Professor
Federico Garcia Lammers, Associate Professor
Brian Rex, Department Head and Associate Professor
Scott Wallace, Professor

Programs

Master's Degrees

- Architecture (M.Arch.)

Coursework Only

- Studio Arts

School of Performing Arts

David Reynolds, Director
School of Performing Arts
Performing Arts Center 123B, Box 2830
605-688-5188

The School of Performing Arts at South Dakota State University fosters and provides opportunities for creativity, performance, and both artistic and intellectual understanding through the study and practice of performing arts within contemporary and historical cultures. Mindful of the University's Land Grant mission, we strive to provide outreach-engagement that creates meaningful connections among students, the University, and the broader community.

Graduate Faculty

David Reynolds, Director and Professor

Programs

Coursework Only

- Music

College of Education & Human Sciences

Jill Thorngren, Dean
Matt Vukovich, Associate Dean for Research
College of Education and Human Sciences
Wagner Hall 249, Box 2275A
605-688-6181

The College of Education and Human Sciences enhances human potential and well-being through the integration of:

- exemplary student-centered graduate and undergraduate education that prepares tomorrow's professionals;
- discovery and scholarship that is nationally and internationally recognized for addressing human and community needs; and
- engagement with individuals, families, schools, and communities that transforms knowledge and discovery into meaningful impacts.

Graduates of the College of Education and Human Sciences transform the lives of people around the world every day. They work in diverse work settings which span the healthcare industry, education, business, government, and non-profit or community agencies.

The professional graduate programs in the College of Education and Human Sciences prepares graduates for certification, licensure, and qualification across some of the fastest growing and most sought out careers in the nation and world. Examples include: professional counselors supporting the development of individuals, families, schools, and communities, school administrators who provide leadership in their schools; dietitians who counsel others to establish a healthy or specialized diet; financial counselors working with families to manage their resources; wellness professionals who works across the lifespan to promote good health practices for people of all ages; a gerontology specialist working with the elderly, or an athletic trainer engaging in injury prevention and career. These are but a few of the rewarding, and in demand, careers that EHS graduates pursue. We have successful marketing professionals, business leaders, healthcare professionals, and educators across the nation who reflect our mission of *enhancing human potential*.

Programs

Department of Consumer Sciences

Master's Degrees

- Human Sciences (M.S.) - Family Financial Planning Specialization
- Human Sciences (M.S.) - Merchandising Specialization

Certificates

- Family Financial Planning Certificate
- Financial and Housing Counseling Certificate
- Merchandising Certificate

Department of Counseling & Human Development

Master's Degrees

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Community Services Specialization

Certificates

- Academic Advising Certificate

Department of Health & Nutritional Sciences

Master's Degrees

- Athletic Training (M.S.)
- Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Sport and Recreation Administration (M.S.)

Doctoral Degrees

- Nutrition and Exercise Sciences (Ph.D.)

Certificates

- Transdisciplinary Childhood Obesity Prevention Certificate

Department of Teaching, Learning, & Leadership

Master's Degrees

- Agricultural Education (M.S.)
- Curriculum and Instruction (M.Ed.) - Early Childhood Education Specialization
- Curriculum and Instruction (M.Ed.) - Elementary Education Specialization
- Curriculum and Instruction (M.Ed.) - Secondary Education Specialization
- Educational Administration (M.Ed.) - Elementary Education Specialization
- Educational Administration (M.Ed.) - Secondary Education Specialization
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Consumer Sciences Education Specialization

Department of Consumer Sciences

Kendra Kattelmann, Department Head
Department of Consumer Sciences
Wagner Hall 425, Box 2275A
605-688-5196

The Department of Consumer Sciences enhances the quality of life for consumers, with particular emphasis on the sustainable management of resources in a global context. While the department is home to a diverse collection of disciplines, all the programs are professionally based. All academic and extension programs have integrated elements of leadership, management, customer service, and technology. Consumer Sciences strives for high quality dynamic, and innovative teaching, scholarship, and outreach in its quest to develop successful professionals in the areas of apparel merchandising, aviation, consumer affairs, hospitality management, and leadership. In addition, a strong general education curriculum is part of all majors, which aids students in learning to assimilate all of their educational components.

Consumer Sciences faculty are committed to SDSU's tripartite mission of teaching, scholarship, and outreach, where the focus is on integrating students into the learning environment under close supervision of qualified faculty. As well as teaching and mentoring students, faculty are researchers and scholars who produce new knowledge and serve related professional organizations in leadership capacities. Faculty and students commit themselves to fostering scholarship and outreach efforts that reflect local, regional, national, and/or global contexts; promoting careers in an ever-changing global marketplace; inspiring critical thinking and theory building; encouraging activities with socially responsible impacts on individuals, households, communities, and environments; and celebrating diversity.

Four major themes underpin the Consumer Sciences vision and mission:

- Commerce: Consumer Sciences students learn about design and production processes and consumption patterns and behavior in the global marketplace;
- Creativity: Consumer Sciences students engage in problem-solving activities that produce experiential work within project constraints that is a result of creative collaboration;
- Resource Management: Consumer Sciences students understand the need for prioritization of resources to help consumers and businesses make optimal decisions; and
- Leadership Development: Consumer Sciences students engage in leadership development opportunities.

Graduate Faculty

Axton Betz-Hamilton, Assistant Professor
Cody Christensen, Associate Professor
Wookjae Heo, Assistant Professor
Xu Li, Assistant Professor
Kunsoon Park, Associate Professor

Programs

Master's Degrees

- Human Sciences (M.S.) - Family Financial Planning Specialization
- Human Sciences (M.S.) - Merchandising Specialization

Certificates

- Family Financial Planning Certificate
- Financial and Housing Counseling Certificate
- Merchandising Certificate

Department of Counseling & Human Development

Jay Trenhaile, Department Head
Lisbeth Leagjeld, CHRD Liaison Black Hills State University - Rapid City
Department of Counseling and Human Development
Wenona Hall 109, Box 507
605-688-4367

The mission of the Counseling and Human Development department is to provide high quality educational programs to learners who will work in human science fields, and to generate knowledge of human behavior, cognition, and interaction.

Students will participate in practical experiences designed to provide the knowledge, skills, and experiences necessary for careers in individual and family service settings; child/adult focused human services, and/or continued coursework in graduate school.

The Department of Counseling and Human Development is one of the few public university departments in South Dakota that delivers programs at the main campus in Brookings, Community College for Sioux Falls, BHSU - Rapid City, and online.

Graduate Faculty

Andrea Bjornestad, Associate Professor
Staci Born, Assistant Professor
Hande Briddick, Associate Professor
William Briddick, Associate Professor
Christin Carotta, Assistant Professor
Ann Michelle Daniels, Associate Professor
Alan Davis, Professor
Gregory Howard, Senior Lecturer
Lisbeth Leagjeld, Lecturer
Amber Letcher, Associate Professor
Kristine Ramsay-Seaner, Assistant Professor
Katelyn Romsa, Assistant Professor
Jay Trenhaile, Department Head and Professor

Programs

Master's Degrees

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Community Services Specialization

Certificates

- Academic Advising Certificate

Department of Health & Nutritional Sciences

Kendra Kattelmann, Distinguished Professor and Department Head
Department of Health and Nutritional Sciences
Wagner Hall 425, Box 2275A
605-688-5161

The Department of Health and Nutritional Sciences offers graduate degrees in Athletic Training, Dietetics, Nutrition and Exercise Sciences, and Sport and Recreation Administration. The overall goal(s) of the graduate programs are to provide students with the knowledge and experiences that improve the depth and breadth of professional competency, enhance written and oral communication, and promote scholarly pursuits and scientific research to inform practice and/or prepare them for advanced study at the doctoral level.

Graduate Faculty

Bradley Bowser, Associate Professor
Moul Dey, Professor
Elizabeth Droke, Associate Professor
Becky Jensen, Instructor
Kendra K. Kattelmann, Department Head and Distinguished Professor
Hungling (Stella) Liu, Assistant Professor
Lacey McCormack, Associate Professor
Jessica Meendering, Professor
Trevor Roiger, Assistant Professor
Bryan Romsa, Assistant Professor
Igor Sergeev, Professor
Bonny L. Specker, Professor
Matthew Vukovich, Associate Dean and Professor
Mary Beth Zwart, Assistant Professor

Programs

Master's Degrees

- Athletic Training (M.S.)
- Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Sport and Recreation Administration (M.S.)

Doctoral Degrees

- Nutrition and Exercise Sciences (Ph.D.)

Certificates

- Transdisciplinary Childhood Obesity Prevention Certificate

Department of Teaching, Learning & Leadership

Jay Trenhaile, Department Head
Department of Teaching, Learning and Leadership
Wenona Hall 108, Box 507
605-688-5039

The Department of Teaching, Learning and Leadership prepares educational professionals to be teachers and educational leaders for the 21st century. The department is committed to preparing highly qualified professionals, creating and sharing new knowledge in our profession, and developing outreach opportunities with stakeholders in the field. The departmental vision includes four overarching

themes: Responsiveness, Collaboration, Innovation, and Commitment that guide their teaching, research, and service.

Graduate Faculty

Mary Bowne, Professor
Kay Cutler, Professor
Anthony Durr, Assistant Professor
Patrick Hales, Assistant Professor
Jennifer Kampmann, Assistant Professor
Andrew Stremmel, Professor
Peter White, Assistant Professor

Programs

Master's Degrees

- Agricultural Education (M.S.)
- Curriculum and Instruction (M.Ed.) - Early Childhood Education Specialization
- Curriculum and Instruction (M.Ed.) - Elementary Education Specialization
- Curriculum and Instruction (M.Ed.) - Secondary Education Specialization
- Educational Administration (M.Ed.) - Elementary Education Specialization
- Educational Administration (M.Ed.) - Secondary Education Specialization
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Consumer Sciences Education Specialization

College of Natural Sciences

Charlene Wolf-Hall, Dean
Matthew Miller, Associate Dean for Academics
Greg Heiberger, Associate Dean for Student Success
College of Natural Sciences
Avera Health and Science Center 131
605-688-4420

The College of Natural Sciences provides degree programs in natural and physical sciences which are foundational to all professional, applied, and technical fields. A degree in physics explores the fundamental physical characteristics of matter, its motion and behavior through space and time through concepts of energy and force. Chemistry and biochemistry provide a study of the composition, structure, behavior and change of atoms, molecules, and macromolecules. A degree in the biological sciences provides a fundamental understanding of physiological mechanisms and development, providing a framework describing the processes of life and living organisms. Geography studies Earth's environments, landscapes, peoples, and places, including natural science (physical geography), social science (human geography), and geospatial science (GIScience), to understand how human and natural complexities have changed over time and how they have come to exist in their current form. Our graduate programs not only provide advanced training in the chosen discipline but also ensure the graduates have professional and leadership skills to excel in academia, government, or industry.

Programs

Department of Biology & Microbiology

Master's Degrees

- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Human Biology (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization

Department of Chemistry & Biochemistry

Master's Degrees

- Chemistry (M.S.)
- Chemistry (M.S.) - Chemical Education Specialization

Doctoral Degrees

- Biochemistry (Ph.D.)
- Chemistry (Ph.D.)

Department of Geography & Geospatial Sciences

Master's Degrees

- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Department of Physics

Coursework Only

- Physics

Department of Biology & Microbiology

Heike Bücking, Department Head
Radhey Kaushik, Professor/Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Graduate degrees available through the Department of Biology and Microbiology are the M.S. and the Ph.D. in Biological Sciences. Students may choose specializations in Biology or Microbiology for the M.S. program, and Biology, Microbiology or Molecular Biology for their Ph.D. program. The M.S. Biological Sciences degree program prepares students for a variety of careers such as teachers, laboratory research assistants, positions with state and federal agencies, and many private industry positions. Some M.S. students choose to pursue a Ph.D. degree after completing their M.S. degree at SDSU. Similar career opportunities also exist for students completing their Ph.D. degree; however, job placement is typically at a higher level. University or college faculty positions generally require a Ph.D. degree. The M.S. in Human Biology provides graduate-level preparation for students for successful admission to professional schools, including those not admitted directly to professional school from an undergraduate program.

Normally at least two years are needed to complete the requirements for the M.S. degree and at least four years (without a prior master's degree) for the Ph.D. degree. For some students, particularly those pursuing a career in secondary school teaching, a M.S. program with a non-thesis research option (Plan B) is available. Additional course work and a research paper are required in lieu of the thesis for the Plan B program. A list of graduate courses in the Biology and Microbiology Department is available in the Graduate Bulletin. Additional courses may be taken in closely related departments, such as Chemistry and Biochemistry, Mathematics and Statistics, Veterinary and Biomedical Sciences, Natural Resource Management, Plant Science, and Animal Science.

Graduate Faculty

Donald Auger, Professor
Bruce Bleakley, Professor
Volker Brözel, Professor
Heike Bucking, Department Head and Professor
Nicholas Butzin, Assistant Professor
Charles Fenster, Professor
Greg Heiberger, Assistant Professor
Michael Hildreth, Professor
Anne-Marie Hoskinson, Assistant Professor
Radhey Kaushik, Professor, Graduate Coordinator
Wanlong Li, Professor
Jaime Lopez-Mosqueda, Assistant Professor
Shinyi Marzano, Assistant Professor
Mark Messerli, Associate Professor
Madhav Nepal, Professor
Scott Pedersen, Professor
Natalie Thiex, Assistant Professor
Dan Wang, Research Assistant Professor
Xiuqing Wang, Professor
Yajun Wu, Professor
Yang Yen, Professor
Ruanbao Zhou, Associate Professor

Programs

Master's Degrees

- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Human Biology (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization

Department of Chemistry & Biochemistry

Douglas Raynie, Department Head
Jihong Cole-Dai, Graduate Program Coordinator
Department of Chemistry and Biochemistry
Avera Health and Science Center 131, Box 2202
605-688-5151

The graduate programs in the department lead to the M.S. or Ph.D. degrees in chemistry or the Ph.D. degree in biochemistry. Research programs exist in analytical/environmental chemistry, biochemistry, chemical education, and organic/natural products chemistry. All students admitted to the graduate program receive a full assistantship to support them during their studies.

Graduate Faculty

Michelle Baack, Adjunct Assistant Professor
Suvobrata Chakravarty, Associate Professor
Jihong Cole-Dai, Professor
Darci Fink, Assistant Professor
Tanya Gupta, Assistant Professor
Fathi Halaweish, Professor
Adam Hoppe, Professor
Surtaj Iram, Assistant Professor
Melody Jewell, Senior Lecturer
Brian Logue, Associate Professor
Lance Lee, Adjunct Assistant Professor
Matthew Miller, Professor
Keith Miskimins, Adjunct Assistant Professor
David Pearce, Adjunct Assistant Professor
Douglas Raynie, Department Head and Associate Professor
Kyle Roux, Adjunct Assistant Professor
Alexei Savinov, Adjunct Assistant Professor
Jay Shore, Associate Professor
Kameswaran Surendran, Adjunct Assistant Professor
Paola Vermeer, Adjunct Assistant Professor
Peter Vitiello, Adjunct Assistant Professor
Jill Weimer, Adjunct Assistant Professor
Rachel Willand-Charnley, Assistant Professor
Cheng Zhang, Associate Professor

Programs

Master's Degrees

- Chemistry (M.S.)
- Chemistry (M.S.) - Chemical Education Specialization

Doctoral Degrees

- Biochemistry (Ph.D.)
- Chemistry (Ph.D.)

Department of Geography & Geospatial Sciences

Bob Watrel, Department Head
George White, Professor/Graduate Coordinator (M.S. Program)
Xiaoyang Zhang, Professor/Graduate Coordinator (Ph.D. Program)
Department of Geography and Geospatial Sciences
Wecota Hall 109, Box 506
605-688-4511

Geography is an exciting field that recognizes the complex relationships and linkages of human and natural systems; geography is the science of place. As such, geographers study and analyze many of today's pressing issues, which range from climate change, human modification of the Earth's systems, environmental hazards, resource assessment, and land use to population distributions, urbanization, cultural adaption, political organization of space, and globalization. Geographers' tools, skill sets, and techniques, which include computer cartography, remote sensing, Global Positioning Systems (GPS), and Geographic Information Systems (GIS), are recognized increasingly as essential for solving many contemporary questions and are not only being adopted by businesses and governmental agencies but also by wider society. More people are recognizing that geography is fundamental to understanding our world and solving many of the problems that confront us.

The Department of Geography and Geospatial Sciences at South Dakota State University offers Bachelor's of Science programs in Geography and Geographic Information Sciences (GISc), Master's of Science degrees in Geography and Geography with a specialization in Geographic Information Systems, and a Ph.D. in Geospatial Sciences and Engineering. A diverse faculty focuses on topical specialties that include environment, geomorphology, soils, land use, hazards, energy use, cultural issues, historical, and political geography. Regional specialties are North America and Europe.

Graduate Faculty

Chris Crawford, Adjunct Associate Professor
Alisa Gallant, Adjunct Associate Professor
Dapeng Li, Assistant Professor
Thomas Loveland, Adjunct Professor
Bruce Millett, Assistant Professor
Izaya Numata, Adjunct Associate Professor
Birgit Peterson, Adjunct Associate Professor
David Roy, Adjunct Professor
Bob Watrel, Department Head and Associate Professor
George W. White, Professor
George Xian, Adjunct Professor
Xiaoyang Zhang, Professor

Programs

Master's Degrees

- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Department of Physics

Douglas Raynie, Department Head
Department of Physics
Daktronics Engineering Hall 255, Box 2222
605-688-5428

The Department of Physics does not offer a graduate degree program. However, the Physics program's coursework supports graduate degrees in a variety of departments in the science and engineering fields.

Graduate Faculty

Larry Browning, Professor
Yung Huh, Professor
Parashu Kharel, Associate Professor
Robert McTaggart, Professor

Programs

Coursework Only

- Physics

College of Nursing

Mary Anne Krogh, Dean
Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 255, Box 2275
605-688-5178 or 1-888-216-9806 Ext. 2

The College of Nursing strives for excellence in undergraduate and graduate education, research, scholarship, and health services to diverse individuals, communities and populations across the life span. The college improves human health and quality of life for people in the state of South Dakota, the region, the nation and the world. The vision of the College is to be a national leader in accessible and quality undergraduate and graduate nursing education and be recognized across health disciplines, and to prospective students, alumni and nursing leaders as innovative scholars and researchers who improve human health through strategic partnerships and interprofessional collaboration that shapes new delivery models of quality health care and nursing education.

Programs

Master's Degrees

- Nursing (M.S.) - Clinical Nurse Leader Specialization
- Nursing (M.S.) - Family Nurse Practitioner Specialization
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nursing (M.S.) - Psychiatric Mental Health Nurse Practitioner Specialization

Doctoral Degrees

- Nursing (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Certificates

- Post-Graduate Clinical Nurse Leader Certificate
- Post-Graduate Family Nurse Practitioner Certificate
- Post-Graduate Nurse Educator Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

Department of Graduate Nursing

Melinda Tinkle, Associate Dean for Academic Programs
Department of Graduate Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806 Ext. 2

Graduate nursing education is crucial for role preparation in advanced practice, nursing education, nursing administration, nursing leadership, and research. Collectively, these roles meet the growing needs of the healthcare and academic settings. The Department of Graduate Nursing offers a variety of degrees, specializations, and curriculum plans.

Students can earn a Master's of Science (M.S.) degree in five specializations: Family Nurse Practitioner, Nurse Educator, Nurse Administrator, Clinical Nurse Leader, and Psychiatric Mental Health Nurse Practitioner.

For students with a previous Master's degree, four post-graduate certificate options are available: Clinical Nurse Leader, Family Nurse Practitioner, Nurse Educator, and Psychiatric Mental Health Nurse Practitioner.

Graduate options continue in the doctoral programs. The Doctor of Nursing Practice degree will prepare Advanced Practice Registered Nurses to bring a transformative level of care and leadership to primary care settings in rural and underserved communities. Students can earn a Doctor of Nursing Practice (D.N.P.) with the specialty area of a Family Nurse Practitioner or Psychiatric Mental Health Nurse Practitioner. Students may enter these programs with either a Bachelor's or a Master's degree in nursing. Established in 2005, the Doctor of Philosophy in Nursing prepares nurse scientists to assume roles as healthcare researchers, faculty, and healthcare administrators with an emphasis on health promotion and disease prevention in underserved and rural populations. The Ph.D. program educates nurse scientists in academic, research, practice, and policy roles to address healthcare issues in urban, rural, frontier, and reservation areas.

Graduate Faculty

Alham Abuatiq, Assistant Professor
Robin Arends, Associate Professor
Robin Brown, Assistant Professor
Linda Burdette, Assistant Dean (Aberdeen) /Associate Professor
Paula Carson, Associate Professor
Cynthia Elverson, Associate Professor
Karin Emery, Assistant Dean (Brookings) / Assistant Professor
Kay Foland, Professor Emerita
Nicole Gibson, Clinical Assistant Professor
Margaret Hegge, Distinguished Professor Emerita
Leann Horsley, Assistant Dean (Sioux Falls)/Associate Professor
Lori Hendrickx, Professor
Barbara Hobbs, Associate Professor Emerita
Polly Hulme, Professor
Mary Isaacson, Associate Professor
Mary Anne Krogh, Dean / Professor
Heidi Mennenga, Associate Professor
Sarah Mollman, Assistant Professor
Roberta Olson, Dean and Professor Emerita of Nursing
Christina Plemmons, Assistant Dean / Assistant Professor
Brandi Pravecek, Clinical Assistant Professor
Thomas Stenvig, Associate Professor
Mindy Tinkle, Associate Dean for Academic Programs/Associate Professor
Jo Voss, Associate Professor

Programs

Master's Degrees

- Nursing (M.S.) - Clinical Nurse Leader Specialization
- Nursing (M.S.) - Family Nurse Practitioner Specialization
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nursing (M.S.) - Psychiatric Mental Health Nurse Practitioner Specialization

Doctoral Degrees

- Nursing (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Certificates

- Post-Graduate Clinical Nurse Leader Certificate
- Post-Graduate Family Nurse Practitioner Certificate
- Post-Graduate Nurse Educator Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

College of Pharmacy & Allied Health Professions

Dan Hansen, Interim Dean
Teresa Seefeldt, Associate Dean for Academic Programs
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133, Box 2202C
605-688-6197

Xiangming Guan, Associate Dean for Research
Avera Health and Science Center 271, Box 2202C
605-688-5314

The South Dakota State University College of Pharmacy and Allied Health Professions is nationally recognized for excellence in preparing students to provide high quality, patient-centered, and population-based pharmacist care. In the area of problem-solving research, the College has great momentum. Research teams led by faculty are making progress on projects that can enhance the health and wellbeing of people around the world. The College's growing research portfolio includes oncology, unique drug delivery systems, addiction to drugs and alcohol, cardiovascular health, dementia, ophthalmic medicine, and new models of pharmacy care.

Programs

Master's Degrees

- Public Health (M.P.H.)

Doctoral Degrees

- Pharmaceutical Sciences (Ph.D.)

Professional Doctoral Degrees

- Pharmacy (Pharm.D.)

Department of Allied & Population Health

Sharrel Pinto, Department Head
Department of Allied and Population Health
Avera Health and Science Center 147, Box 2202C
605-688-4329

The Department of Allied and Population Health offers the Master of Public Health (M.P.H.) degree and teaches courses in social and administrative pharmacy for the Doctor of Pharmacy (Pharm.D.) program. At the undergraduate level, the department offers a B.S. in Medical Laboratory Science. In addition to teaching, the department advances population health through research and innovations in community health and wellness services.

Graduate Faculty

Sharrel Pinto, Hoch Family Endowed Professor for Community Pharmacy Practice
Aaron Hunt, Assistant Professor and Program Coordinator
Yen-Ming Huang, Assistant Professor
Erin Miller, Assistant Professor

Programs

Master's Degrees

- Public Health (M.P.H.)

Department of Pharmaceutical Sciences

Omathanu Perumal, Department Head
Department of Pharmaceutical Sciences
Avera Health and Science Center 275, Box 2202C
605-688-4745 or 605-688-5598

The department offers a comprehensive Ph.D. program in Pharmaceutical Sciences that prepares graduates for academic, industry, and research careers. Our graduates are well placed in academic, industry, and research institutions in the US and other countries. In addition to receiving national recognition for their research work, the graduate students are also active in various national scientific organizations.

Our highly dedicated faculty members provide quality education and research training in the pharmaceutical sciences. The faculty have been recognized for the use of new teaching methods and technology to enhance student learning. The department has an active research program in cancer, cardiovascular, neuropharmacology, immunology, and eye diseases. The research expertise in the department includes medicinal chemistry, pharmacology, molecular biology, and drug delivery systems.

Graduate Faculty

Wenfeng An, Professor and Markl Faculty Scholar
Gudiseva Chandrasekher, Associate Professor
Hesham Fahmy, Associate Professor
Xiangming Guan, Associate Dean for Research and Professor
Jayarama Gunaje, Associate Professor
Omathanu Perumal, Department Head and Professor
Shafiqur Rahman, Professor
Komal Raina, Associate Professor and Haarberg Chair
Joshua Reineke, Assistant Professor
Teresa Seefeldt, Associate Dean for Academic Programs and Associate Professor
Hemachand Tummala, Professor

Programs

Doctoral Degrees

- Pharmaceutical Sciences (Ph.D.)

Department of Pharmacy Practice

James Clem, Department Head
Department of Pharmacy Practice
Avera Health and Science Center 133, Box 2202C
605-688-6197 or 605-688-5591

The Department of Pharmacy Practice builds on the fundamentals of pharmaceutical sciences so that our students gain the knowledge and expertise to become skilled pharmacy practitioners once they complete the Doctor of Pharmacy (Pharm.D.) degree.

Graduate Faculty

James Clem, Department Head and Professor
Dennis Hedge, Provost and Professor
Jodi Heins, Professor
Brad Laible, Professor
Kimberly Messerschmidt, Professor

Programs

Professional Doctoral Degrees

- Pharmacy (Pharm.D.)

Graduate School

Nicole Lounsbery, Director
Graduate School
Morrill Hall 130, Box 2201
605-688-4181

The South Dakota State University Graduate School advances post-baccalaureate education to meet the economic, technological and societal needs of South Dakota and beyond, supports graduate student success, and fosters innovation and diversity in graduate education and scholarship.

The Graduate School supports post-baccalaureate education at SDSU by promoting programs for student recruitment, setting and adhering to admission standards, and defining and maintaining rigorous academic standards for graduate programs. Administrative support is provided to departments and colleges seeking to improve existing courses as well as development of new programs. The Graduate School seeks academic balance through enhancement of graduate research and scholarly works, promotion of human diversity among the graduate student body and graduate faculty, and engagement with the graduate faculty to achieve the highest level of academic education.

Programs

Master's Degrees

- Biological Sciences (M.S.)
- Interdisciplinary Studies (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.)

Jerome J. Lohr College of Engineering

Bruce Berdanier, Dean
Jerome J. Lohr College of Engineering
Crothers Engineering Hall 201, Box 2219
605-688-4161

Engineering programs have been a vital part of SDSU since 1881, and graduates of the Jerome J. Lohr College of Engineering have extended the bounds of science and improved our way of life in many ways. The College has a rich history and long tradition of providing outstanding graduates who are well prepared for exciting careers in engineering, mathematics, science, and technology. The six academic departments of the College offer a broad range of programs, each with its unique features that ensure the student of both depth and breadth in their field of study. The mission of the College is to provide a rigorous, practical education for our students oriented toward problem solving; to conduct world-class research with a regional emphasis; and to provide technical assistance to existing and emerging business, industry, and government.

Programs

Jerome J. Lohr College of Engineering

Master's Degrees

- Engineering (M.Eng.)

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Department of Agricultural & Biosystems Engineering

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization

Department of Civil Engineering

Master's Degrees

- Civil Engineering (M.S.)

Doctoral Degrees

- Civil Engineering (Ph.D.)

Department of Construction & Operations Management

Master's Degrees

- Operations Management (M.S.)

Certificates

- Management Foundations Certificate
- Systems Management Certificate

Department of Electrical Engineering & Computer Science

Master's Degrees

- Computer Science (M.S.)
- Electrical Engineering (M.S.)

Doctoral Degrees

- Electrical Engineering (Ph.D.)

Department of Mathematics & Statistics

Master's Degrees

- Data Science (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Statistics (M.S.)

Doctoral Degrees

- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization

Certificates

- Advanced Graduate Mathematics Certificate
- Data Science Certificate
- Graduate Mathematics Certificate

Department of Mechanical Engineering

Master's Degrees

- Mechanical Engineering (M.S.)

Doctoral Degrees

- Mechanical Engineering (Ph.D.)

Department of Agricultural & Biosystems Engineering

Van C. Kelley, Department Head
Kasiviswanathan Muthukumarappan, Distinguished Professor/Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Agricultural Engineering 107, Box 2120
605-688-5143

The mission of the Department of Agricultural and Biosystems Engineering is to provide professional education at the undergraduate and graduate levels for engineers and technologists who will serve agricultural, biological, and environmental industries and to conduct research and provide technological leadership in engineering design and management for the agricultural community and its affiliated industries.

Graduate Faculty

Gary A. Anderson, Professor
Aaron Franzen, Assistant Professor
Zhengrong Gu, Professor
Van C. Kelley, Department Head and Associate Professor
Rachel McDaniel, Assistant Professor
John McMaine, Assistant Professor
Kasiviswanathan Muthukumarappan, Distinguished Professor
Todd P. Trooien, Professor
Lin Wei, Associate Professor

Programs

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization

Department of Civil & Environmental Engineering

Nadim Wehbe, Department Head
Suzette Burckhard, Professor /Graduate Coordinator
Department of Civil and Environmental Engineering
Crothers Engineering Hall 120, Box 2219
605-688-5427

Civil Engineering includes design, construction, and operation and maintenance of highways, airports, buildings, bridges, dams, water supply and distribution systems, waste water collection systems and treatment plants, irrigation and drainage systems, river and harbor improvements and many other infrastructure facilities essential in modern life. Civil Engineers are custodians of the built environment and are responsible for all aspects of the world's infrastructure. The Civil and Environmental Engineering Department's mission is to provide a highly respected, rigorous, practical education for our students, oriented toward problem solving through the integration of education, research and lifelong learning.

Graduate Faculty

Suzette Burckhard, Professor
Rouzbeh Ghabchi, Assistant Professor
Guanghui Hua, Associate Professor
Allen Jones, Professor
Kyungnan Min, Lecturer
Michael Pawlovich, Assistant Professor
Christopher G. Schmit, Professor
Junwon Seo, Associate Professor
Mostafa Tazarv, Assistant Professor
Francis C.K. Ting, Professor
Nadim Wehbe, Department Head and Professor

Programs

Master's Degrees

- Civil Engineering (M.S.)

Doctoral Degrees

- Civil Engineering (Ph.D.)

Department of Construction & Operations Management

Teresa Keys Hall, Department Head
Department of Construction and Operations Management
Solberg Hall 116, Box 2223
605-688-6417

The mission of the Construction and Operations Management Department is to provide high quality, relevant, and contemporary learning experiences for our students; to enhance the economic vitality of the region through outreach, research and service initiatives for our industrial constituents; and to promote our respective disciplines through these outreach ventures and scholarly activity.

Graduate Faculty

Teresa Keys Hall, Department Head and Professor
Yilei Huang, Assistant Professor
Ekaterina Koromyslova, Assistant Professor
Huitian Lu, Professor
Carrie Steinlicht, Senior Lecturer

Programs

Master's Degrees

- Engineering (M.Eng.)
- Operations Management (M.S.)

Certificates

- Management Foundations Certificate
- Systems Management Certificate

Department of Electrical Engineering & Computer Science

Siddharth Suryanarayanan, Department Head
Sung Shin, Professor/Graduate Coordinator Computer Science
Reinaldo Tonkoski, Associate Professor/Graduate Coordinator Electrical Engineering
Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214, Box 2222
605-688-4526

The Department of Electrical Engineering and Computer Science combines all aspects of electricity, electronics, hardware, and software into one multi-disciplinary unit. The department has well-established, nationally and internationally-known research programs in materials, image processing and power and energy systems.

Graduate Faculty

Robert Fourney, Associate Professor
George Hamer, Associate Professor
Timothy Hansen, Assistant Professor
Steven M. Hietpas, Professor
Yi Liu, Associate Professor
Sung Y. Shin, Professor
Siddharth Suryanarayanan, Department Head and Professor
Songxin Tan, Associate Professor
Reinaldo Tonkoski, Associate Professor
Kwanghee Won, Assistant Professor

Programs

Master's Degrees

- Computer Science (M.S.)
- Electrical Engineering (Ph.D.)

Doctoral Degrees

- Electrical Engineering (Ph.D.)

Department of Mathematics & Statistics

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Rong Fan, Statistics Lecturer/MS Data Science Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

The SDSU Department of Mathematics and Statistics is a large, diverse, and active organization. The department's mission is to provide excellent instruction, conduct high-quality research and scholarly activity, and prepare graduates and provide mathematical and statistical services that are both regionally relevant and internationally competitive.

The SDSU Department of Mathematics and Statistics offers the M.S. in Mathematics, the M.S. in Statistics, the M.S. in Data Science, and the Ph.D. in Computational Science and Statistics. All four programs offer students the opportunity to pursue graduate studies in a collegial environment with high faculty-student interaction and research activity, and are particularly effective at preparing graduates to work in business, industry, or government as well as the more traditional area of higher education.

Graduate Faculty

Ross Abraham, Professor
Matthew Biesecker, Associate Professor
Thomas Brandenburger, Associate Professor
Kurt D. Cogswell, Department Head and Professor
Gemechis Djira, Associate Professor
Donna Flint, Professor
Xijin Ge, Professor
Gary Hatfield, Associate Professor
John Jasper, Assistant Professor
Jung-Han Kimn, Associate Professor
Christine Larson, Professor
Semhar Michael, Assistant Professor
Hossein Moradi Rekabdarkolaee, Assistant Professor
Cedric Neumann, Associate Professor
Chris Saunders, Assistant Professor

Daniel J. Schaal, Professor
Robert C. Schmidt, Professor
Donald Vestal, Associate Professor
Sharon Vestal, Associate Professor

Programs

Master's Degrees

- Data Science (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Statistics (M.S.)

Doctoral Degrees

- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization

Certificates

- Advanced Graduate Mathematics Certificate
- Data Science Certificate
- Graduate Mathematics Certificate

Department of Mechanical Engineering

Kurt Bassett, Department Head
Zhong Hu, Professor/Graduate Coordinator
Department of Mechanical Engineering
Crothers Engineering Hall 221, Box 2219
605-688-5426

The Department of Mechanical Engineering offers programs of study leading to the Bachelor of Science (B.S.) and Master of Science (M.S.) degrees in Mechanical Engineering, as well as a minor in Sustainable Energy Systems. A Ph.D. in Agricultural, Biosystems, and Mechanical Engineering (ABME) is also offered. The department is focused on developing students' problem-solving talents, built upon a solid understanding of the scientific and mathematical principles that guide engineers. The faculty members are dedicated to providing a challenging and effective learning environment. They continue to build upon their considerable expertise through engineering research and practice.

The mission of the Department of Mechanical Engineering is to provide a highly respected, rigorous, professional education for Mechanical Engineering students; to conduct consequential research; and to provide technical assistance to our constituents.

Graduate Faculty

Kurt Bassett, Department Head and Professor
Saikat Basu, Assistant Professor
Travis Burgers, Adjunct Assistant Professor
Marco Ciarcià, Assistant Professor
Jeffrey Doom, Assistant Professor
Stephen Gent, Professor
Zhong Hu, Professor
Todd Letcher, Associate Professor
Gregory Michna, Associate Professor
Kim-Doang Nguyen, Assistant Professor
Anamika Prasad, Assistant Professor

Programs

Master's Degrees

- Mechanical Engineering (M.S.)

Doctoral Degrees

- Mechanical Engineering (Ph.D.)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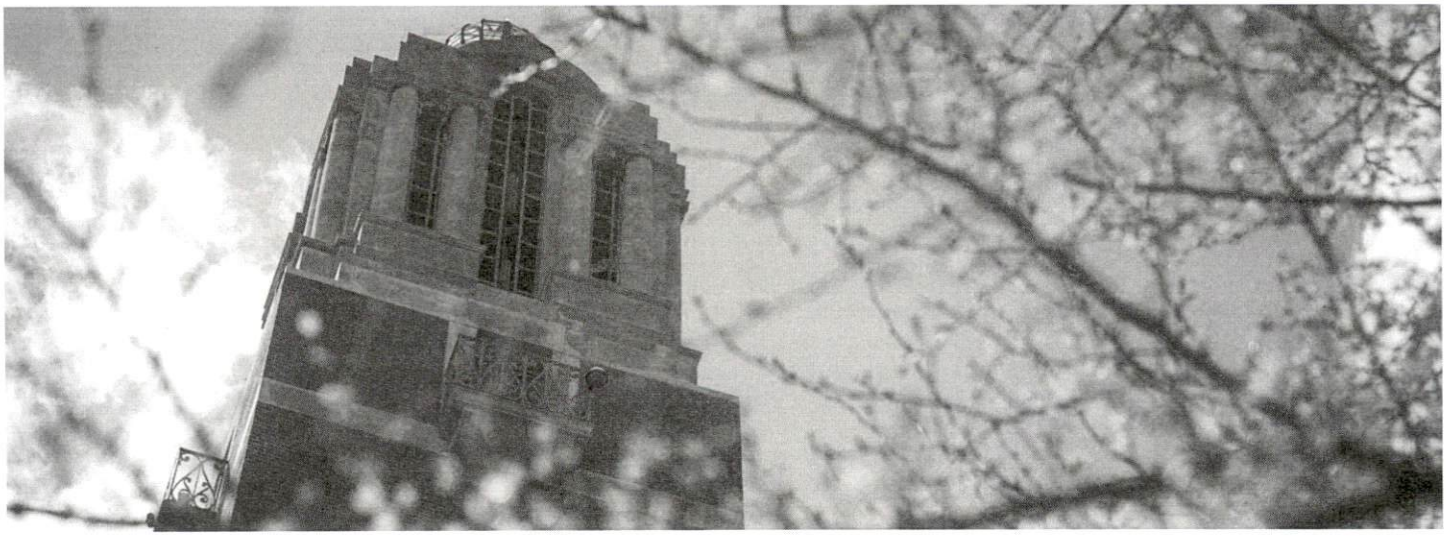


Online, Off-Campus, Distance & Non-Credit Programs

The Office of Continuing and Distance Education works to broaden the reach of SDSU, with a commitment to providing quality education no matter where students reside. The office serves students on campus and across the globe. In addition to online education, the Office of Continuing and Distance Education coordinates the program offerings at off-campus locations. The off-campus centers effectively extend the reach of SDSU by offering the same quality education to students who want to earn their degree while living and working in their home community.

Outreach Mission

South Dakota State University has a long tradition of, and responsibility for, delivering a variety of outreach efforts to locations around the world. These include educational services to Community College for Sioux Falls, Black Hills State University – Rapid City, the Capital University Center in Pierre (CUC), and numerous other distance education classes, workshops and services.

The Office of Continuing and Distance Education provides coordination and support for off-campus educational programs and serves as a conduit for the University's service mission to citizens of South Dakota, the region and world. Outreach Programs are designed to deliver both state- and self-support education through on-site or online education credit courses, non-credit professional development, short courses and workshops.

Academic Credit Programs

Academic standards and policies governing off-campus and technology delivered courses are identical to the on-campus instructional program. Hence, credit course offerings, instruction and academic standards are the responsibilities of the Vice President for Academic Affairs, Deans of the colleges and department heads. There are outreach locations throughout South Dakota where credit courses are presented each semester and many courses are available by distance education. Additional locations are added as needed.

Online Education

South Dakota State University offers undergraduate and graduate courses and programs online. SDSU offers Internet-based courses and programs for students needing a more flexible schedule, yet a rigorous and quality educational experience. Online courses are taught by the same SDSU faculty and are similar to on-campus courses in quality and rigor. Students receive the same credit for completing an online course as they would for an on-campus course. Based upon more than 80 years of effective off-campus education, SDSU is committed to serving:

- Working adults
- Part-time students
- Time- and place-bound individuals
- K-12 students, teachers and administrators
- Employees seeking career development skills
- Government and military personnel
- Persons with disabilities

For more information regarding SDSU's online education opportunities call toll free at 866-827-3198, or go to the Continuing and Distance Education website.

Students enrolling in online courses may incur additional costs associated with online learning; such as, but not limited to, test proctoring and technology (software/hardware).

Summer Term

SDSU offers a wide range of courses on and off-campus to continue your studies during the summer months as well as numerous special workshops, short courses, distance education classes, evening offerings and non-credit programs. Summer programming is offered May through August and is characterized by innovation and responsiveness to your needs. Classes are comfortably sized, and time is available for individual attention from the faculty member. Participants need not be regularly matriculated at SDSU but may be admitted as non-degree seeking students.

Off-Campus Centers

SDSU, in partnership with the other SD Board of Regents institutions, offers advising and support services, courses and programs at three off-campus centers across South Dakota: Black Hills State University – Rapid City, Capital University Center (CUC) – Pierre, and Community College for Sioux Falls. For more information regarding offerings at the off-campus centers, please visit the Continuing and Distance Education website.

State Authorization

Colleges and universities who market to, recruit and offer educational activities to out-of-state students must understand and follow the laws and regulations set forth in those states. Authorization may be required for SDSU to serve and reach students in states outside of South Dakota. SDSU is determined to comply with all state regulations and will apply for authorization, when necessary, from those states where it conducts activities such as delivery of online courses, placement for field experiences (internships, clinicals, practicums, etc.) academic and athletic recruiting, marketing, etc.

SDSU participates in the National Council of State Authorization Reciprocity Agreement (NC-SARA). South Dakota became a SARA state in November 2014 and SDSU became a SARA member institution in March 2015. This membership provides SDSU the authorization to provide educational activities within other SARA states without further authorization. Activities that are beyond the scope allowed through SARA may require individual state authorization. For further state authorization and complaint process information, please visit the Continuing and Distance Education website.

Professional Licensure & Certification

South Dakota State University offers a variety of courses and programs online and is committed to providing a quality education to help you reach your professional goals. Some professions require certification or licensure to practice/work in the field; for instance, a student must hold a teacher certification to teach or a nurse must be licensed to work in a hospital. The curriculum for a number of degree programs at South Dakota State University have been designed to meet the licensure/certification requirements in South Dakota, and prepare students to sit for licensure exams in South Dakota. The various licensure boards in each state are responsible for setting requirements for licensure/certification in their state and distance students with intent of returning or moving to any state other than South Dakota should be aware of the unique requirements for that state.

Students seeking to establish licensure outside the state of South Dakota can find information pertaining to the licensure requirements in their state on the Continuing and Distance Education Professional Licensure and Certification website. You are encouraged to engage with an academic advisor prior to beginning any online

academic program that would lead to licensure, to best understand the licensure program in your intended state of residence. Assistance will be provided to candidates by contacting the appropriate program advisor.

Non-Credit Programs

The Office of Continuing and Distance Education provides opportunities for individuals to participate in professional development and personal enrichment activities throughout the year. Continuing and Distance Education can authorize Continuing Education Units (CEUs), coordinate professional development workshops, and partners with Osher Lifelong Learning Institute (OLLI) offer short-term, non-credit classes.

Osher Lifelong Learning Institute (OLLI)

South Dakota State University has collaborated with Osher Lifelong Learning Institute (OLLI) at Community College for Sioux Falls to provide the residents of Brookings, SD and surrounding area the ability to participate in this lifelong learning opportunity.

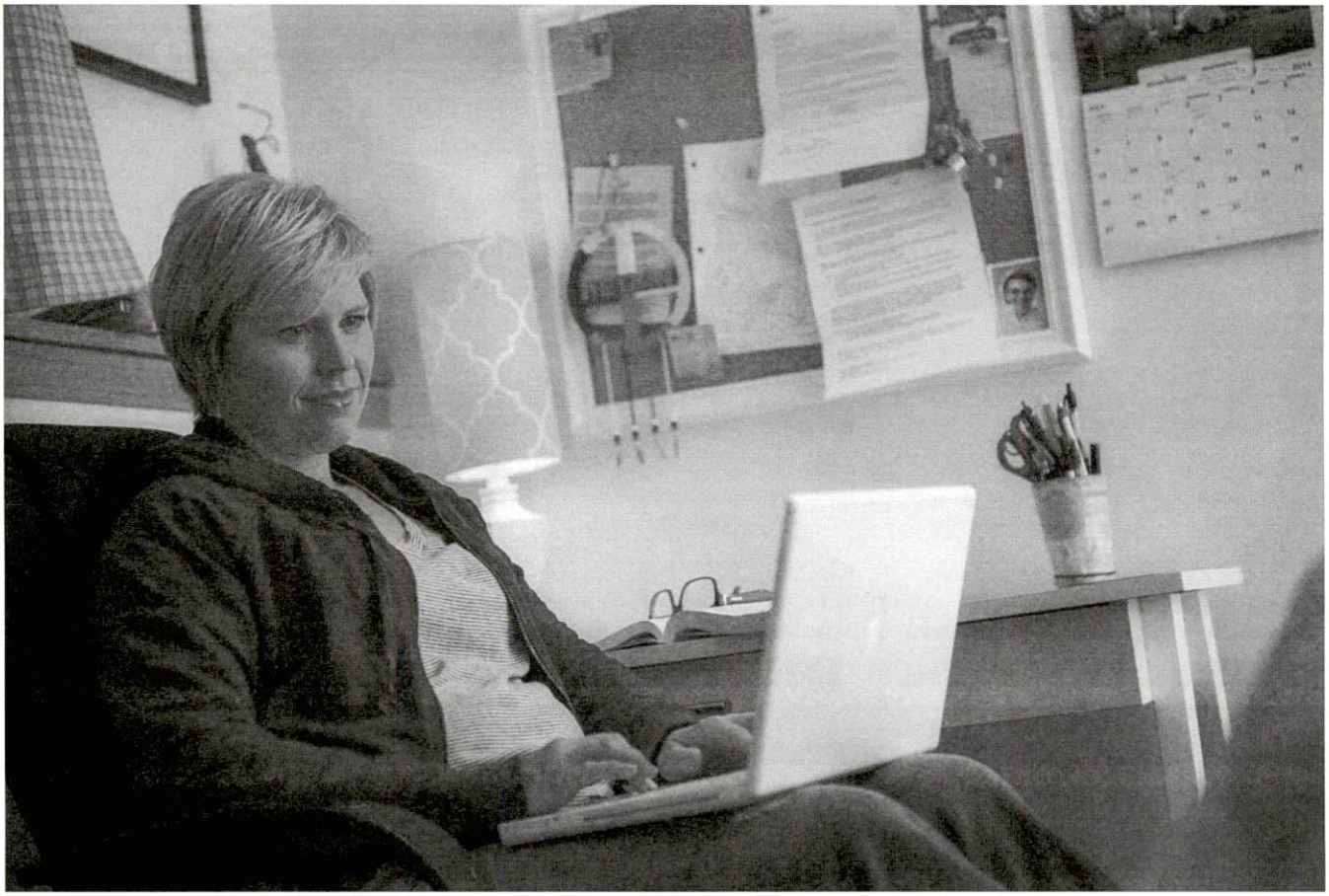
The Osher Lifelong Learning Institute (OLLI) is a non-profit membership-based organization that seeks to provide intellectually stimulating lifelong learning and personal growth opportunities for people fifty (50) and older. OLLI exemplifies the University's commitment to community service though is collaborative work with the partner institutions, academic and professional groups, and organizations devoted to engaging the minds and fostering the well-being of adults. With OLLI, there are no grades, no tests and no pressure, just the joy of learning.

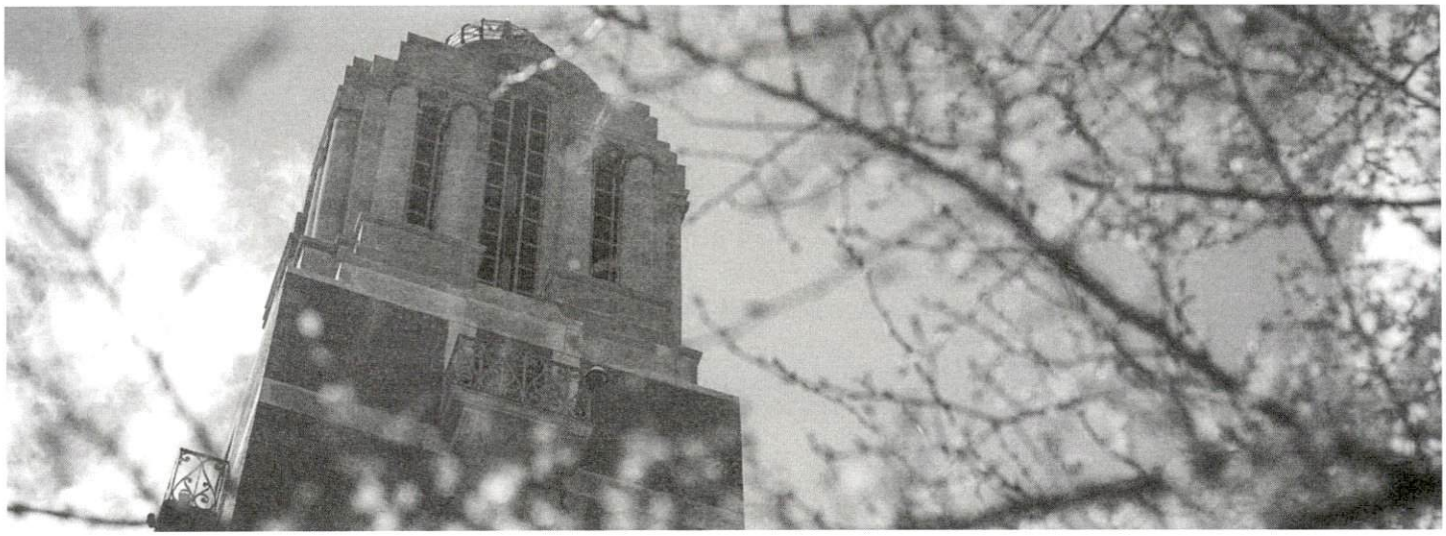
Continuing Education Units

Today's workforce needs constant and current information to keep up-to-date with industry and association certifications. Continuing Education Units (CEUs) offer flexibility in delivery and fulfilling certification requirements. Contact the Office of Continuing and Distance Education at 605-688-4154 or e-mail to learn more about offering CEUs at your next conference.

Professional & Continued Education

SDSU Professional and Continuing Education is dedicated to building the workforce skill-sets needed for businesses to thrive in our evolving world. Our team of SDSU experts are committed to providing workshops and training programs for employees of businesses, non-profit organizations, and government agencies that center around relevant and essential skills that will increase the value of your employees to your business. Contact the Office of Continuing and Distance Education at 605-688-4154 or e-mail to learn more.





Academic Programs

Graduate Programs at SDSU

The Graduate School supports post-baccalaureate education at SDSU by promoting programs for student recruitment, setting and adhering to admission standards, and defining and maintaining rigorous academic standards for graduate programs. Administrative support is provided to departments and colleges delivering master's, doctoral, and professional programs, as well as graduate certificates. The information below provides links to major programs and specializations.

Master's Degrees

- Master of Architecture (M.Arch.)
- Master of Arts (M.A.)
- Master of Education (M.Ed.)
- Master of Engineering (M.Eng.)
- Master of Mass Communication (M.M.C.)
- Master of Public Health (M.P.H.)
- Master of Science (M.S.)

Doctoral Ph.D. & Professional Programs

- Doctor of Nursing Practice (D.N.P.)
- Doctor of Pharmacy (Pharm.D.)
- Doctor of Philosophy (Ph.D.)

Graduate Certificates

Programs & Degrees Listed Alphabetically by Degree

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)
- Agricultural Education (M.S.)
- Animal Science (M.S.)
- Architecture (M.Arch.)
- Athletic Training (M.S.)
- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemical Education Specialization
- Civil Engineering (M.S.)
- Communication and Media Studies (M.A.)
- Computer Science (M.S.)
- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Curriculum and Instruction (M.Ed.) - Early Childhood Education Specialization
- Curriculum and Instruction (M.Ed.) - Elementary Education Specialization
- Curriculum and Instruction (M.Ed.) - Secondary Education Specialization
- Data Science (M.S.)
- Dietetics (M.S.)
- Economics (M.S.)
- Educational Administration (M.Ed.) - Elementary Education Specialization
- Educational Administration (M.Ed.) - Secondary Education Specialization
- Electrical Engineering (M.S.)
- Engineering (M.Eng.)
- English (M.A.)
- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization
- Human Biology (M.S.)
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Community Services Specialization
- Human Sciences (M.S.) - Family and Consumer Sciences Education Specialization
- Human Sciences (M.S.) - Family Financial Planning Specialization
- Human Sciences (M.S.) - Merchandising Specialization
- Interdisciplinary Studies (M.S.)
- Mass Communication (M.M.C.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Mechanical Engineering (M.S.)
- Nursing (M.S.) - Clinical Nurse Leader Specialization
- Nursing (M.S.) - Family Nurse Practitioner Specialization
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nursing (M.S.) - Psychiatric Mental Health Nurse Practitioner Specialization
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Operations Management (M.S.)
- Plant Science (M.S.)
- Public Health (M.P.H.)
- Sociology (M.S.) - Community Development Specialization
- Sport and Recreation Administration (M.S.)
- Statistics (M.S.)
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)
- Animal Science (Ph.D.)
- Biochemistry (Ph.D.)
- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization
- Chemistry (Ph.D.)
- Civil Engineering (Ph.D.)
- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization

- Computational Science and Statistics (Ph.D.) - Statistics Specialization
- Electrical Engineering (Ph.D.)
- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization
- Mechanical Engineering (Ph.D.)
- Nursing (Ph.D.)
- Nutrition and Exercise Sciences (Ph.D.)
- Pharmaceutical Sciences (Ph.D.)
- Plant Science (Ph.D.)
- Wildlife and Fisheries Sciences (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization
- Pharmacy (Pharm.D.)

Certificates

- Academic Advising Certificate
- Advanced Graduate Mathematics Certificate
- Animal Science Certificate
- Community Development Certificate
- Data Science Certificate
- Family Financial Planning Certificate
- Financial and Housing Counseling Certificate
- Graduate Mathematics Certificate
- Grassland Management Certificate
- Management Foundations Certificate
- Merchandising Certificate
- Native Communities and Economic Development Certificate
- Post-Graduate Clinical Nurse Leader Certificate
- Post-Graduate Family Nurse Practitioner Certificate
- Post-Graduate Nurse Educator Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate
- Systems Management Certificate
- Transdisciplinary Childhood Obesity Prevention Certificate

Coursework Only

- French, German, Global Studies, History, Political Science, Philosophy, Religion, and Spanish
- Music
- Physics
- Psychology
- Studio Arts

Programs & Degrees Listed Alphabetically by Program

- Academic Advising Certificate
- Advanced Graduate Mathematics Certificate
- Agricultural and Biosystems Engineering (M.S.)
- Agricultural and Biosystems Engineering (Ph.D.)
- Agricultural Education (M.S.)
- Animal Science (M.S.)
- Animal Science (Ph.D.)
- Animal Science Certificate
- Architecture (M.Arch.)
- Athletic Training (M.S.)
- Biochemistry (Ph.D.)
- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemical Education Specialization
- Chemistry (Ph.D.)
- Civil Engineering (M.S.)
- Civil Engineering (Ph.D.)
- Communication and Media Studies (M.A.)
- Community Development Certificate
- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization
- Computer Science (M.S.)
- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Curriculum and Instruction (M.Ed.) - Early Childhood Education Specialization
- Curriculum and Instruction (M.Ed.) - Elementary Education Specialization
- Curriculum and Instruction (M.Ed.) - Secondary Education Specialization
- Data Science (M.S.)
- Data Science Certificate
- Dietetics (M.S.)
- Economics (M.S.)
- Educational Administration (M.Ed.) - Elementary Education Specialization
- Educational Administration (M.Ed.) - Secondary Education Specialization
- Electrical Engineering (M.S.)
- Electrical Engineering (Ph.D.)
- Engineering (M.Eng.)
- English (M.A.)
- Family Financial Planning Certificate
- Financial and Housing Counseling Certificate
- French, German, Global Studies, History, Political Science, Philosophy, Religion, and Spanish
- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization
- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization
- Graduate Mathematics Certificate
- Grassland Management Certificate
- Human Biology (M.S.)
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Community Services Specialization
- Human Sciences (M.S.) - Family and Consumer Sciences Education Specialization
- Human Sciences (M.S.) - Family Financial Planning Specialization
- Human Sciences (M.S.) - Merchandising Specialization
- Interdisciplinary Studies (M.S.)
- Management Foundations Certificate
- Mass Communication (M.M.C.)
- Mathematics (M.S.)

- Mathematics (M.S.) - Statistics Specialization
- Mechanical Engineering (M.S.)
- Mechanical Engineering (Ph.D.)
- Merchandising Certificate
- Music
- Native Communities and Economic Development Certificate
- Nursing (D.N.P.)
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization
- Nursing (M.S.) - Clinical Nurse Leader Specialization
- Nursing (M.S.) - Family Nurse Practitioner Specialization
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nursing (M.S.) - Psychiatric Mental Health Nurse Practitioner Specialization
- Nursing (Ph.D.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Nutrition and Exercise Sciences (Ph.D.)
- Operations Management (M.S.)
- Pharmaceutical Sciences (Ph.D.)
- Pharmacy (Pharm.D.)
- Physics
- Plant Science (M.S.)
- Plant Science (Ph.D.)
- Post-Graduate Clinical Nurse Leader Certificate
- Post-Graduate Family Nurse Practitioner Certificate
- Post-Graduate Nurse Educator Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate
- Psychology
- Public Health (M.P.H.)
- Sociology (M.S.) - Community Development Specialization
- Sport and Recreation Administration (M.S.)
- Statistics (M.S.)
- Studio Arts
- Systems Management Certificate
- Transdisciplinary Childhood Obesity Prevention Certificate
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Programs & Degrees Listed by College & Program

College of Agriculture, Food & Environmental Sciences

Biological Sciences Program

Master's Degrees

- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Department of Agronomy, Horticulture, & Plant Science

Master's Degrees

- Plant Science (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Plant Science (Ph.D.)

Department of Animal Science

Master's Degrees

- Animal Science (M.S.)

Doctoral Degrees

- Animal Science (Ph.D.)

Certificates

- Animal Science Certificate

Department of Dairy & Food Science

Master's Degrees

- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization

Department of Natural Resource Management

Master's Degrees

- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Grassland Management Certificate

Department of Veterinary & Biomedical Sciences

Doctoral Degrees

- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

College of Arts, Humanities & Social Sciences

Department of Architecture

Master's Degrees

- Architecture (M.Arch.)

Department of English

Master's Degrees

- English (M.A.)

Department of Psychology

Coursework Only

- Psychology

Department of Sociology & Rural Studies

Master's Degrees

- Sociology (M.S.) - Community Development Specialization

Certificates

- Community Development Certificate
- Native Communities and Economic Development Certificate

Ness School of Management & Economics

Master's Degrees

- Economics (M.S.)

School of American & Global Studies

Coursework Only

- French, German, Global Studies, History, Political Science, Philosophy, Religion, and Spanish

School of Communication & Journalism

Master's Degrees

- Communication and Media Studies (M.A.)
- Mass Communication (M.M.C.)

School of Design

Coursework Only

- Studio Arts

School of Performing Arts

Coursework Only

- Music

College of Education & Human Sciences

Department of Consumer Sciences

Master's Degrees

- Human Sciences (M.S.) - Family Financial Planning Specialization
- Human Sciences (M.S.) - Merchandising Specialization

Certificates

- Family Financial Planning Certificate
- Financial and Housing Counseling Certificate
- Merchandising Certificate

Department of Counseling & Human Development

Master's Degrees

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Community Services Specialization

Certificates

- Academic Advising Certificate

Department of Health & Nutritional Sciences

Master's Degrees

- Athletic Training (M.S.)
- Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Sport and Recreation Administration (M.S.)

Doctoral Degrees

- Nutrition and Exercise Sciences (Ph.D.)

Certificates

- Transdisciplinary Childhood Obesity Prevention Certificate

Department of Teaching, Learning & Leadership

Master's Degrees

- Agricultural Education (M.S.)
- Curriculum and Instruction (M.Ed.) - Early Childhood Education Specialization
- Curriculum and Instruction (M.Ed.) - Elementary Education Specialization
- Curriculum and Instruction (M.Ed.) - Secondary Education Specialization
- Educational Administration (M.Ed.) - Elementary Education Specialization
- Educational Administration (M.Ed.) - Secondary Education Specialization
- Human Sciences (M.S.) - Family and Consumer Sciences Education Specialization

College of Natural Sciences

Department of Biology & Microbiology

Master's Degrees

- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Human Biology (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization

Department of Chemistry & Biochemistry

Master's Degrees

- Chemistry (M.S.)
- Chemistry (M.S.) - Chemical Education Specialization

Doctoral Degrees

- Biochemistry (Ph.D.)
- Chemistry (Ph.D.)

Department of Geography & Geospatial Sciences

Master's Degrees

- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Department of Physics

Coursework Only

- Physics

College of Nursing

Department of Graduate Nursing

Master's Degrees

- Nursing (M.S.) - Clinical Nurse Leader Specialization
- Nursing (M.S.) - Family Nurse Practitioner Specialization
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nursing (M.S.) - Psychiatric Mental Health Nurse Practitioner Specialization

Doctoral Degrees

- Nursing (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Certificates

- Post-Graduate Clinical Nurse Leader Certificate
- Post-Graduate Family Nurse Practitioner Certificate
- Post-Graduate Nurse Educator Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

College of Pharmacy & Allied Health Professions

Department of Allied & Population Health

Master's Degrees

- Public Health (M.P.H.)

Department of Pharmaceutical Sciences

Doctoral Degrees

- Pharmaceutical Sciences (Ph.D.)

Department of Pharmacy Practice

Professional Doctoral Degrees

- Pharmacy (Pharm.D.)

Graduate School

Master's Degrees

- Interdisciplinary Studies (M.S.)

Jerome J. Lohr College of Engineering

Master's Degrees

- Engineering (M.Eng.)

Department of Agricultural & Biosystems Engineering

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization

Department of Civil & Environmental Engineering

Master's Degrees

- Civil Engineering (M.S.)

Doctoral Degrees

- Civil Engineering (Ph.D.)

Department of Construction & Operations Management

Master's Degrees

- Operations Management (M.S.)

Certificates

- Management Foundations Certificate
- Systems Management Certificate

Department of Electrical Engineering & Computer Science

Master's Degrees

- Computer Science (M.S.)
- Electrical Engineering (M.S.)

Doctoral Degrees

- Electrical Engineering (Ph.D.)

Department of Mathematics & Statistics

Master's Degrees

- Data Science (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Statistics (M.S.)

Doctoral Degrees

- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization

Certificates

- Advanced Graduate Mathematics Certificate
- Data Science Certificate
- Graduate Mathematics Certificate

Department of Mechanical Engineering

Master's Degrees

- Mechanical Engineering (M.S.)

Doctoral Degrees

- Mechanical Engineering (Ph.D.)

Programs & Degrees Listed by Degree Type

Master of Architecture (M.Arch.)

- Architecture (M.Arch.)

Master of Arts (M.A.)

- Communication and Media Studies (M.A.)
- English (M.A.)

Master of Education (M.Ed.)

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Curriculum and Instruction (M.Ed.) - Early Childhood Education Specialization
- Curriculum and Instruction (M.Ed.) - Elementary Education Specialization
- Curriculum and Instruction (M.Ed.) - Secondary Education Specialization
- Educational Administration (M.Ed.) - Elementary Education Specialization
- Educational Administration (M.Ed.) - Secondary Education Specialization

Master of Engineering (M.Eng.)

- Engineering (M.Eng.)

Master of Mass Communication (M.M.C.)

- Mass Communication (M.M.C.)

Master of Public Health (M.P.H.)

- Public Health (M.P.H.)

Master of Science (M.S.)

- Agricultural and Biosystems Engineering (M.S.)
- Agricultural Education (M.S.)
- Animal Science (M.S.)
- Athletic Training (M.S.)
- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemical Education Specialization
- Civil Engineering (M.S.)
- Computer Science (M.S.)
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Data Science (M.S.)
- Dietetics (M.S.)
- Economics (M.S.)
- Electrical Engineering (M.S.)
- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization
- Human Biology (M.S.)
- Human Sciences (M.S.) - Developmental Sciences Specialization
- Human Sciences (M.S.) - Family and Community Services Specialization
- Human Sciences (M.S.) - Family and Consumer Sciences Education Specialization
- Human Sciences (M.S.) - Family Financial Planning Specialization
- Human Sciences (M.S.) - Merchandising Specialization

- Interdisciplinary Studies (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Mechanical Engineering (M.S.)
- Nursing (M.S.) - Clinical Nurse Leader Specialization
- Nursing (M.S.) - Family Nurse Practitioner Specialization
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nursing (M.S.) - Psychiatric Mental Health Nurse Practitioner Specialization
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Operations Management (M.S.)
- Plant Science (M.S.)
- Sociology (M.S.) - Community Development Specialization
- Sport and Recreation Administration (M.S.)
- Statistics (M.S.)
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctor of Nursing Practice (D.N.P.)

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Doctor of Pharmacy (Pharm.D.)

- Pharmacy (Pharm.D.)

Doctor of Philosophy (Ph.D.)

- Agricultural and Biosystems Engineering (Ph.D.)
- Animal Science (Ph.D.)
- Biochemistry (Ph.D.)
- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization
- Chemistry (Ph.D.)
- Civil Engineering (Ph.D.)
- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization
- Electrical Engineering (Ph.D.)
- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization
- Mechanical Engineering (Ph.D.)
- Nursing (Ph.D.)
- Nutrition and Exercise Sciences (Ph.D.)
- Pharmaceutical Sciences (Ph.D.)
- Plant Science (Ph.D.)
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Academic Advising Certificate
- Advanced Graduate Mathematics Certificate
- Animal Science Certificate
- Community Development Certificate
- Data Science Certificate
- Family Financial Planning Certificate
- Financial and Housing Counseling Certificate
- Graduate Mathematics Certificate
- Grassland Management Certificate
- Management Foundations Certificate
- Merchandising Certificate
- Native Communities and Economic Development Certificate
- Post-Graduate Clinical Nurse Leader Certificate
- Post-Graduate Family Nurse Practitioner Certificate
- Post-Graduate Nurse Educator Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate
- Systems Management Certificate
- Transdisciplinary Childhood Obesity Prevention Certificate

Coursework Only

- French, German, Global Studies, History, Political Science, Philosophy, Religion, and Spanish
- Music
- Physics
- Psychology
- Studio Arts

Master's Degrees

Agricultural & Biosystems Engineering (M.S.)

Program Coordinator/Contact

Kasiviswanathan Muthukumarappan, Distinguished Professor/Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Agricultural Engineering 107, Box 2120
605-688-5661

Program Information

Graduate work in the Department of Agricultural and Biosystems Engineering leads to Master of Science in Agricultural and Biosystems Engineering, Doctor of Philosophy in Agricultural and Biosystems Engineering, and Doctor of Philosophy in Biological Sciences degrees.

Students who undertake graduate studies in Agricultural and Biosystems Engineering normally have as their goal a better understanding of the current theories, principles, issues, and problems in agricultural, environmental and biological systems. Graduate studies improve the student's ability to think critically and creatively, and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

The department offers students an opportunity to undertake research and advanced study in specialization areas such as food and biomaterial processing, physical properties of biological materials, natural resource engineering, structures, indoor environment, waste management and machine design.

Student Learning Outcomes

- Conduct Research or Design: Conduct research and/or design projects that demonstrate an ability to model, analyze, and design agricultural and biosystems engineering processes and systems.
- Understand the principles of agricultural and biosystems engineering: The student will articulate a solid understanding of fate fundamental principles of agricultural and biosystems engineering, including the area of specialization and supporting areas.
- Communicate effectively: The student will demonstrate an ability to communicate, both orally and in writing, technical information in an effective manner. (Communication Skills)

Course Delivery Format

The program engages students in lecture, laboratory, and in hands-on, field-based learning experiences.

Facilities & Services

The Agricultural and Biosystems Engineering Department is housed in the Agricultural Engineering Building. The entire building is dedicated to undergraduate and graduate instruction, research, and outreach projects that support the engineering needs of production agriculture, natural resource conservation, and value-added processing of the food and fiber produced in the region and nationally. Additional research and outreach projects take place at multiple field locations in the region. There are almost 17,000 square feet of space dedicated to industry-sponsored student design projects and cutting edge research, including a full fabrication shop and a computer lab to support these efforts. The department is also home to the South Dakota Water Resources Institute (SDWRI), dedicated to the proper stewardship of the state's water resources.

Student Engagement & Support Opportunities

Many students participate in activities such as internships and research projects. Other ABE opportunities are available via our student branch of the American Society of Agricultural and Biological Engineers (ASABE). In addition, engineering opportunities are available via organizations such as Society of Women Engineers, Engineers Without Borders, and others. The most outstanding students are honored by induction into the ABE honorary society of Alpha Epsilon, Agricultural honorary society of Gamma Sigma Delta and engineering honor societies such as Tau Beta Pi.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

- ABME 790 - Seminar (COM) Credits: 1
- STAT 541 - Statistical Methods II Credits: 3

ABE Electives

Credits: 9

- ABE 544 - Unit Operations of Biological Materials Processing Credits: 4
- ABE 544L - Unit Operations of Biological Materials Processing Laboratory Credits: 0
- ABE 555 - Principles Biological Separation Processing Credits: 3
- ABE 555L - Principles of Biological Separation Processes Laboratory Credits: 0
- ABE 732 - Advanced Hydrology in Agriculture Credits: 2
- ABE 733 - Ground Water Engineering in Agriculture Credits: 3
- ABE 734 - Advanced Irrigation Engineering Credits: 3
- ABE 748 - Bioseparations Credits: 3
- ABE 752 - Theoretical Micro-Climatology Credits: 2
- ABE 754 - Advanced Unit Operations of Food/Biomaterials Processing Credits: 3
- ABE 754L - Advanced Unit Operations of Food/Biomaterials Processing Laboratory Credits: 0
- ABE 763 - Instrumentation Credits: 3
- ABE 763L - Instrumentation Laboratory Credits: 0
- ABE 771 - Graduate Seminar Credits: 1
- Other elective courses from outside the department (such as in Computer Science, Math, Physics or another engineering department or another supporting department) may be used only if: (1) 500-level or higher, (2) they support a coherent plan of study, and (3) they are approved by the Major Advisor and Graduate School.

Select one of the following options

Option A - Thesis

- ABE 798 - Thesis Credits: 1-7 (5-8 credits required)
- Electives Credits: 9-12

Option B - Research/Design Paper

- ABE 788 - Master's Research Problems/Projects (COM) Credits: 1-2 (2-3 credits required)
- Electives Credits: 16-17

Total Required Credits: 30 (Option A), 32 (Option B)

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 550 paper-based, 79 Internet-based
IELTS: 5.5

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Agricultural Education (M.S.)

Program Coordinator/Contact

P. Troy White, Assistant Professor
Department of Teaching, Learning, and Leadership
Wenona Hall 106
605-688-4546

Program Information

The Master's degree in Agricultural Education is designed to meet the needs of individuals who work (or plan to work) in agricultural education, non-profit organizations, post-secondary education or in agriculture leadership. The department of Teaching, Learning, and Leaderships provides professional preparation for those who want to expand their knowledge and advance themselves professionally in the agricultural industry.

Students are able to choose from either a program in which only coursework is required or a program in which they must complete a research project or creative component. If a student elects to complete a thesis (Plan A) the program will include 30 credit hours. If a student elects to complete a creative component (Plan B), the student must complete a minimum of 32 credit hours in order to graduate.

If a full coursework option is selected (Plan C), the student must complete a minimum of 36 credit hours.

Student Learning Outcomes

- Knowledge of current issues: The graduate of the curriculum and instruction program displays knowledge of current practices, research, theories, and issues in education.
- Knowledge of learning: The graduate of the curriculum and instruction program demonstrates knowledge of how students learn and is able to effectively apply that knowledge within a variety of educational roles. (Transferable Skill: Teaching/Training)
- Curricular processes: The graduate of the curriculum and instruction program effectively participates in curricular processes. (Transferable Skill: Teaching/Training)
- Communication skills: The graduate of the curriculum and instruction program effectively communicates. (Transferable Skill: Teaching/Training)
- Foundational lifetime learning skills: The graduate of the curriculum and instruction program displays commitment to professional involvement and growth through continual learning, reflective practice, and collaboration. (Transferable Skill: Teaching/Training)
- Technology: The graduate of the curriculum and instruction program makes appropriate use of educational technology.

Accreditation, Certification, Licensure

This program can lead to alternative certification in agricultural education at the secondary level in South Dakota.

Course Delivery Format

The program can be completed online through the Brookings Campus. Some course offerings will be available face to face.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- AGED 650 - Foundations of Agricultural Education Credits: 3
- EDER 610 - Introduction to Research Credits: 3
- EDER 614 - Advanced Educational Research Design and Analysis Credits: 3
- EDFN 600 - Advanced Pedagogy Credits: 3
- EPSY 740 - Advanced Educational Psychology Credits: 3

Select one of the following options

Option A - Thesis

- AGED 798 - Thesis (COM) Credits: 1-7 (5-7 credits required)
- Electives Credits: 8-10

Option B - Research/Design Paper

- AGED 788 - Research Problems in Agricultural Education (COM) Credits: 1-7 (3 credits required)
- Electives Credits: 14

Option C - Coursework Only

- Electives Credits: 21

Total Required Credits: 30 (Option A), 32 (Option B), 36 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: 525 paper-based, 71 Internet-based or higher
IELTS: 5.5

Applicants must provide a resume, goal statement, and two professional letters of reference as part of the application process.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Animal Science (M.S.)

Program Coordinator/Contact

Jeff Clapper, Professor
Department of Animal Science
Animal Science Complex 103A
605-688-5166

Program Information

The Department of Animal Science offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Animal Science, or the Doctor of Philosophy degree in Biological Sciences. Faculty and graduate students are actively involved in basic and/or applied research in the fields of nutrition, reproductive physiology, animal breeding and genetics, meat science, gastrointestinal microbiology and animal production.

With the multi-disciplinary approaches towards production efficiency, product enhancement, and basic science graduate students gain strong skill sets. The graduate programs are administered in collaboration with the Departments of Animal Science, Dairy Science, Veterinary and Biomedical Sciences, and Agricultural and Biosystems Engineering. The Department is committed to providing graduate students with quality educational and research experiences and preparing them to meet the challenges of a competitive job market upon graduation.

This program allows for considerable latitude in the education and training of students. Identification of a major professor with resources to support the student's thesis project is required for unconditional acceptance into the program. An advisory committee will be formed for each student. The advisory committee will work with the student to design a unique and individualized plan of study to meet the interests and needs of the student. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available and encouraged.

Student Learning Outcomes

- Communication skills: Demonstrate effective written and oral communication skills
- Apply methods and interpret results: Apply scientific method, experimental design, statistically analyze data, and interpret results
- Demonstrate technical methods: Demonstrate a proficiency in technical methods necessary to conduct research in their field
- Professional Ethics: Demonstrate an understanding of professional ethics (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Critical thinking: Critically evaluate data and solve problems in their field
- Diversity and inclusion: Relate with people of diverse backgrounds with integrity and professionalism

Course Delivery Format

Program coursework is available on campus, in classroom and laboratory settings, as well as field-based settings.

Facilities & Services

Training and experience in research methods are among the most important facets of a well-rounded graduate student education. Excellent facilities and large herds and flocks of livestock are available for Animal Science research at South Dakota State University. Modern research facilities, including state-of-the-art facilities for cow-calf management and ruminant nutrition, along with new swine education and research facilities, both on-site and off-site, were completed in 2016.

Student Engagement & Support Opportunities

The Department conducts cutting edge research that creates opportunities for graduate students. Qualified students may apply for a Graduate Research Assistant position.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours

Core Requirements

- AS 790 - Seminar Credits: 1

Select from the following courses

12-14 credits of discipline specific courses are required for a total requirement of 30 credits.

- AS 533 - Applied Mineral Nutrition of Livestock Credits: 1
- AS 534 - Applied Vitamin Nutrition of Livestock Credits: 1
- AS 711 - Ruminology Credits: 3

- AS 712 - Ruminant Nutrition Credits: 3
- AS 720 - Advanced Selection of Domestic Animals Credits: 3
- AS 730 - Endocrinology Credits: 3
- AS 732 - Advanced Physiology of Reproduction Credits: 3
- AS 734 - Protein and Energy Nutrition Credits: 3
- AS 736 - Monogastric Nutrition Credits: 3
- AS 740 - Metabolism Credits: 3
- AS 750 - Animal Growth and Development Credits: 3
- AS 753 - Research Topics in Meat Science Credits: 3
- DS 731 - Laboratory Techniques in Dairy Science Credits: 3
- PS 756 - Quantitative Genetics Credits: 3
- STAT 541 - Statistical Methods II Credits: 3
- STAT 661 - Design of Experiments I Credits: 3
- VET 576 - Advanced Mammalian Physiology Credits: 4

Total Required Credits: 30 (Option A)

Notes

Develop a Plan of Study no later than the end of the first semester of study.

- The Advisory Committee will work with the student to select the discipline specific courses intended to prepare the student in their emphasis area.

Develop a research proposal no later than the end of the first semester.

Additional Admission Requirements

GRE: Not required
TOEFL: required score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

Two letters of reference, a letter of interest and intent, and a resume.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Architecture (M.Arch.)

Program Coordinator/Contact

Brian Rex, Department Head
Department of Architecture
Chicoine Architecture, Mathematics and Engineering 378, Box 2225
605-688-4841

Program Information

The Master of Architecture (M.Arch.) program prepares professional leaders with specialized knowledge and skills to meet the nation's needs in design, build, and education. The aim of the program is to prepare architecture majors to practice in a full range of contexts and settings.

The Master of Architecture degree is comprised of a 48 credit hour, four semester graduate curriculum which rounds out the department's seven semester NAAB accreditation candidate professional program. (See department website (www.sdstate.edu/arch/) for NAAB Professional Program details.)

Student Learning Outcomes

- Research: Understand the theoretical and applied research methodologies and practices used during the design process.
- Project Implementation: Demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.
- Integrative Decision-Making: Be able to make design decisions within a complex architectural project while demonstrating broad integration and consideration of environmental stewardship, technical documentation, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems and assemblies.
- Mediated Practices: Use a diverse range of mediated practices to think about and convey architectural ideas, including writing, investigating, speaking, drawing, and modeling.
- Ethics: Understand the ethical issues involved in the exercise of professional judgment in architectural design and practice and understanding the role of the NCARB Rules of Conduct and the AIA Code of Ethics in defining professional conduct.
- Team Building: Understand the methods for selecting consultants and assembling teams; identifying work plans, project schedules, and time requirements; and recommending project delivery methods.

Course Delivery Format

The curriculum is interactive, haptic and performance based, offering problem solving experiences in all major areas of professional practice.

Available Options for Graduate Degrees

Master of Architecture	Option C - Coursework Only	48 Credit Hours

Core Requirements

- ARCH 501 - Writing Architecture Credits: 3
- ARCH 502 - Reading Architecture Credits: 3
- ARCH 534 - Technology of Systems Credits: 3
- ARCH 543 - Urban History Credits: 3
- ARCH 544 - History of Profession Credits: 3
- ARCH 552 - Comprehensive Building Design Credits: 6
- ARCH 603 - Practicing Architecture Credits: 1
- ARCH 631 - Technology of Envelopes Credits: 2
- ARCH 632 - Technology of Interiors Credits: 2
- ARCH 653 - Independent Performance Credits: 6
- ARCH 654 - Research Studio Credits: 5
- ARCH 654L - Research Lab Credits: 2
- ARCH 655 - Independent Documentation Credits: 3
- ARCH 673 - Professional Practice I Credits: 3
- ARCH 674 - Professional Practice II Credits: 3

Total Required Credits: 48 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 525 paper-based, 71 Internet-based
IELTS: 5.5

Students may be admitted fully or provisionally. Students provisionally admitted with insufficient graphic capacity may be required to take fundamental drawing and / or design courses the Fall semester before beginning professional study.

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Athletic Training (M.S.)

Program Coordinator/Contact

Trevor Roiger, Assistant Professor
Department of Health and Nutritional Sciences
Wagner Hall 135, Box 2275A
605-688-5824

Program Information

The South Dakota State University Master of Science in Athletic Training (AT) program aspires to prepare engaged practitioners and contemporary leaders of athletic training. Through the cultivation of a learning environment implementing innovative and best practice pedagogies, the program exists to challenge students to become reflective, professional, and ethical practitioners dedicated to improving patients' quality of life. The overall goals of the program are to provide students with knowledge and experiences which improve the depth and breadth of professional competency in athletic training, enhance written and oral communication abilities, and promote an appreciation for the ways research can inform practice, and/or prepare students for advanced study in the field.

The Master of Science in Athletic Training prepares students for entry into clinical practice as licensed athletic trainers. The program is two years in length and includes a blend of coursework and clinical experiences completed under the

supervision of preceptors who are appropriately credentialed health care professionals. Clinical experiences will include working with a variety of patients in high schools, colleges/universities, sports medicine clinics, and medical and rehabilitation clinics. Upon successful completion of the curriculum, students will be eligible to challenge the national certifying examination for athletic trainers through the Board of Certification (BOC).

Each year the Master of Science in AT program admits (1) new cohort of students who begin their plan of study during the summer term. Admission to the program is on a competitive basis. For initial consideration, students must be admitted into Graduate School at SDSU. To complete their eligibility for admission, candidates must also complete a secondary selective admissions application specifically for the AT program.

Student Learning Outcomes

- Demonstrate competence and confidence: Provide confident and competent, patient-centered care that meets the essential and expected practices of Athletic Training practice in order to improve patient-outcomes. (Transferable Skill: Career Preparedness)
- Demonstrate ethical behaviors: Recognize and demonstrate behaviors that reflect a commitment to legal, ethical, and professional athletic training practice in a diverse and evolving healthcare environment. (Transferable Skill: Diversity Awareness; Ethics - Moral Decision Making/Moral Reasoning)
- Teamwork and collaboration: Effectively collaborate within an interdisciplinary team to provide consistent, efficient healthcare that optimizes patient outcomes.
- Critical thinking: Integrate the best available evidence, clinical expertise, and patient values to provide safe and effective care
- Prioritize the patient: Demonstrate the ability to prioritize patient safety an improve quality.
- Communication: Communicate, manage knowledge, mitigate error and support decision making using information technology. (Communication Skills)

Accreditation, Certification, & Licensure

Upon completion of the program, students are eligible to challenge the national certifying examination for athletic trainers through the Board of Certification. The Master of Science in Athletic Training at South Dakota State University was awarded initial accreditation by the Commission on Accreditation of Athletic Training Education (CAATE) in August, 2008. As a professional degree program, it is not designed for individuals who already have a degree in Athletic Training or are eligible for certification in Athletic Training.

Academic Requirements

Students enrolled in the Athletic Training program must pay for a background check before they can be placed at any of the clinical sites. Approximate cost of the background check is $75.00.

Course Delivery Format

The program consists of lecture, laboratory, and clinical experience learning opportunities.

Student Support & Engagement Opportunities

The Department of Health and Nutritional Sciences aims to provide premier academic programs and high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified graduate students.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	60 Credit Hours
	Option B - Research/Design Paper	57 Credit Hours

Core Requirements

- AT 600 - Introduction to Patient Management Credits: 2
- AT 610 - Interventions I Credits: 3
- AT 611 - Prophylactic Interventions Credits: 1
- AT 651 - Clinical Experience I Credits: 1
- AT 652 - Clinical Experience II Credits: 1
- AT 722 - Patient Examination and Treatment I Credits: 6
- AT 725 - Principles of Acute Care in Athletic Training Credits: 3
- AT 725L - Principles of Acute Care Lab Credits: 0
- AT 732 - Patient Examination and Treatment II Credits: 6
- AT 735 - Health Care Administration for Athletic Training Credits: 2
- AT 740 - Functional Movement Credits: 3
- AT 740L - Functional Movement Lab Credits: 0
- AT 742 - General Medical Examination Credits: 3
- AT 753 - Clinical Experience III Credits: 2
- AT 754 - Clinical Experience IV Credits: 2
- AT 755 - Clinical Experience V Credits: 5
- AT 756 - Clinical Experience VI Credits: 5
- BIOL 721 - Advanced Human Anatomy Credits: 4
- BIOL 721L - Advanced Human Cadaver Dissection Credits: 0
- NUTR 715 - Public Health Nutrition Credits: 3
- NUTR 782 - Epidemiology Credits: 3

Select one of the following options

Option A - Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (5 credits required)

Option B - Research/Design Paper

- AT 788 - Master's Research Problems/Projects (COM) Credits: 1 (2 credits required)

Total Required Credits: 60 (Option A), 57 (Option B)

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

Program Application

Admission into the MSAT program is on a competitive basis. Each year the AT program uses a Primary (Graduate School Application) and Secondary (Program Application) Selective Admission Process to admit (1) new cohort of students who will begin their program of study during the Summer term. The AT program begins reviewing applications on a rolling basis beginning in July of the year preceding the start of the next cohort. Applications are excepted until March 15th.

In order to complete all application requirements, students must:

- Complete the Graduate School Application and submit this to the South Dakota State University Graduate School.
- Complete the Secondary Selective Admission Process/Program Application and submit application materials through ATCAS (Athletic Training Centralized Application Service) or directly to Dr. Trevor Roiger, Athletic Training program director. Students wishing to bypass ATCAS and apply directly to the MS in Athletic Training Program can find the program-specific application materials on the program webpage. These materials can be submitted directly to:

  Dr. Trevor Roiger, AT, ATC
  Box 2275A, Wagner 135
  Department of Health and Nutrition Sciences
  Brookings, SD 57007

Verification and Demonstration of Technical Standards

Students will receive a copy of the program's technical standards as part of the application process. They will be asked to verify that they have received a copy, understand the concepts and work with the program if accommodations are necessary. Technical standards set the guidelines for the application process and progress in the major by describing the essential skills considered necessary for admitted students to possess in order to complete the responsibilities associated with being an athletic training student and subsequently, a practicing athletic trainer. Technical Standards are requirements of the Commission on Accreditation of Athletic Training Education (CAATE). Technical standards are assessed at the time of application, during progress and for completion of the program. Skills are described in five areas: cognitive ability/skills, psychomotor skill, affective behaviors, interpersonal skills, and knowledge or/interest in the profession of athletic training. The technical standards also describe policy statements regarding accommodations, standards of English as a second language, and eligibility requirements for the BOC national certifying examination and state licensing examinations.

Secondary Selective Admissions Minimum Selection Criteria

The criteria listed below represents additional prerequisite requirements.

- Completed Health Assessment
- Verification of Technical Standards
- Cumulative (or Junior-Senior) GPA of 3.0 or better

- Completion of the Athletic Training Observation Record
- Completed Program application, letter of interest, three letters of reference and a personal interview
- **Successful completion (C or better) of the following courses or their equivalents.***

Basic and Applied Sciences

- BIOL 151-151L General Biology I and Lab
  or
  BIOL 101-101L Biology Survey I and Lab
- BIOL 221- 221L Human Anatomy and Lab
- BIOL 325- 325L Physiology and Lab
- CHEM 112-112L General Chemistry I and Lab
  and CHEM 114-114L General Chemistry II and Lab
  or
  CHEM 106-106 Chemistry Survey and Lab
  and CHEM 108-108L Organic and Biochemistry and Lab
- EXS 350 Exercise Physiology
- EXS 454 Biomechanics
- PHYS 111-111L Introduction to Physics I and Lab

Social Sciences

- PSYC 101 General Psychology

Nutrition

- NUTR 315 Human Nutrition

Statistics

- STAT 281 Statistics

Optional

- AT 164 Introduction to Athletic Training
- EXS 354 Prevention and Care of Athletic Injuries
- HLTH/HSC 443 Public Health Sciences

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 8 credits of graduate-level coursework in the M.S. in Athletic Training may be used to satisfy requirements for an undergraduate degree. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

Financial Aid

Students on the 5-year accelerated track to completion of the M.S. in Athletic Training (3+2 with Exercise Science) are accepted into the professional athletic training program at the end of the third year of their undergraduate degree. As such, these students are classified as undergraduates during their first 3 years of study, but as graduate students once they have been accepted into and begin coursework in the M.S. in Athletic Training program. While graduate students qualify for greater amounts of financial aid in the form of unsubsidized loans, they are no longer eligible for Pell Grants or Subsidized Loans.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Biological Sciences (M.S.)

Program Coordinator/Contact

Nicole Lounsbery, Director
Graduate School
130 Morrill Hall, Box 2201
605-688-4181

Program Information

This is a collaborative graduate program leading to the Master of Science degree in Biological Sciences. Departments that cooperate in the program are the Departments of Agricultural & Biosystems Engineering; Agronomy, Horticulture, & Plant Science; Biology & Microbiology; Dairy & Food Science; Natural Resource Management; and Veterinary & Biomedical Sciences. Specializations and emphases are available in the following areas:

- Biology Specialization
- Dairy Science Specialization
- Food Science Specialization
- Microbiology Specialization
- Natural Resource Management Specialization
- Veterinary Microbiology Emphasis
- Veterinary Pathology Emphasis

The masters and doctoral programs in Biological Sciences allow for considerable latitude in the education and training of students. Students interested in advanced studies in the biological sciences will have the opportunity to tailor a program that meets their interest by selecting courses offered by faculty from the participating departments. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available. Generally, identification of a major professor with resources to support the student's dissertation project is required for unconditional acceptance into the program. Therefore, interested persons should make application for program admission well in advance of the anticipated date of enrollment. Please refer to each departmental section for a listing of the graduate faculty and details regarding the areas of study offered in this program. Inquiries should be made directly to the department representing the discipline of interest.

Biological Sciences Program Objectives

Graduates of the Master of Science in Biological Sciences will:

- Have a deep understanding and knowledge of biological principles related to the chosen discipline
- Apply principles into practice in the field or industry setting
- Have an appreciation and working knowledge of scientific research methods in the discipline
- Demonstrate ability to interpret research findings and understand the implications
- Write a coherent thesis or research paper and demonstrate the ability to write a scientific journal paper
- Demonstrate competence in the major course topics covered by the student's graduate plan of study
- Demonstrate the ability to use ethics in decision making and planning
- Demonstrate information literacy for science-based decision making and lifetime learning

Student Learning Objectives

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a MS degree holder.
- Communication skills: Be able to effectively express themselves orally and in written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Specialization: Specialize in some area of biology, biotechnology and/or microbiology, but still be broadly based in knowledge in cellular and molecular biology.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional Development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Facilities & Services

A variety of outstanding laboratories, green houses, McCrory Gardens and Arboretum, livestock units, and field stations are available for education and research. Many Biological Sciences faculty hold appointments in the South Dakota Agricultural Experiment Station.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Option A - Thesis

- XXX 790 - Seminar Credits: 2
- XXX 798 - Thesis Credits: 5-10
- 3 or more credits of STAT courses numbered 500-level or higher
- 6 additional course credits, designed to meet the interests and individual needs of the student
- Electives Credits: 9-14

Option B - Research/Design Paper

- XXX 790 - Seminar Credits: 2
- XXX 788 - Master's Research Problems/Project minimum Credits: 2-3
- 3 or more credits of STAT courses numbered 500-level or higher
- Electives Credits: 18-19

Total Required Credits: 30 (Option A), 32 (Option B)

Additional Admission Requirements

GRE: Not a general requirement, but individual departments may require GRE
TOEFL: required score of 525 paper-based, 71 Internet-based
IELTS: 5.5

(Individual departments may have different requirements for GRE, TOEFL and IELTS.)

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Biology Specialization

Program Coordinator/Contact

Heike Bücking, Department Head
Radhey Kaushik, Professor/Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offer expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment and field research sites available to carry out their research projects. The learning environment, scholarly excellence and quality of teaching are areas of strength in the department's Graduate Program.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a MS degree holder.
- Communication skills: Be able to effectively express themselves orally and in written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Specialization: Specialize in some area of biology, biotechnology and/or microbiology, but still be broadly based in knowledge in cellular and molecular biology.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional Development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

For details see specific program: Biological Sciences (M.S.)

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Option A - Thesis

- XXX 790 - Seminar Credits: 2
- XXX 798 - Thesis Credits: 5-10
- 3 or more credits of STAT courses numbered 500-level or higher
- 6 additional course credits, designed to meet the interests and individual needs of the student
- Electives Credits: 9-14

Option B - Research/Design Paper

- XXX 790 - Seminar Credits: 2
- XXX 788 - Master's Research Problems/Project minimum Credits: 2-3
- 3 or more credits of STAT courses numbered 500-level or higher
- Electives Credits: 18-19

Total Required Credits: 30 (Option A), 32 (Option B)

Master's Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Presentation of Thesis/Paper (public) during last semester of program
- Oral defense of Thesis (committee) during last semester of program
- Thesis (Plan A) - OR - Research Paper (Plan B) completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL: Score of 575 paper-based, 90 Internet based
IELTS: 6.5

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicants involvement in research, the applicants research interest, and career goals is also required.

Retention in the program is dependent on formation of a committee and completion of review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review annually.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Dairy Science Specialization

Program Coordinator/Contact

Joseph Cassady, Interim Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Dairy and Food Science Department provides research opportunities leading to Masters and PhD degrees. SDSU is one of two universities in the US with a Dairy Science Program that offers Dairy Production and Manufacturing majors. It is equipped with excellent laboratories, and a state of the art dairy processing plant which has the capability of processing fluid milk, cheese, butter, ice cream, concentrated and dried products, and other products. It also has a dairy research and training facility where a herd of 300 Holstein and Brown Swiss cattle for teaching and research is maintained. Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment in the Genomics Lab and other departments on campus, including, Veterinary and Biomedical

Sciences, and Health and Nutritional Sciences Programs are also available. Graduate students accepted in the program will have opportunities to utilize these facilities to develop basic and/or applied research programs in dairy product processing, microbiology, chemistry, food safety, dairy cattle nutrition, metabolism, breeding, microbiology of the rumen, immunology, and management, while interacting with well qualified faculty. The SDSU Dairy Science Program, in collaboration with the Food Science and Nutrition Program at the University of Minnesota and the Food Science and Human Nutrition Program at Iowa State University, is the Midwest Dairy Foods Research Center. This provides graduate students in the manufacturing area a unique opportunity to be involved with current issues and research needs.

Student Learning Outcomes

- Exhibit knowledge concerning dairy science, either manufacturing or production, at a level appropriate to a M.S. degree holder.
- Demonstrate adequate presentation and communication skills, including thesis and journal article writing, poster and oral presentation skills.
- Demonstrate information literacy for science-based inquiry and critical review of existing knowledge sources.
- Demonstrate an understanding of scientific methods and application of analytical techniques for solving research problems.
- Develop a deep understanding of experimental design, statistical analysis and use of inferential statistics to make valid judgements based on scientific data.
- Specialize research focus in some area such as dairy manufacturing, dairy microbiology or dairy production, but still be broadly based in knowledge of dairy science.
- Be able to conduct and publish scholarly research. (Option A)
- Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Student Engagement & Support Opportunities

An application to the graduate program serves as an application for a graduate assistantship. Qualified applicants may be eligible for financial aid in the form of departmental research assistantships for masters and doctoral students.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours

Core Requirements

For details see specific program: M.S. in Biological Sciences.

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Option A - Thesis

- XXX 790 - Seminar Credits: 2
- XXX 798 - Thesis Credits: 5-10
- 3 or more credits of STAT courses numbered 500-level or higher
- 6 additional course credits, designed to meet the interests and individual needs of the student
- Electives Credits: 9-14

Total Required Credits: 30 (Option A)

Additional Academic Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

At least two letters of reference and a personal statement that includes a description of the applicants' involvement in research, the applicant's research interest, and career goals.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Food Science Specialization

Program Coordinator/Contact

Joseph Cassady, Interim Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Food Science program offers excellent opportunities for graduate level coursework and research leading to academic or industry careers in Food Science. Graduate students receive advanced preparation related to food processing, product development, and food safety. Food Science is a multi-disciplinary program that is administered by the Department of Dairy and Food Science, but may also include such diverse areas as animal science, food grain processing, and agricultural & biosystems engineering.

Student Learning Outcomes

- Exhibit knowledge concerning food science at a level appropriate to a M.S. degree holder.
- Demonstrate adequate presentation and communication skills, including thesis and journal article writing, poster and oral presentation skills.
- Demonstrate information literacy for science-based inquiry and critical review of existing knowledge sources.
- Demonstrate an understanding of scientific methods and application of analytical techniques for solving research problems.
- Develop a deep understanding of experimental design, statistical analysis and use of inferential statistics to make valid judgements based on scientific data.
- Specialize research focus in some area of food processing, food product development, food microbiology or food safety, but still be broadly based in knowledge in food science.
- Be able to conduct and publish scholarly research. (Option A)
- Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

For details see specific program: M.S. in Biological Sciences.

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- FS 551 - New Food Product Development Credits: 4
- FS 551L - New Food Product Development Laboratory Credits: 0
- XXX 790 - Seminar Credits: 2
- 3 or more credits of STAT courses numbered 500-level or higher

Select one of the following options

Option A - Thesis

- XXX 798 - Thesis Credits: 5-10
- Electives Credits: 7-12

Option B - Research/Design Paper

- XXX 788 - Master's Research Problems/Project minimum Credits: 2-3
- Electives Credits: 16-17

Total Required Credits: 30 (Option A), 32 (Option B)

Additional Academic Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

At least two letters of reference and a personal statement that includes a description of the applicants' involvement in research, the applicant's research interest, and career goals.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Microbiology Specialization

Program Coordinator/Contact

Heike Bücking, Department Head
Radhey Kaushik, Professor/Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offer expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment and field research sites available to carry out their research projects. The learning environment, scholarly excellence and quality of teaching are areas of strength in the department's Graduate Program.

Student Learning Outcomes

- Program content: Graduates will demonstrate fundamental knowledge in biological or microbiological sciences broadly focused on cellular and molecular biology concepts and will specialize in specific area of biology, microbiology or molecular biology.
- Content – Research: Graduates will carry out research and scholarly activity in analysis of scientific data using statistics.
- Communication skills: Graduate will demonstrate effective oral and written communications skills in expressing and reporting scientific findings and concepts. (Communication Skills)
- Intellectual and critical thinking: Graduates will demonstrate effective intellectual and critical thinking traits. (Transferable Skill: Intellectual Traits)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

For details see specific program: Biological Sciences (M.S.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Option A - Thesis

- XXX 790 - Seminar Credits: 2
- XXX 798 - Thesis Credits: 5-10
- 3 or more credits of STAT courses numbered 500-level or higher
- 6 additional course credits, designed to meet the interests and individual needs of the student
- Electives Credits: 9-14

Option B - Research/Design Paper

- XXX 790 - Seminar Credits: 2
- XXX 788 - Master's Research Problems/Project minimum Credits: 2-3
- 3 or more credits of STAT courses numbered 500-level or higher
- Electives Credits: 18-19

Total Required Credits: 30 (Option A), 32 (Option B)

Master's Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Presentation of Thesis/Paper (public) during last semester of program
- Oral defense of Thesis (committee) during last semester of program
- Thesis (Plan A) - OR - Research Paper (Plan B) completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL: Score of 575 paper-based, 90 Internet based
IELTS: 6.5

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicants involvement in research, the applicants research interest, and career goals is also required.

Retention in the program is dependent on formation of a committee and completion of review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review annually.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Natural Resource Management Specialization

Program Coordinator/Contact

Michele Dudash, Department Head
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138, Box 2140B
605-688-6121

Program Information

The Natural Resource Management specialization will provide training in ecology, evolution, environmental sciences, and range areas of expertise with a focus on basic and applied research.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a MS degree holder.
- Communication skills: Be able to effectively express themselves orally and in written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Specialization: Specialize in some area of biology, biotechnology and/or microbiology, but still be broadly based in knowledge in cellular and molecular biology.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional Development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Facilities & Services

The department is housed within the McFadden Biostress Laboratory at SDSU.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

- NRM 790 - Seminar Credits: 1 (2 credits required)
- STAT courses numbered 500 level or higher Credits: 3
- Additional course credits from BOT, EES, NRM, RANG, or WL numbered 500-level or higher Credits: 6

Select one of the following options

Option A - Thesis

- BIOS 798 - Thesis (COM) Credits: 1-10 (5-10 credits required)
- Electives Credits: 9-14

Option B - Research/Design Paper

- NRM 788 - Master's Research Problems/Projects Credits: 1-3 (2-3 credits required)
- Electives Credits: 18-19

Total Required Credits: 30 (Option A), 32 (Option B)

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Chemistry (M.S.)

Program Coordinator/Contact

Douglas Raynie, Department Head
Jihong Cole-Dai, Graduate Program Coordinator
Department of Chemistry and Biochemistry
Avera Health and Science Center 131, Box 2202
605-688-5151

Program Information

The Department's chemistry faculty research programs fall into the thematic focus areas of environmental chemistry and green chemistry, chemical sensor development, organic synthesis, materials chemistry, natural products chemistry, and chemical education. Within these multidisciplinary and interdisciplinary focus areas, students can select research projects that involve the traditional subdisciplines of chemistry -- analytical, biochemistry, inorganic, organic and physical. Currently active research projects in the Department focus on various aspects of analytical chemistry, drug discover and delivery, synthesis or photoactive materials including polymers, materials chemistry and self assembly, chromatography, the chemistry of cell membranes, cancer biology, environmental and green chemistry, chemistry of climate change, photo-physical chemistry, natural products synthesis, biophysical chemistry, computational chemistry, and solid-state NMR. For additional information about these options review the descriptions of current faculty research interests on the Department website.

In addition to a traditional thesis-based (Option A) M.S. degree, the Department also offers a predominantly on-line M.S. in chemistry in chemical education. This is a non-thesis (Option B) degree that focuses on the content necessary for practicing high school teachers to achieve highly qualified status. Admission in this program is limited to practicing high school science teachers, students interested in the thesis-based M.S. degree in chemical education should specify this on the application for admission.

Research Instrumentation

The Department is equipped with modern instrumentation core facilities to support its research program. These facilities are readily available to graduate students for hands-on experience after successfully completing a short training course.

- **NMR core facility** includes 600, 400, and 200 MHz solution FT-NMR spectrometers and 400, 300, 100 MHz wide-bore solid-state NMR spectrometers.
- **Core campus mass spectrometry facility** consists of a high-resolution magnetic sector mass spectrometer with EI and CI sources and GC, HPLC, pyrolysis and fast-atom bombardment capabilities; a MALDI-TOF mass spectrometer; a Eksigent/Thermo LTQ ESI LC-MS/SM dedicated to "bottom-up" proteomics studies; and an Applied Biosystems SCIEX QTRAP ESI LC-MS/MS dedicated to small molecule and metablomics characterizations.
- **Core campus proteomics facility** has all the necessary equipment to prepare samples for mass-spectrometry-based proteomics characterizations.
- **Optical Spectroscopy lab** containing two FTIR spectrometers with far-IR capabilities; time-resolved spectrofluorometer; atomic absorption; and diode-array UV-Vis spectrophotometers.
- The Department is home to multiple state of the art fluorescence microscopes for the analysis of biochemical reactions involving purified molecules and within living cells. These instruments including spinning disk confocal microscopy, total internal reflection fluorescence (TIRF) microscopy, targeted photo-bleaching, instrumentation of for ensemble and single-molecule fluorescence-resonance energy transfer (FRET) experiments and fluorescence-correlation spectroscopy, and optogenetics capabilities. The department also houses cell/tissue culture facilities, large- and small-scale protein-purification equipment and biophysical characterization capabilities including an isothermal titration calorimetry. Campus computer facilities (including a Beowulf supercomputer cluster) are readily available. Individual groups maintain their own systems for molecular modeling, word processing or data manipulation. Direct, on-line computer access to chemical and biochemical literature databases such as Chemical Abstracts and Web of Science are provided by the Department.
- In addition to these departmental resources, individual research groups also maintained instrumentation including supercritical fluid chromatography and extraction, differential scanning calorimetry, and laser-light scattering. Campus supercomputer facilities and on-line computer access to other on-line information sources are readily available.

Student Learning Outcomes

- Comprehensive knowledge: Graduate degree recipients will possess comprehensive disciplinary knowledge with high competence. (Communication Skills)
- M.S. degree recipients will be able to demonstrate chemistry knowledge and advanced technical skills.
- Graduate degree recipients will be prepared to demonstrate knowledge and technical skills in a large variety of professional fields, careers and endeavors.
- Graduate degree recipients will communicate effectively in an oral, written and visual manner to technical audiences and stakeholders.
- Graduate degree recipients will possess and practice high standards of scientific integrity and professional ethics.
- Trans-disciplinary professional skills: Graduate degree recipients will possess trans-disciplinary professional skills. (Transferable Skill: Mentoring; Diversity Awareness; Entrepreneurship)
- Graduate degree recipients will apply creativity to innovation.
- Graduate degree recipients will recognize the importance of workplace diversity in culture, gender, perspective, and experience.
- Graduate degree recipients will work effectively with peers and develop mentoring skills.
- Graduate degree recipients will develop an understanding of the intellectual property process and the business needs of their workplace.
- Students will be familiar with the research literature of their chemistry subdiscipline and have the ability to keep abreast of major developments to acquire a working background in any area. (Communication Skills)
- Students will be able to demonstrate skill in the recognition of meaningful problems and questions for research.
- Students will possess technical skill in laboratory manipulation.
- Students will be able to demonstrate skill in designing experimental protocols and in conducting productive self-directed research.

Course Delivery Format

Courses offered in the M.S. Chemistry curriculum are taught in a variety of formats which address student learning outcomes. Didactic (lecture) methods ensure the development of advanced knowledge of chemistry. Practical (laboratory) methods ensure the development and maturation of laboratory skills and training and these opportunities are developed in the research laboratory. A combination of didactic and practical methods ensures the successful completion of the graduate thesis research project.

Facilities & Services

The Department is housed in the Avera Health and Science Center, which provides 100,000 sq. ft. of research and instructional space.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours

Core Requirements

Select any four of the following:

- CHEM 701 - Advanced Organic Chemistry I Credits: 3

  or CHEM 703 - Advanced Physical Chemistry Credits: 3
  or CHEM 704 - Advanced Inorganic Chemistry Credits: 3
  or CHEM 705 - Principles of Biochemistry Credits: 2-5 (3 credits required)
  or CHEM 706 - Advanced Analytical Chemistry Credits: 3
- CHEM 790 - Seminar (COM) Credits: 1 (2 credits required)
- CHEM 798 - Thesis (COM) Credits: 1-7 (9 credits required)

- CHEM Electives Credits: 7

Total Required Credits: 30 (Option A)

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL: Score of 580 paper-based, 92-93 Internet-based
IELTS: 5.5

Applications are accepted for admission to the M.S. program in fall only. Students are strongly encouraged to submit their applications for admission no later than January 15. Initial offers of admission will be made no later than the first week of February.

In addition to the materials required by the Graduate School, the Department of Chemistry and Biochemistry requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Three letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Chemistry (M.S.) - Chemical Education Specialization

Program Coordinator/Contact

Douglas Raynie, Department Head
Matthew Miller, Graduate Program Coordinator
Department of Chemistry and Biochemistry
Avera Health and Science Center 131, Box 2202
605-688-5151

Program Information

In addition to a traditional thesis-based (Option A) M.S. degree, the Department also offers a predominantly on-line M.S. in chemistry in chemical education. This is a non-thesis (Option B) degree that focuses on the content necessary for practicing high school teachers to achieve highly qualified status. Admission in this program is limited to in-service high school/college science teachers; students interested in the thesis-based M.S. degree in chemical education should specify this on the application for admission.

Student Learning Outcomes

- Demonstrate knowledge of AP curriculum: Students will be able to demonstrate knowledge of topics in the Advanced Placement curriculum in chemistry. (Transferable Skill: Teaching/Training)
- Students will be able to explain atomic theory.
- Students will be able to describe bonding and intermolecular forces.
- Students will be able to explain phases of matter.
- Students will be able to explain thermodynamics and equilibria.
- Students will be able to describe kinetics.
- Students will demonstrate an understanding of electrochemistry, nuclear chemistry, and organic and biochemistry.
- Apply content knowledge toward teaching: Students will apply content knowledge toward teaching and critique their approaches toward teaching various chemistry topics.
- Action research project: Students will investigate the learning environment in their classroom via an action research project.
- Make discipline accessible and meaningful: Students will use the central concepts, tools of inquiry, and structures of the discipline(s) he/she teaches and create learning experiences that make the discipline accessible and meaningful for learners to assure mastery of the content. (Transferable Skill: Teaching/Training)
- Prepare plans of instruction to support all students: Students will prepare plans of instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context. (Transferable Skill: Teaching/Training)

Course Delivery Format

The M.S. in Chemistry – Chemical Education Specialization is a largely online program for course offerings. As such, the content coursework is delivered via online format. In this format, individualized coursework and discussion methods are used to encourage discourse on content as it relates to teaching high school science. In summer, students participate in laboratory development exercises with research active faculty in the Department of Chemistry and Biochemistry, providing practical skills development. Additionally, students learn about research skills for the classroom to engage in a year-long action research project.

Facilities & Services

The Department is housed in the Avera Health and Science Center, which provides 100,000 sq. ft. of research and instructional space.

Available Options for Graduate Degrees

Master of Science	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

- CHEM 770 - Atomic Theory & Bonding Credits: 3
- CHEM 771 - Intermolecular Interactions & Phases of Matter Credits: 3
- CHEM 772 - Thermodynamics Credits: 3
- CHEM 773 - Equilibria & Acid-Base Chemistry Credits: 3
- CHEM 774 - Kinetics, Nuclear,& Electrochemistry Credits: 3
- CHEM 775 - Organic & Biochemistry Credits: 3
- CHEM 776 - Laboratory Development Credits: 3 (6 credits required) (Must be taken twice for 3 credits each session.)
- CHEM 777 - Action Research in the Secondary Classroom Credits: 2
- CHEM 778 - Chemistry Teaching Strategies Credits: 3
- CHEM 788 - Research Problems in the Chemistry Classroom Credits: 1-2 (Must be taken twice, once for 1 credit, the second for 2 credits.)

Total Required Credits: 32 (Option B)

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 580 paper-based, 92-93 Internet-based
IELTS: 5.5

Applications are accepted for admission to the M.S. program in fall only. Students are strongly encouraged to submit their applications for admission no later than January 15. Initial offers of admission will be made no later than the first week of February.

In addition to the materials required by the Graduate School, the Department of Chemistry and Biochemistry requires the following application materials:

- A one- to two-page personal statement which includes a description of work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Civil Engineering (M.S.)

Program Coordinator/Contact

Nadim Wehbe, Department Head
Suzette Burckhard, Professor/Graduate Coordinator
Department of Civil and Environmental Engineering
Crothers Engineering Hall 120, Box 2219
605-688-5427

Program Information

The MSCE program offers courses, design, and research activities within Civil and Environmental Engineering that are related to structural, transportation, geotechnical, water resources, hydrology, hydraulics and environmental

engineering, as well as engineering mechanics. Students can pursue an MS degree under a thesis, design paper, or coursework only option.

Program Educational Objectives

The Civil Engineering program at South Dakota State University is committed to preparing students to achieve the following educational objectives within five years beyond the baccalaureate degree.

- Graduates will have obtained professional licensure or specialized certification.
- Graduates will have engaged in professional development and life-long learning through earning advanced degrees, attending continuing education forums, or active participation in professional organizations.
- Graduates will have become actively involved in their profession, communities, and global society with a trajectory towards leadership positions.

Course Delivery Format

The program offers course, design, and research activities within Civil and Environmental Engineering that are related to structural, transportation, geotechnical, water resources, hydrology, hydraulics, and environmental engineering, as well as areas of engineering mechanics in classroom, laboratory, and field based settings.

Facilities & Services

The Civil and Environmental Engineering department is housed in Crothers Engineering Hal and maintains over 18,000 square feet of classroom and laboratory space dedicated to undergraduate instruction and research experience, as well as testing laboratories for research and sponsored projects. This includes the Lohr Structures Lab, Fluid Mechanics Lab, HDR Environmental Lab, Geotechnical Lab, Concrete Lab, Structural Materials Lab, Bituminous Lab, Capstone Design Studio and Student Computer Lab

Student Support & Engagement Opportunities

The department provides outreach and services through the American Society of Civil Engineers Student Chapter Program.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- CEE 702 - Advanced Civil and Environmental Engineering Credits: 1 (2 credits required)

Option A - Thesis

- CEE 798 - Thesis (COM) Credits: 1-9 (5 -10 credits required)
- Civil and Environmental Engineering Electives
- Supporting Electives

Option B - Research/Design Paper

- CEE 788 - Master's Research Problems/Projects (COM) Credits: 1-3 (2-3 credits required)
- Civil and Environmental Engineering Electives
- Supporting Electives

Option C - Coursework Only

- Civil and Environmental Engineering Electives
- Supporting Electives

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 525 paper-based, 71 Internet-based
IELTS: 5.5

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Communication & Media Studies (M.A.)

Program Coordinator/Contact

Jenn Anderson, Associate Professor/Graduate Program Coordinator
School of Communication and Journalism
Pugsley Continuing Education Center 115
605-688-6131

Program Information

The Master of Arts in Communication and Media Studies is a broad-based graduate degree for students with an undergraduate degree in communication studies, media studies, or related areas. Coursework emphasizes the intersections of academic and professional approaches to understanding, creating, and evaluating messages across contexts. Core coursework covers the foundations of the communication and media studies disciplines (including relevant theories and methods), explores cross-platform communication, and offers applied coursework in either professional communication or media law.

Students who pursue Option A (thesis) complete an additional 9-12 credits of elective coursework and an independent, theoretically-based study that generates new disciplinary knowledge and prepares them for advanced graduate work. Students who pursue Option B (project) complete an additional 15-18 credits of elective coursework and an independent, applied project that addresses a practical issue using skills related to students' chosen career fields.

Student Learning Outcomes

A graduate with a specialization in Communication Studies will be able to:

- Demonstrate excellent communication skills across various platforms (written, oral, and digital) that are tailored to the professions, audiences, and purposes they serve. (Transferable Skill: Career Preparedness)
- Conduct research and/or evaluation projects using appropriate qualitative and/or quantitative methodologies.
- Understand the theoretical foundations of the field and generate new, creative insights or contributions to one's academic or professional field.
- Identify the impact of history, diversity, and intersectionality of social identities on human communication and mass media within personal, professional, organizational, and societal contexts.
- Use current and emerging technologies effectively to adapt fundamental critical thinking and storytelling skills to the interconnected world with digital, networked media.
- Practice professional ethics, as well as principles of freedom of speech and expression, within one's academic or professional field.

Course Delivery Format

This program is offered at SDSU's Brookings campus and includes both face-to-face and online instruction options.

Available Options for Graduate Degrees

Master of Arts	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

- MCOM 710 - Cross-Platform Storytelling Credits: 3
  or MCOM 746 - Cross-Platform Campaigns Credits: 3
- MCOM 730 - Media Law Case Studies Credits: 3
  or SPCM 720 - Professional Communication Credits: 3
- SPCM 700 - Instructional Communication Credits: 3 (Required only for Graduate Teaching Assistants)
- SPCM 702 - Theories of Communication and Media Credits: 3
- SPCM 787 - Research in Communication and Media Credits: 3

Select one of the following options

Option A - Thesis

- MCOM/ SPCM 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives as approved by advisor Credits: 9-12

Option B - Research/Design Paper

- MCOM/ SPCM 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (2 credits required)
- Electives as approved by advisor Credits: 15-18

Total Required Credits: 30 (Option A), 32 (Option B)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 600 paper-based, 100 Internet-based
IELTS: 7.0

GPA: 3.25 undergraduate GPA

Previous coursework: At least 18 credit hours of relevant coursework (e.g., Advertising, Agricultural Communication, Communication Studies, Journalism, Marketing, Media Studies, or Public Relations).

- Priority Deadline: February 1
  - All applications received by the priority deadline receive a timely, comprehensive review by the graduate committee. Students admitted during this round of review are prioritized for funding decisions.
  - Assistantship funding is only available for applicants admitted for the Fall semester.
  - Applications received after the priority deadlines will be periodically reviewed by the graduate committee.
  - Admission decisions will be shared at least 10 working days before the April 15 deadline set by the Council of Graduate Schools.
- Application materials
  - Resume/CV
    - Writing sample (max: 5 pages)
    - Cover letter (max: 2 pages) that addresses
    - Interest in graduate work in communication & media studies
    - How this degree will advance professional goals
    - Preparation for success in advanced studies in communication and media studies
  - Official Transcripts
    - Note: If the coursework was completed at a South Dakota Board of Regents (SDBOR) institution, we have access to your transcript, and you do not need to take any action.
  - $35 application fee
- International Applicants may only receive unconditional admission. To receive unconditional admission, international applicants must meet these requirements:
  - A minimum GPA of 3.0.
  - A **professional academic transcript evaluation** for degrees earned outside the United States. (This requirement cannot be waived unless your highest degree was earned or will be earned in the U.S. prior to enrollment at SDSU).
  - If you are completing your bachelor's degree at the time of application, you may submit an incomplete evaluation. If you are accepted, a complete transcript and/or evaluation with completed degree will be required by the end of your first semester of coursework.
  - Official U.S. transcripts where a degree is earned (or will be earned), and official U.S. transcripts where graduate level coursework has been taken.
  - The School of COJO requires higher English proficiency scores than the minimums set by the SDSU Graduate School. International applicants must achieve a minimum TOEFL score of 600 paper-based or 100 Internet based, or an IELTS score of 7.0.
- Process for assistantship decisions.
  - Admission decisions are made by the graduate committee.
  - Assistantship offers are facilitated by the hiring manager.
  - Admitted students being considered for an assistantship will provide the hiring manager with additional materials upon request and complete an interview with the hiring manager.
  - Assistantship offers will be shared at least 10 working days before the April 15 deadline set by the Council of Graduate Schools.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Computer Science (M.S.)

Program Coordinator/Contact

Siddharth Suryanarayanan, Department Head
Sung Shin, Professor/Graduate Coordinator Computer Science
Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214, Box 2222
605-688-4526

Program Information

The Department of Electrical Engineering and Computer Science offers the Master of Science in Computer Science. The program prepares graduate students for positions in the design and development of computer systems and applications in business and industry and for scientific positions in industrial or academic computing research. Areas of research interest within the department currently include Software Engineering, Medical Image Processing, Parallel Processing, Applied Computing, GIS, Computer Security, Cluster Computing, and Computer Networks.

Program Objectives

The CS graduate program objectives are to equip individuals to:

- Discover and disseminate knowledge relevant to the discipline of computer science.
- Provide leadership for increasingly complex roles in computer science and industry.
- Contribute to the advancement of the science of computer science serving regional and national needs.

Student Learning Outcomes

- Conduct research and/or design software projects: Conduct research and/or design software projects that demonstrate ability to model, analyze, design, implement, and manage software development processes and systems.
- Understand fundamental principles: Articulate a solid understanding of the fundamental principles in the area of computer science.
- Communication skills: Demonstrate an ability to communicate, both orally and in writing, technical information effectively as an ethically and socially responsible computer science professional. (Communication Skills; Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

A majority of the courses are taught on campus in smart classrooms. The smart classrooms allow for a variety of methods for student engagement and faculty are able to record and post their lectures on-line.

Facilities & Services

With more than $12 million invested in classrooms and laboratories, graduate students benefit from modern lecture rooms and gain valuable experience using state-of-the-art equipment. The recently dedicated modern Daktronics Engineering Hall is home to the Computer Science program with over 15,000 square feet of dedicated research space.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- CSC 705 - Design and Analysis of Computer Algorithms (COM) Credits: 3
- CSC 710 - Structure and Design of Programming Languages (COM) Credits: 3
- CSC 720 - Theory of Computation (COM) Credits: 3
- CSC 770 - Software Engineering Management Credits: 3

Select one of the following options

Option A - Thesis

- CSC 798 - Thesis (COM) Credits: 1-9 (6 credits required)
- Electives Credits: 12

Option B - Research/Design Paper

- CSC 788 - Master's Research Problems/Project (COM) Credits: 1-3 (2 credits required)
- Electives Credits: 18

Option C - Coursework Only

- Electives Credits: 24

Total Required Credits: 30 (Option A), 32 (Option B), 36 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Additional Graduation Requirements

All CS graduate candidates must pass a comprehensive written examination. The comprehensive written examination is offered twice during each academic year. The four graduate core courses are the subjects of the comprehensive written examination.

Comprehensive Written Exam Requirements

All CS graduate candidates must pass a comprehensive written examination. The comprehensive written examination is offered twice during each academic year. It is usually during the third week of both the fall and spring semester. The four graduate core courses (listed below) are the subjects of the comprehensive written examination.

CS graduate students can take the comprehensive exam up to three times as long as they have an average score of 50 or higher in the comprehensive exam and a minimum score of 40 or higher in each of the core course exams. If at any time in the students' scores fall below the criteria, the student loses the option of retaking the exam.

If a student submits an application to take the comprehensive exam, that application will be counted as one of their three opportunities.

Final Oral Exam Requirements

The final oral exam is required for both option A and option B students. It is scheduled for approximately two hours. The first part of the exam includes the candidate's thesis or design paper defense, and the second part of the exam comprises the candidate's course work.

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Counseling & Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization

Program Coordinator/Contact

Katelyn Romsa, Assistant Professor
Department of Counseling and Human Development
Wenona Hall 318, Box 507
605-688-6831

Program Information

This Administration of Student Affairs Specialization is designed for those who seek professional roles in student affairs or related areas of higher education in any postsecondary setting. The administrative emphasis will build skills based on both theory and experience. Students that complete this 36-credit program will earn a Master of Education in Counseling & Human Resource Development (CHRD) specializing in Administration of Student Affairs.

Student Learning Outcomes

- Career: Students will demonstrate a comprehensive knowledge of career development theories and decision-making models. (Transferable Skill: Career Preparedness)
- Diversity: Students will demonstrate a comprehensive knowledge of multicultural and pluralistic trends, including characteristics and concerns within and among diverse groups nationally and internationally. (Transferable Skill: Diversity Awareness)
- Ethics: Students will demonstrate a comprehensive knowledge of ethical standards of professional organizations and credentialing bodies, and applications of ethical and legal consideration in the student affairs profession. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Communication: Students will demonstrate critical and innovative thinking.

Accreditation, Certification, & Licensure

Accreditation

The Master of Education specialization in Administration of Student Affairs meets the guidelines of the Council for the Advancement of Standards in Higher Education (CAS).

Course Delivery Format

Instruction occurs through didactic (classroom) and clinical experience. Most classes are enhanced with internet supplement.

Available Options for Graduate Degrees

Master of Education	Option A - Thesis	36 Credit Hours
	Option B - Research/Design Paper	36 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- CHRD 771 - Student Personnel Services Credits: 3
- CHRD 772 - Administration and Leadership in Student Affairs Credits: 3
- CHRD 794 - Internship Credits: 1-6
- EDFN 727 - Group Processes Credits: 3

Electives

Credits: 11

- CHRD 798 - Thesis Credits: 1-6 (Option A - Thesis)
- CHRD 788 - Research Problems in Counseling and Guidance Credits: 1-3 (Option B - Research/Design Paper)
- Additional Coursework (Option C - Coursework Only)

Total Required Credits: 36 (Option A, B,& C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Counseling & Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization

Program Coordinator/Contact

Staci Born, Assistant Professor
Department of Counseling and Human Development
Wenona Hall 301, Box 507
605-688-5062

Program Information

Students who successfully complete this 60-credit hour specialization will earn a Master of Science in Counseling and Human Resource Development specializing in Clinical Mental Health Counseling. Upon successful completion of the core requirements, and those of the Clinical Mental Health Counseling specialization and with the successful completion of the comprehensive written and oral examinations, graduates are endorsed as having constructed appropriate entry level knowledge and as having met appropriate skill acquisition to be recognized as professional clinical mental health counselors. Students in the Clinical Mental Health Counseling specialization are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Student Learning Outcomes

- Understand and advocate for positive attention to developmental needs of individuals, families, schools, and communities;
- Promote mental health through well-developed and consistent theoretical study and application;
- Appreciate cultural, ethnic, and gender differences as they relate to perceptions and expectations of counseling; (Transferable Skill: Diversity Awareness)
- Apply ethical, legal, moral, and professional standards to all aspects of professional counseling services; (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Respond to the mental health needs of a variety of individuals and families, through a wide spectrum of services including support, education, assessment, and treatment;
- Understand and be able to appropriately select and apply a variety of service or treatment modalities;
- Understand assessment strategies and the criteria for mental illnesses as well as effective treatments;
- Understand and model healthy community and work relationships; and (Transferable Skill: Wellness)
- Be prepared to pursue licensure as a professional counselor.

Accreditation, Certification, & Licensure

Accreditation

The Master of Science in CHRD specializing in Clinical Mental Health Counseling, is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP) under the 2001 standards for Community Counseling.

Certification

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

Licensure

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

The Clinical Mental Health Counseling specialization is designed to meet the requirements of the South Dakota Board of Counselor Examiners. Graduates of this specialization are eligible for training supervisee status under the South Dakota Board of Examiners for Counselors. Once graduates complete an approved plan for the remainder of the supervised clinical experience, they are eligible for licensure as a Licensed Professional Counselor (LPC).

Course Delivery Format

Instruction occurs through didactic (classroom) and clinical experience. Most classes are enhanced with internet supplement.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	60 Credit Hours
	Option B - Research/Design Paper	60 Credit Hours
	Option C - Coursework Only	60 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 713 - Administration and Management of Mental Health Organizations Credits: 3
- CHRD 723 - Counseling the Family Credits: 3
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5
- CHRD 794 - Internship Credits: 1-6 (9 credits required)
- PHA 647 - Pharmacological Issues in Mental Health Counseling Credits: 3

Select one of the following options

Option A - Thesis

- CHRD 798 - Thesis Credits: 1-6 (Minimum of 5 required credits)
- Electives - Select courses listed under Option C

Option B - Research/Design Paper

- CHRD 788 - Research Problems in Counseling and Guidance Credits: 1-3 (Minimum of 2 required credits)
- Electives - Select courses listed under Option C

Option C - Coursework Only

- Electives Credits: 9

Select from the following

The following is a list of potential electives, though it is not comprehensive. Note: *Prerequisites or permission of instructor may be required.

- CHRD 706 - Introduction to Play Therapy: Theory and Techniques Credits: 2
- CHRD 707 - Advanced Play Therapy and Techniques Credits: 2 *
- CHRD 708 - Play Therapy: Filial and Family Credits: 1 *
- CHRD 709 - Applications of Play Therapy Credits: 2 *
- CHRD 710 - Clinical Experiences in Play Therapy I Credits: 1 *
- CHRD 711 - Clinical Experiences in Play Therapy II Credits: 1 *
- CHRD 725 - Couples and Advanced Family Counseling Credits: 3
- CHRD 728 - Child and Adolescent Counseling Credits: 2
- CHRD 756 - Counseling the Addictive Client Credits: 3

Total Required Credits: 60 (Option A, B,& C)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a 100-hour practicum and an approved 600-hour internship. These experiences allow students to learn by doing, with active, sound supervision.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Counseling & Human Resource Development (M.S.) - College Counseling Specialization

Program Coordinator/Contact

Katelyn Romsa, Assistant Professor
Department of Counseling and Human Development
Wenona Hall 318, Box 507
605-688-6831

Program Information

This program prepares students to work in higher education settings in the various aspects of student life that take place largely outside of the classroom. These include, but are not limited to, student affairs administration, general college student counseling, career counseling, academic advising, institutional admissions, student activities, multicultural affairs, and residence hall settings. Currently, there are no certification or licensure requirements for student personnel professionals. Students who successfully complete this 48-credit hour specialization will earn a Master of Science in Counseling and Human Resource Development specializing in College Counseling. Upon successful completion of the core requirements, and those of the College Counseling specialization, and, with the successful completion of the comprehensive written and oral examinations, graduates are endorsed as student affairs professionals.

Student Learning Outcomes

- Understand and apply various student development theories;
- Understand and incorporate multicultural and diverse perspectives; (Transferable Skill: Diversity Awareness)
- Comprehend the effects of student characteristics and the effects of college on students;
- Be proficient at individual and group counseling techniques;
- Understand the historical, philosophical, psychological, cultural, and sociological foundations of higher education and student affairs;
- Have skills and knowledge of assessment, evaluation, and research in higher education and student affairs;
- Be familiar with the organization and administration of student affairs programs and services;
- Demonstrate program planning and evaluation skills;
- Practice in accordance with the legal and ethical standards of counseling and college student personnel; (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Be able to develop and maintain human relations and enhance student development within the professional setting; and (Transferable Skill: Wellness)
- Be prepared to pursue licensure as a professional counselor.

Accreditation, Certification, & Licensure

Accreditation

The Master of Science in CHRD specializing in College Counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Certification

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

Licensure

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

Course Delivery Format

Instruction occurs through didactic (classroom) and clinical experience. Most classes are enhanced with internet supplement.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	48 Credit Hours
	Option B - Research/Design Paper	48 Credit Hours
	Option C - Coursework Only	48 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 766 - Group Counseling Credits: 3
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- CHRD 771 - Student Personnel Services Credits: 3
- CHRD 772 - Administration and Leadership in Student Affairs Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship Credits: 1-6 (6 credits required)

Electives

Credits: 4

- CHRD 798 - Thesis Credits: 1-6 (Option A - Thesis)
- CHRD 788 - Research Problems in Counseling and Guidance Credits: 1-3 (Option B - Coursework Only)
- Additional Coursework (Option C - Coursework Only)

Total Credits Required: 48 (Option A, B,& C)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a practicum and an approved internship. These experiences allow students to learn by doing, with active, sound supervision. The practicum and internship experiences carry clock and credit hour completion expectations. For example, for every 3 credits of internship, students are required to complete 20 hours per week of on-site experience. In addition, regular work expectations outside the classroom exist for every credit hour enrolled. Thus, students enrolled in 3 credits of internship or practicum experience will be considered part-time. Students enrolled in 4 credits of internship or 3 credits of practicum plus other courses to total 4 semester credits will be considered full-time.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Counseling & Human Resource Development (M.S.) - Marriage & Family Counseling Specialization

Program Coordinator/Contact

Staci Born, Assistant Professor
Department of Counseling and Human Development
Wenona Hall 301, Box 507
605-688-5062

Program Information

Students who successfully complete this 60-credit hour specialization will earn a Master of Science in Counseling and Human Resource Development specializing in Marriage and Family Counseling. Upon successful completion of the core requirements, and those of the Marriage and Family Counseling specialization and with the successful completion of the comprehensive written and oral examinations, graduates are endorsed as having constructed appropriate entry level knowledge and as having met appropriate skill acquisition to be recognized as professional marriage and family therapists. Students in the Marriage and Family Counseling specialization are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Student Learning Outcomes

- Understand and advocate for positive attention to developmental needs of individuals, couples, families, and groups;
- Effectively identify needs of individuals, couples, and families as they relate to human development and sexuality over the lifespan;
- Appreciate cultural, ethnic, and gender differences as they relate to perceptions and expectations of counseling; (Transferable Skill: Diversity Awareness)
- Apply ethical, legal, moral, and professional standards to all aspects of professional counseling services; (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Respond to the mental health needs of a variety of individuals, couples, and families, through a wide spectrum of services including support, education, assessment, and treatment;
- Understand and be able to appropriately select and apply a variety of service or treatment modalities;
- Be prepared to pursue licensure as a professional marriage and family therapist.

Accreditation, Certification, & Licensure

Accreditation

The Master of Science in CHRD specializing in Marriage and Family Counseling, is seeking accreditation by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Certification

All Master of Science students are eligible to begin the process for the National Certified Counselor certification. Upon graduation, Marriage and Family Counseling specialization students are eligible to apply to complete the National Marriage and Family Therapy Examination.

Licensure

Graduation from this program does not grant immediate licensure as a marriage and family therapist. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

The Marriage and Family Counseling specialization is designed to meet the requirements of the South Dakota Board of Counselor Examiners. Graduates of this specialization are eligible for training supervisee status under the South Dakota Board of Examiners for Counselors. Once graduates complete an approved plan for the remainder of the supervised clinical experience, they are eligible for licensure as a Licensed Marriage and Family Therapist (LMFT).

Course Delivery Format

Instruction occurs through didactic (classroom) and clinical experience. Most classes are enhanced with internet supplement.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	61 Credit Hours
	Option B - Research/Design Paper	60 Credit Hours
	Option C - Coursework Only	60 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 723 - Counseling the Family Credits: 3
- CHRD 725 - Couples and Advanced Family Counseling Credits: 3
- CHRD 728 - Child and Adolescent Counseling Credits: 2
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 756 - Counseling the Addictive Client Credits: 3
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship Credits: 1-6 (9 credits required)
- PHA 647 - Pharmacological Issues in Mental Health Counseling Credits: 3

Select one of the following options

Option A - Thesis

- CHRD 798 - Thesis Credits: 1-6 (5 credits required)

Option B - Research/Design Paper

- CHRD 788 - Research Problems in Counseling and Guidance Credits: 1-3 (4 credits required)

Option C - Coursework Only

- Electives (Any prefix and course should be related to counseling) Credits: 4

Select from the following

The following is a list of potential electives, though it is not comprehensive. Note: *Prerequisites or permission of instructor may be required.

- CHRD 706 - Introduction to Play Therapy: Theory and Techniques Credits: 2

- CHRD 707 - Advanced Play Therapy and Techniques Credits: 2
- CHRD 708 - Play Therapy: Filial and Family Credits: 1
- CHRD 709 - Applications of Play Therapy Credits: 2
- CHRD 710 - Clinical Experiences in Play Therapy I Credits: 1
- CHRD 711 - Clinical Experiences in Play Therapy II Credits: 1
- CHRD 713 - Administration and Management of Mental Health Organizations Credits: 3
- CHRD 756 - Counseling the Addictive Client Credits: 3

Total Required Credits: 61 (Option A), 60 (Option B & C)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a 100-hour practicum and an approved 600-hour internship. These experiences allow students to learn by doing, with active, sound supervision. Within their internship, a focus on family systems theory should be emphasized and at least 10% of direct client contact hours should be conducted with two or more clients present in session.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Counseling & Human Resource Development (M.S.) - Rehabilitation Counseling Specialization

Program Coordinator/Contact

Alan Davis, Professor
Department of Counseling and Human Development
Wenona Hall 115, Box 507
605-688-4715

Program Information

The Rehabilitation Counseling Specialization is dedicated to enhancing the effectiveness of counselors and programs of service to people with disabilities. Educational experiences will aim to prepare qualified rehabilitation counselors, increase knowledge in the field of rehabilitation, and to apply knowledge to the growing effectiveness of rehabilitation professionals and service delivery systems. In alliance with students, agencies, consumers, and professional organizations, the specialty area will promote the independence, acceptance, and dignity of all people with significant disabilities.

Students who successfully complete this 48-credit hour specialization will earn a Master of Science in Counseling and Human Resource Development specializing in Rehabilitation Counseling. Upon successful completion of the core requirements, and those of the Rehabilitation Counseling emphasis, and with successful completion of the comprehensive written and oral examinations, graduates are endorsed as having constructed appropriate entry level knowledge and as having met appropriate skill acquisition to be recognized as professional rehabilitation and mental health counselors. Students in this emphasis are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Program Objectives

- meet the growing needs and diverse challenges of consumers with physical and psychiatric disabilities; prepare qualified counselors for careers with federal, state, and private agencies;
- meet anticipated work force needs in the growing rehabilitation and mental health counseling field; and
- provide field experience and internships to develop professional counseling skills.

Student Learning Outcomes

- Acquire a sound, basic education in rehabilitation;
- Develop the lifelong habit of updating skills and professionalism;
- Develop a commitment to assist individuals with disabilities in using their own resources and opportunities to meet their developmental, vocational, and educational needs; (Transferable Skill: Diversity Awareness)
- Nourish a commitment to individual human values;
- Exercise skills and competencies on a high ethical level and with personal integrity; (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Maintain a critical, questioning, and exploratory attitude; and
- Contribute to the profession by offering suggestions to educators and researchers with the overall goal of improving practice in the rehabilitation profession in general and in the specific area of professional application. Students should also be personally committed to the field of rehabilitation who can provide effective services to individuals with disabilities, including individuals with severe disabilities.
- Students are encouraged to contribute to the advancement of knowledge in the field of rehabilitation through research and the demonstrated application of significant findings.

Accreditation, Certification, & Licensure

Accreditation

The Master of Science in CHRD specializing in Rehabilitation Counseling is accredited by the Council on Rehabilitation Education (CORE).

Certification

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

Students specializing in Rehabilitation Counseling are eligible to begin the process for the Certified Rehabilitation Counselor certification by taking the CRC exam after a student has completed 75% of coursework or after graduation.

Licensure

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

Course Delivery Format

Instruction occurs through didactic (classroom) and clinical experience. Most classes are enhanced with internet supplement. Rehabilitation counseling specific courses are on a semester rotation for online delivery. Classes are scheduled for one day per week for three hours. All courses are available at the BHSU - Rapid City except for rehabilitation-specific courses. The Rehabilitation Counseling specialization is not available at BHSU - Rapid City. A few courses are available at the Community College for Sioux Falls; CHRD does not offer a degree program at the Community College for Sioux Falls.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	60 Credit Hours
	Option B - Research/Design Paper	60 Credit Hours
	Option C - Coursework Only	60 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3

  or EDER 760 - Informational Literacy Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 690 - Seminar Credits: 1-3 (1 credit required) (Ethics)
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 751 - Overview of Rehabilitation and Mental Health Counseling Credits: 3
- CHRD 752 - Medical and Psychological Aspects of Disability Credits: 3
- CHRD 753 - Case Management Principles and Plan Development Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 756 - Counseling the Addictive Client Credits: 3
- CHRD 757 - Case Consultation and Supervision Credits: 3
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship Credits: 1-6 (6 credits required)

Select one of the following options

Option A - Thesis

- CHRD 798 - Thesis Credits: 1-6 (5 credits required)

Option B - Research/Design Paper

- CHRD 788 - Research Problems in Counseling and Guidance Credits: 1-3 (2-3 credits required)
- Additional Coursework Credits: 2-3

Option C - Coursework Only

- Additional Coursework Credits: 5

Total Required Credits: 60 (Option A, B,& C)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a practicum and an approved internship. These experiences allow students to learn by doing, with active, sound supervision. The practicum and internship experiences carry clock and credit hour completion expectations. For example, for every 3 credits of internship, students are required to complete 20 hours per week of on-site experience. In addition, regular work expectations outside the classroom exist for every credit hour enrolled. Thus, students enrolled in 3 credits of internship or practicum experience will be considered part-time. Students enrolled in 4 credits of internship or 3 credits of practicum plus other courses to total 4 semester credits will be considered full-time.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Counseling & Human Resource Development (M.S.) - School Counseling Specialization

Program Coordinator/Contact

Hande Briddick, Associate Professor
Department of Counseling and Human Development
Wenona Hall 317, Box 507
605-688-4365

Program Information

The School Counseling specialization is designed to prepare students for endorsement/certification as a school counselor in the state of South Dakota. Should the student seek endorsement in another state, it is that student's responsibility to meet any additional requirements by that particular state. Students who successfully complete this 48-credit hour specialization will earn a Master of Science in Counseling and Human Resource Development specializing in School Counseling.

Upon successful completion of the core requirements, and those of the School Counseling specialization, and with the successful completion of the comprehensive written and oral examinations, graduates are endorsed as having constructed entry level knowledge and as having met appropriate skill acquisition to be recognized as professional school counselors. Students in the School Counseling specialization are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Student Learning Outcomes

- Understand developmental theory as it relates to the difference(s) between "normal" developmental behavior and "abnormal" developmental behavior in youth;
- Utilize knowledge and skills to address the counseling needs of a dynamic and diverse population of students and their families; (Transferable Skill: Diversity Awareness)
- Be prepared to create and deliver a comprehensive, K-12 developmental school guidance program;
- Be able to consult with school personnel and serve as a liaison to community programs to assist in coordinating services for students, parents, and teachers;
- Understand and provide effective individual, group, and classroom guidance services;
- Know the ethical, legal, and professional standards in a K-12 educational institution; (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Develop a commitment to continued personal and professional development;
- Be certified by the State of South Dakota as a K-12 School Counselor; and
- Be prepared to pursue licensure as a professional counselor.

Accreditation, Certification, & Licensure

Accreditation

The Master of Science in CHRD specializing in School Counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Certification

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

The School Counseling specialization prepares students for endorsement/certification in the state of South Dakota. Students are responsible for researching school counseling certification requirements for any state in which they wish to practice.

Licensure

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

Course Delivery Format

Instruction occurs through didactic (classroom) and clinical experience. Most classes are enhanced with internet supplement.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	48 Credit Hours
	Option B - Research/Design Paper	48 Credit Hours
	Option C - Coursework Only	48 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 721 - School Counseling Credits: 3
- CHRD 722 - Administration and Management of School Counseling Programs Credits: 3
- CHRD 723 - Counseling the Family Credits: 3

  or CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship Credits: 1-6 (6 credits required)

Electives

- CHRD 798 - Thesis Credits: 1-6 (Option A - Thesis)
- CHRD 788 - Research Problems in Counseling and Guidance Credits: 1-3 (Option B - Research/Design Paper)
- Additional Coursework (Option C - Coursework Only)

Total Required Credits: 48 (Option A, B,& C)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a practicum and an approved internship. These experiences allow students to learn by doing, with active, sound supervision. The practicum and internship experiences carry clock and credit hour completion expectations. For example, for every 3 credits of internship, students are required to complete 20 hours per week of on-site experience. In addition, regular work expectations outside the classroom exist for every credit hour enrolled. Thus, students enrolled in 3 credits of internship or practicum experience will be considered part-time. Students enrolled in 4 credits of internship or 3 credits of practicum plus other courses to total 4 semester credits will be considered full-time.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Curriculum & Instruction (M.Ed.) - Early Childhood Education Specialization

Program Coordinator/Contact

Jennifer Kampmann, Assistant Professor
Department of Teaching, Learning, and Leadership
Wenona Hall 108, Box 507
605-688-5039

Program Information

The degree in Curriculum and Instruction (C&I) is designed to meet the needs of individuals who work (or plan to work) in some kind of an instructional capacity. The degree does not lead to a South Dakota teaching certificate nor does it lead to an endorsement on the South Dakota teaching certificate.

The C&I degree is structured to allow a great deal of flexibility. It is expected that students will take a mixture of required courses and elective credits, depending on their areas of interest. These courses may be completed with no intention of seeking a degree or may be used as part of the basis for completing a C&I degree.

Student Learning Outcomes

- Knowledge of current issues: The graduate of the curriculum and instruction program displays knowledge of current practices, research, theories, and issues in education. (Transferable Skill: Teaching/Training)
- Knowledge of learning: The graduate of the curriculum and instruction program demonstrates knowledge of how students learn and is able to effectively apply that knowledge within a variety of educational roles. (Transferable Skill: Teaching/Training)
- Curricular processes: The graduate of the curriculum and instruction program effectively participates in curricular processes. (Transferable Skill: Teaching/Training)
- Communication skill: The graduate of the curriculum and instruction program effectively communicates. (Transferable Skill: Teaching/Training)
- Foundational lifelong learning skills: The graduate of the curriculum and instruction program displays commitment to professional involvement and

growth through continual learning, reflective practice, and collaboration. (Transferable Skill: Teaching/Training)

- Technology: The graduate of the curriculum and instruction program makes appropriate use of educational technology. (Transferable Skill: Teaching/Training)

Course Delivery Format

The program can be completed online through the Brookings Campus. Some course offerings will be available face to face.

Student Support & Engagement Opportunities

The Teaching, Learning, and Leadership Department has a few assistantships for which students can apply.

Available Options for Graduate Degrees

Master of Education	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- ECE 794 - Internship (COM) Credits: 1-7 (2 credits required)

  or EDFN 794 - Internship (COM) Credits: 1-6 (2 credits required)
- EDER 610 - Introduction to Research Credits: 3
- EDFN 600 - Advanced Pedagogy Credits: 3
- EDFN 701 - Capstone Credits: 1
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3
- EPSY 740 - Advanced Educational Psychology Credits: 3

Select one of the following options

Option A - Thesis

- Approved Electives Credits: 1
- EDFN 798 - Thesis (COM) Credits: 1-6 (5 credits required)
- EDER 612 - Inquiry and Action Research Credits: 3

  or EDER 614 - Advanced Educational Research Design and Analysis Credits: 3

Select from the following

Select six credits from the following. Credits: 6

- ECE 711 - Developmental Theory and Application Credits: 3
- ECE 715 - Cognitive Development Credits: 3
- EDER 711 - Educational Assessment (COM) Credits: 3
- EDFN 700 - Exceptional Learners Credits: 3
- EDFN 750 - Educational Technology Credits: 3
- HDFS 742 - Family Theory and Research Credits: 3

Option B - Research/Design Paper

- Approved Electives Credits: 5
- EDER 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (3 credits required)

Select from the following

Select nine credits from the following. Credits: 9

- ECE 711 - Developmental Theory and Application Credits: 3
- ECE 715 - Cognitive Development Credits: 3
- EDER 612 - Inquiry and Action Research Credits: 3
- EDER 711 - Educational Assessment (COM) Credits: 3
- EDFN 750 - Educational Technology Credits: 3
- HDFS 742 - Family Theory and Research Credits: 3

Option C - Coursework Only

- Approved Electives Credits: 8

Select from the following

Select nine credits from the following. Credits: 9

- ECE 711 - Developmental Theory and Application Credits: 3
- ECE 715 - Cognitive Development Credits: 3
- EDER 612 - Inquiry and Action Research Credits: 3
- EDER 711 - Educational Assessment (COM) Credits: 3
- EDFN 750 - Educational Technology Credits: 3
- HDFS 742 - Family Theory and Research Credits: 3

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

Applicants must provide a resume, goal statement, and two letters of professional reference to Teaching, Learning, and Leadership. Once all material is received, it is reviewed by the Department. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Curriculum & Instruction (M.Ed.) - Elementary Education Specialization

Program Coordinator/Contact

Jennifer Kampmann, Assistant Professor
Department of Teaching, Learning, and Leadership
Wenona Hall 108, Box 507
605-688-5039

Program Information

The degree in Curriculum and Instruction (C&I) is designed to meet the needs of individuals who work (or plan to work) in some kind of an instructional capacity. The degree does not lead to a South Dakota teaching certificate nor does it lead to an endorsement on the South Dakota teaching certificate.

The C&I degree is structured to allow a great deal of flexibility. It is expected that students will take a mixture of required courses and elective credits, depending on their areas of interest. These courses may be completed with no intention of seeking a degree or may be used as part of the basis for completing a C&I degree.

Student Learning Outcomes

- Knowledge of current issues: The graduate of the curriculum and instruction program displays knowledge of current practices, research, theories, and issues in education. (Transferable Skill: Teaching/Training)
- Knowledge of learning: The graduate of the curriculum and instruction program demonstrates knowledge of how students learn and is able to effectively apply that knowledge within a variety of educational roles. (Transferable Skill: Teaching/Training)
- Curricular processes: The graduate of the curriculum and instruction program effectively participates in curricular processes. (Transferable Skill: Teaching/Training)
- Communication skill: The graduate of the curriculum and instruction program effectively communicates. (Transferable Skill: Teaching/Training)
- Foundational lifelong learning skills: The graduate of the curriculum and instruction program displays commitment to professional involvement and growth through continual learning, reflective practice, and collaboration. (Transferable Skill: Teaching/Training)
- Technology: The graduate of the curriculum and instruction program makes appropriate use of educational technology. (Transferable Skill: Teaching/Training)

Course Delivery Format

The program can be completed online through the Brookings Campus. Some course offerings will be available face to face.

Student Support & Engagement Opportunities

The Teaching, Learning, and Leadership Department has a few assistantships for which students can apply.

Available Options for Graduate Degrees

Master of Education	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- EDER 610 - Introduction to Research Credits: 3
- EDFN 600 - Advanced Pedagogy Credits: 3

- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3
- EPSY 740 - Advanced Educational Psychology Credits: 3

Select from the following

Select nine credits from the following. Credits: 9

- EDER 612 - Inquiry and Action Research Credits: 3
- EDER 711 - Educational Assessment (COM) Credits: 3
- EDFN 700 - Exceptional Learners Credits: 3
- EDFN 750 - Educational Technology Credits: 3

Select one of the following options

Option A - Thesis

- EDFN 798 - Thesis (COM) Credits: 1-6 (5 credits required)
- Approved Electives Credits: 1

Option B - Research/Design Paper

- EDER 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (3 credits required)
- Approved Electives Credits: 5

Option C - Coursework Only

- Approved Electives Credits: 8

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

Applicants must provide a resume, goal statement, and two letters of professional reference to Teaching, Learning, and Leadership. Once all material is received, it is reviewed by the Department. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Curriculum & Instruction (M.Ed.) - Secondary Education Specialization

Program Coordinator/Contact

Jennifer Kampmann, Assistant Professor
Department of Teaching, Learning, and Leadership
Wenona Hall 108, Box 507
605-688-5039

Program Description

The degree in Curriculum and Instruction (C&I) is designed to meet the needs of individuals who work (or plan to work) in some kind of an instructional capacity. The degree does not lead to a South Dakota teaching certificate nor does it lead to an endorsement on the South Dakota teaching certificate.

The C&I degree is structured to allow a great deal of flexibility. It is expected that students will take a mixture of required courses and elective credits, depending on their areas of interest. These courses may be completed with no intention of seeking a degree, or may be used as part of the basis for completing a C&I degree.

Student Learning Outcomes

- Knowledge of current issues: The graduate of the curriculum and instruction program displays knowledge of current practices, research, theories, and issues in education. (Transferable Skill: Teaching/Training)
- Knowledge of learning: The graduate of the curriculum and instruction program demonstrates knowledge of how students learn and is able to effectively apply that knowledge within a variety of educational roles. (Transferable Skill: Teaching/Training)
- Curricular processes: The graduate of the curriculum and instruction program effectively participates in curricular processes. (Transferable Skill: Teaching/Training)
- Communication skill: The graduate of the curriculum and instruction program effectively communicates. (Transferable Skill: Teaching/Training)
- Foundational lifelong learning skills: The graduate of the curriculum and instruction program displays commitment to professional involvement and growth through continual learning, reflective practice, and collaboration. (Transferable Skill: Teaching/Training)
- Technology: The graduate of the curriculum and instruction program makes appropriate use of educational technology. (Transferable Skill: Teaching/Training)

Course Delivery Format

The program can be completed online through the Brookings Campus. Some course offerings will be available face to face.

Student Support & Engagement Opportunities

The Teaching, Learning, and Leadership Department has a few assistantships for which students can apply.

Available Options for Graduate Degrees

Master of Education	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- EDER 610 - Introduction to Research Credits: 3
- EDFN 600 - Advanced Pedagogy Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3
- EPSY 740 - Advanced Educational Psychology Credits: 3

Select from the following

Select nine credits from the following. Credits: 9

- EDER 612 - Inquiry and Action Research Credits: 3
- EDER 711 - Educational Assessment (COM) Credits: 3
- EDFN 700 - Exceptional Learners Credits: 3
- EDFN 750 - Educational Technology Credits: 3

Select one of the following options

Option A - Thesis

- EDFN 798 - Thesis (COM) Credits: 1-6 (5 credits required)
- Approved Electives Credits: 1

Option B - Research/Design Paper

- EDER 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (3 credits required)
- Approved Electives Credits: 5

Option C - Coursework Only

- Approved Electives Credits: 8

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

Applicants must provide a resume, goal statement, and two letters of professional reference to Teaching, Learning, and Leadership. Once all material is received, it is reviewed by the Department. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Data Science (M.S.)

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Rong Fan, Statistics Lecturer/MS Data Science Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The SDSU M.S. in Data Science is a one-year program that provides graduates with the statistical, mathematical, and computational skills needed to meet the large-scale data science challenges of today's professional world. The curriculum incorporates current techniques in statistics, operations research, predictive

modeling, data mining, forecasting, big data programming and management, and data visualization. The program's focus is on application and interpretation of modern data analysis techniques of known value in today's professional world, both private and public sector.

Student Learning Outcomes

- Communication: Students will understand the foundations of data science, with a specific focus on the interplay between computational complexity and statistical efficiency. (Communication Skills; Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Ethics: Students will understand ethical implications of using data and statistical models for making decisions. (Communication Skills; Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Analysis: Students will perform exploratory data analysis and statistical inference in appropriate application areas. (Communication Skills; Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Application of methods: Students will apply the methods in artificial intelligence, machine learning, or pattern recognition to real data. (Communication Skills; Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Students will proficiently use at least one statistical software among R, SAS, PYTHON, STATA, JMP, or SQL.
- Students will appropriately communicate the results of their analysis to various audiences.

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Available Options for Graduate Degrees

Master of Science	Option C - Coursework Only	30 Credit Hours

Core Requirements

- INFS 762 - Data Warehousing and Data Mining Credits: 3 (DSU)
- INFS 772 - Programming for Data Analytics Credits: 3 (DSU)
- INFS 774 - Big Data Analytics Credits: 3 (DSU)
- STAT 600 - Statistical Programming Credits: 3
- STAT 601 - Modern Applied Statistics I Credits: 3
- STAT 602 - Modern Applied Statistics II Credits: 3

Electives

Credits: 12

The following courses will be the default elective curriculum beyond the core courses in the M.S. in Data Science program.

- MATH 575 - Operations Research (COM) Credits: 3
- STAT 545 - Nonparametric Statistics (COM) Credits: 3
- STAT 551 - Predictive Analytics I Credits: 3
- STAT 560 - Time Series Analysis (COM) Credits: 3

The following courses are available to students with appropriate mathematical and statistical prerequisite knowledge.

- MATH 675 - Operations Research II Credits: 3
- STAT 553 - Applied Bayesian Statistics Credits: 3
- STAT 651 - Predictive Analytics II Credits: 3
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 715 - Multivariate Analysis I Credits: 3
- STAT 721 - Statistical Computing and Simulation Credits: 3
- STAT 731 - Survival Analysis Credits: 3
- STAT 742 - Spatial Statistics Credits: 3
- STAT 792 - Topics (COM) Credits: 1-3 (3 credits required)

Total Required Credits: 30 (Option C)

Additional Admission Requirements

GRE: Not required.
TOEFL: Program requirement minimum score of 575paper-based, 90-91 internet-based, OR
IELTS: Program requirement minimum score of 6.0

In addition to meeting Graduate School admission requirements, applicants for graduate study for the M.S. in Data Science must have:

- Baccalaureate degree from an institution of higher education with full regional accreditation for that degree.
- The applicant must have an undergraduate grade point average of at least 3.0 on 4.0 scale.
- Transcript should show completion of courses in key areas equivalent to:
- Database design/programming including familiarity with SQL (STAT 410/510 or equivalent)
- Understanding of the principles of programming (CSC 150 or INFO 101 or equivalent)
- Understanding of statistical principles (STAT 441/541 or equivalent)

Undergraduate preparatory courses required of entering students include two semesters of calculus, one course in matrix or linear algebra, one introductory course in calculus-based probability and statistics. SDSU courses that would satisfy these requirements would be:

- MATH 123 Calculus I
- MATH 125 Calculus II
- MATH 215 Matrix Algebra OR MATH 315 Linear Algebra
- STAT 381 Introduction to Probability and Statistics
- Students with other educational backgrounds may be admitted conditionally. They will be required to complete the necessary coursework to eliminate deficiencies in their background during their first semester in the program.

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Dietetics (M.S.)

Program Coordinator/Contact

Kendra Kattelmann, Distinguished Professor and Department Head
Department of Health and Nutritional Sciences
Wagner Hall 425, Box 2275A
605-688-5161

Program Information

Dietetics prepares Registered Dietitian Nutritionists to practice dietetics at an advanced level and/or pursue doctoral study. The program seeks to develop research skills, stimulate independent thought, and provide up-to-date knowledge in foods, nutrition, and food service/business management. This program prepares individuals to integrate and apply the principles ranging from the biomedical sciences, human behavior, and management to design, and to lead effective food, nutrition, health and wellness programs in a variety of settings. This online program will be a degree tailored for credentialed, practicing dietetics professionals who seek to enhance their knowledge in a specific area of dietetics practice or to retool for new career opportunities in dietetics practice. The student must already have the RDN credential. This degree does not prepare one to become a RDN.

Student Learning Outcomes

- Foundational knowledge: Apply foundational knowledge and skills in the theory and application of nutrition and dietetics sciences to professional practice, education, and research. (Transferable Skill: Career Preparedness)
- Communication skills: Develop effective written and oral communication skills. (Communication Skills)
- Critical thinking: Critically analyze and synthesize scientific evidence to defend a position. (Communication Skills; Transferable Skill: Intellectual Traits; Career Preparedness)
- Career preparedness: Demonstrate effective career preparedness. (Transferable Skill: Career Preparedness)

Course Delivery Format

The program consists of lecture, laboratory, and experiential learning opportunities delivered online.

Student Support & Engagement Opportunities

The Department of Health and Nutritional Sciences aims to provide premier academic programs and high-quality services to students.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	36 Credit Hours
	Option B - Research/Design Paper	36 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- NUTR 734 - Research Methods in Dietetics Credits: 3
- NUTR 735 - Current Trends in Dietetics Practices Credits: 3
- NUTR 760 - Vitamins and Minerals in Human Nutrition Credits: 3
- STAT 541 - Statistical Methods II Credits: 3

Select one of the following options

Option A - Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives Credits: 18

Option B - Research/Design Paper

- HNS 788 - Master's Research Problems/Projects Credits: 1-7 (3 credits required)
- Electives Credits: 21

Option C - Coursework Only

- Requires a comprehensive written exam
- Electives Credits: 24

Total Required Credits: 36 (Option A, B,& C)

Additional Admission Requirements

GRE: Not required
TOEFL: required score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

- Students must have completed a BS or BA from an Accreditation Counsel for Education of Nutrition and Dietetics) accredited Didactic Program in Dietetics and submit the ACEND Verification statement as documentation.
- Letter of application stating the following: reasons for attending graduate school; long-term goals outlining career goals; primary area of interest for capstone/research focus; and current professional certifications and credentials.
- Two recommendations letters from professionals knowledgeable in applicants graduate school potential.

General Requirements

The student's option and schedule of courses must be approved by his/her faculty advisor and graduate committee.

See Master's Degree Requirements.

Economics (M.S.)

Program Coordinator/Contact

Joseph M. Santos, Professor/Graduate Program Coordinator
Ness School of Management and Economics
Harding Hall
605-688-4141

Program Information

The graduate program in economics prepares students for professions in business and government as well as for advanced studies in economics and finance. Program requirements include one course in microeconomics (advanced microeconomic theory or advanced managerial economics) and one course in quantitative analysis (econometrics or advanced business decision science). The program offers two curriculum options: an economic theory option and an applied business-economics option. In any case, students customize their plans of study, emphasizing one of the following four subject areas.

- Agricultural Business
- Agricultural and Resource Economics
- Business Economics
- General Economics

The Ness School of Management and Economics offers an accelerated master's program, which allows qualified students to work toward their master's degree in economics while they complete their undergraduate degree. This accelerated program is available to qualified undergraduate students who maintain an overall undergraduate cumulative GPA of at least 3.5.

Student Learning Outcomes

- Analytical reasoning: Graduates will be able to apply economic theories and quantitative and qualitative analytical methods to analyze and evaluate economic outcomes and to make decisions.
- Communication: Graduates will be able to communicate economic-research outcomes, and the analysis underlying these outcomes, in oral and written forms to diverse audiences.
- Ethical Reasoning: Graduates will be able to demonstrate the capacity to evaluate ethical matters within the context of the discipline. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Core economics knowledge: Graduates will be able to demonstrate the knowledge and understanding of economic terminology, mathematical and graphical tools and representations, institutions, common economic variables, and general habits of economic thought.

Course Delivery Format

The Ness School of Management and Economics generally delivers graduate courses in a face-to-face format. On occasion, the department delivers an elective course in an online format. The school delivers its business-economics curriculum-option courses in flexible formats, including evening, weekend, and blended courses.

Student Support & Engagement Opportunities

The Ness School of Management and Economics prides itself on providing excellent academic programs and offering high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified students enrolled in the economic research curriculum option. The Economics Graduate Student Association (EGSA) supports graduate-student engagement opportunities, as well.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

- DSCI 752 - Advanced Business Decision Science Credits: 3
  or ECON 705 - Econometrics Credits: 3
- ECON 704 - Advanced Microeconomics Credits: 3
  or ECON 751 - Advanced Managerial Economics Credits: 3

Select one of the following options

Option A - Thesis

- ECON 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Approved Electives Credits: 19

Option B - Research/Design Paper

- ECON 788 - Master's Research Problems/Projects (COM) Credits: 1-3 (2 credits required)
- Approved Electives Credits: 24

Total Required Credits: 30 (Option A), 32 (Option B)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 575 paper-based, 90-91 Internet-based
IELTS: 6.0

Two letters of reference and a letter of intent are required. In the letter of intent, the applicant should identify their interests in the graduate program, address how their skills - including those the applicant attained in their undergraduate program - align with our graduate program, and address any undergraduate coursework in which the applicant earned below a B. The letter of intent should be roughly 500 to 750 words long.

Accelerated Master's Program

The program offers an accelerated master's degree to qualified undergraduate students who maintain an overall undergraduate cumulative GPA of at least 3.5; these students may begin their graduate studies while they complete their undergraduate degree. Students may apply for admission to the accelerated master's degree program once they have completed 60 undergraduate credits. Students interested in the accelerated master's degree should contact the

Ness School of Management and Economics graduate coordinator to obtain application requirements. Application and admission to the Graduate School is required.

Contact the Graduate Coordinator for further information.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Educational Administration (M.Ed.) - Elementary Education Specialization

Program Coordinator/Contact

Jennifer Kampmann, Assistant Professor
Department of Teaching, Learning, and Leadership
Wenona Hall 108, Box 507
605-688-5039

Program Information

The M.Ed. degree in Educational Administration is designed to meet the needs of individuals who work (or plan to work) with youth of all ages in an administrative capacity. The department of Teaching, Learning, and Leaderships provides professional preparation for those who expect to become qualified administrators in schools where certification is required, child care, early intervention or for other institutions, businesses, industries and service-orientated agencies where an administrative program is of value.

The elementary specialization in Educational Administration meets the requirements for endorsement as a principal in South Dakota. Those seeking to complete the requirements for the principalship will have very limited flexibility in the coursework taken. See below for the coursework. These requirements are designed to meet the ELCC Standards as required by law. This major is also appropriate for early childhood professionals who wish to serve the profession in administrative roles in schools or ECE related service agencies.

The South Dakota State Board of Education requires that in order to be endorsed, individuals must have three years of verified teaching experience on a valid teaching certificate in a K-12 school, one year of which includes classroom experience or direct services to student.

Students are able to choose from either a program in which only coursework is required or a program in which they must complete a research project. If a student elects to take only course work (Plan C), the student must complete a minimum of 35 credit hours in order to graduate. If the research option is chosen, the student must complete a minimum of 32 credit hours including EDER 788 Research Problems (Plan B).

Student Learning Outcomes

- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by facilitating the development, articulation, implementation, and stewardship of a school vision of learning supported by the school community. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by promoting a positive school culture, providing an effective instructional program, applying best practice to student learning, and designing comprehensive professional growth plans for staff. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by managing the organization, operations, and resources in a way that promotes a safe, efficient, and effective learning environment. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by collaborating with families and other community members, responding to diverse community interests and needs, and mobilizing community resources. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by acting with integrity, fairly, and in an ethical manner. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context. (Transferable Skill: Teaching/Training)
- Internship. The internship provides significant opportunities for candidates to synthesize and apply the knowledge and practice and develop the skills identified in Standards 1-6 through substantial, sustained, standards-based work in real settings, planned and guided cooperatively by the institution and school district personnel for graduate credit. (Transferable Skill: Teaching/Training)

Course Delivery Format

The program can be completed online through the Brookings Campus or face-to-face through West River Graduate Center in Rapid City which also offers coursework in Gillette, Wyoming.

Student Support & Engagement Opportunities

The Teaching, Learning, and Leadership Department has a few assistantships for which students can apply.

Available Options for Graduate Degrees

Master of Education	Option B - Research/Design Paper	35 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- EDER 610 - Introduction to Research Credits: 3
- EDFN 600 - Advanced Pedagogy Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3
- EPSY 740 - Advanced Educational Psychology Credits: 3

Select from the following

Select nine credits from the following. Credits: 9

- EDAD 705 - Introduction to School Administration Credits: 3
- EDAD 706 - Supervision Credits: 3
- EDAD 731 - School Finance Credits: 2
- EDAD 736 - Educational Law and Legislation Credits: 3
- EDAD 741 - Community and Public Relations Credits: 3

Select one of the following options

Option B - Research/Design Paper

- EDER 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (3 credits required)
- Approved Electives Credits: 8

Option C - Coursework Only

- ECE 794 - Internship (COM) Credits: 1-7 (2 credits required)
  or EDFN 794 - Internship (COM) Credits: 1-6 (2 credits required)
- EDFN 701 - Capstone Credits: 1
- Approved Electives Credits: 8

Total Required Credits: 35 (Option B & C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

Applicants must provide a resumé, goal statement, and two letters of professional reference to Teaching, Learning, and Leadership. Once all material is received, it is reviewed by the Department. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Educational Administration (M.Ed.) - Secondary Education Specialization

Program Coordinator/Contact

Jennifer Kampmann, Assistant Professor
Department of Teaching, Learning, and Leadership
Wenona Hall 108, Box 507
605-688-5039

Program Information

The M.Ed. degree in Educational Administration is designed to meet the needs of individuals who work (or plan to work) in an administrative capacity. The department of Teaching, Learning, and Leaderships provides professional preparation for those who expect to become qualified administrators in schools where certification is required, and for other institutions, businesses, industries and service-orientated agencies where an administrative program is of value.

The secondary specialization in Educational Administration meets the requirements for endorsement as a principal in South Dakota. Those seeking to complete the requirements for the principalship will have very limited flexibility in the coursework taken. See below for the coursework. These requirements are designed to meet the ELCC Standards as required by law.

The South Dakota State Board of Education requires that in order to be endorsed, individuals must have three years of verified teaching experience on a valid teaching certificate in a K-12 school, one year of which includes classroom experience or direct services to student.

Students are able to choose from either a program in which only coursework is required or a program in which they must complete a research project. If a student elects to take only course work (Plan C), the student must complete a minimum of 35 credit hours in order to graduate. If the research option is chosen, the student must complete a minimum of 32 credit hours including EDER 788 Research Problems (Plan B).

Student Learning Outcomes

- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by facilitating the development, articulation, implementation, and stewardship of a school vision of learning supported by the school community. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by promoting a positive school culture, providing an effective instructional program, applying best practice to student learning, and designing comprehensive professional growth plans for staff. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by managing the organization, operations, and resources in a way that promotes a safe, efficient, and effective learning environment. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by collaborating with families and other community members, responding to diverse community interests and needs, and mobilizing community resources. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by acting with integrity, fairly, and in an ethical manner. (Transferable Skill: Teaching/Training)
- Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context. (Transferable Skill: Teaching/Training)
- Internship. The internship provides significant opportunities for candidates to synthesize and apply the knowledge and practice and develop the skills identified in Standards 1-6 through substantial, sustained, standards-based work in real settings, planned and guided cooperatively by the institution and school district personnel for graduate credit. (Transferable Skill: Teaching/Training)

Course Delivery Format

The program can be completed online through the Brookings Campus or face-to-face through West River Graduate Center in Rapid City which also offers coursework in Gillette, Wyoming.

Student Support & Engagement Opportunities

The Teaching, Learning, and Leadership Department has a few assistantships for which students can apply.

Available Options for Graduate Degrees

Master of Education	Option B - Research/Design Paper	35 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- EDER 610 - Introduction to Research Credits: 3
- EDFN 600 - Advanced Pedagogy Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3
- EPSY 740 - Advanced Educational Psychology Credits: 3

Select from the following

Select nine credits from the following. Credits: 9

- EDAD 705 - Introduction to School Administration Credits: 3
- EDAD 706 - Supervision Credits: 3
- EDAD 731 - School Finance Credits: 2
- EDAD 736 - Educational Law and Legislation Credits: 3
- EDAD 741 - Community and Public Relations Credits: 3

Select one of the following options

Option B - Research/Design Paper

- EDER 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (3 credits required)
- Approved Electives Credits: 8

Option C - Coursework Only

- ECE 794 - Internship (COM) Credits: 1-7 (2 credits required)
  or EDFN 794 - Internship (COM) Credits: 1-6 (2 credits required)
- EDFN 701 - Capstone Credits: 1
- Approved Electives Credits: 8

Total Required Credits: 35 (Option B & C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

Applicants must provide a resumé, goal statement, and two letters of professional reference to Teaching, Learning, and Leadership. Once all material is received, it is reviewed by the Department. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Electrical Engineering (M.S.)

Program Coordinator/Contact

Siddharth Suryanarayanan, Department Head
Reinaldo Tonkoski, Associate Professor
Department of Electrical Engineering and Computer Science
Daktronics Eng Hall 214, Box 2222
605-688-4526

Program Information

The program offers a variety of courses that encompass a broad range of Electrical Engineering areas including: alternative energy and power systems; computer engineering, communications; electronic materials, devices and sensors; nano technology, photovoltaic devices and systems; and signal and image processing. The department's graduate faculty conduct active research in these areas using modern research facilities and equipment.

Program Objectives

The EE graduate program objectives are to equip individuals to

- Discover and disseminate knowledge relevant to the discipline of electrical engineering.

- Provide leadership for increasingly complex roles in electrical engineering and industry.
- Contribute to the advancement of the science of electrical engineering serving regional and national needs.

Student Learning Outcomes

- Understand fundamental principles: Articulate a solid understanding of the fundamental principles in the area of specialization and supporting areas.
- Communication skills: Demonstrate an ability to communicate, both orally and in writing, technical information in an effective manner. (Communication Skills)
- Conduct research and/or design project: Conduct research and/or design projects that demonstrate ability to model, analyze and design electrical engineering processes and systems.

Course Delivery Format

A majority of the courses are taught on campus in smart classrooms. The smart classrooms allow for a variety of methods for student engagement and faculty are able to record and post their lectures on-line.

Facilities & Services

With more than $12 million invested in classrooms and laboratories, graduate students benefit from modern lecture rooms and gain valuable experience using state-of-the-art equipment. The recently dedicated modern Daktronics Engineering Hall is home to the Electrical Engineering program with over 15,000 square feet of dedicated research space. The department boasts a 5-bay multi-million dollar clean room, several class one gloveboxes, and nano-characterization labs for developing both organic and inorganic electronics, as well as numerous other labs for research in fiber optics, power and alternative energy systems, and sensors.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- EE 5XX/6XX/7XX Courses in a category of EE concentration Credits: 13-16

Select one of the following options

Option A - Thesis

- EE 798 - Thesis (COM) Credits: 1-7 (5-7 credits required)
- Electives Credits: 7-12

Option B - Research/Design Paper

- EE 788 - Master's Research Problems/Projects (COM) Credits: 1-3 (2-3 credits required)
- Electives Credits: 13-17

Option C - Coursework Only

- Electives Credits: 19-22

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: General scores required
TOEFL: Department requirement of 575 paper-based, 90-91 Internet-based
IELTS: 5.5

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Engineering (M.Eng.)

Program Coordinator/Contact

Teresa Keys Hall, Professor
Jerome J. Lohr College of Engineering
Solberg Hall 116, Box 2223
605-688-6417

Program Information

The Master of Engineering program is a professional degree designed to grow your capacity to manage and lead in complex technical organizations. The program is 50% advanced engineering courses, 50% management and leadership courses, and can be completed on-campus or on-line.

The Master of Engineering (M.Eng.) is a terminal or professional degree as it is coursework only – no thesis. This graduate program is tailored to meet the needs of working professionals at their own pace or for senior-level engineering students who want to earn a graduate degree while still at SDSU. Core classes include project management, operations, and management and leadership, culminating in an applied industry-based project. Advanced engineering courses come from civil, electrical, mechanical, or agricultural engineering disciplines.

The M.Eng. program has a dedicated industrial advisory board to provide input and guidance on expected student competencies and program outcomes.

Student Learning Outcomes

At the time of graduation from the Master of Engineering program, students will have:

- in-depth technical knowledge in engineering;
- knowledge of contemporary leadership and management in professional practice; (Transferable Skill: Leadership - Management)
- a demonstrated ability to apply engineering, management and leadership concepts; and,
- a demonstrated ability to effectively communicate verbally, graphically and in writing.

The Capstone course (GE 750) is used to determine whether students have met expected program outcomes. In the Capstone course, students are expected to manage and execute an industry-based project or similar complex application of technical knowledge and management analysis skills.

Course Delivery Format

The program engages students in lecture (face-to-face and online), laboratory courses, and in field-based learning experiences, depending on the elective courses selected. The program is primarily online.

Available Options for Graduate Degrees

Master of Engineering	Option D - Coursework Only (Professional)	30 Credit Hours

Core Requirements

- ABE, CEE, EE, & ME 500, 600, 700 Level Courses (Approved by Program Advisor) Credits: 15
- GE 569 - Project Management Credits: 2-3 (2 credits required)
- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- GE 750 - Capstone Credits: 1
- OM 660 - Operations Management Credits: 3
- STAT 541 - Statistical Methods II Credits: 3

Electives

Select one of the following. Credits: 3

- GE 525 - Occupational Safety and Health Management Credits: 3
- OM/ OM 650 - Manufacturing Systems Management Credits: 3
- ME/ OM 767 - Decision Theory Credits: 3
- OM 563 - Supply Chain Management Credits: 3
- ME 760 - Quality Control Credits: 3
- Or Approved Technical Elective* Credits: 3

  *Elective courses may be used only if: (1) 500-level or higher, (2) they support a coherent plan of study, and (3) they are approved by the M.Eng Program Advisor and Graduate School.

Total Required Credits: 30 (Option D)

Additional Admission Requirements

GRE: Not required
TOEFL: 550 paper-based, 79 internet-based
IELTS: 6.5

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

English (M.A.)

Program Coordinator/Contact

Jason McEntee, Department Head
Sharon Smith, Associate Professor/Graduate Coordinator
Department of English
Pugsley Continuing Education Center 301, Box 2218
605-688-5191

Program Information

SDSU's English department offers the M.A. degree in English. There are two emphases available to students:

- Studies in Literature
- Studies in Writing and Rhetoric

Within these two areas of study, the department offers three options for completing the degree:

- Option A requires twenty-four credit hours of coursework, six credit hours of thesis, a thesis project, and an oral examination. Within this option, the student may write a critical or a creative thesis.
- Option B requires thirty credit hours of coursework, two credit hours of research, a research/design project, and an oral examination.
- Option C requires thirty-six credit hours of coursework, a comprehensive written examination, and an oral examination.

Each option will support a variety of educational or professional goals. Students generally complete the program in two to three years.

Student Learning Outcomes

The English department's M.A program prepares students for professional careers or further graduate study by developing their capacities for textual analysis, research, theory, and creative and critical writing.

Upon completing the English M.A. program, students will be able to:

- Textual Analysis: Demonstrate an advanced ability to analyze and interpret literary and cultural texts.
- Literary History: Examine significant texts, authors, periods, movements, genres, theories, and modes from literary history, interpreting the relationship between texts and their historical, aesthetic, cultural, and ideological contexts.
- Writing: Compose sophisticated argumentative, creative, and reflective texts that demonstrate focus, content, structure, evidence, style, and grammar appropriate to their rhetorical contexts.
- Theory: Demonstrate an advanced ability to apply theoretical concepts to the writing and analysis of texts.
- Research: Produce original research that advances knowledge within the discipline; generates questions for scholarly inquiry; identifies its methodological and theoretical foundations; employs library resources and discipline-specific databases; evaluates and integrates secondary criticism; and documents sources using MLA style.
- Diversity: Explain how literature both reflects and enriches the diversity of human experience through its exploration of the ways in which race, ethnicity, religion, gender, sexuality, ability, and class shape identity and influence perception. (Transferable Skill: Diversity Awareness)
- Teaching: Deliver instruction that demonstrates a growing mastery of course content (cultural analysis, rhetoric, grammar, and research) and increasing skill in helping students of varying abilities improve their cultural awareness, critical acumen, reading comprehension, and writing competence. (*Graduate teaching assistants only.*) (Transferable Skill: Teaching/Training)

Course Delivery Format

The English Department offers both face-to-face and online M.A. programs. Graduate courses are delivered in small, seminar settings.

Student Support & Engagement Opportunities

The department offers a number of graduate teaching assistantships for the nine-month academic year. Teaching assistants take two graduate classes each semester and teach either two sections of composition or one section of composition with duties in the Writing Center. The assistantship is renewable each year, providing the student is making good academic progress and receives satisfactory teaching evaluations. Graduate teaching assistants receive a stipend, office space, faculty library status, and a full tuition waiver. Applicants who wish to be considered for a graduate teaching assistantship should indicate their interest in the statement of purpose submitted to the Graduate School as part of their online application.

Available Options for Graduate Degrees

Master of Arts	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- ENGL 704 - Introduction to Graduate Studies Credits: 3
- ENGL 705 - Seminar in Teaching Composition Credits: 3 *required for all Teaching Assistants*

Select one of the following options

Option A - Thesis

- ENGL 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives Credits: 18

Option B - Research/Design Paper

- ENGL 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (2 credits required)
- Electives Credits: 24

Option C - Coursework Only

- Electives Credits: 30

Total Required Credits: 30 (Option A), 32 (Option B), 36 (Option C)

Additional Admission Requirements

To be considered for admission into the M.A. Program in English, the applicant should have a minimum of 24 semester hours of undergraduate credit in English or receive the consent of the Department Head.

To be considered for unconditional acceptance and to be eligible for a graduate teaching assistantship, applicants must have at least a 3.0 undergraduate GPA and a 3.25 GPA in their undergraduate English courses.

GRE: Not required
TOEFL: Department requirement of 600 paper-based, 100 Internet-based
IELTS: Department requirement of 7.0

In addition to the materials required by the Graduate School, the English department requires the following application materials:

- A one-page statement of purpose explaining the applicant's interest in and goals for graduate study. The statement of purpose should indicate whether or not the applicant would like to be considered for a graduate teaching assistantship. The applicant may upload this statement while completing the Graduate School's online application.
- An eight- to ten-page critical writing sample. This sample must engage in critical research and include a works cited page. The applicant may upload this writing sample while completing the Graduate School's online application.
- Two letters of recommendation from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential as a graduate teaching assistant. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Geography (M.S.)

Program Coordinator/Contact

Bob Watrel, Department Head
George White, Professor/Graduate Coordinator
Department of Geography and Geospatial Sciences
Wecota Hall 109, Box 506
605-688-4511

Program Information

The Department of Geography and Geospatial Sciences offers graduate students the opportunity to earn a Master of Science Degree. The curriculum, organized through formal courses, seminars, internship experiences, and supervised research, is designed to prepare students for positions in such professional areas as planning, remote sensing, geographic information sciences, government service, research,

business, and teaching. The program also is designed to provide students with the education needed to pursue further graduate study. Students seeking this degree are expected to select courses that will provide a sound foundation in geography (philosophical, physical and human, and research techniques) supported, if appropriate, by courses outside the department. Students may also seek out opportunities such as the cooperative program with the EROS Data Center and/or internships, generally available with planning districts, governmental agencies, business, and industry.

Student Learning Outcomes

- Critical thinking: Demonstrate foundational and specialized knowledge in both the physical and human sciences and their interconnectedness at local, regional, and global scales.
- Critical thinking: Interpret the ethical consequences of global issues concerning the environment to strengthen commitment to local, national, and global citizenship.
- Problem solving: Demonstrate proficiency in the application of appropriate geographical technologies and techniques to address issues in the physical and/or human sciences.
- Written communication: Communicate geographic ideas clearly and effectively (e.g., maps, writing, oral presentations, posters, photos, flowcharts, tables, graphs, and illustrations). (Communication Skills)
- Creative thinking: Apply observations from laboratory and/or field experiences to analyze problems and offer solutions.
- Creative thinking: Demonstrate the ability to collect, organize, analyze, and synthesize information about people, places, and environments in a spatial-temporal context.
- Inquiry and analysis: Explore complex local, regional, and global issues using a geographical perspective to formulate questions and draw informed conclusions that are based on critical scientific analysis and interpretation of information.

Course Delivery Format

Geography is not only a classroom subject but one that also includes laboratory research, fieldwork, and travel, as well as limited online coursework.

Facilities & Services

The department houses the Geospatial Sciences Center of Excellence and produces its own annual Geography Convention, the longest running such event in the United States.

Student Support & Engagement Opportunities

The department provides numerous opportunities for student engagement. For example, the Geography Club is a student organization centered on both academic and social functions. Membership is open to anyone interested. Additionally, the South Dakota State Geography Convention.

Students and faculty regularly travel including attendance at regional and national geography meetings, as well as travel to other parts of the world in pursuit of their individual scholarly interests.

Master of Science

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- GEOG 710 - Evolution of Geographic Thought Credits: 3
- GEOG 714 - Research and Writing Credits: 3

Select one of the following options

Option A - Thesis

- GEOG 798 - Thesis Credits: 1-7 (5-10 credits required)
- Electives Credits: 14-19

Option B - Research/Design Paper

- GEOG 788 - Research Paper in Geography (COM) Credits: 1-3 (2-5 credits required)
- Electives Credits: 21-24

Option C - Coursework Only

- Electives Credits: 30

Total Credits: 30 (Option A), 32 (Option B), 36 (Option C)

Additional Admission Requirements

GRE: Required
TOEFL: Department requirement of 590 paper-based, 80 Internet-based
IELTS: 6.5

The Department of Geography has listed the following additional admission requirements:

- Submission of Graduate Record Examination (GRE) scores.
- Submission of 1-2 page statement describing applicants' interests in the master's program in Geography at SDSU.
- Submission of two (2) letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant.
- Bestow conditional status on those applicants who have not completed the following courses or their equivalents prior to entering the program:
  - GEOG 131 (Physical Geography: Weather & Climate) or GEOG 132 (Physical Geography: Natural Landscapes)
  - GEOG 200 (Human Geography) or GEOG 210 (World Regional)
  - GEOG 372 (Introduction to GIS)

  These courses may be completed pass/fail.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Geography (M.S.) - Geographic Information Sciences Specialization

Program Coordinator/Contact

Bob Watrel, Department Head
George White, Professor/Graduate Coordinator
Department of Geography and Geospatial Sciences
Wecota Hall 109, Box 506
605-688-4511

Program Information

The Department of Geography and Geospatial Sciences offers graduate students the opportunity to earn a Master of Science Degree. The curriculum, organized through formal courses, seminars, internship experiences, and supervised research, is designed to prepare students for positions in such professional areas as planning, remote sensing, geographic information sciences, government service, research, business, and teaching. The program also is designed to provide students with the education needed to pursue further graduate study. Students seeking this degree are expected to select courses that will provide a sound foundation in geography (philosophical, physical and human, and research techniques) supported, if appropriate, by courses outside the department. Students may also seek out opportunities such as the cooperative program with the EROS Data Center and/or internships, generally available with planning districts, governmental agencies, business, and industry.

Student Learning Outcomes

- Critical thinking: Demonstrate foundational and specialized knowledge in both the physical and human sciences and their interconnectedness at local, regional, and global scales.
- Critical thinking: Interpret the ethical consequences of global issues concerning the environment to strengthen commitment to local, national, and global citizenship.
- Problem solving: Demonstrate proficiency in the application of appropriate geographical technologies and techniques to address issues in the physical and/or human sciences.
- Written communication: Communicate geographic ideas clearly and effectively (e.g., maps, writing, oral presentations, posters, photos, flowcharts, tables, graphs, and illustrations). (Communication Skills)
- Creative thinking: Apply observations from laboratory and/or field experiences to analyze problems and offer solutions.
- Creative thinking: Demonstrate the ability to collect, organize, analyze, and synthesize information about people, places, and environments in a spatial-temporal context.
- Inquiry and analysis: Explore complex local, regional, and global issues using a geographical perspective to formulate questions and draw informed conclusions that are based on critical scientific analysis and interpretation of information.

Course Delivery Format

Geography is not only a classroom subject but one that also includes laboratory research, fieldwork, and travel, as well as limited online coursework.

Facilities & Services

The department houses the Geospatial Sciences Center of Excellence and produces its own annual Geography Convention, the longest running such event in the United States.

Student Support & Engagement Opportunities

The department provides numerous opportunities for student engagement. For example, the Geography Club is a student organization centered on both academic and social functions. Membership is open to anyone interested. Additionally, the South Dakota State Geography Convention.

Students and faculty regularly travel including attendance at regional and national geography meetings, as well as travel to other parts of the world in pursuit of their individual scholarly interests.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- GEOG 710 - Evolution of Geographic Thought Credits: 3
- GEOG 714 - Research and Writing Credits: 3

Select from the following

Select nine credits from the following. Credits: 9

- GEOG 571 - Introduction to GIS Programming Credits: 3
- GEOG 573 - GIS Data Creation/Integration Credits: 3
- GEOG 573L - GIS: Data Creation and Integration Lab Credits: 0
- GEOG 574 - GIS: Vector & Raster Modeling Credits: 3
- GEOG 574L - GIS: Vector and Raster Modeling Lab Credits: 0
- GEOG 575 - GIS Applications Credits: 3
- GEOG 575L - GIS Applications Lab Credits: 0
- GEOG 576 - Web GIS Credits: 3
- GEOG 576L - Web GIS Lab Credits: 0
- GEOG 577 - Spatial Databases Credits: 3
- GEOG 577L - Spatial Databases Lab Credits: 0
- GEOG 583 - Aerial Remote Sensing Credits: 3
- GEOG 583L - Aerial Remote Sensing Lab Credits: 0
- GEOG 584 - Remote Sensing Credits: 3
- GEOG 584L - Remote Sensing Lab Credits: 0
- GEOG 585 - Quantitative Remote Sensing Credits: 3
- GEOG 585L - Quantitative Remote Sensing Lab Credits: 0
- GEOG 741 - Quantitative Remote Sensory for Terrestrial Monitoring Credits: 3
- GEOG 743 - Geospatial Analysis Credits: 3
- GEOG 760 - Advanced Methods in Geospatial Modeling: Topical Credits: 3
- GEOG 786 - Geographic Information Systems Credits: 3

Select one of the following options

Option A - Thesis

- GEOG 798 - Thesis Credits: 1-7 (6 credits required)
- Electives will be determined in consultation with the advisor. Credits: 9

Option B - Research/Design Paper

- GEOG 788 - Research Paper in Geography (COM) Credits: 1-3 (6 credits required)
- Electives will be determined in consultation with the advisor. Credits: 11

Option C - Coursework Only

- Electives will be determined in consultation with the advisor. Credits: 21

Total Credits: 30 (Option A), 32 (Option B), 36 (Option C)

Additional Admission Requirements

GRE: Required
TOEFL: Department requirement of 590 paper-based, 80 Internet-based
IELTS: 6.5

The Department of Geography has listed the following additional admission requirements:

- Submission of Graduate Record Examination (GRE) scores.
- Submission of 1-2 page statement describing applicants' interests in the master's program in Geography at SDSU.
- Submission of two (2) letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant.
- Bestow conditional status on those applicants who have not completed the following courses or their equivalents prior to entering the program:
  - GEOG 131 (Physical Geography: Weather & Climate) or GEOG 132 (Physical Geography: Natural Landscapes)
  - GEOG 200 (Human Geography) or GEOG 210 (World Regional)
  - GEOG 372 (Introduction to GIS)

  These courses may be completed pass/fail.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Human Biology (M.S.)

Program Coordinator/Contact

Heike Bücking, Department Head
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The M.S. in Human Biology provides graduate-level preparation for students for successful admission to professional schools, including those not admitted directly to professional school from an undergraduate program. The program is designed to provide graduate-level preparation for students who desire admission to professional schools in human healthcare. This includes but is not limited to programs such as: Allopathic Medical Doctor (M.D.), Doctor of Osteopathic Medicine (D.O.), Doctor of Optometry (O.D.), Doctor of Chiropractic (D.C.), Doctor of Dental Surgery (D.D.S), and Master of Science – Physician Assistant Studies (M.S. – PAS). The M.S. program allows for additional opportunities to demonstrate their academic excellence and polish their professional skills. This program directly strengthens the academic capacity of the student with special attention to advanced content knowledge and case based application, professional development and professional skills needed by the healthcare provider.

Student Learning Outcomes

- Integrate the biological, biochemical, physiological and structural aspects of the human body.
- Demonstrate quantitative literacy and evaluate quantitative reasoning.
- Communicate effectively (written and oral).
- Demonstrate leadership and adhere to the ethical standards of the field.

Academic Requirements

Students must maintain an overall program grade point average of 3.0.

Course Delivery Format

Biology courses are delivered in traditional lecture, laboratory, seminar and discussion formats.

Available Options for Graduate Degrees

Master of Science	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

- BIOL 576 - Advanced Mammalian Physiology Credits: 4
- BIOL 719 - Professional Development Seminar Credits: 1-4 (4 credits required)
- BIOL 721 - Advanced Human Anatomy Credits: 4
- BIOL 721L - Advanced Human Cadaver Dissection Credits: 0
- BIOL 788 - Master's Research Problems/Project (COM) Credits: 1-3 (2 credits required)
- BIOS 662 - Advanced Molecular Biology Credits: 3 (6 credits required)
- BIOS 792 - Topics (COM) Credits: 1-6 (3 credits required) (Epigenetics)

Electives

Select nine credits from the following. Credits: 9

- BIOL 567 - Parasitology Credits: 3
- BIOL 567L - Parasitology Laboratory Credits: 0
- BIOL 570 - Cancer Biology Credits: 3
- BIOL 583 - Developmental Biology (COM) Credits: 3
- BIOL/MICR 500-700 A course determined by the advisor and the student. Credits: 3
- MICR 524 - Medical and Veterinary Virology Credits: 3
- MICR 533 - Medical Microbiology (COM) Credits: 3
- MICR 539 - Medical and Veterinary Immunology Credits: 3

Total Required Credits: 32 (Option B)

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 525 paper-based, 71 Internet based
IELTS: 5.5

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students conditionally admitted to the graduate program. Up to 6 credits applied to the B.S. program may be used to satisfy graduate credit. Students will enroll in the graduate coursework in the spring of their final undergraduate year. Once students complete the graduate coursework in the M.S. in Human Biology with B or above grades, and graduate with a B.S. in Human Biology, including all dual-credit courses, they will by fully accepted into the program.

In order to apply, students must:

- Be enrolled in the B.S.in Human Biology;
- Have earned 90 undergraduate credits with a GPA of 2.9 or higher;
- Meet all degree requirements as stipulated by Regental or University policy;
- Submit to the a statement of interest identifying how the M.S. in Human Biology will contribute to their academic and career goals;
- Submit at least two letters of reference regarding his/her ability to participate in the program;
- Submit scores for the GRE, MCAT, DAT, or OAT; and
- Submit the application for admission to the graduate school.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Human Sciences (M.S.) - Developmental Sciences Specialization

Program Coordinator/Contact

Aileen Garcia, Assistant Professor
Department of Counseling and Human Development
Wenona Hall 206
605-688-4597

Program Information

The Human Sciences (M.S.) - Developmental Sciences Specialization provides students with graduate training in an interdisciplinary field that examines human development across the lifespan in cultural, social, and family contexts. Students will complete advanced coursework in the areas of child, adolescent, and adult development with an emphasis in multiculturalism, diverse learners, and learning sciences. The specialization provides advanced training for individuals working in outreach and advocacy, health, and human services, education, and businesses and corporations.

Student Learning Outcomes

- Human Development - Students will demonstrate a comprehensive knowledge and understanding of the major human development domains.
- Diversity - Students will demonstrate a comprehensive knowledge of multicultural and pluralistic trends, including characteristics and concerns within and among diverse groups nationally and internationally. (Transferable Skill: Diversity Awareness)
- Integration of Developmental Science - Utilizing practice, prevention, and policy, students will demonstrate a comprehensive understanding of the developmental sciences.
- Communication - Students will demonstrate critical and innovative thinking.

Course Delivery Format

Courses for the Developmental Sciences Specialization will be delivered on campus in Brookings and online.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	36 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- CHRD/ HDFS 602 - Research and Evaluation in Counseling and Human Development Credits: 3

  or EDER 610 - Introduction to Research Credits: 3
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3

  or EDFN 725 - Education in a Pluralistic Society Credits: 3
- ECE 711 - Developmental Theory and Application Credits: 3

  or HDFS 614 - Adult Development Credits: 3
- ECE 715 - Cognitive Development Credits: 3
- HDFS 525 - Family Resiliency Credits: 3
- HDFS 701 - Current Issues in Developmental Sciences Credits: 3
- HDFS 710 - Program Design, Evaluation, and Implementation Credits: 3

  or HDFS 730 - Grant Writing Credits: 3

Select one of the following options

Human Development in Diverse Context

Credits: 12

- CHRD/ HDFS 702 - Advanced Human Sexuality Credits: 3
- HDFS 525 - Family Resiliency Credits: 3
- HDFS 742 - Family Theory and Research Credits: 3
- HDFS 744 - Diverse Families Credits: 3

Human Development in Educational Context

Credits: 12

- ECE 645 - Contemporary Perspectives in Early Childhood Education Credits: 3
- EDER 612 - Inquiry and Action Research Credits: 3
- EDFN 600 - Advanced Pedagogy Credits: 3
- EPSY 740 - Advanced Educational Psychology Credits: 3

Select one of the following options

Option A - Thesis

- HDFS 798 - Thesis Credits: 1-7

Option C - Coursework Only

- Electives determined in consultation with advisor Credits: 6

Total Required Credits: 36 (Option A & C)

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirements of 525 paper-based, 71 Internet-based
IELTS: 5.5

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Human Sciences (M.S.) - Family & Community Services Specialization

Program Coordinator/Contact

Ann Michelle Daniels, Associate Professor
Department of Counseling and Human Development
Wenona Hall 005, Box 507
605-688-4036

Program Information

The goal of the online M.S. specializing in Family and Community Services is to provide advanced, professional education and research expertise that focuses on improving individual, family, and community well-being. This specialization is delivered entirely online through Great Plains Interactive Distance Education Alliance (Great Plains IDEA) and is designed to meet the educational needs of military service members and their spouses. Students who successfully complete this specialization will earn a Master of Science in Human Sciences specializing in Family and Community Services.

Student Learning Outcomes

- Research-based perspective: Student will be able to use a research-based perspective on individual, family, interpersonal and community dynamics across the lifespan.
- Design, implement and sustain program: Student will have the knowledge and skills to design, implement, and sustain family and community service programs.
- Leadership and management: Student will have the knowledge and skills for leadership and management of family and community service programs. (Transferable Skill: Leadership - Management)

Course Delivery Format

The online program has been developed by faculty from the Great Plains IDEA. Courses will be entirely Internet based and will be taught by faculty within the Alliance (Kansas State University, Michigan State University, Oklahoma State University, South Dakota State University, University of Missouri, and University of Nebraska). Courses are offered fall, spring and summer semesters.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	36 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- HDFS 501 - Foundations and Principles of Community Service Credits: 3
- HDFS 510 - Parenting Credits: 3
- HDFS 525 - Family Resiliency Credits: 3
- HDFS 605 - Program Administration and Management Credits: 3
- HDFS 610 - Family Resource Management Credits: 3
- HDFS 620 - Family Dynamics Credits: 3
- HDFS 630 - Lifespan Development Credits: 3
- HDFS 635 - Crises Across the Lifespan Credits: 3
- HDFS 640 - Interpersonal Relationships Credits: 3
- HDFS 710 - Program Design, Evaluation, and Implementation Credits: 3
- HDFS Electives: 6
- HDFS 798 Thesis (Option A)
- Elective Coursework (Option C)

Total Required Credits: 36 (Option A & C)

Additional Academic Requirements

GRE: Not Required
TOEFL: Department Requirements of 525 paper-based, 71 Internet-based
IELTS: 5.5

- STEP 1: Applicant Applies to the Graduate School
  - Apply to the Graduate School at least two months before the FCS/ADW deadline to allow for processing
  - Graduate School applications received after the FCS/ADW deadline will be denied and referred to the next semester
  - The minimum GPA to apply is 2.75, however a 3.0 or higher is desired
  - GRE is not required
- STEP 2: Applicant Applies to the FCS or AWD Program
  - Applicants to the FCS/ADW programs must submit the documents below by April 1 for fall admission or October 1 for spring admission. Late or incomplete applications will be denied.
  - Resume
  - A one page, typed goal statement explaining your professional goals and how completion of this degree will assist you in meeting those goals
  - Three letters of recommendation prepared within the past year; one letter must come from an academic professor.
- STEP 3: Admissions Decision
  - Complete admission files will be reviewed by faculty for an admissions decision. The Graduate School will notify the applicant via email about their admission status.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Human Sciences (M.S.) - Family & Consumer Sciences Education Specialization

Program Contact/Coordinator

Nicole Graves, Assistant Professor
Department of Teaching, Learning, and Leadership
Wenona Hall 102, Box 507
605-688-6484

Program Information

There is a strong demand for family and consumer sciences teachers and education professionals nationwide. Through the online Great Plains Interactive Distance Education Alliance (Great Plains IDEA) program, graduates will earn a Master's of Science in Human Sciences with a specialization in Family and Consumer Sciences Education. Students in the program develop skills in planning curriculum, creating physical and psychological learning environments conducive to learning, developing engaging activities for learners, integrating technology, advising student organizations, working with diverse audiences and analyzing the historical and philosophical underpinnings of the family and consumer sciences profession. Courses will also address professionalism and applying research to practice.

There are two emphases within this specialization:

- Teacher Licensure/Certification Emphasis - This emphasis is designed for those seeking initial teacher certification and is a teacher preparation focused program.
- Professional Practice Emphasis – This emphasis is designed for practicing professionals in family and consumer sciences education and extension and is a professional development/advancement focused program.

Student Learning Outcomes

- Nutrition - Students will demonstrate comprehensive knowledge of the nutritional value of food and the necessary steps for food preparation and safety.
- Diversity - Students will demonstrate a comprehensive knowledge of multicultural and pluralistic trends, including characteristics and concerns within and among diverse groups nationally and internationally.
- Careers - Students will demonstrate a comprehensive understanding of the varied careers available to individuals who pursue a career in this area. (Transferable Skill: Career Preparedness)
- Communication - Students will demonstrate critical and innovative thinking.

Accreditation, Certification, & Licensure

Accreditation

The programs in Teaching, Learning and Leadership are accredited by the National Council for Accreditation of Teacher Education (2010 Massachusetts Ave., NW, Suite 500, Washington, D.C. 20036-1023; Phone 202-466-7496). In order to become a licensed/certified family and consumer sciences educator, students may require additional content courses, tests or other individual state requirements.

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). Courses will be entirely Internet based and will be taught by faculty within the Alliance (Central Washington University, North Dakota State University, South Dakota State

University, Texas Tech University, and University of Nebraska - Lincoln). Courses are offered fall, spring and summer semesters.

Available Options for Graduate Degrees

Teacher Licensure/Certification Emphasis		
Master of Science	Option C - Coursework Only	38-41 Credit Hours
Professional Practice Emphasis		
Master of Science	Option C - Coursework Only	36 Credit Hours

Core Requirements

Teacher Licensure/Certification Emphasis

- EDFN 700 - Exceptional Learners Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3 (Teaching Reading Across Disciplines)
- EDFN 792 - Topics (COM) Credits: 1-3 (3 credits required) (Teaching FCS with Technology)
- EPSY 723 - Adolescent Psychology Credits: 3
- FCSE 595 - Practicum Credits: 1-3 (2 credits required)
- FCSE 611 - History and Philosophy of Family and Consumer Sciences Credits: 3
- FCSE 673 - Supervised Student Teaching in Family and Consumer Sciences Education Credits: 6-9 (credit requirement based on certification requirements)
- FCSE 721 - Occupational Programs in Family and Consumer Sciences Credits: 3
- FCSE 751 - Curriculum of Family/Consumer Sciences Education Credits: 3
- FCSE 761 - Advanced Methods and Assessment in Family & Consumer Sciences Education Credits: 3

Total Required Credits: 38-41 (Option C)

Professional Practice Emphasis

- EDFN 730 - Current Issues in Education (COM) Credits: 3 (Teaching Reading Across Disciplines)
- EDFN 792 - Topics (COM) Credits: 1-3 (3 credits required) (Teaching FCS with Technology)
- FCSE 611 - History and Philosophy of Family and Consumer Sciences Credits: 3
- FCSE 721 - Occupational Programs in Family and Consumer Sciences Credits: 3
- FCSE 761 - Advanced Methods and Assessment in Family & Consumer Sciences Education Credits: 3
- FCSE 792 - Topics (COM) Credits: 1-3 (3 credits required) (Current Trends)
- FCSE 792 - Topics (COM) Credits: 1-3 (3 credits required) (Supervision of Student Teachers OR Administration of FCS Education Programs)
- FCSE 792 - Topics (COM) Credits: 1-3 (3 credits required) (Advising FCCLA)
- HDFS 602 - Research and Evaluation in Counseling and Human Development Credits: 3

Select from the following

Select nine credits from the following. Credits: 9

- EDFN 700 - Exceptional Learners Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EPSY 723 - Adolescent Psychology Credits: 3
- or other elective coursework approved by advisor

Total Required Credits: 36 (Option C)

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirements of 525 paper-based, 71 Internet-based
IELTS: 5.5

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Human Sciences (M.S.) - Family Financial Planning Specialization

Program Contact/Coordinator

Wookjae Heo, Assistant Professor
Department of Consumer Sciences
Wagner Hall 229, Box 2275A
605-688-5196

Program Information

The online M.S. in Human Sciences – Family Financial Planning program will allow students to enhance personal finance knowledge, gain eligibility to sit for the CFP® Certification Examination, increase networking opportunities, and improve career options. Family financial planning is an emerging area with job opportunities in areas related to insurance, real estate, investments, retirement, tax and estate planning. Financial planners are increasingly in demand as Americans seek advisors to help manage their income, assets, and debts.

The curriculum consists of twelve 3-credit courses taken in any order with the Financial Planning Case Study course designed as a capstone to the program. The elective six credit-hours include supervised experiences or projects in family financial planning.

Student Learning Outcomes

- Students will communicate a financial plan with consumers and communities.
- Students will recognize ethical standards for financial planners as prescribed by the CFP Board. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Students will demonstrate listening and counseling skills needed to help families with financial management.
- Students will calculate time value of money calculation.

Accreditation, Certification, & Licensure

The Family Financial Planning graduate program is registered by the CERTIFIED FINANCIAL PLANNER™ Board of Standards. CFP® and CERTIFIED FINANCIAL PLANNER™ are federally registered service marks of the CERTIFIED FINANCIAL PLANNER™ Board of Standards, Inc. They are granted by the CFP® Board to those persons who have fulfilled a comprehensive educational requirement, passed the CFP® Certification Examination, satisfied a work experience requirement and agreed to abide by the CFP® Board code of ethical conduct.

- The graduate certificate in Financial Planning does not guarantee a student will pass the CFP® exam.
- In earning the graduate certificate in Financial Planning through the Great Plains Interactive Distance Education Alliance (Great Plains IDEA), students receive the education required to take the exam.
- After completing the necessary educational requirements, students work with the CFP Board on examination, experience and ethics requirements for CFP® certification.

Certified Financial Planner™ professionals have the satisfaction of helping people solve their financial problems and reach their financial goals. The CFP Board website at www.cfp.net has extensive CFP® certification information.

Students admitted to the Great Plains IDEA online degree program are advised to obtain the Guide to CFP® Certification. The guide includes an application for the exam, exam fee information, exam procedures and information on the required work experience.

- Certified Financial Planner Board of Standards Inc. owns the marks CFP®, CERTIFIED FINANCIAL PLANNERTM, and CFP (with flame logo)®, which it awards to individuals who successfully complete initial and ongoing certification requirements.
- Great Plains IDEA institutions do not certify individuals to use the CFP®, CERTIFIED FINANCIAL PLANNERTM and CFP (with flame logo)® certification marks. CFP® Certification is granted only by the Certified Financial Planner Board of Standards Inc. to those persons who, in addition to completing an educational requirement such as this CFP Board-Registered Program, have met its ethics, experience and examination requirements.

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). Courses will be entirely Internet based and will be taught by faculty within the Alliance (Iowa State University, Kansas State University, Montana State University, North Dakota State University, Oklahoma State University, South Dakota State University, and University of Missouri). Courses are offered fall, spring and summer semesters.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	36 Credit Hours
	Option B - Research/Design Paper	36 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- CA 612 - Financial Counseling Credits: 3
- CA 621 - Financial Theory and Research I Credits: 3
- CA 640 - Fundamentals of Family Financial Planning Credits: 3
- CA 660 - Investing for Family's Future Credits: 3
- CA 680 - Insurance Planning for Families Credits: 3
- CA 704 - Estate Planning for Families Credits: 3
- CA 725 - Family, Employment Benefits and Retirement Planning Credits: 3
- CA 735 - Personal Income Taxation Credits: 3
- CA 755 - Financial Planning Case Study Credits: 3

Select one of the following options

Option A - Thesis

- CA 798 - Thesis (COM) Credits: 1-6 (6 credits required)
- Electives Credits: 3

Option B - Research/Design Paper

- CA 788 - Master's Research Problems/Projects (COM) Credits: 3 (3 credits required)
- Electives Credits: 6

Option C - Coursework Only

- Electives Credits: 9

Coursework for Option C - Coursework Only requires 9 credits from the Electives courses listed below. Students choosing Option A - Thesis or Option B - Research Project instead of Option C, then choose any remaining credit hours from the electives list.

- CA 595 - Practicum Credits: 3-6 (3-6 credits required)
- CA 645 - Military Personal Financial Readiness Credits: 3
- CA 715 - Housing and Real Estate in FFP Credits: 3
- CA 721 - Financial Theory and Research II Credits: 3
- CA 745 - Professional Practices in Financial Planning Credits: 3
- CA 790 - Seminar (COM) Credits: 3
- STAT 541 - Statistical Methods II Credits: 3

Total Required Credits: 36 (Option A, B,& C)

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirements of 525 paper-based, 71 Internet-based
IELTS: 5.5

Students enter the Great Plains IDEA program through application and admission to the South Dakota State University Graduate School. The Graduate School requires a minimum undergraduate GPA of 3.0 for unconditional admission into any program. The program accounts for life experience as a part of conditional admission to the program. Three Letters of Recommendation from persons acquainted with the academic ability or professional competency of the applicant should be sent directly to Dr. Heo at Wookjae.Heo@sdstate.edu.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Human Sciences (M.S.) - Merchandising Specialization

Program Contact/Coordinator

Kendra Kattelmann, Department Head
Department of Consumer Sciences
Wagner Hall 425, Box 2275A
605-688-5196

Program Information

The M.S. in Human Sciences specialization in Merchandising provides an understanding of merchandising at every level, with emphasis on current trends in the United States and the global marketplace, factors that will distinguish graduates among their peers. Students can obtain a focus on the merchandising aspect of the business. The additional expertise offered through the merchandising certificate may position individuals for career advancement or a new career in merchandising. Graduates of the program are prepared to work in product development, promotions, and retail management in this ever-expanding industry.

Student Learning Outcomes

- Demonstrate the ability to identify and understand theories, principles, practices and terminology related to the merchandising industry.
- Demonstrate competency in communicating effectively using oral and written techniques, to include the use of technology, in the gathering and professional presentation of information.
- Apply their knowledge of leadership, planning, and controlling to business activities and merchandising organizations.
- Analyze and evaluate the triple bottom-line (economic, social, environmental) impact of sustainable merchandising industry activities and processes. (Transferable Skill: Leadership - Management)
- Demonstrate strong research, analytical and strategic decision-making skills. (Transferable Skill: Argument Deconstruction)

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). Courses will be entirely Internet based and will be taught by faculty within the Alliance (Kansas State University, North Dakota State University, Oklahoma State University, South Dakota State University, and University of Nebraska). Courses are offered fall, spring and summer semesters.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	36 Credit Hours
	Option B - Research/Design Paper	36 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- MRCH 510 - Consumer Behavior in Merchandising Credits: 3
- MRCH 520 - Professional Advancement in Merchandising Credits: 3
- MRCH 530 - Product Design, Development, and Evaluation Credits: 3
- MRCH 540 - Promotional Strategies in Merchandising Credits: 3
- MRCH 550 - Retail Theory and Current Practice Credits: 3
- MRCH 560 - Retail Analytics Credits: 3
- MRCH 620 - International Merchandise Management Credits: 3
- MRCH 630 - Research Methods in Merchandising Credits: 3
- MRCH 640 - Financial Merchandising Implications Credits: 3
- MRCH 650 - Strategic Planning in Merchandising Credits: 3

Select from the following options

Option A - Thesis

The thesis option is reserved only for those students who are willing and able to travel to SDSU main campus in Brookings, SD several times during their graduate studies.

- MRCH 798 - Thesis (COM) Credits: 1-6 (6 credits required)

Option B - Research/Design Paper

- MRCH 788 - Master's Research Problems/Projects (COM) Credits: 1-3 and electives for a total of 6 credits

Option C - Coursework Only

- MRCH 695 - Practicum (COM) Credits: 1-6 and electives for a total of 6 credits

Total Required Credits: 36 (Option A, B,& C)

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirements of 525 paper-based, 71 Internet-based
IELTS: 5.5

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Interdisciplinary Studies (M.S.)

Program Contact/Coordinator

Nicole Lounsbery, Director
Graduate School
Morrill Hall 130, Box 2201
605-688-4181

Program Information

The M.S. in Interdisciplinary Sciences program is an innovative, flexible, and highly individualized graduate program designed to meet students' academic and professional goals. Students will work with their advisor to finalize their plan of study in at least two or three disciplines, using classes that are relevant to supporting the student in achieving their educational goals. Students will complete a plan of study with a research/design paper or coursework only option.

Student Learning Outcomes

- demonstrate an understanding of the relationship between the various disciplines incorporated into their plan of study;
- identify and apply relevant theoretical frameworks;
- have fundamental knowledge of their disciplines and specific knowledge of their particular area of study; and
- demonstrate mastery of subject matter on their plan of study.

Students who undertake a project will be able to:

- develop a plan for the project or develop a plan for a scholarly or creative work;
- locate, retrieve and utilize appropriate information;
- read, understand, and critically review the primary literature or previous creative works;
- utilize appropriate methodologies to conduct an applied study, implement a project, or utilize appropriate skills to produce a creative work;
- analyze results using qualitative or quantitative techniques when appropriate;
- compare their results to previous studies when appropriate;
- explain the contribution of their work to the broader field of existing knowledge or to previously created works; and
- communicate the originality of, as well as the independent thinking and rationale for their work, in oral or written format.

Students who undertake the course completion option will be able to:

- undertake scholarly or creative work as demonstrated in specific class assignments;
- locate, retrieve and utilize appropriate information;
- read, understand, and critically review the primary literature or previous creative works;
- analyze results using qualitative or quantitative techniques when appropriate;
- compare their results to previous studies when appropriate;
- explain the contribution of their work to the broader field of existing knowledge or to previously created works; and
- communicate the originality of, as well as the independent thinking and rationale for their work, in written or oral format.

Course Delivery Format

Courses are delivered through online and face-to-face instruction.

Available Options for Graduate Degrees

Master of Science	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

Coursework must be selected from two (2) or three (3) distinct academic areas, excluding pedagogy. If two academic areas are selected, the student must complete no fewer than twelve (12) credit hours in each area and no less than one (1) credit hour of capstone experience. If three academic areas are selected, the student must complete no fewer than nine (9) credit hours and no less than one (1) credit hour of capstone experience. An academic area is defined by courses taught under the same prefix (e.g. BIOL, ENGL, MCOM, MICR, NRM, OM, PE, SOC, SPCM, etc.).

Select one of the following options

Option B - Research/Design Paper

- Academic Area "1" Credits: 12
- Academic Area "2" Credits: 12
- Capstone Credits: 1
- Electives Credits: 7

  OR

- Academic Area "1" Credits: 9
- Academic Area "2" Credits: 9
- Academic Area "3" Credits: 9
- Capstone Credits: 1
- Electives Credits: 4

Option C - Coursework Only

- Academic Area "1" Credits: 12
- Academic Area "2" Credits: 12
- Capstone Credits: 1
- Electives Credits: 10

  OR

- Academic Area "1" Credits: 9
- Academic Area "2" Credits: 9
- Academic Area "3" Credits: 9
- Capstone Credits: 1
- Electives Credits: 7

Total Required Credits: 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Applicants must submit a personal statement identifying 2 or 3 specific academic areas to be included on their plan of study.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Mass Communication (M.M.C.)

Program Coordinator/Contact

Jenn Anderson, Associate Professor/Graduate Program Coordinator
School of Communication and Journalism
Pugsley Continuing Education Center 115
605-688-6131

Program Information

The Master of Mass Communication (M.M.C.) consists of advanced professional studies. While it has theoretical underpinnings, the primary purpose is to enhance knowledge and skills for application in professional practice. Fifty percent or more of the courses must be skills-based. This degree targets mid-career professionals in journalism and mass communication and builds on students' current levels of experience and skills making them more marketable. The Master of Mass Communication prepares students for the increasingly competitive workforce and changing disciplines in mass communications.

Student Learning Outcomes

- Understand and apply the principles and laws of freedom of speech and press for the country in which the institution that invites ACEJMC is located, as well as receive instruction in and understand the range of systems of freedom

of expression around the world, including the right to dissent, to monitor and criticize power, and to assemble and petition for redress of grievances;

- Demonstrate an understanding of the history and role of professionals and institutions in shaping communications;
- Demonstrate an understanding of gender, race, ethnicity, sexual orientation and, as appropriate, other forms of diversity in domestic society in relation to mass communications; (Transferable Skill: Diversity Awareness)
- Demonstrate an understanding of the diversity of peoples and cultures and of the significance and impact of mass communications in a global society;
- Understand concepts and apply theories in the use and presentation of images and information;
- Demonstrate an understanding of professional ethical principles and work ethically in pursuit of truth, accuracy, fairness and diversity; (Transferable Skill: Diversity Awareness; Ethics - Moral Decision Making/Moral Reasoning)
- Think critically, creatively and independently;
- Conduct research and evaluate information by methods appropriate to the communications professions in which they work;
- Write correctly and clearly, in forms and styles appropriate for the communications professions, audiences and purposes they serve; (Transferable Skill: Communication Skills)
- Critically evaluate their own work and that of others for accuracy and fairness, clarity, appropriate style and grammatical correctness;
- Apply basic numerical and statistical concepts;
- Apply tools and technologies appropriate for the communications professions in which they work; and
- Students will contribute to knowledge appropriate to the communications professions in which they work. (Transferable Skill: Teaching/Training)

Accreditation, Certification, & Licensure

The Masters of Mass Communication Degree is accredited by the national accrediting body of journalism and mass communication, the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC).

Course Delivery Format

Courses for the M.M.C. program are delivered online and are eight weeks long.

Available Options for Graduate Degrees

Master of Mass Communication	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- MCOM 705 - Introduction to Master of Mass Communication Credits: 3
- MCOM 710 - Cross-Platform Storytelling Credits: 3
- MCOM 730 - Media Law Case Studies Credits: 3
- MCOM 746 - Cross-Platform Campaigns Credits: 3
- MCOM 786 - Conducting Professional Research Credits: 3

Select one of the following options

Option B - Research/Design Paper

- MCOM 788 - Master's Research Problems/Projects (COM) Credits: 1-6 (2 credits required)
- Electives Credits: 15

Option C - Coursework Only

- Electives Credits: 21

Electives for Option B & C

Select from the following list of courses. Other courses may be selected with prior approval.

- MCOM 513 - International Media (COM) Credits: 3
- MCOM 519 - Women in Media Credits: 3
- MCOM 574 - Media Administration and Management (COM) Credits: 3
- MCOM 615 - Opinion Writing Credits: 3
- MCOM 653 - Mass Communications Teaching Methods Credits: 1-4 (3 credits required)
- MCOM 760 - Social Marketing for Health and Behavioral Change Credits: 3
- MCOM 785 - Health Journalism Credits: 3
- MCOM 791 - Independent Study (COM) Credits: 1-3
- MCOM 794 - Internship (COM) Credits: 1-3

Total Required Credits: 32 (Option B), 36 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 600 paper-based, 100 Internet-based
IELTS: 7.0

GPA: 3.0 undergraduate GPA

Preferred qualifications:

- Professional experience in fields such as journalism, advertising, marketing, or public relations.
- Previous coursework in areas such as journalism, advertising, marketing, or public relations.
- Priority Deadline: February 1
  - Students will only be considered for Fall admission.
  - All applications received by the priority deadline receive a timely, comprehensive review by the graduate committee.
  - Applications received after the priority deadlines will be periodically reviewed by the graduate committee.
  - Admission decisions will be shared at least 10 working days before the April 15 deadline set by the Council of Graduate Schools.
- Application materials
  - Professional resume
  - Professional portfolio
  - Cover letter (max: 2 pages) that addresses
    - Preparation for success in an accelerated, online graduate program.
    - How this degree will advance professional goals.
  - Official Transcripts
    - Note: If the coursework was completed at a South Dakota Board of Regents (SDBOR) institution, we have access to your transcript, and you do not need to take any action.
  - $35 application fee
- International Applicants may only receive unconditional admission. To receive unconditional admission, international applicants must meet these requirements:
  - A minimum GPA of 3.0.
  - A **professional academic transcript evaluation** for degrees earned outside the United States. (This requirement cannot be waived unless your highest degree was earned or will be earned in the U.S. prior to enrollment at SDSU).
  - If you are completing your bachelor's degree at the time of application, you may submit an incomplete evaluation. If you are accepted, a complete transcript and/or evaluation with completed degree will be required by the end of your first semester of coursework.
  - Official U.S. transcripts where a degree is earned (or will be earned), and official U.S. transcripts where graduate level coursework has been taken.
  - The School of COJO requires higher English proficiency scores than the minimums set by the SDSU Graduate School. International applicants must achieve a minimum TOEFL score of 600 paper-based or 100 Internet based, or an IELTS score of 7.0.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Mathematics (M.S.)

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The focus of the M.S. in Mathematics program is the development of sophisticated mathematical models and their implementation on high performance computing platforms. The curriculum features a balance of application, computation, and

theory with particular emphasis in the areas of operations research, computational science, and the development of probabilistic and deterministic models. Areas of faculty and graduate student research activity include computational biology, computational finance, molecular dynamics simulation, operations research, optimization, and Ramsey theory. The program is particularly effective at preparing graduates to work in business, industry, or government as well as preparing students to continue on to the CSS Ph.D. or other Ph.D. program.

Student Learning Outcomes

- Prove theorems: Students should be able to prove theorems in specialized areas of mathematics and statistics.
- Recall definitions and theorems: Students should be able to recall important definitions and theorems from some specialized areas of mathematics and statistics and effectively communicate these concepts.
- Use models correctly: Students should be able to use mathematical models correctly.
- Understand the ethical implications of professional actions in mathematics and other contexts. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Facilities & Services

The department offices are located in Chicoine Architecture, Mathematics and Engineering 209. The Math Help Center, located in AME 292 and in the Biostress Basement 0020, provides free walk-in tutoring for students in several undergraduate courses.

Student Support & Engagement Opportunities

The department has graduate research and teaching assistantships and fellowships are available for a number of qualified applicants.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- MATH 575 - Operations Research (COM) Credits: 3
  and MATH 675 - Operations Research II Credits: 3
  or
  MATH 571 - Numerical Analysis I (COM) Credits: 3
  and MATH 770 - Numerical Linear Algebra Credits: 3
  or
  MATH 571 - Numerical Analysis I (COM) Credits: 3
  and MATH 771 - Numerical Analysis II Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 779 - Advanced Mathematics Synthesis Credits: 1

Select one of the following options

Option A - Thesis

- MATH 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Additional electives as needed to complete requirements

Option B - Research/Design Paper

- MATH 788 - Research Paper Credits: 1-2 (2 credits required)
- Additional electives as needed to complete requirements

Option C - Coursework Only

- Approved Electives

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Mathematics requirement of 575 paper-based, 90-91 Internet-based
IELTS: 6.0

Students who are interested in an assistantship are strongly encouraged to submit letters of recommendation addressing the applicant's experience with teaching and research.

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Mathematics (M.S.) - Statistics Specialization

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The Department of Mathematics and Statistics is a large, diverse, and active organization. The department's mission is to provide excellent instruction, conduct high-quality research and scholarly activity, and prepare graduates and provide mathematical and statistical services that are both regionally relevant and internationally competitive. The department offer students the opportunity to pursue master's and doctoral level graduate studies in a collegial environment with small class sizes and high faculty-student interaction and research activity.

The focus of the M.S. in Mathematics Program is the development of sophisticated mathematical models and their implementation on high performance computing platforms. The curriculum features a balance of application, computation, and theory with particular emphasis in the areas of operations research, computational science, and the development of probabilistic and deterministic models. Areas of faculty and graduate student research activity include computational biology, computational finance, molecular dynamics simulation, operations research, optimization, and Ramsey theory. The program is particularly effective at preparing graduates to work in business, industry, or government as well as preparing students to continue on to the CSS PhD or other PhD program.

Student Learning Outcomes

- Prove theorems: Students should be able to prove theorems in specialized areas of mathematics and statistics.
- Recall definitions and theorems: Students should be able to recall important definitions and theorems from some specialized areas of mathematics and statistics and effectively communicate these concepts.
- Use models correctly: Students should be able to use mathematical models correctly.
- Understand the ethical implications of professional actions in mathematics and other contexts. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Facilities & Services

The department offices are located in Chicoine Architecture, Mathematics and Engineering 209. The Math Help Center, located in AME 292 and in the Biostress Basement 0020, provides free walk-in tutoring for students in several undergraduate courses.

Student Support & Engagement Opportunities

The department has graduate research and teaching assistantships and fellowships are available for a number of qualified applicants.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

Math Sequences

- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 779 - Advanced Mathematics Synthesis Credits: 1

Statistics Sequences

- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3

Select one of the following options

Option A - Thesis

- MATH 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Additional electives as needed to complete requirements

Option B - Research/Design Paper

- MATH 788 - Research Paper Credits: 1-2 (2 credits required)
- Additional electives as needed to complete requirements

Option C - Coursework Only

- Approved Electives

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Mathematics requirement of 575 paper-based, 90-91 Internet-based
IELTS: 6.0

Students who are interested in an assistantship are strongly encouraged to submit letters of recommendation addressing the applicant's experience with teaching and research.

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Mechanical Engineering (M.S.)

Program Coordinator/Contact

Kurt Bassett, Department Head
Zhong Hu, Professor/Graduate Coordinator
Department of Mechanical Engineering
Crothers Engineering Hall 221, Box 2219
605-688-5426

Program Information

The Mechanical Engineering Department offers courses for the degree Master of Science in Mechanical Engineering. Also, course offerings can be used in co-major or minor programs for students of other departments. The graduate program in mechanical engineering concentrates on advanced study, including design and research, in such areas as thermofluid science, solid mechanics and dynamics, and industrial and quality control engineering. Students are encouraged to broaden their education by participating in supporting programs in established departments such as mathematics, computer science and other fields of engineering.

Student Learning Outcomes

- Articulate a solid understanding of the fundamental principles in the general areas of the mechanical engineering discipline and supporting areas.
- Demonstrate an ability to communicate, written and verbal, technical information in an effective manner. (Communication Skills)
- Conduct research and/or design projects that demonstrate ability to model, analyze and design mechanical engineering processes and systems.
- Demonstrate the transferable skills necessary for a career as a researcher and/or for employment in a senior and leading capacity in a relevant area of professional practice or industry, through career preparedness training, such as writing cover letters and resumes. (Communication Skills; Transferable Skill: Leadership - Management; Career Preparedness)

Course Delivery Format

The program consists of lecture, laboratory, and experiential learning opportunities.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

Please note that SDSU Policy 2:17 requires that all graduate coursework be at the 500-level and above and that at least fifty (50) percent of the credits on a plan of study must be in courses 600-series and above.

- ME 7XX Courses with ME Prefix Credits: 6

Select from the following options

Option A - Thesis

- ME 798 - Thesis (COM) Credits: 1-9 (6 credits required)
- Electives Credits: 18

Option B - Research/Design Paper

- ME 788 - Master's Research Problems/Projects (COM) Credits: 1-9 (2 credits required)
- Electives Credits: 24

Option C - Coursework Only

- Electives Credits: 29

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper based, 71 Internet-based
IELTS: 5.5

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Nursing (M.S.) - Clinical Nurse Leader Specialization

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

Established in 1979, the M.S. in Nursing at South Dakota State University prepares nurses for advanced practice roles in nursing administration, leadership, clinical practice, or education.

Program Outcomes

To prepare Nurse Administrators, Clinical Nurse Leaders, Family Nurse Practitioners, Nurse Educators, and Psychiatric Mental Health Nurse Practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning,
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings, and
- function in leadership roles.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following outcomes:

- Incorporate knowledge and theories from nursing and other supportive disciplines to promote and translate evidence into practice to effectively tailor health care to diverse populations. (Transferable Skill: Diversity Awareness)
- Use leadership strategies at the organizational and individual level to work with interprofessional teams to recommend quality improvement initiatives to provide safe healthcare delivery and improve population health. (Transferable Skill: Leadership - Management)
- Assume accountability to influence health policy, improve healthcare delivery, decrease health disparities, and address the diversity of health care needs. (Transferable Skill: Awareness of Public Policy - Regulatory Affairs)

- Utilize informatics to enhance delivery of healthcare to a population
- Communicate effectively with populations to improve health through population- centered strategies of health promotion/disease prevention education (Communication Skills)
- Utilize microsystem assessment data to design, implement, and evaluate evidence-based interventions that improve safety and quality for selected populations.

Accreditation, Certification, & Licensure

Accreditation

The master's degree in nursing at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Certification

Upon completion of the M.S. in Nursing - Clinical Nurse Leader Specialization, students may be eligible for the following certifications:

National Certification Eligibility	*Certifying Body*
Clinical Nurse Leader (CNL)* *requires graduation from a CNL master's education program or a student in their last term of a CNL education program that meets the criteria delineated in the CNL Competencies and Curricular Expectations for Clinical Nurse Leader SM Education and Practice are eligible to sit for this certification examination.	Commission on Nurse Certification (CNC)

Course Delivery Format

The program coursework is delivered online and includes a field-based practicum.

Available Options for Graduate Degrees

Master of Science	Option C - Coursework Only	36 Credit Hours

Core Requirements

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (2 credits required)
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 630 - Advanced Assessment Across the Lifespan for the CNL/Nurse Educator Credits: 3
- NURS 645 - CNL I: Improvement Science: A Microsystem Approach Credits: 5
- NURS 646 - CNL II: Clinical Immersion and Capstone Project Credits: 6
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultural Competence in Health Care Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (2 credits required)

Total Required Credits: 36 (Option C)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed approved statistical methods course within the past 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Nursing (M.S.) - Family Nurse Practitioner Specialization

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806 Ext. 2

Program Information

Established in 1979, the M.S. in Nursing at South Dakota State University prepares nurses for advanced practice roles in nursing administration, leadership, clinical practice, or education.

Program Outcomes

To prepare Nurse Administrators, Clinical Nurse Leaders, Family Nurse Practitioners, Nurse Educators, and Psychiatric Mental Health Nurse Practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning,
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings, and
- function in leadership roles.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following outcomes:

- Incorporate knowledge and theories from nursing and other supportive disciplines to promote and translate evidence into practice to effectively tailor health care to diverse populations. (Transferable Skill: Diversity Awareness)
- Use leadership strategies at the organizational and individual level to work with interprofessional teams to recommend quality improvement initiatives to provide safe healthcare delivery and improve population health. (Transferable Skill: Leadership - Management)
- Assume accountability to influence health policy, improve healthcare delivery, decrease health disparities, and address the diversity of health care needs. (Transferable Skill: Awareness of Public Policy - Regulatory Affairs)
- Utilize informatics to enhance delivery of healthcare to a population
- Communicate effectively with populations to improve health through population- centered strategies of health promotion/disease prevention education (Communication Skills)
- Collaborate with the interprofessional team in the translation, implementation, analysis, and dissemination of evidence-based practice to improve healthcare outcomes.

Accreditation, Certification, & Licensure

Accreditation

The master's degree in nursing at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Certification

After completing the program of study, graduates may be eligible to complete certification through several professional organizations.

Course Delivery Format

A blend of online and face-to-face course delivery ensures convenience and accessibility. Students complete a minimum of 1000 hours of clinical practice preceptorship.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	58 Credit Hours
	Option B - Research/Design Paper	55 Credit Hours
	Option C - Coursework Only	53 Credit Hours

Core Requirements

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (4 credits required)
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 631 - Advanced Assessment Across the Lifespan Credits: 4
- NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 0
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 765 - FNP Integration: Practicum I Credits: 7 (3, 4)
- NURS 768 - FNP Integration: Practicum II Credits: 4
- NURS 771 - FNP Integration: Practicum III Credits: 7 (3, 4)
- NURS 776 - FNP Integration: Practicum IV Credits: 8 (3, 5)
- NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
- NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (4 credits required)
- PHA 738 - Health Informatics Credits: 1

Select one of the following options

Option A - Thesis

- NURS 798 - Thesis Credits: 1-7 (5 credits required)

Option B - Research/Design Paper

- NURS 788 - Master's Research Problems/Projects Credits: 1-2 (2 credits required)

Option C - Coursework Only

- Coursework only

Total Required Credits: 58 (Option A), 55 (Option B), 53 (Option C)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed approved statistical methods course within the past 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Nursing (M.S.) - Nurse Administrator Specialization

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806 Ext. 2

Program Information

Established in 1979, the M.S. in Nursing at South Dakota State University prepares nurses for advanced practice roles in nursing administration, leadership, clinical practice, or education.

Program Outcomes

To prepare Nurse Administrators, Clinical Nurse Leaders, Family Nurse Practitioners, Nurse Educators, and Psychiatric Mental Health Nurse Practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning,
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings, and
- function in leadership roles.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following outcomes:

- Incorporate knowledge and theories from nursing and other supportive disciplines to promote and translate evidence into practice to effectively tailor health care to diverse populations. (Transferable Skill: Diversity Awareness)
- Use leadership strategies at the organizational and individual level to work with interprofessional teams to recommend quality improvement initiatives to provide safe healthcare delivery and improve population health. (Transferable Skill: Leadership - Management)
- Assume accountability to influence health policy, improve healthcare delivery, decrease health disparities, and address the diversity of health care needs. (Transferable Skill: Awareness of Public Policy - Regulatory Affairs)
- Utilize informatics to enhance delivery of healthcare to a population
- Communicate effectively with populations to improve health through population- centered strategies of health promotion/disease prevention education (Communication Skills)
- Analyze and apply a broad spectrum of administrative functions such as management principles and business skills to influence health care delivery systems.

Accreditation, Certification, & Licensure

Accreditation

The master's degree in nursing at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Certification

Upon Completion of the M.S. in Nursing - Nurse Administrator Specialization, students may be eligible for the following certifications:

National Certification Eligibility	*Certifying Body*
Nurse Executive - Board Certified (NE-BSC)* *requires candidate to have held an administrative position at the nurse executive level, OR a faculty position teaching graduate students nursing administration, OR a nursing management or executive consultation position, for at least 24 months full time equivalent in the last 5 years.	American Nurses Credentialing Center (ANCC)
Nurse Executive - Advanced Board Certified (NEA-BC)* *requires candidate to have held an administrative position at the nurse executive level, OR a faculty position teaching graduate students nursing administration, for at least 24 months full time equivalent in the last 5 years.	American Nurses Credentialing Center (ANCC)
Certified Nurse Manager and Leader (CNML)* *requires 2 years of experience (minimum of 1,040 hours per year) in a nurse manager role.	American Organization of Nurse Executives (AONE)
Certified in Executive Nursing Practice (CENP)* *requires 2 years of experience in an executive nursing role.	American Organization of Nurse Executives (AONE)

Course Delivery Format

The program coursework is delivered online and includes a field-based practicum.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	31 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultural Competence in Health Care Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 774 - Nurse Administrator: Practicum Credits: 5
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3

Select one of the following options

Option A - Thesis

- NURS 798 - Thesis Credits: 1-7 (5 credits required)

Option B - Research/Design Paper

- NURS 788 - Master's Research Problems/Projects Credits: 1-2 (2 credits required)
- Electives (as approved by academic advisor) Credits: 4

Option C - Coursework Only

- Electives (as approved by academic advisor) Credits: 9

Total Required Credits: 31 (Option A), 32 (Option B), 35 (Option C)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed approved statistical methods course within the past 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Nursing (M.S.) - Nurse Educator Specialization

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

Established in 1979, the M.S. in Nursing at South Dakota State University prepares nurses for advanced practice roles in nursing administration, leadership, clinical practice, or education.

Program Outcomes

To prepare Nurse Administrators, Clinical Nurse Leaders, Family Nurse Practitioners, Nurse Educators, and Psychiatric Mental Health Nurse Practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning,
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings, and
- function in leadership roles.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following outcomes:

- Incorporate knowledge and theories from nursing and other supportive disciplines to promote and translate evidence into practice to effectively tailor health care to diverse populations. (Transferable Skill: Diversity Awareness)
- Use leadership strategies at the organizational and individual level to work with interprofessional teams to recommend quality improvement initiatives to provide safe healthcare delivery and improve population health. (Transferable Skill: Leadership - Management)

- Assume accountability to influence health policy, improve healthcare delivery, decrease health disparities, and address the diversity of health care needs. (Transferable Skill: Awareness of Public Policy - Regulatory Affairs)
- Utilize informatics to enhance delivery of healthcare to a population
- Communicate effectively with populations to improve health through population- centered strategies of health promotion/disease prevention education (Communication Skills)
- Utilize acquired knowledge and skills to develop and implement a nurse educator evidence-based practice in a variety of settings.

Accreditation, Certification, & Licensure

Accreditation

The master's degree in nursing at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Certification

After completing the program of study, graduates may be eligible to complete certification through several professional organizations.

Graduate Students may be eligible for certification after completing their program of study.

National Certification Eligibility	*Certifying Body*
Certified Nurse Educator*	National League for Nursing (NLN)

*Individuals must meet eligibility requirements before they can take the CNE examination. An active registered nurse license is necessary. Students must also have a master's or doctoral degree in nursing and full-time experience in a nurse faculty role within the past five years. If the college degree emphasized on nursing instruction, individuals will need two years of experience in a nurse faculty role. Four years of experience is required if the graduate nursing degree did not emphasize on education.

Course Delivery Format

The program coursework is delivered online and includes a field-based practicum.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	40 Credit Hours
	Option B - Research/Design Paper	37 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 620 - Role Development of the Nurse Educator Credits: 2
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (2 credits required)
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 630 - Advanced Assessment Across the Lifespan for the CNL/Nurse Educator Credits: 3
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultural Competence in Health Care Credits: 3
- NURS 710 - Curriculum Development and Program Evaluation in Nursing Credits: 3
- NURS 720 - Teaching and Learning Methodologies in Nursing Credits: 3
- NURS 721 - Assessment and Evaluation in Nursing Education Credits: 3
- NURS 778 - Nurse Educator Didactic/Practicum Credits: 1-5 (5 credits required)
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (2 credits required)

Select one of the following options

Option A - Thesis

- NURS 798 - Thesis Credits: 1-7 (5 credits required)

Option B - Research/Design Paper

- NURS 788 - Master's Research Problems/Projects Credits: 1-2 (2 credits required)

Option C - Coursework Only

- Coursework only

Total Required Credits: 40 (Option A), 37 (Option B), 35 (Option C)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed approved statistical methods course within the past 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Nursing (M.S.) - Psychiatric Mental Health Nurse Practitioner Specialization

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806 Ext. 2

Program Information

Established in 1979, the M.S. in Nursing at South Dakota State University prepares nurses for advanced practice roles in nursing administration, leadership, clinical practice, or education.

Program Outcomes

To prepare Nurse Administrators, Clinical Nurse Leaders, Family Nurse Practitioners, Nurse Educators, and Psychiatric Mental Health Nurse Practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning,
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings, and
- function in leadership roles.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following outcomes:

- Incorporate knowledge and theories from nursing and other supportive disciplines to promote and translate evidence into practice to effectively tailor health care to diverse populations. (Transferable Skill: Diversity Awareness)
- Use leadership strategies at the organizational and individual level to work with interprofessional teams to recommend quality improvement initiatives to provide safe healthcare delivery and improve population health. (Transferable Skill: Leadership – Management)
- Assume accountability to influence health policy, improve healthcare delivery, decrease health disparities and address the diversity of health care needs. (Transferable Skill: Awareness of Public Policy – Regulatory Affairs)
- Utilize informatics to enhance delivery of healthcare to a population. (Transferable Skill: Intellectual Traits)
- Communicate effectively with populations to improve health through population-centered strategies of health promotion/disease prevention education. (Transferable Skill: Intellectual Traits)
- Collaborate with the interprofessional team in the translation, implementation, analysis and dissemination of evidence-based practice to improve mental healthcare outcomes. (Transferable Skill: Leadership – Management)

Accreditation, Certification, & Licensure

Accreditation

The master's degree in nursing at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Certification

After completing the program of study, graduates are eligible to complete certification through the American Nurses Credentialing Center (ANCC).

National Certification Eligibility	*Certifying Body*
Psychiatric-Mental Health Nurse Practitioner (Across the Lifespan) Certification (PMHNP-BC)	American Nurses Credentialing Center (ANCC)

Course Delivery Format

The program coursework is delivered online and includes a field-based practicum.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	50 Credit Hours
	Option B - Research/Design Paper	47 Credit Hours
	Option C - Coursework Only	45 Credit Hours

Core Requirements

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (4 credits required)
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 631 - Advanced Assessment Across the Lifespan Credits: 4
- NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 0
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
- NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 3
- NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
- NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
- NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 4
- NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 5
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
- NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (4 credits required)
- PHA 738 - Health Informatics Credits: 1

Select one of the following options

Option A - Thesis

- NURS 798 - Thesis Credits: 1-7 (5 credits required)

Option B - Research/Design Paper

- NURS 788 - Master's Research Problems/Projects Credits: 1-2 (2 credits required)

Option C - Coursework Only

- Coursework only

Total Required Credits: 50 (Option A), 47 (Option B), 45 (Option C)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical lab or within the first program year.
- Completed approved statistical methods course within the past 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Nutrition & Exercise Sciences (M.S.) - Exercise Science Specialization

Program Coordinator/Contact

Kendra Kattelmann, Distinguished Professor and Department Head
Department of Health and Nutritional Sciences
Wagner Hall 425, Box 2275A
605-688-5161

Program Information

The M.S. in Nutrition and Exercise Sciences provides an opportunity to specialize in Nutritional Sciences or Exercise Science. Students are prepared for careers in clinical, industry, or research fields. A partial list includes clinical dietitians, public health nutritionists, research dietitians, clinical exercise physiology, strength and

conditioning, research assistants or coordinators, instructors, or public health officials.

Student Learning Outcomes

- Apply foundational knowledge and skills in the theory and application of nutrition and exercise sciences to professional practice, education, and research.
- Develop effective written and oral communication skills.
- Critically analyze and synthesize scientific evidence to defend a position.
- Demonstrate effective career preparedness. (Transferable Skill: Career Preparedness)

Course Load Information

Students enrolled in six or more state-supported credits within a given semester will be charged the current special discipline fee.

Course Delivery Format

The program consists of lecture, laboratory, and experiential learning opportunities.

Student Support & Engagement Opportunities

The Department of Health and Nutritional Sciences aims to provide premier academic programs and high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified graduate students.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	35 Credit Hours

Core Requirements

Nutrition and Exercise Sciences Core Requirements

- HNS 790 - Seminar (COM) Credits: 1

Advanced Research Methods

Credits: 3
Graduate students must consult with their advisors prior to registration.

- HNS 783 - Research Methods in Health and Nutritional Sciences Credits: 3
- NUTR 782 - Epidemiology Credits: 3

Advanced Statistics

Credits: 3
Graduate students must consult with their advisors prior to registration.

- HSC 631 - Biostatistics I Credits: 3
- HSC 731 - Biostatistics II Credits: 3
- STAT 541 - Statistical Methods II Credits: 3

Exercise Science Specialization Requirements

Select 12 credits from the list below.

- EXS 550 - Clinical Exercise Physiology Credits: 3
- EXS 745 - Applied Biomechanics Credits: 3
- EXS 750 - Advanced Exercise Physiology Credits: 3
- EXS 751 - Laboratory Techniques in Exercise Physiology Credits: 3
- EXS 755 - Applied Exercise Physiology Credits: 3
- NUTR 725 - Nutrition and Human Performance Credits: 3
- PE 742 - Psychological Aspects of Sport and Exercise Credits: 3

Select one of the following options

Option A - Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Electives Credits: 6

Option B - Research/Design Paper

- HNS 788 - Master's Research Problems/Projects Credits: 1-7 (3 credits required)
- Electives Credits: 13

Total Required Credits: 30 (Option A), 35 (Option B)

Additional Admissions Requirements

GRE: Required
TOEFL: required score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

- Letter of application stating the following: primary area of interest (dietetics, exercise science, nutrition, etc.); desired research focus; long-term goals outlining career goals; interest in assistantship (teaching or research); if interested in an assistantship describe experiences to support the assistantship; reason(s) for attending graduate school; current professional certifications and credentials; an interview (in person or via phone) is highly encouraged but not required.
- Two recommendations letters from professionals knowledgeable in applicants graduate school potential.

Master's Nutrition and Exercise Sciences Admission Requirements

Entering students for the Master's degree will be required to have a Bachelor's degree in dietetics, exercise science, nutrition, biology, chemistry, epidemiology, or other related field from an accredited institution. Students with other educational backgrounds may be admitted conditionally. They will be required to complete the necessary coursework to eliminate deficiencies in their background during their first semester in the program.

Prerequisites for the Master's degree include STAT 281 or equivalent, NUTR 315, CHEM 106/108 or CHEM 112/114 or equivalent, BIOL 221, BIOL 325, and for students in the Exercise Science Specialization EXS 350 or equivalent.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Nutrition & Exercise Sciences (M.S.) - Nutritional Sciences Specialization

Program Coordinator/Contact

Kendra Kattelmann, Distinguished Professor and Department Head
Department of Health and Nutritional Sciences
Wagner Hall 425, Box 2275A
605-688-5161

Program Information

The M.S. in Nutrition and Exercise Sciences provides an opportunity to specialize in Nutritional Sciences or Exercise Science. Students are prepared for careers in clinical, industry, or research fields. A partial list includes clinical dietitians, public health nutritionists, research dietitians, clinical exercise physiology, strength and conditioning, research assistants or coordinators, instructors, or public health officials.

Student Learning Outcomes

- Apply foundational knowledge and skills in the theory and application of nutrition and exercise sciences to professional practice, education, and research.
- Develop effective written and oral communication skills.
- Critically analyze and synthesize scientific evidence to defend a position.
- Demonstrate effective career preparedness. (Transferable Skill: Career Preparedness)

Course Load Information

Students enrolled in six or more state-supported credits within a given semester will be charged the current special discipline fee.

Course Delivery Format

The program consists of lecture, laboratory, and experiential learning opportunities. Some courses are delivered online.

Student Support & Engagement Opportunities

The Department of Health and Nutritional Sciences aims to provide premier academic programs and high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified graduate students.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	35 Credit Hours

Core Requirements

Nutrition and Exercise Sciences Core Requirements

- HNS 790 - Seminar (COM) Credits: 1

Advanced Research Methods

Credits: 3
Graduate students must consult with their advisors prior to registration.

- HNS 783 - Research Methods in Health and Nutritional Sciences Credits: 3

- NUTR 782 - Epidemiology Credits: 3

Advanced Statistics

Credits: 3
Graduate students must consult with their advisors prior to registration.

- HSC 631 - Biostatistics I Credits: 3
- HSC 731 - Biostatistics II Credits: 3
- STAT 541 - Statistical Methods II Credits: 3

Nutritional Sciences Specialization Requirements

Select 12 or 13 credits from the list below.

- NUTR 522 - Advanced Human Nutrition and Metabolism Credits: 4
- NUTR 524 - Community Nutrition Credits: 3
- NUTR 524L - Community Nutrition Laboratory Credits: 0
- NUTR 560 - Nutrigenomics and Molecular Nutrition Credits: 3
- NUTR 660 - Maternal and Child Nutrition Credits: 3
- NUTR 702 - Macronutrients in Human Nutrition Credits: 3
- NUTR 704 - Phytochemicals Credits: 3
- NUTR 706 - Nutrition and Immunology Credits: 3
- NUTR 708 - Evidence Based Analysis Credits: 3
- NUTR 715 - Public Health Nutrition Credits: 3
- NUTR 725 - Nutrition and Human Performance Credits: 3
- NUTR 750 - Issues in Obesity Credits: 3
- NUTR 751 - Nutrition and Physical Activity Assessment and Evaluation Credits: 3
- NUTR 760 - Vitamins and Minerals in Human Nutrition Credits: 3
- NUTR 761 - Nutrition and Aging Credits: 3
- NUTR 775 - Nutrigenomics and Health Credits: 3

Select one of the following options

Option A - Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Electives Credits: 5-6

Option B - Research/Design Paper

- HNS 788 - Master's Research Problems/Projects Credits: 1-7 (3 credits required)
- Electives Credits: 12-13

Total Required Credits: 30 (Option A), 35 (Option B)

Additional Admissions Requirements

GRE: Required
TOEFL: required score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

- Letter of application stating to include the following: primary area of interest (dietetics, nutrition, etc.); desired research focus; long-term goals outlining career goals; interest in assistantship (teaching nutrition or research); reason(s) for attending graduate school; current professional certifications and credentials; an interview (in person or via phone) is highly encouraged but not required.
- Two recommendations letters from professionals knowledgeable in applicants graduate school potential.

Master's Nutrition and Exercise Sciences Admission Requirements

Entering students for the Master's degree will be required to have a Bachelor's degree in dietetics, exercise science, nutrition, biology, chemistry, epidemiology, or other related field from an accredited institution. Students with other educational backgrounds may be admitted conditionally. They will be required to complete the necessary coursework to eliminate deficiencies in their background during their first semester in the program.

Pre-requisites for the Master's degree include STAT 281 or equivalent, NUTR 315, CHEM 106/108 or CHEM 112/114 or equivalent, BIOL 221, BIOL 325, and EXS 350 or equivalent for students in the Exercise Science Specialization.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Operations Management (M.S.)

Program Coordinator/Contact

Teresa Keys Hall, Department Head
Department of Construction and Operations Management
Solberg Hall 116, Box 2223
605-688-6417

Program Information

The Master of Science degree in Operations Management (MSOM), offered through the Jerome J. Lohr College of Engineering, is a program for professionals interested in expanding their ability to manage technical functions in an organization as the next logical step in their career path.

Students may elect to pursue the traditional thesis route under Option A: this is valuable for individuals who anticipate future graduate work toward achieving the terminal degree in a related field. Most students select the research/design paper route under Option B: this requirement generally takes the form of a project in collaboration with local or regional industry to solve a problem or to improve a system or process. A third option, Option C, is a non-thesis program that provides more coursework in lieu of the research component. Option C requires approval of the faculty advisor.

Regardless of the option selected, the student works with his/her Major Advisor to develop the program of study plan, make consistent progress toward completion of the degree, and to show proficiency in integrating and applying management concepts through the Final Oral Exam.

Student Learning Outcomes

- Able to analyze information & make appropriate decisions.
- Project management skills: Demonstrate competence in developing, managing and closing out a project (simulated, case study, or practical application). (Transferable Skill: Leadership - Management)
- Effective communication: Effective use of professional communication skills including interpersonal, written, and in presentations.

Course Delivery Format

Program coursework is delivered on campus, with limited coursework offered online.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- GE/ OM 569 - Project Management Credits: 2-3
- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- OM 660 - Operations Management Credits: 3
- OM 690 - Seminar (COM) Credits: 1

Select one (1) course from each topic area:

Resources

- CHRD 716 - Human Resources Management in Business and Industry Credits: 3
- CSC 740 - Management Information Systems Credits: 3
- OM 603 - Designing the Work Place for Production Credits: 3
- OM 563 - Supply Chain Management Credits: 3
- or approved CSC, ECON, GE, OM elective

Operations

- OM 650 - Manufacturing Systems Management Credits: 3
- OM/ ME 760 - Quality Control Credits: 3
- ME 761 - Operations Research Credits: 3
- or approved GE or ME elective

Analysis

- OM/ ME 767 - Decision Theory Credits: 3
- STAT 541 - Statistical Methods II Credits: 3
- or approved ECON, OM or STAT elective

Select one of the following options

Option A - Thesis

- GE 798 - Thesis (COM) Credits: 1-7 (5-7 credits required)

- OM 670 - Research Methods in Management Credits: 3
- Electives Credits: 3-4

Option B - Research/Design Paper

- GE 788 - Master's Research Problems/Projects (COM) Credits: 1-2 (2-3 credits required)
- OM 670 - Research Methods in Management Credits: 3
- Electives Credits: 10-11

Option C - Coursework Only

- Electives Credits: 18-19

Total Required Credits: 30 (Option A), 32 (Option B), 36 (Option C)

Additional Admissions Requirements

GRE: Not required (recommended)
TOEFL: Operations Management requirement of 575 minimum paper-based, 90-91 Internet-based
IELTS: 6.0

Application must include a written statement of how the MSOM program is aligned with your professional development plans (1000 word limit).

Refer to the Construction and Operations Management Department Graduate Program page information for specific details.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Plant Science (M.S.)

Program Coordinator/Contact

David Wright, Department Head
Brent Turnipseed, Assistant Department Head
Senthil Subramanian, Professor/Graduate Coordinator
Department of Agronomy, Horticulture, and Plant Science
244 Berg Hall, Box 2207A
605-688-4600

Program Information

The Agronomy, Horticulture, and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. Departmental diversity encourages collaborations among disciplines and research programs that support this graduate training.

Course Delivery Format

The program coursework is available on campus, in classroom and laboratory settings, as well as field-based settings.

Facilities & Services

The department is housed in seven buildings across campus. These buildings provide research and teaching laboratories, greenhouses, seed house facilities and access to the functional genomics core facility. The on and off-campus facilities also include the SDSU Seed Testing Laboratory, SDSU Plant Diagnostics Clinic, Seed Certification, and Foundation Seed Stocks Division, which operates as services for the public. In addition, the department conducts research at five research farms near campus and five research stations across the state. The Field Specialists are housed in seven regional extension offices across the state.

Student Support & Engagement Opportunities

Students are encouraged to join and participate in the Plant Science Graduate Student Association (PSGSA) which conducts professional and social events on a regular basis. In addition, students are encouraged to participate and mentor undergraduate students in the Arboriculture Club, Agronomy and Conservation Club, or Horticulture and Urban Agriculture Club which offers opportunities for fellowship, leadership, and career planning for undergraduate students.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours

Core Requirements

M.S. students required to have 2 credits of Graduate Seminar, one oral and one in poster format. All students are required to have teaching experience.

- PS 781 - Plant Science Graduate Seminar Credits: 1 (2 credits required) (over two different semesters)
- PS 792 - Topics (COM) Credits: 1-6 (2 credits required) (Teaching Experience)

Select one of the following options

Option A - Thesis

- PS 798 - Thesis Credits: 1-7 (5-10 credits required)
- Approved Electives Credits: 16-21

Option B - Research/Design Paper

- PS 788 - Master's Research Problems/Projects (COM) Credits: 1-3 (3-4 credits required)
- Approved Electives Credits: 24-25

Total Required Credits: 30 (Option A), 32 (Option B)

Additional Admission Requirements

GRE: Recommended, but not required
TOEFL: Minimum requirement of 560 paper-based, 83 Internet-based
IELTS: Minimum total score of 6.0

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Public Health (M.P.H.)

Program Coordinator/Contact

Aaron Hunt, Program Coordinator/Assistant Professor
Department of Allied and Population Health
Avera Health and Science Center 153, Box 2202C
605-688-4741

Program Information

The Master of Public Health (M.P.H.) degree program is a collaborative degree offering of South Dakota State University and the University of South Dakota. The M.P.H. degree is the most widely recognized professional credential for leadership and practice in public health. As outlined by the Council on Education for Public Health, which accredits M.P.H. programs, the M.P.H. curriculum covers the five core areas of public health education:

- Biostatistics
- Epidemiology
- Health Services Administration
- Social and Behavioral Sciences
- Environmental Health

Student Learning Outcomes

- History, philosophy and values: Explain public health history, philosophy and values.
- Core functions and essential services: Identify the core functions of public health and the 10 Essential Services.
- Quantitative and qualitative methods: Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population's health.
- Morbidity and mortality: List major causes and trends of morbidity and mortality in the US or other community relevant to the school or program.
- Prevention: Discuss the science of primary, secondary and tertiary prevention in population health, including health promotion, screening, etc.
- Advancing knowledge: Explain the critical importance of evidence in advancing public health knowledge.
- Environmental factors: Explain the effects of environmental factors on a population's health.
- Biological and genetic factors: Explain the biological and genetic factors that affect a population's health.
- Behavioral and psychological factors: Explain the behavioral and psychological factors that affect a population's health.

- Social determinants of health: Explain the social, political and economic determinants of health and how they contribute to population health and health inequities.
- Globalization: Explain how globalization affects global burdens of disease.
- One health: Explain an ecological perspective on the connection among human health, animal health and ecosystem health.
- Competency #1-4 - Evidence-based Approaches to Public Health
  - Apply epidemiological methods to the breadth of settings and situations in public health practice.
  - Select quantitative and qualitative data collection methods appropriate for a given public health context.
  - Evidence-based Approaches to Public Health: Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software as appropriate.
  - Interpret results of data analysis for public health research, policy and practice.
- Competency #5-6 - Public Health & Health Care Systems:
  - Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings.
  - Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels.
- Competency #7-11 - Planning & Management to Promote Health
  - Assess population needs, assets and capacities that affect communities' health.
  - Apply awareness of cultural values and practices to the design or implementation of public health policies or programs.
  - Design a population-based policy, program, project or intervention.
  - Explain basic principles and tools of budget and resource management.
  - Select methods to evaluate public health programs.
- Competency #12-15 - Policy in Public Health
  - Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence. (Transferable Skill: Awareness of Public Policy - Regulatory Affairs)
  - Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes.
  - Advocate for political, social and economic policies and programs that will improve health in diverse populations.
  - Evaluate policies for their impact on public health and health equity. (Transferable Skill: Awareness of Public Policy - Regulatory Affairs)
- Competency #16-17 – Leadership
  - Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making.
  - Apply negotiation and mediation skills to address organizational or community challenges.
- Competency #18-20 – Communication
  - Select communication strategies for different audiences and sectors.
  - Communicate audience-appropriate public health content, both in writing and through oral presentation.
  - Describe the importance of cultural competence in communicating public health content.
- Competency #21 - Interprofessional Practice
  - Perform effectively on interprofessional teams.
- Competency #22 - Systems Thinking
  - Apply systems thinking tools to a public health issue.

Course Delivery Format

Coursework is provided through distance delivery (online, DDN, etc.) using lecture formats and asynchronous presentations.

Student Engagement & Support Opportunities

The program offers student engagement through research and practice opportunities. Ongoing partnerships exist with entities such as the South Dakota Area Health Education Center (AHEC), Indian Health Services, and the South Dakota Department of Health.

Facilities & Services

The Master of Public Health (M.P.H.) degree program is an interdisciplinary graduate program of the Graduate School, involving departments and colleges across the university.

Available Options for Graduate Degrees

Master of Public Health Option C - Coursework Only 42 Credit Hours

Core Requirements

(Instruction of some courses shared between USD and SDSU campuses)

- PUBH 701 - Biostatistics for Public Health Credits: 3 (USD)
- PUBH 702 - Public Health Theory and Practice (COM) Credits: 3
- PUBH 710 - Epidemiology Credits: 3 (USD)
- PUBH 721 - Public Health Applied Practice Experience I (COM) Credits: 1
- PUBH 722 - Public Health Applied Practice Experience II (COM) Credits: 1
- PUBH 723 - Public Health Applied Practice Experience III (COM) Credits: 1
- PUBH 729 - Leadership and Project Management in Public Health (COM) Credits: 3
- PUBH 730 - Public Health Integrative Learning Experience (COM) Credits: 3-6 (3 credits required)
- PUBH 733 - Environmental Health Credits: 3
- PUBH 740 - Introduction to US Health Systems and Policy Credits: 3 (USD)
- PUBH 750 - Social and Behavioral Sciences in Public Health Credits: 3 (USD)
- PUBH 755 - Program Planning and Evaluation Credits: 3
- PUBH 760 - Public Health and Native American Communities Credits: 3 (USD)

Supporting Area Coursework

Students must take at least 9 credit hours of supporting area coursework from either USD or SDSU. 6 credits must be from PUBH prefix courses. Credits: 9

Supporting Area Coursework offered by SDSU

- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultural Competence in Health Care Credits: 3
- NUTR 660 - Maternal and Child Nutrition Credits: 3
- NUTR 715 - Public Health Nutrition Credits: 3
- NUTR 724 - Nutrition Education in the Community Credits: 3
- NUTR 727 - Obesity Across the Lifespan Credits: 3
- NUTR 760 - Vitamins and Minerals in Human Nutrition Credits: 3
- NUTR 761 - Nutrition and Aging Credits: 3
- PUBH 540 - Health Geography Credits: 3
- PUBH 751 - Public Mental Health Credits: 3
- PUBH 761 - Social Epidemiology Credits: 3
- PUBH 762 - Cultural Perspectives in Public Health Credits: 3
- PUBH 764 - Applied Dissemination and Implementation Research in Health Credits: 3
- PUBH 767 - Public Health Toxicology Credits: 3
- Other graduate-level electives with advisor approval Credits: 3

Supporting Area Coursework offered by USD

- ADS 754 - Public Policy and Addiction Credits: 3
- HSAD 559 - Health Service for Long Term Care Credits: 3
- HSAD 560 - Administration of Long Term Care Credits: 3
- HSAD 710 - Advanced Strategic Management of Health Care Orgs Credits: 3
- HSAD 740 - Advanced Health Care Systems Credits: 3
- HSAD 770 - Advanced Health Care Management Credits: 3
- HSC 575 - Process and Outcomes Evaluation Credits: 3
- OCTH 733 - Promotion of Health and Prevention of Disability Credits: 3
- PUBH 711 - Topics in Applied Biostatistics Credits: 3
- PUBH 763 - Casual Inference in Public Health Credits: 3
- PUBH 765 - Community Health Assessment and Action Planning Credits: 3
- PUBH 770 - Public Health Immunology Credits: 3

- PUBH 792 - Public Health Topics Credits: 3
- SOCW 600 - Social Policy Analysis Credits: 3
- SOCW 640 - Diversity and Social Justice Credits: 3
- Other graduate-level electives with advisor approval Credits: 3

Total Required Credits: 42

Additional Admission Requirements

- Successful completion of a baccalaureate degree or an equivalent degree from an institution with full regional accreditation for that degree.
- Through no specific major is required, adequate undergraduate preparation in social, health, or biological sciences is recommended.
- A minimum undergraduate cumulative GPA of 3.0 on conferred degree and/or graduate cumulative GPA of 3.0 or better, based on a 4.0 scale, on all graduate coursework. Each institution may admit students on conditional or provisional status per university policy.
- Complete the Graduate School application along with the $35 application fee.
- Statement of purpose for studying Public Health (include career plans relative to the MPH).
- Two letters of recommendation are required.
- Successfully complete a criminal background check upon acceptance.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Sociology (M.S.) - Community Development Specialization

Program Coordinator/Contact

Mary Emery, Department Head
Meredith Redlin, Professor/Graduate Coordinator
Department of Sociology and Rural Studies
Hansen Hall 004
605-688-4132

Program Information

The Community Development specialization provides students the opportunity to study with leading educators and researchers from several different universities representing a diversity of fields including Community and Regional Planning, Architecture, Sociology, American Indian Studies, Economics and Natural Resources. This program is designed for people doing community development work in non-profit organizations, colleges, communities, community organizations and governments. The program welcomes those working in all areas to help communities and regions build their capacity for an inclusive, sustainable future; those who volunteer their time and resources to support community; and most of all those with a passion for working toward a brighter future and a willingness to share their experience and wisdom with others via the Internet community. A student guide to the program is located on the department website.

Student Learning Outcomes

- Professional knowledge of community development (CD) theory, methods, practices, and ethics. (Transferable Skill: Career Preparedness)
- The ability to create and implement planning and action for community change toward more prosperity for all.
- Communication skills appropriate for both academic and public audiences.

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). Courses will be entirely Internet based and will be taught by faculty within the Alliance (Iowa State University, Kansas State University, North Dakota State University, South Dakota State University, and University of Nebraska). Courses are offered fall, spring and summer semesters.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	36 Credit Hours
	Option B - Research/Design Paper	36 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- CD 600 - Foundations of Community Development Credits: 3
- CD 601 - Organizing for Community Change Credits: 3
- CD 602 - Community and Regional Economic Policy and Analysis Credits: 3
- CD 603 - Community Natural Resource Management Credits: 3
- CD 604 - Community Analysis Credits: 3
- CD 605 - Principles and Strategies of Community Change Credits: 3

Select one of the following options

Option A - Thesis

- SOC 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives Credits: 12

  Electives will be determined in consultation with the advisor.

Option B - Research/Design Paper

- SOC 791 - Independent Study (COM) Credits: 1-3 (3 credits required)
- SOC 794 - Internship Credits: 1-6 and Written Report (3 credits required)
- Electives Credits: 12

  Electives will be determined in consultation with the advisor.

Option C - Coursework Only

- Electives Credits: 18

  Electives will be determined in consultation with the advisor.

Total Required Credits: 36 (Options A, B,& C)

Additional Admission Requirements

GRE: Not required
TOEFL: Required score of 525 paper-based, 71 Internet-based
IELTS: 5.5

Each applicant is required to provide two signed letters of recommendation from individuals familiar with the student's academic record as part of the graduate school application process. In addition, we require that interested applicants submit a writing sample (past term paper or a professional technical report, for example) and a personal statement. The personal statement should outline the applicant's academic goals and describe how those goals connect with SDSU faculty expertise and interests.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Sport & Recreation Administration (M.S.)

Program Coordinator/Contact

Bryan Romsa, EdD, Assistant Professor
Stella Liu, PhD, Assistant Professor
Department of Health and Nutritional Sciences
Wagner Hall 425, Box 2275A
605-688-5161

Program Information

The Sport and Recreation Administration program at South Dakota State University prepares students to become dynamic leaders in intercollegiate athletics as well as campus and community recreation. The curriculum and internship experiences will educate students in management, marketing, communications, facilities, finance, ethics and legal issues, research, and much more. In addition to their experiential learning opportunities in their coursework, students will gain valuable real world experiences with our industry partners both on and off campus. Students graduating from the program will be equipped with a skill set that can be directly applied to a wide range of exciting career possibilities.

Student Learning Outcomes

- Management and ethical leadership: Students will understand a foundation in advanced principles and procedures of management and ethical leadership (e.g., administration, marketing, finance and budgeting) for the delivery of sport and recreation management. (Transferable Skill: Leadership - Management)
- Effective communication: Students will develop effective writing and oral communication skills within the professional guidelines appropriate to graduate study in the field. (Communication Skills)
- Research: Develop effective writing and oral communication skills within the professional guidelines appropriate to graduate study in the field.

- Diversity awareness: Demonstrate an appreciation of individual differences, civic responsibility and engagement, ethical issues and all dimensions of diversity. (Transferable Skill: Diversity Awareness)
- Experiential learning: Demonstrate the ability to apply the disciplinary knowledge and skills in experiential learning endeavors.

Course Delivery Format

The program consists of lecture and experiential learning opportunities.

Student Support & Engagement Opportunities

The Department of Health and Nutritional Sciences aims to provide premier academic programs and high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified graduate students.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	32 Credit Hours
	Option B - Research/Design Paper	33 Credit Hours
	Option C - Coursework Only	36 Credit Hours

Core Requirements

- HNS 783 - Research Methods in Health and Nutritional Sciences Credits: 3
- PE 770 - Sport and Recreation Administration Credits: 3
- RECR 750 - Foundations of Sport and Recreation Administration Credits: 3
- PE 771 - Seminar in Sport and Recreation Administration Credits: 3
- RECR 760 - Advanced Sport and Recreation Marketing Credits: 3
- PE 772 - Financial Aspects of Sport and Recreation Administration (COM) Credits: 3
- RECR 762 - Ethics in Sport and Recreation Credits: 3
- RECR 515 - Sport and Recreation Facility Management Credits: 3

Select one of the following options

Option A - Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Electives Credits: 3

Option B - Research/Design Paper

- HNS 788 - Master's Research Problems/Projects Credits: 1-7 (3 credits required)
- Electives Credits: 6

Option C - Coursework Only

- HNS 794 - Internship (COM) Credits: 1-7 (3 credits required)
- Electives Credits: 9

Total Required Credits: 32 (Option A), 33 (Option B), 36 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: required score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

Steps to Apply

Students seeking admission to graduate study in the HNS Department must apply electronically by completing the Online Graduate School Application. Applications require the following in order to be complete:

- Resume or Curriculum Vitae
- Official transcripts of all previously established academic records (undergraduate and graduate) sent directly to SDSU from the academic institution. Applicants who attended a South Dakota Regental Institution do not need to take any action, as the Graduate School will access any transcripts for you.
- A one-page personal statement identifying applicant aspirations and goals for the profession. If interested in an assistantship, please also identify what you would like to be considered for, as well as, provide a description of the skills and abilities that would qualify you for the assistantship.
- Two professional references
- Submission of $35 application fee, paid through the online application system at the time of application submission.

Applications are due by March 31st. Applicants are encouraged to contact faculty within the department to determine interest and ability to accept graduate students.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Statistics (M.S.)

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The focus of the M.S. in Statistics program is the development of sophisticated statistical models and their implementation on high performance computing platforms. The curriculum features a balance of application, computation, and theory with particular emphasis in the areas of biostatistics/informatics and analytics. Areas of faculty and graduate student research activity include bioinformatics, biostatistics, business and financial analytics, forensic statistics, and general statistics. The program is particularly effective at preparing graduates to work in business, industry, or government as well as preparing students to continue on to the CSS Ph.D. or other Ph.D. program.

Student Learning Outcomes

- Prove theorems: Students should be able to prove theorems in specialized areas of mathematics and statistics.
- Recall definitions and theorems: Students should be able to recall important definitions and theorems from some specialized areas of mathematics and statistics and effectively communicate these concepts.
- Use models correctly: Students should be able to use mathematical models correctly.
- Understand the ethical implications of professional actions in statistics and other contexts. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Facilities & Services

The department offices are located in Chicoine Architecture, Mathematics and Engineering 209. The Math Help Center, located in AME 292 and in the Biostress Basement 0020, provides free walk-in tutoring for students in several undergraduate courses.

Student Support & Engagement Opportunities

The department has graduate research and teaching assistantships and fellowships are available for a number of qualified applicants.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours
	Option B - Research/Design Paper	32 Credit Hours
	Option C - Coursework Only	35 Credit Hours

Core Requirements

- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 779 - Advanced Statistics Synthesis Credits: 1

Select one of the following options

Option A - Thesis

- STAT 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Additional electives as needed to complete option requirements

Option B - Research/Design Paper

- STAT 788 - Master's Research Problems/Projects (COM) Credits: 1-2 (2 credits required)
- Additional electives as needed to complete option requirements

Option C - Coursework Only

- Approved Electives

Total Required Credits: 30 (Option A), 32 (Option B), 35 (Option C)

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 575 paper-based, 90-91 Internet-based
IELTS: 6.0

Students who are interested in an assistantship are strongly encouraged to submit letters of recommendation addressing the applicant's experience with teaching and research.

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Wildlife & Fisheries Sciences (M.S.) - Fisheries Sciences Specialization

Program Coordinator/Contact

Michele Dudash, Department Head
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138, Box 2140B
605-688-6121

Program Information

The Department of Natural Resource Management offers graduate programs in both Biological Science with a Specialization in Natural Resource Management and Wildlife and Fisheries Sciences. Both degree programs award M.S. and Ph.D. degrees.

Wildlife & Fisheries Sciences

The M.S. degree program in Wildlife and Fisheries Sciences is intended to educate students for management-level positions with state and federal agencies, private companies, and for the pursuit of higher academic degrees. By using specifically identified coursework and mentoring, we strive to assist students in developing their intellectual capabilities in working with natural resources and people. In addition, each student must propose and conduct an original scientific investigation. Placement rates for M.S. graduates into positions as fisheries biologists, wildlife biologists, and other natural resource positions with state and federal agencies is extremely high.

Student Learning Outcomes

- Be knowledgeable regarding biological systems at a level appropriate to a M.S. degree holder.
- Be able to effectively express themselves orally and in written form.
- Understand the scientific method of solving problem.
- Be computer and statistically capable.
- Be specialized in some area of wildlife or fisheries, but still be broadly based in knowledge.
- Be able to conduct scholarly research.
- Understand the relationships between biological information and socioeconomic factors.
- Demonstrate professional development, especially in regard to the need for continued learning after their degree program.
- Develop a concern and feeling for the natural resources of the world.

Accreditation, Licensure, & Certification

Certification

Certification is available through the American Fisheries Society and The Wildlife Society.

Course Delivery Format

The Wildlife and Fisheries Sciences graduate program is primarily an on-campus program. However, field research may require extended time periods away from campus.

Facilities & Services

The department is housed within the McFadden Biostress Laboratory at SDSU. The Department houses the Oak Lake Field Station and also hosts the South Dakota Cooperative Fish and Wildlife Research Unit.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours

Core Requirements

- NRM 582 - Natural Resource Management Biometry Credits: 3
  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar Credits: 1 (2 credits required)
- WL 798 - Thesis Credits: 1-7 (5-10 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 15-20

Total Required Credits: 30 (Option A)

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Admission to all degree programs requires that a faculty member from the department agrees to serve as the major advisor.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Wildlife & Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Program Coordinator/Contact

Michele Dudash, Department Head
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138, Box 2140B
605-688-6121

Program Information

The Department of Natural Resource Management offers graduate programs in both Biological Science with a Specialization in Natural Resource Management and Wildlife and Fisheries Sciences. Both degree programs award M.S. and Ph.D. degrees.

Wildlife & Fisheries Sciences

The M.S. degree program in Wildlife and Fisheries Sciences is intended to educate students for management-level positions with state and federal agencies, private companies, and for the pursuit of higher academic degrees. By using specifically identified coursework and mentoring, we strive to assist students in developing their intellectual capabilities in working with natural resources and people. In addition, each student must propose and conduct an original scientific investigation. Placement rates for M.S. graduates into positions as fisheries biologists, wildlife biologists, and other natural resource positions with state and federal agencies is extremely high.

Student Learning Outcomes

- Be knowledgeable regarding biological systems at a level appropriate to a M.S. degree holder.
- Be able to effectively express themselves orally and in written form.
- Understand the scientific method of solving problems.
- Be computer and statistically capable.
- Be specialized in some area of wildlife or fisheries, but still be broadly based in knowledge.
- Be able to conduct scholarly research.
- Understand the relationships between biological information and socioeconomic factors.
- Demonstrate professional development, especially in regard to the need for continued learning after their degree program.
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Accreditation, Licensure, & Certification

Certification

Certification is available through the American Fisheries Society and The Wildlife Society.

Course Delivery Format

The Wildlife and Fisheries Sciences graduate program is primarily an on-campus program. However, field research may require extended time periods away from campus.

Facilities & Services

The department is housed within the McFadden Biostress Laboratory at SDSU. The Department houses the Oak Lake Field Station and also hosts the South Dakota Cooperative Fish and Wildlife Research Unit.

Available Options for Graduate Degrees

Master of Science	Option A - Thesis	30 Credit Hours

Core Requirements

- NRM 582 - Natural Resource Management Biometry Credits: 3

  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar Credits: 1 (2 credits required)
- WL 798 - Thesis Credits: 1-7 (5-10 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 15-20

Total Required Credits: 30 (Option A)

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Admission to all degree programs requires that a faculty member from the department agrees to serve as the major advisor.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Doctoral Degrees

Agricultural & Biosystems Engineering (Ph.D.)

Program Coordinator/Contact

Van C. Kelley, Department Head
Kasiviswanathan Muthukumarappan, Distinguished Professor/Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Agricultural Engineering 107, Box 2120
605-688-5141

Program Information

Students who undertake this Ph.D. in Agricultural and Biosystems Engineering graduate degree normally have as their goal a better understanding of the current theories, principles, issues, and problems in agricultural, biological, thermal, fluid, control, bulk materials storage/handling systems, animal systems, and mechanical systems. Graduate studies improve the student's ability to think critically and creatively, and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

This program offers students an opportunity to undertake research and advanced study in specialization areas such as:

- biorenewable energy and bioresource conversion technologies,
- engineering of advanced precision agriculture systems used in production agriculture,
- natural resources engineering for utilization and conservation of soil and water resources,
- advanced manufacturing and quality control technologies focused on composition, properties, and integrity of materials,
- advanced thermal-fluid systems,
- advanced composites,
- advanced animal systems
- bulk materials storage/handling systems and
- systems modeling.

Student Learning Outcomes

- Acquire and apply the knowledge and skills to make an original contribution to the agricultural, biosystems and mechanical engineering field.
- Conduct creative and independent research within a supportive framework.
- Understand and critically evaluate the relevant engineering literature.
- Communicate relevant engineering principles and theories by written, oral, and visual means.
- Apply engineering principles and procedures to the recognition, interpretation, and understanding of prior and current knowledge in the field.
- Exhibit an appropriate awareness of and commitment to the ethical conduct of research.

Course Delivery Format

The program engages students in lecture, laboratory, and in hands-on, field-based learning experiences.

Student Engagement & Support Opportunities

Financial assistance in the form of research assistantships and project assistantships is available on a highly competitive basis.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

- ABE 790 - Seminar (COM) Credits: 1-3 (1 credit required)
- ABE 898D - Dissertation - PhD (COM) Credits: 1-12 (40-60 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1
- STAT 541 - Statistical Methods II Credits: 3
- Electives Credits: 15 (60 Hour Plan), 25 (90 Hour Plan) (*Selected by the individual with committee approval.*)

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 550 paper-based, 79 Internet-based
IELTS: 5.5

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Animal Science (Ph.D.)

Program Coordinator/Contact

Jeff Clapper, Professor
Department of Animal Science
Animal Science Complex 103A
605-688-5166

Program Information

The Department of Animal Science offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Animal Science, or the Doctor of Philosophy degree in Biological Sciences. Faculty and graduate students are actively involved in basic and/or applied research in the fields of nutrition, reproductive physiology, animal breeding and genetics, meat science, gastrointestinal microbiology and animal production.

With the multi-disciplinary approaches towards production efficiency, product enhancement, and natural resources management, graduate students gain strong skill sets. The graduate programs are administered in collaboration with the Departments of Animal Science, Dairy Science, Veterinary and Biomedical Sciences, and Agricultural and Biosystems Engineering. The Department is committed to providing graduate students with quality educational and research experiences and preparing them to meet the challenges of a competitive job market upon graduation.

This program allows for considerable latitude in the education and training of students. Identification of a major professor with resources to support the student's thesis project is required for unconditional acceptance into the program. An advisory committee will be formed for each student. The advisory committee will work with the student to design a unique and individualized plan of study to meet the interests and needs of the student. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available and encouraged.

Student Learning Outcomes

- Demonstrate effective written and oral communication skills
- Apply scientific method, experimental design, statistically analyze data, and interpret results
- Demonstrate a proficiency in technical methods necessary to conduct research in their field
- Demonstrate an understanding of professional ethics (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Critically evaluate data and solve problems in their field
- Relate with people of diverse backgrounds with integrity and professionalism (Transferable Skill: Diversity Awareness)
- Hypothesize, develop, and conduct an original research project in their field

Course Delivery Format

Program coursework is available on campus, in classroom and laboratory settings, as well as field-based settings.

Facilities & Services

Training and experience in research methods are among the most important facets of a well-rounded graduate student education. Excellent facilities and large herds and flocks of livestock are available for Animal Science research at South Dakota State University. Modern research facilities, including state-of-the-art facilities for cow-calf management and ruminant nutrition, along with new swine education and research facilities, both on-site and off-site, were completed in 2016.

Student Support & Engagement Opportunities

The department conducts cutting edge research that creates opportunities for graduate students. Qualified students may apply for a Graduate Research Assistant position.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

Develop a plan of study and a research proposal by the end of the first year.

- AS 790 - Seminar Credits: 1 (2 credits required)

Courses offered

- AS 711 - Ruminology Credits: 3
- AS 712 - Ruminant Nutrition Credits: 3
- AS 720 - Advanced Selection of Domestic Animals Credits: 3
- AS 730 - Endocrinology Credits: 3
- AS 732 - Advanced Physiology of Reproduction Credits: 3
- AS 734 - Protein and Energy Nutrition Credits: 3
- AS 736 - Monogastric Nutrition Credits: 3
- AS 740 - Metabolism Credits: 3
- AS 750 - Animal Growth and Development Credits: 3
- AS 753 - Research Topics in Meat Science Credits: 3
- DS 731 - Laboratory Techniques in Dairy Science Credits: 3
- PS 756 - Quantitative Genetics Credits: 3
- STAT 541 - Statistical Methods II Credits: 3
- STAT 661 - Design of Experiments I Credits: 3
- VET 576 - Advanced Mammalian Physiology Credits: 4

Additional Admission Requirements

GRE: Not required
TOEFL: required score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

Two letters of reference, a letter of interest and intent, and a resume.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biochemistry (Ph.D.)

Program Coordinator/Contact

Douglas Raynie, Department Head
Jihong Cole-Dai, Graduate Program Coordinator
Department of Chemistry and Biochemistry
Avera Health and Science Center 131, Box 2202
605-688-5151

Program Information

The Department's biochemistry faculty research programs focus on the chemistry and biochemistry of cell membranes, multi-scale modeling of signal transduction in macromolecular assemblies, development of FRET-imaging technologies to measure the location and dynamics of direct protein interactions, biophysical chemistry underlying cell-surface control of leukocyte function, structural biology, proteomics, protein function, the cellular biochemistry of disease and cancer, and photobiochemistry.

This program is unique in that a student can chose their dissertation research over a broad range of research projects available in the Department or in the laboratories of participating program faculty at the Sanford and Avera Research Institutes in Sioux Falls, SD. The partnerships with the biomedical research programs at these research institutes also provides a unique opportunity for research that translates basic science into clinical treatments that directly impact patients. For additional information about these options review the descriptions of current faculty research interests on the Department website.

Student Learning Outcomes

- Comprehensive disciplinary knowledge: Graduate degree recipients will possess comprehensive disciplinary knowledge with high competence.
- Ph.D. degree recipients will be able to demonstrate knowledge of the chemistry discipline, appropriate sub-discipline and related scientific disciplines (e.g., biochemistry, biology, mathematics, physics, environmental science) and be cognizant of the disciplinary development frontier.
- Ph.D. degree recipients will be able to define scientifically meaningful research issues, develop competitive proposals, and contribute to knowledge creation through research.
- Graduate degree recipients will be prepared to demonstrate knowledge and technical skills in a large variety of professional fields, careers and endeavors.
- Graduate degree recipients will communicate effectively in an oral, written and visual manner to technical audiences and stakeholders.
- Graduate degree recipients will possess and practice high standards of scientific integrity and professional ethics. (Communication Skills)
- Trans-disciplinary professional skills: Graduate degree recipients will possess trans-disciplinary professional skills.
- Graduate degree recipients will apply creativity to innovation.

- Graduate degree recipients will recognize the importance of workplace diversity in culture, gender, perspective, and experience.
- Graduate degree recipients will work effectively with peers and develop mentoring skills.
- Graduate degree recipients will develop an understanding of the intellectual property process and the business needs of their workplace. (Transferable Skill: Mentoring; Diversity Awareness; Entrepreneurship)
- Familiar with research literature: Students will be familiar with the research literature of their chemistry subdiscipline and have the ability to keep abreast of major developments to acquire a working background in any area. (Communication Skills)
- Recognize meaningful problems and questions: Students will be able to demonstrate skill in the recognition of meaningful problems and questions for research.
- Technical laboratory skills: Students will possess technical skill in laboratory manipulation.
- Design experiments and conduct research: Students will be able to demonstrate skill in designing experimental protocols and in conducting productive self-directed research.

Research Instrumentation

The Department is equipped with modern instrumentation core facilities to support its research program. These facilities are readily available to graduate students for hands-on experience after successfully completing a short training course.

- **NMR core facility** includes 600, 400, and 200 MHz solution FT-NMR spectrometers and 400, 300, 100 MHz wide-bore solid-state NMR spectrometers
- **Core campus mass spectrometry facility** consists of a high-resolution magnetic sector mass spectrometer with EI and CI sources and GC, HPLC, pyrolysis and fast-atom bombardment capabilities; a MALDI-TOF mass spectrometer; a Eksigent/Thermo LTQ ESI LC-MS/SM dedicated to "bottom-up" proteomics studies; and an Applied Biosystems SCIEX QTRAP ESI LC-MS/MS dedicated to small molecule and metablomics characterizations.
- **Core campus proteomics facility** has all the necessary equipment to prepare samples for mass-spectrometry-based proteomics characterizations.
- **Optical Spectroscopy lab** containing 2 FT-IR spectrometer with far-IR capabilities; time-resolved spectrofluorometer; atomic absorption and diode-array UV-Vis spectrophotometers.
- The Department is home to multiple state of the art fluorescence microscopes for the analysis of biochemical reactions involving purified molecules and within living cells. These instruments including spinning disk confocal microscopy, total internal reflection fluorescence (TIRF) microscopy, targeted photo-bleaching, instrumentation of for ensemble and single-molecule fluorescence-resonance energy transfer (FRET) experiments and fluorescence-correlation spectroscopy, and optogenetics capabilities. The department also houses cell/tissue culture facilities, large- and small-scale protein-purification equipment and biophysical characterization capabilities including isothermal titration calorimetry. Campus computer facilities (including a Beowulf supercomputer cluster) are readily available. Individual groups maintain their own systems for molecular modeling, word processing or data manipulation. Direct, on-line computer access to chemical and biochemical literature databases such as Chemical Abstracts and Web of Science are provided by the Department.
- In addition to these departmental resources, individual research groups also maintained instrumentation including supercritical fluid chromatography and extraction, thermal analysis, laser light scattering, and computational chemistry. Campus supercomputer facilities and on-line computer access to other on-line information sources are readily available.

Course Delivery Format

Courses offered in the Ph.D. in Biochemistry curriculum are taught in a variety of formats which address student learning outcomes. Didactic (lecture) methods ensure the development of advanced knowledge of chemistry. Practical (laboratory) methods ensure the development and maturation of laboratory skills and training and these opportunities are developed in the research laboratory. A combination of didactic and practical methods ensures the successful completion of the graduate dissertation research project.

Facilities & Services

The Department is housed in the Avera Health and Science Center, which provides 100,000 sq. ft. of research and instructional space.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

60 Credit Plan

- CHEM 790 - Seminar (COM) Credits: 1 (2 credits required)
- CHEM 898D - Dissertation - PhD (COM) Credits: 1-12 (minimum of 18 credits)
- and/or other coursework as required by Graduate Student Advisory Committee

90 Credit Plan

The core coursework (12 credits of coursework and 3 credits of laboratory rotations) covering basic concepts in biochemistry and research ethics provides disciplinary breadth and a foundation for a student's plan of study. To support the interdisciplinary nature of the planned dissertation research project and provide depth in a subspecialty within the field, 9 credits of elective coursework are chosen by the student and their graduate advisory committee. Three additional credits of seminar are required. The remaining credits in the 90 credit plan of study are dissertation research. Students must develop their program of study in consultation with their graduate research advisor and graduate advisory committee during the first semester in residence.

- BIOS 662 - Advanced Molecular Biology Credits: 3 (3 credits required)
- BIOL 743 - Cell Biology (COM) Credits: 3
- CHEM 548 - Biophysical Chemistry Credits: 3
- CHEM 705 - Principles of Biochemistry Credits: 2-5 (3 credits required)
- CHEM 760 - Laboratory Rotations in Biochemistry Credits: 1-2 (3 credits required)
- CHEM 790 - Seminar (COM) Credits: 1 (3 credits required)
- CHEM 898D - Dissertation - PhD (COM) Credits: 1-12 (62 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1
- Electives Credits: 9

  Courses may be selected from STEM disciplines (e.g. BIOL, BIOS, CHEM, MATH, or STAT prefixes)

Candidacy Examinations

The Department uses a comprehensive examination process as its written candidacy examination for the doctorate in Biochemistry. The exam is offered annually with all biochemistry faculty contributing equally to the exam. The exam is to be taken after the student has substantially completed the required coursework and the exam will cover the content presented in the required coursework. The oral candidacy exam takes place within a year of completion of the cumulative exams. For the oral examination, students are required to develop and write an original research proposal and defend it orally. In order to successfully defend such a proposal the student must be able to integrate their coursework into the proposed research, and the oral defense reflects that expectation.

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL: Score of 580 paper-based, 92-93 Internet-based
IELTS: 5.5

Applications are accepted for admission to the Ph.D. program in fall only. Students are strongly encouraged to submit their applications for admission no later than January 15. Initial offers of admission will be made no later than the first week of February.

In addition to the materials required by the Graduate School, the Department of Chemistry and Biochemistry requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Three letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for

submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.)

Program Coordinator/Contact

Nicole Lounsbery, Director
Graduate School
130 Morrill Hall, Box 2201
605-688-4181

Program Information

This is a cooperative program leading to the Doctor of Philosophy degree in Biological Sciences. Departments that cooperate in the program are Agricultural & Biosystems Engineering; Agronomy, Horticulture, & Plant Science; Animal Science; Biology & Microbiology; Dairy & Food Science; Health & Nutritional Sciences; Natural Resource Management; and Veterinary & Biomedical Sciences at South Dakota State University. The masters and doctoral programs in Biological Sciences allow for considerable latitude in the education and training of students. The plan of study can be designed to meet the interests and individual needs of the student. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available. Generally, identification of a major professor with resources to support the student's dissertation project is required for unconditional acceptance into the program. Therefore, interested persons should make application for program admission well in advance of the anticipated date of enrollment. Please refer to each departmental section for a listing of the graduate faculty and details regarding the areas of study offered in this program. Inquiries should be made directly to the department representing the discipline of interest. Specializations are available in the following areas:

- Agricultural and Biosystems Engineering Specialization
- Biology Specialization
- Dairy Science Specialization
- Food Science Specialization
- Microbiology Specialization
- Molecular Biology Specialization
- Natural Resource Management Specialization
- Plant Molecular Biology Specialization
- Plant Science Specialization
- Veterinary Microbiology Specialization
- Veterinary Pathobiology Specialization

Biological Sciences Program Objectives

Graduates of the Doctor of Philosophy in Biological Sciences will:

- Have a thorough understanding and knowledge of biological principles related to the chosen discipline.
- Demonstrate the ability to conduct innovative research to create new knowledge.
- Demonstrate the ability to write grant proposals to secure research funding.
- Utilize appropriate statistical methods to make inferences from research.
- Write a coherent dissertation and submit one or more manuscripts to a scientific journal.
- Understand and articulate the potential applications of basic research.
- Demonstrate the ability to use ethics in decision making and planning.
- Demonstrate information literacy for science-based decision making and lifetime learning.
- Be prepared to enter into careers related to research and development or academic institutions.
- Contribute to the advancement of science in the discipline.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a Ph.D. holder.
- Communication skills: Express their scientific views effectively in both oral and written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Facilities & Services

A variety of outstanding laboratories, green houses, McCrory Gardens and Arboretum, livestock units, and field stations are available for education and research. Many Biological Sciences faculty hold appointments in the South Dakota Agricultural Experiment Station.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: Not a general requirement, but individual departments may require GRE
TOEFL: required score of 525 paper-based, 71 Internet-based
IELTS: 5.5

(Individual departments may have different requirements for GRE and TOEFL.)

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Agricultural & Biosystems Engineering Specialization

Program Coordinator/Contact

Van C. Kelley, Department Head
Kasiviswanathan Muthukumarappan, Distinguished Professor/Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Agricultural Engineering 107, Box 2120
605-688-5143

Program Information

Graduate work in the Department of Agricultural and Biosystems Engineering leads to Master of Science in Agricultural and Biosystems Engineering and Doctor of Philosophy in Biological Sciences degrees. The PhD in Biological Sciences with a specialization in Agricultural and Biosystems Engineering shares a common core with several other departments. The core requirements are defined in this Catalog in the Biological Sciences (Ph.D.) section. Additional classes are selected by the individual with the approval of the committee.

Students who undertake graduate studies in Agricultural and Biosystems Engineering normally have as their goal a better understanding of the current theories, principles, issues, and problems in agricultural and biological systems. Graduate studies improve the student's ability to think critically and creatively, and

to synthesize, analyze, and integrate ideas for decision-making and problem solving.

The department offers students an opportunity to undertake research and advanced study biological sciences with in relation to specialization areas such as food and biomaterial processing, physical properties of biological materials, natural resource engineering, structures, indoor environment, waste management and machine design.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a Ph.D. holder.
- Communication skills: Express their scientific views effectively in both oral and written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

The program engages students in lecture, laboratory, and in hands-on, field-based learning experiences.

Facilities & Services

The Agricultural and Biosystems Engineering Department is housed in the Agricultural Engineering Building. The entire building is dedicated to undergraduate and graduate instruction, research, and outreach projects that support the engineering needs of production agriculture, natural resource conservation, and value-added processing of the food and fiber produced in the region. Additional research and outreach projects take place at multiple field locations in the region. There are almost 17,000 square feet of space dedicated to industry-sponsored student design projects and cutting edge research, including a full fabrication shop and two computer labs to support these efforts. The department is also home to the Water Resources Institute, dedicated to the proper stewardship of the state's water resources.

Student Support & Engagement Opportunities

Many students participate in activities such as internships and research projects. Other ABE opportunities are available via our student branch of the American Society of Agricultural and Biological Engineers (ASABE). In addition, engineering opportunities are available via organizations such as Society of Women Engineers, Engineers Without Borders, and others. The most outstanding students are honored by induction into the ABE honorary society of Alpha Epsilon and engineering honor societies such as Tau Beta Pi.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific program: Biological Sciences (Ph.D.).

- ABE 791 - Independent Study Credits: 1-3
- ABE 898D - Dissertation - PhD (COM) Credits: 1-12 (30 credits required {60 Hour Plan}, 45 credits required {90 Hour Plan})
- ABME 790 - Seminar (COM) Credits: 1
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- Electives selected by the individual with committee approval

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 550 paper-based, 79 Internet-based
IELTS: 5.5

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Biology Specialization

Program Coordinator/Contact

Heike Bücking, Department Head
Radhey Kaushik, Professor/Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offer expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment and field research sites available to carry out their research projects. The learning environment, scholarly excellence and quality of teaching are areas of strength in the department's Graduate Program.

Student Learning Outcomes

- Program content: Graduates will demonstrate fundamental knowledge in biological or microbiological sciences broadly focused on cellular and molecular biology concepts and will specialize in specific area of biology, microbiology or molecular biology.
- Content – Research: Graduates will carry out research and scholarly activity in analysis of scientific data using statistics.
- Communication skills: Graduate will demonstrate effective oral and written communications skills in expressing and reporting scientific findings and concepts. (Communication Skills)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific program: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Ph.D. Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Comprehensive written exam (mid-program)
- Comprehensive oral exam (defense of written exam/research progress) (mid-program)
- Oral presentation of Dissertation (public) during last semester of program
- Oral defense of Dissertation (committee) during last semester of program
- Dissertation completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL: Score of 575 paper-based, 90 Internet based
IELTS: 6.5

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicants involvement in research, the applicants research interest, and career goals is also required.

Retention in the program is dependent on formation of a committee and completion of review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review annually.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Dairy Science Specialization

Program Coordinator/Contact

Joseph Cassady, Interim Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Dairy and Food Science Department provides research opportunities leading to Masters and PhD degrees. SDSU is one of two universities in the US with a Dairy Science Program that offers Dairy Production and Manufacturing majors. It is equipped with excellent laboratories, and a state of the art dairy processing plant which has the capability of processing fluid milk, cheese, butter, ice cream, concentrated and dried products, and other products. It also has a dairy research and training facility where a herd of 300 Holstein and Brown Swiss cattle for teaching and research is maintained. Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment the Genomics Lab and other departments on campus, including, Veterinary and Biomedical Sciences, and Health and Nutritional Sciences Programs are also available. Graduate students accepted in the program will have opportunities to utilize these facilities to develop basic and/or applied research programs in dairy product processing, microbiology, chemistry, food safety, dairy cattle nutrition, metabolism, breeding, microbiology of the rumen, immunology, and management, while interacting with well qualified faculty. The SDSU Dairy Science Program, in collaboration with the Food Science and Nutrition Program at the University of Minnesota and the Food Science and Human Nutrition Program at Iowa State University, is the Midwest Dairy Foods Research Center. This provides graduate students in the manufacturing area a unique opportunity to be involved with current issues and research needs.

Student Learning Outcomes

- Exhibit knowledge concerning dairy science, either manufacturing or production, at a level appropriate to a Ph.D. holder.
- Demonstrate adequate presentation and communication skills, including dissertation and journal article writing, poster and oral presentation skills, and grant/proposal writing skills.
- Demonstrate information literacy for science-based inquiry and critical review of existing knowledge sources.
- Demonstrate an understanding of scientific methods and application of analytical techniques for solving research problems.
- Develop a deep understanding of experimental design, statistical analysis and use of inferential statistics to make valid judgements based on scientific data.
- Specialize research focus in some area such as dairy manufacturing, dairy microbiology or dairy production, but still be broadly based in knowledge of dairy science.
- Be able to conduct and publish scholarly research.
- Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Student Support & Engagement Opportunities

An application to the graduate program serves as an application for a graduate assistantship. Qualified applicants may be eligible for financial aid in the form of departmental research assistantships for masters and doctoral students.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific program: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

At least two letters of reference and a personal statement that includes a description of the applicants' involvement in research, the applicant's research interest, and career goals will be required.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Food Science Specialization

Program Coordinator/Contact

Joseph Cassady, Interim Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Food Science program offers excellent opportunities for graduate level coursework and research leading to academic or industry careers in Food Science. Graduate students receive advanced preparation related to food processing, product development, and food safety. Food Science is a multi-disciplinary program that is administered by the Department of Dairy and Food Science, but may also include such diverse areas as animal science, food grain processing, and agricultural & biosystems engineering.

Student Learning Outcomes

- Exhibit knowledge concerning food science at a level appropriate to a Ph.D. holder.
- Demonstrate adequate presentation and communication skills, including dissertation and journal article writing, poster and oral presentation skills, and grant/proposal writing skills.
- Demonstrate information literacy for science-based inquiry and critical review of existing knowledge sources.
- Demonstrate an understanding of scientific methods and application of analytical techniques for solving research problems.
- Develop a deep understanding of experimental design, statistical analysis and use of inferential statistics to make valid judgements based on scientific data.
- Specialize research focus in some area of food processing, food product development, food microbiology or food safety, but still be broadly based in knowledge in food science.
- Be able to conduct and publish scholarly research.
- Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific program: PhD in Biological Sciences.

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550 paper-based, 79-80 Internet-based
IELTS: 5.5

At least two letters of reference and a personal statement that includes a description of the applicants' involvement in research, the applicants research interest, and career goals will be required.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Microbiology Specialization

Program Coordinator/Contact

Heike Bücking, Department Head
Radhey Kaushik, Professor/Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offer expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment and field research sites available to carry out their research projects. The learning environment, scholarly excellence and quality of teaching are areas of strength in the department's Graduate Program.

Student Learning Outcomes

- Program content: Graduates will demonstrate fundamental knowledge in biological or microbiological sciences broadly focused on cellular and molecular biology concepts and will specialize in specific area of biology, microbiology or molecular biology.
- Content – Research: Graduates will carry out research and scholarly activity in analysis of scientific data using statistics.
- Communication skills: Graduate will demonstrate effective oral and written communications skills in expressing and reporting scientific findings and concepts. (Communication Skills)
- Intellectual and critical thinking: Graduates will demonstrate effective intellectual and critical thinking traits. (Transferable Skill: Intellectual Traits)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Ph.D. Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Comprehensive written exam (mid-program)
- Comprehensive oral exam (defense of written exam/research progress) (mid-program)
- Oral presentation of Dissertation (public) during last semester of program
- Oral defense of Dissertation (committee) during last semester of program
- Dissertation completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL: Score of 575 paper-based, 90 Internet based
IELTS: 6.5

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicants involvement in research, the applicants research interest, and career goals is also required.

Retention in the program is dependent on formation of a committee and completion of review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review annually.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Molecular Biology Specialization

Program Coordinator/Contact

Heike Bücking, Department Head
Radhey Kaushik, Professor/Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offer expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment and field research sites available to carry out their research projects. The learning environment, scholarly excellence and quality of teaching are areas of strength in the department's Graduate Program.

Student Learning Outcomes

- Program content: Graduates will demonstrate fundamental knowledge in biological or microbiological sciences broadly focused on cellular and molecular biology concepts and will specialize in specific area of biology, microbiology or molecular biology.
- Content – Research: Graduates will carry out research and scholarly activity in analysis of scientific data using statistics.
- Communication skills: Graduate will demonstrate effective oral and written communications skills in expressing and reporting scientific findings and concepts. (Communication Skills)
- Intellectual and critical thinking: Graduates will demonstrate effective intellectual and critical thinking traits. (Transferable Skill: Intellectual Traits)

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Ph.D. Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Comprehensive written exam (mid-program)
- Comprehensive oral exam (defense of written exam/research progress) (mid-program)
- Oral presentation of Dissertation (public) during last semester of program
- Oral defense of Dissertation (committee) during last semester of program
- Dissertation completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL: Score of 575 paper-based, 90 Internet based
IELTS: 6.5

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicants involvement in research, the applicants research interest, and career goals is also required.

Retention in the program is dependent on formation of a committee and completion of review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review annually.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Natural Resource Management Specialization

Program Coordinator/Contact

Michele Dudash, Department Head
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138, Box 2140B
605-688-6121

Program Information

The Natural Resource Management specialization will provide training in ecology, evolution, environmental sciences, and range areas of expertise with a focus on basic and applied research.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a PhD holder.
- Communication skills: Express their scientific views effectively in both oral and written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional development: Demonstrate professional development and competence so that they may enter the work force in academia or industry.

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Facilities & Services

The department is housed within the McFadden Biostress Laboratory at SDSU.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

60 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 790 - Seminar Credits: 1 (2 credits required)
- BIOS 898D - Dissertation (COM) Credits: 1-7 (30-40 credits required)
- STAT courses numbered 500 level or higher Credits: 3
- Additional graduate courses approved by advisor and committee and noted on the student's Plan of Study Credits: 14-24

90 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 790 - Seminar Credits: 1 (2 credits required)
- BIOS 898D - Dissertation (COM) Credits: 1-7 (40-50 credits required)
- STAT courses numbered 500 level or higher Credits: 3
- Additional graduate courses approved by advisor and committee and noted on the student's Plan of Study Credits: 34-44

Additional Admission Requirements

GRE: Not Required
TOEFL: Required score of 525 paper-based, 71 Internet-based
IELTS: 5.5

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization

Program Coordinator/Contact

David Wright, Department Head
Brent Turnipseed, Assistant Department Head
Senthil Subramanian, Professor/Graduate Coordinator
Department of Agronomy, Horticulture, and Plant Science
244 Berg Hall, Box 2207A
605-688-4600

Program Information

The Agronomy, Horticulture, and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. Departmental diversity encourages collaborations among disciplines and research programs that support this graduate training.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a Ph.D. holder.
- Communication skills: Express their scientific views effectively in both oral and written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.

- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

The program coursework is available on campus, in classroom and laboratory settings, as well as field-based settings.

Facilities & Services

The department is housed in seven buildings across campus. These buildings provide research and teaching laboratories, greenhouses, seed house facilities and access to the functional genomics core facility. The on and off-campus facilities also include the SDSU Seed Testing Laboratory, SDSU Plant Diagnostics Clinic, Seed Certification, and Foundation Seed Stocks Division, which operates as services for the public. In addition, the department conducts research at five research farms near campus and five research stations across the state. The Field Specialists are housed in seven regional extension offices across the state.

Student Support & Engagement Opportunities

Students are encouraged to join and participate in the Plant Science Graduate Student Association (PSGSA) which conducts professional and social events on a regular basis. In addition, students are encouraged to participate and mentor undergraduate students in the Arboriculture Club, Agronomy and Conservation Club, or Horticulture and Urban Agriculture Club which offers opportunities for fellowship, leadership, and career planning for undergraduate students.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study. In addition, the student will successfully complete:

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: recommended, but not required
TOEFL: minimum requirement of 560 paper-based, 83 Internet-based
IELTS: minimum total score of 6.0

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Plant Science Specialization

Program Coordinator/Contact

David Wright, Department Head
Brent Turnipseed, Assistant Department Head
Senthil Subramanian, Professor/Graduate Coordinator
Department of Agronomy, Horticulture, and Plant Science
244 Berg Hall, Box 2207A
605-688-4600

Program Information

The Agronomy, Horticulture, and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. Departmental diversity encourages collaborations among disciplines and research programs that support this graduate training.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a Ph.D. holder.
- Communication skills: Express their scientific views effectively in both oral and written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Course Delivery Format

The program coursework is available on campus, in classroom and laboratory settings, as well as field-based settings.

Facilities & Services

The department is housed in seven buildings across campus. These buildings provide research and teaching laboratories, greenhouses, seed house facilities and access to the functional genomics core facility. The on and off-campus facilities also include the SDSU Seed Testing Laboratory, SDSU Plant Diagnostics Clinic, Seed Certification, and Foundation Seed Stocks Division, which operates as services for the public. In addition, the department conducts research at five research farms near campus and five research stations across the state. The Field Specialists are housed in seven regional extension offices across the state.

Student Support & Engagement Opportunities

Students are encouraged to join and participate in the Plant Science Graduate Student Association (PSGSA) which conducts professional and social events on a regular basis. In addition, students are encouraged to participate and mentor undergraduate students in the Arboriculture Club, Agronomy and Conservation Club, or Horticulture and Urban Agriculture Club which offers opportunities for fellowship, leadership, and career planning for undergraduate students.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study. In addition, the study will successfully complete:

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: recommended, but not required
TOEFL: minimum requirement of 560 paper-based, 83 Internet-based
IELTS: minimum score of 6.0

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization

Program Coordinator/Contact

Jane Christopher-Hennings, Department Head
Christopher Chase, Professor/Graduate Coordinator
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 1105, Box 2175
605-688-5171

Program Information

Graduate education in the Department of Veterinary and Biomedical Science is focused on the one health concept, with major emphasis in infectious diseases of food-producing domestic species and zoonotic diseases. Research projects range from basic (mechanistic) to applied science. The interaction of service, discovery, and education that takes place within the Department of Veterinary and Biomedical Sciences results in new knowledge, timely information, and students prepared for careers that make a difference for animals and people alike.

The Department of Veterinary and Biomedical Sciences offers degrees in both Masters of Science and Doctor of Philosophy. The Ph.D. program is offered as a Doctorate in Biological Sciences and requires either 90 credits beyond a B.S. degree, or 60 credits beyond an M.S. from either a Canadian or American University.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a Ph.D. holder.
- Communication skills: Express their scientific views effectively in both oral and written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Accreditation, Licensure, & Certification

American Association of Veterinary Laboratory Diagnosticians Accreditation

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Facilities & Services

- Animal Disease Research and Diagnostic Laboratory
- Food Safety Microbiology Laboratory
- Food Emergency Response Network

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Research in pursuit of the dissertation requirement is expected to address a question of fundamental scientific importance and is expected to generate data of publication quality.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Admission to the program is dependent upon admission to the SDSU Graduate School and identification of a suitable mentor. Applicants are not accepted into the program unless an assistantship can be provided. Funding for assistantships comes from a variety of sources including the South Dakota Agricultural Experiment Station, federal granting agencies, and the animal health product industry. Those interested are encouraged to contact the Department to identify opportunities.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Program Coordinator/Contact

Jane Christopher-Hennings, Department Head
Christopher Chase, Professor/Graduate Coordinator
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 1105, Box 2175
605-688-5171

Program Information

Graduate education in the Department of Veterinary and Biomedical Science is focused on the one health concept, with major emphasis in infectious diseases of food-producing domestic species and zoonotic diseases. Research projects range from basic (mechanistic) to applied science. The interaction of service, discovery, and education that takes place within the Department of Veterinary and Biomedical Sciences results in new knowledge, timely information, and students prepared for careers that make a difference for animals and people alike.

The Department of Veterinary and Biomedical Sciences offers degrees in both Masters of Science and Doctor of Philosophy. The Ph.D. program is offered as a Doctorate in Biological Sciences and requires either 90 credits beyond a B.S. degree, or 60 credits beyond an M.S. from either a Canadian or American University.

Student Learning Outcomes

- Knowledge of program: Exhibit knowledge concerning biological and/or microbiological systems/sciences at a level appropriate to a Ph.D. holder.
- Communication skills: Express their scientific views effectively in both oral and written form.
- Understand scientific method: Understand the scientific methods and techniques for solving research problems and analyze scientific data using the appropriate statistics.
- Use statistics to analyze data: Be able to use statistics to analyze scientific data.
- Publish research: Be able to conduct and publish scholarly research. (Option A)
- Professional development: Demonstrate professional development and competence so that they may enter the work force in academia or industry. (Transferable Skill: Career Preparedness)

Accreditation, Licensure, & Certification

American Association of Veterinary Laboratory Diagnosticians Accreditation

Course Delivery Format

Biological Sciences courses are delivered face-to-face and enhanced with web-based instruction. Online delivery may be offered for specific courses.

Facilities & Services

- Animal Disease Research and Diagnostic Laboratory
- Food Safety Microbiology Laboratory
- Food Emergency Response Network

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 Seminar Credit: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Research in pursuit of the dissertation requirement is expected to address a question of fundamental scientific importance and is expected to generate data of publication quality.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Admission to the program is dependent upon admission to the SDSU Graduate School and identification of a suitable mentor. Applicants are not accepted into the program unless an assistantship can be provided. Funding for assistantships comes from a variety of sources including the South Dakota Agricultural Experiment Station, federal granting agencies, and the animal health product industry. Those interested are encouraged to contact the Department to identify opportunities.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Chemistry (Ph.D.)

Program Coordinator/Contact

Douglas Raynie, Department Head
Jihong Cole-Dai, Graduate Program Coordinator
Department of Chemistry and Biochemistry
Avera Health and Science Center 131, Box 2202
605-688-5151

Program Information

The Department's chemistry faculty research programs fall into the thematic focus areas of environmental chemistry, green chemistry, chemical sensor development, organic synthesis, materials chemistry, natural products chemistry, and chemical education. Within these multidisciplinary and interdisciplinary focus areas, students can select research projects that involve the traditional subdisciplines of chemistry; analytical, biochemistry, inorganic, organic, and physical. Currently active research projects in the Department focus on various aspects of analytical chemistry, drug discover and delivery, synthesis or photoactive materials including polymers, materials chemistry and self assembly, chromatography, the chemistry of cell membranes, environmental analysis, green chemistry, chemistry of climate change, photophysical chemistry, natural products synthesis, biophysical chemistry, computational chemistry, and solid-state NMR. For additional information about these options, review the descriptions of current faculty research interests on the Department website.

Student Learning Outcomes

- Graduate degree recipients will possess comprehensive disciplinary knowledge with high competence.
- Ph.D. degree recipients will be able to demonstrate knowledge of the chemistry discipline, appropriate sub-discipline and related scientific disciplines (e.g., biochemistry, biology, mathematics, physics, environmental science) and be cognizant of the disciplinary development frontier.
- Ph.D. degree recipients will be able to define scientifically meaningful research issues, develop competitive proposals, and contribute to knowledge creation through research.
- Graduate degree recipients will be prepared to demonstrate knowledge and technical skills in a large variety of professional fields, careers and endeavors.
- Graduate degree recipients will communicate effectively in an oral, written and visual manner to technical audiences and stakeholders.
- Graduate degree recipients will possess and practice high standards of scientific integrity and professional ethics. (Communication Skills)
- Graduate degree recipients will possess trans-disciplinary professional skills.
- Graduate degree recipients will apply creativity to innovation.
- Graduate degree recipients will recognize the importance of workplace diversity in culture, gender, perspective, and experience.
- Graduate degree recipients will work effectively with peers and develop mentoring skills.
- Graduate degree recipients will develop an understanding of the intellectual property process and the business needs of their workplace. (Transferable Skill: Mentoring; Diversity Awareness; Entrepreneurship)
- Students will be familiar with the research literature of their chemistry subdiscipline and have the ability to keep abreast of major developments to acquire a working background in any area. (Communication Skills)
- Students will be able to demonstrate skill in the recognition of meaningful problems and questions for research.
- Students will possess technical skill in laboratory manipulation.
- Students will be able to demonstrate skill in designing experimental protocols and in conducting productive self-directed research.

Research Instrumentation

The Department is equipped with modern instrumentation core facilities to support its research program. These facilities are readily available to graduate students for "hands-on" experience after successfully completing a short training course.

- **NMR core facility** includes 600, 400, and 200 MHz solution FT-NMR spectrometers and 400, 300, 100 MHz wide-bore solid-state NMR spectrometers
- **Core campus mass spectrometry facility** consists of a high-resolution magnetic sector mass spectrometer with EI and CI sources and GC, HPLC, pyrolysis and fast-atom bombardment capabilities, a MALDI-TOF mass spectrometer; a Eksigent/Thermo LTQ ESI LC-MS/SM dedicated to "bottom-up" proteomics studies; and an Applied Biosystems SCIEX QTRAP ESI LC-MS/MS dedicated to small molecule and metablomics characterizations.
- **Core campus proteomics facility** has all the necessary equipment to prepare samples for mass-spectrometry-based proteomics characterizations.
- **Optical Spectroscopy lab** containing 2 FT-IR spectrometer with far-IR capabilities; time-resolved spectrofluorometer; atomic absorption; and diode-array UV-Vis spectrophotometers.
- The Department is home to multiple state of the art fluorescence microscopes for the analysis of biochemical reactions involving purified molecules and within living cells. These instruments including spinning disk confocal microscopy, total internal reflection fluorescence (TIRF) microscopy, targeted photo-bleaching, instrumentation of for ensemble and single-molecule fluorescence-resonance energy transfer (FRET) experiments and fluorescence-correlation spectroscopy, and optogenetics capabilities. The department also houses cell/tissue culture facilities, large- and small-scale protein-purification equipment and biophysical characterization capabilities including isothermal titration calorimetry. Campus computer facilities (including a Beowulf supercomputer cluster) are readily available. Individual groups maintain their own systems for molecular modeling, word processing or data manipulation. Direct, on-line computer access to chemical and biochemical literature databases such as Chemical Abstracts and Web of Science are provided by the Department.
- In addition to these departmental resources, individual research groups also maintained instrumentation including supercritical fluid chromatography and extraction, thermal analysis, and laser light scattering. Campus super-computer facilities and on-line computer access to other on-line information sources are readily available.

Course Delivery Format

Courses offered in the Ph.D. Chemistry curriculum are taught in a variety of formats which address student learning outcomes. Didactic (lecture) methods ensure the development of advanced knowledge of chemistry. Practical (laboratory) methods ensure the development and maturation of laboratory skills and training and these opportunities are developed in the research laboratory. A combination of didactic and practical methods ensures the successful completion of the graduate dissertation research project.

Facilities & Services

The Department is housed in the Avera Health and Science Center, which provides 100,000 sq. ft. of research and instructional space.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

60 Credit Plan

- CHEM 790 - Seminar (COM) Credits: 1 (2 credits required)
- CHEM 898D - Dissertation - PhD (COM) Credits: 1-12 (minimum of 18 credits)
- and/or other coursework as required by Graduate Student Advisory Committee

90 Credit Plan

Students are required to complete 21 credits of course work that includes 12 credits of core coursework and 9 credits specific to the research project. Additionally, students must complete 3 credit hours of seminar. The remaining credits in the 90 credit plan of study are dissertation research. Students must develop their program of study in consultation with their graduate research advisor and graduate advisory committee during the first semester in residence.

- CHEM 707 - Chemical Communication Skills Credits: 2
- CHEM 790 - Seminar (COM) Credits: 1 (3 credits required)
- CHEM 898D - Dissertation - PhD (COM) Credits: 1-12 (64 credits required)
- Research Credits: 9

Select 4 of the following 5 courses:

- CHEM 701 - Advanced Organic Chemistry I Credits: 3
- CHEM 703 - Advanced Physical Chemistry Credits: 3
- CHEM 704 - Advanced Inorganic Chemistry Credits: 3
- CHEM 705 - Principles of Biochemistry Credits: 2-5 (3 credits required)
- CHEM 706 - Advanced Analytical Chemistry Credits: 3

Candidacy Examinations

The Department uses a cumulative examination process as its written candidacy (comprehensive) examination for the doctorate in Chemistry. Exams will be scored on a scale of 0-1-2 where 0 represents inadequate knowledge of the material (corresponding to a failing grade), 1 represents adequate knowledge (corresponding to a grade of B or C), and 2 represents superior knowledge (corresponding to a grade of A or B). Successful completion of the cumulative examination process will require that the student accumulate 10 points, with at least three scores of 2 within the sub-discipline of their graduate research and accumulation of points in at least two additional chemistry subdisciplines. These exams must be passed over a period of two calendar years (24 possible tests). The oral candidacy (comprehensive) exam takes place within a year of completion of the cumulative exams. For the oral examination, students are required to develop and write an original research proposal and defend it orally. In order to successfully defend such a proposal, the student must be able to integrate their coursework into the proposed research, and the oral defense reflects that expectation.

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL: Score of 580 paper-based, 92-93 Internet-based
IELTS: 5.5

Applications are accepted for admission to the Ph.D. program in fall only. Students are strongly encouraged to submit their applications for admission no later than January 15. Initial offers of admission will be made no later than the first week of February.

In addition to the materials required by the Graduate School, the Department of Chemistry and Biochemistry requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Three letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Civil Engineering (Ph.D.)

Program Coordinator/Contact

Nadim Wehbe, Department Head
Suzette Burckhard, Professor/Graduate Coordinator
Department of Civil and Environmental Engineering
Crothers Engineering Hall 120, Box 2219
605-688-5427

Program Information

The program is designed to provide breadth and depth within the civil engineering main sub-disciplines including structural, environmental, transportation, geotechnical, hydraulic, and water resources engineering. The department's graduate faculty members conduct research in the fields of bridge engineering, earthquake engineering, traffic operations and safety, transportation infrastructure, breaking waves and river hydraulics, fate and transport of contaminants, water/wastewater treatment processes and biological filtration, and soil stability and deep foundations.

Program Objectives

The Ph.D. program's objectives are to prepare graduates to:

- Generate and disseminate new discovery in civil engineering disciplines
- Develop resilient civil engineering infrastructure to withstand man-made and natural hazards
- Advance sustainable civil engineering systems to serve the needs of future generations and preserve natural resources

Student Learning Outcomes

- Apply knowledge: Apply knowledge and skills to develop new ideas, knowledge, and applications in civil and environmental engineering.
- Make contributions: Make a contribution to the state-of-the-art in the graduate's specialized area of research through development and completion of a research project that culminates in a doctoral dissertation.
- Communication: Communicate effectively with one's peers, students, and public at large by written, oral, and visual means.
- Evaluate literature: Evaluate relevant literature and existing engineering knowledge.
- Ethics: Exhibit ethical and scientific conduct of research. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

The majority of the courses will be taught on campus in a classroom setting. Some courses will be offered through the "Access Grid" system in collaboration with other regental institutions in the state of South Dakota.

Facilities & Services

The Department of Civil and Environmental Engineering is home for state-of-the-art experimental and research facilities. The Lohr Structures Laboratory is a 400 square meters high-bay/strong-floor structural testing facility that is configured to accommodate large-and full-scale test specimens. The Fluid Mechanics Laboratory has a 25-m-long, 0.90-m-wide and 0.75-m-deep research flume which can be used either as an open channel or as a wave tank. The HDR Environmental Laboratory is designed to perform three major functions: Teaching, Analysis, and Research. The research area of the HDR laboratory contains space for graduate work, a ventilated room for biological research, and an area with a high ceiling to accommodate pilot plant work. In addition, the materials, geotechnical, and asphalt laboratories are equipped with basic and advanced testing equipment which can support experimental research.

Student Support & Engagement Opportunities

Students seeking a Ph.D. degree in civil engineering will be conducting research in their area of interest under the mentorship of highly qualified and dedicated faculty. Research and teaching assistantships will be offered to qualified students. Students will also be expected to engage in scholarly activities through publishing of peer-reviewed journal papers and dissemination of research results at national conferences.

Available Options for Graduate Degrees

Doctor of Philosophy 60 Credit Plan

Core Requirements

- CEE 790 - Seminar (COM) Credits: 1 (3 credits required)
- CEE 898D - Dissertation (COM) Credits: 1-12 (36 credits required)
- Supporting Electives Credits: 15
  (Elective courses will be chosen by the Advisor in consultation with the student and approved by the Graduate Advisory Committee as part of the Plan of Study.)

Required Emphasis

Select from the following emphasis areas. Credits: 6

Environmental Emphasis

- CEE 725 - Biological Principles of Environmental Engineering Credits: 3
- CEE 726 - Physical and Chemical Principles of Environmental Engineering Credits: 3
- CEE 726L - Physical and Chemical Principles of Environmental Engineering Laboratory Credits: 0

Structural and Geotechnical Emphasis

- CEE 759 - Structural Dynamics Credits: 3
- EM 741 - Finite Element Analysis Credits: 3

Transportation Emphasis

- CEE 7XX Statistical and Econometric Analysis Methods Credits: 3
- CEE 765 - Pavement Design Credits: 3

Water Resources Emphasis

- CEE 535 - Water Resources Engineering Credits: 3
- CEE 733 - Topics in Water Resources Engineering Credits: 3

Additional Admission Requirements

GRE: General scores required
TOEFL: Department requirement of 575 paper-based, 90-91 Internet-based
IELTS: 5.5

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Computational Science & Statistics (Ph.D.) - Data Science Specialization

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The Computational Science and Statistics Ph.D. program is designed to train students to integrate computational and statistical methodologies to formulate, model, analyze, and solve research problems of interest in a wide variety of applied and theoretical contexts. The Data Science Specialization will emphasize curriculum and research programs that prepare graduates to support local, regional and national industry by analyzing large and complex datasets.

Student Learning Outcomes

- Understanding of models: Students will understand mathematical and statistical models.
- Construct and apply models: Students will be able to construct and apply standard mathematical and statistical models.
- Research: Students will be able to conduct research using appropriate software to implement these models.
- Disseminate research: Students will be able to disseminate the results of their research to others.
- Apply argument deconstruction: Students will be able to apply Argument Deconstruction in mathematics and statistics.
- Understand the ethical implications of professional actions in computational science, statistics, and other contexts. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Available Options for Graduate Degrees

Doctor of Philosophy 60 Credit Plan

Core Requirements

- CSS 890 - Seminar in Computational Science and Statistics (COM) Credits: 1 (3 credits required)
- CSS 898D - Dissertation PhD (COM) Credits: 1-36 (30 credits required)
- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 715 - Multivariate Analysis I Credits: 3
- STAT 721 - Statistical Computing and Simulation Credits: 3
- STAT 752 - Advanced Data Science Credits: 3

Additional Graduation Requirements

Students must also pass qualifying exams based on the program's core sequences, and written and oral comprehensive exams as designed by the student's advisory committee.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 575 paper-based, 90 Internet-based
IELTS: 6.0

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Computational Science & Statistics (Ph.D.) - Mathematics Specialization

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The Computational Science and Statistics Ph.D. program is designed to train students to integrate computational and statistical methodologies to formulate, model, analyze, and solve research problems of interest in a wide variety of applied and theoretical contexts. The Mathematics Specialization will emphasize curriculum and research programs related to development of computational strategies for modeling and analysis that incorporates large and complex datasets.

Student Learning Outcomes

- Understanding of models: Students will understand mathematical and statistical models.
- Construct and apply models: Students will be able to construct and apply standard mathematical and statistical models.
- Research: Students will be able to conduct research using appropriate software to implement these models.
- Disseminate research: Students will be able to disseminate the results of their research to others.
- Apply argument deconstruction: Students will be able to apply Argument Deconstruction in mathematics and statistics.
- Understand the ethical implications of professional actions in computational science, statistics, and other contexts. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan

Core Requirements

- CSS 890 - Seminar in Computational Science and Statistics (COM) Credits: 1 (3 credits required)
- CSS 898D - Dissertation PhD (COM) Credits: 1-36 (30 credits required)
- MATH 515 - Advanced Linear Algebra (COM) Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 751 - Applied Functional Analysis Credits: 3
- MATH 770 - Numerical Linear Algebra Credits: 3
- MATH 773 - Numerical Optimization Credits: 3
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3

Additional Graduation Requirements

Students must also pass qualifying exams based on the program's core sequences, and written and oral comprehensive exams as designed by the student's advisory committee.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 575 paper-based, 90 Internet-based
IELTS: 6.0

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Computational Science & Statistics (Ph.D.) - Statistics Specialization

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The Computational Science and Statistics Ph.D. program is designed to train students to integrate computational and statistical methodologies to formulate, model, analyze, and solve research problems of interest in a wide variety of applied and theoretical contexts. The Statistics Specialization will emphasize curriculum and research programs focusing on problems at the boundaries of effectiveness of current modern statistical methods. Students in this specialization will received a multidisciplinary education combining the curriculums of the Mathematics and Data Science specializations.

Student Learning Outcomes

- Understanding of models: Students will understand mathematical and statistical models.
- Construct and apply models: Students will be able to construct and apply standard mathematical and statistical models.
- Research: Students will be able to conduct research using appropriate software to implement these models.
- Disseminate research: Students will be able to disseminate the results of their research to others.
- Apply argument deconstruction: Students will be able to apply Argument Deconstruction in mathematics and statistics.
- Understand the ethical implications of professional actions in computational science, statistics, and other contexts. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan

Core Requirements

- CSS 890 - Seminar in Computational Science and Statistics (COM) Credits: 1 (3 credits required)
- CSS 898D - Dissertation PhD (COM) Credits: 1-36 (18 credits required)
- MATH 515 - Advanced Linear Algebra (COM) Credits: 3
  or MATH 770 - Numerical Linear Algebra Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 773 - Numerical Optimization Credits: 3
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 715 - Multivariate Analysis I Credits: 3
- STAT 716 - Asymptotic Statistics Credits: 3
- STAT 721 - Statistical Computing and Simulation Credits: 3
- STAT 752 - Advanced Data Science Credits: 3

Additional Graduation Requirements

Students must also pass qualifying exams based on the program's core sequences, and written and oral comprehensive exams as designed by the student's advisory committee.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 575 paper-based, 90 Internet-based
IELTS: 6.0

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Electrical Engineering (Ph.D.)

Program Coordinator/Contact

Siddharth Suryanarayanan, Department Head
Reinaldo Tonkoski, Associate Professor
Department of Electrical Engineering and Computer Science
Daktronics Eng Hall 214, Box 2222
605-688-4526

Program Information

The program offers a variety of courses that encompass a broad range of Electrical Engineering areas including: alternative energy and power systems; computer engineering, communications; electronic materials, devices and sensors; nano technology, photovoltaic devices and systems; and signal and image processing. The department's graduate faculty conduct active research in these areas using modern research facilities and equipment.

Program Objectives

The EE graduate program objectives are to equip individuals to

- Discover and disseminate knowledge relevant to the discipline of electrical engineering.
- Provide leadership for increasingly complex roles in electrical engineering and industry.
- Contribute to the advancement of the science of electrical engineering serving regional and national needs.

Student Learning Outcomes

- Original contribution to field: Knowledge and skills to make an original contribution to the field.
- Understand and evaluate literature: Ability to understand and evaluate critically the literature in the field.
- Independent learning: Ability to undertake independent/self-directed study/learning.
- Apply principles and procedures: Ability to apply appropriate principles and procedures to the recognition, interpretation, and understanding of issues and problems at the frontiers of Electrical Engineering knowledge.
- Communication skills: Ability to communicate relevant science and engineering ideas, principles and theories by written, oral, and visual means. (Communication Skills)
- Ethical awareness: Awareness of and commitment to the ethical practices appropriate to engineering and the sciences. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

A majority of the courses are taught on campus in smart classrooms. The smart classrooms allow for a variety of methods for student engagement and faculty are able to record and post their lectures on-line. Additionally, some courses are offered remotely in collaboration with other Ph.D. granting institutions in the state.

Facilities & Services

With more than $12 million invested in classrooms and laboratories, graduate students benefit from modern lecture rooms and gain valuable experience using state-of-the-art equipment. The recently dedicated modern Daktronics Engineering Hall is home to the Electrical Engineering program with over 15,000 square feet of dedicated research space. The department boasts a 5-bay multi-million dollar clean room, several class one gloveboxes, and nano-characterization labs for developing both organic and inorganic electronics, as well as numerous other labs for research in fiber optics, power and alternative energy systems, and sensors.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

60 Credit Plan

- EE 790 - Seminar (COM) Credits: 1 (3 credits required)
- EE 7XX Electives Credits: 9
- EE 898D - Dissertation - PhD Credits: 1-6 (36 credits required)
- Additional Electives Credits: 12

90 Credit Plan

- EE 790 - Seminar (COM) Credits: 1 (3 credits required)
- EE 7XX Electives Credits: 12
- EE 898D - Dissertation - PhD Credits: 1-6 (60 Credits Required)
- Additional Electives Credits: 15

Additional Admission Requirements

GRE: General scores required
TOEFL: Department requirement of 575 paper-based, 90-91 Internet-based
IELTS: 5.5

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Geospatial Science & Engineering (Ph.D.) - Geography Specialization

Program Coordinator/Contact

Xiaoyang Zhang, Professor/Graduate Coordinator
Department of Geography and Geospatial Sciences and Geospatial Sciences Center of Excellence
Wecota Hall 115, Box 506B
605-688-4511

Program Information

The Geospatial Science and Engineering (GSE) Ph.D. is an interdisciplinary program that combines advanced coursework with cutting-edge research to advance the field of geospatial sciences. The focus is on transforming geospatial data into relevant information through acquisition, processing, characterization, analysis, and modeling in order to understand geographic patterns, processes, and relationships at scales ranging from landscapes to the globe. To achieve these aims, the geospatial sciences integrate the geographic disciplines of cartography, geodesy, geographic information systems, and remote sensing with elements of mathematics, statistics, the natural sciences, the social sciences, and engineering. The resulting array of geospatial concepts, methods, technologies, and datasets are used to address a wide range of pertinent questions about the functioning of the biosphere and its implications for sustainability of natural resources, agricultural productivity, biodiversity, environmental quality, and human welfare in a rapidly-changing world.

The program consists of faculty from the Geospatial Sciences Center of Excellence and the Image Processing Laboratory in the department of Electrical Engineering & Computer Science. Other participating departments include Agricultural & Biosystems Engineering, Civil & Environmental Engineering, Geography, and Natural Resource Management. Current faculty research interests include quantitative remote sensing, sensor design and calibration, land cover and land use change, geography, hydrology, landscape ecology, climate change, and fire science as well as applications of geospatial technologies in agriculture, meteorology, natural resource management, public health, and other fields. The program seeks highly motivated students with strong backgrounds in the geospatial sciences or a closely-related field to complement these efforts.

Student Learning Outcomes

- Problem solving: Demonstrate proficiency in the application of appropriate geographical technologies and techniques to address issues in the physical and/or human sciences.
- Written communication: Communicate geographic ideas clearly and effectively (e.g., maps, writing, oral presentations, posters, photos, flowcharts, tables, graphs, and illustrations).
- Creative thinking: Apply observations from laboratory and/or field experiences to analyze problems and offer solutions.
- Critical thinking: Demonstrate foundational and specialized knowledge in both the physical and human sciences and their interconnectedness at local, regional, and global scales.
- Critical thinking: Interpret the ethical consequences of global issues concerning the environment to strengthen commitment to local, national, and global citizenship.
- Creative thinking: Demonstrate the ability to collect, organize, analyze, and synthesize information about people, places, and environments in a spatial-temporal context.
- Inquiry and analysis: Explore complex local, regional, and global issues using a geographical perspective to formulate questions and draw informed conclusions that are based on critical scientific analysis and interpretation of information.
- Transferable Skill: Career Preparedness (e.g. networking, career explorations, interviewing, writing cover letters and resumes, myIDP) (Transferable Skill: Career Preparedness)

Course Delivery Format

Program coursework is offered in classroom, laboratory, and field-based settings.

Facilities & Services

The program facilities are housed in various locations on campus at SDSU, including the Geospatial Sciences Center of Excellence in Wecota Hall and the Image Processing Laboratory in Daktronics Engineering Hall, as well at the United States Geological Survey's Center for Earth Resources Observation and Science near Baltic, South Dakota.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

- GEOG 710 - Evolution of Geographic Thought Credits: 3
- GSE 740 - Introduction to Geospatial Science and Engineering Credits: 3
- GSE 790 - Seminar Credits: 1-3 (3 credits required)
- GSE 898 - Dissertation PhD (COM) Credits: 1-12 (36 credits required)
- Specialization Coursework Credits: 6
- Supporting Electives (Students should consult their advisors to identify courses suitable for their area of interest.) Credits: 9-39

Additional Admission Requirements

Admission to the GSE program is competitive and limited by the availability of personnel, facilities, and funding necessary to provide quality graduate education. GSE is an interdisciplinary program with participating faculty members from several departments. The scope of the geospatial sciences is broad, and individual faculty members will only advise students within their particular area of specialization. Financial support for students is provided by individual faculty members through their research grants or other funding sources. Students can also bring their own funding, which could be obtained through a fellowship program or through the support of their employer. For these reasons, the application process is highly competitive, and meeting the minimum standards does not guarantee admission. In particular, the critical criterion for admission into the PhD program is that a GSE faculty member must agree to serve as the student's advisor.

Before applying to the program, prospective students are strongly encouraged to contact individual faculty to identify prospective advisors, discuss their research interests and educational goals, and determine if graduate research assistantships are available. Prospective students may also contact Dr. Xiaoyang Zhang, the program coordinator, for additional information.

All applications must meet the admission criteria of the Graduate School before being accepted into the GSE program, and formal offers of graduate assistantships will not be made until students have been officially accepted by the Graduate School.

GRE: Required
TOEFL: Score of 525 paper-based, 71 Internet-based
IELTS: 5.5

Two letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant should be sent directly to the GSE graduate coordinator.

Applicants must provide a written describing their research interests and academic goals in pursuing a Ph.D. and identifying one or more faculty members as potential advisors. The letter of intent should be submitted with the other application materials.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Geospatial Science & Engineering (Ph.D.) - Remote Sensing Specialization

Program Coordinator/Contact

Xiaoyang Zhang, Professor/Graduate Coordinator
Department of Geography and Geospatial Sciences and Geospatial Sciences Center of Excellence
Wecota Hall 115, Box 506B
605-688-4511

Program Information

The Geospatial Science and Engineering (GSE) Ph.D. is an interdisciplinary program that combines advanced coursework with cutting-edge research to advance the field of geospatial sciences. The focus is on transforming geospatial data into relevant information through acquisition, processing, characterization, analysis, and modeling in order to understand geographic patterns, processes, and relationships at scales ranging from landscapes to the globe. To achieve these aims, the geospatial sciences integrate the geographic disciplines of cartography, geodesy, geographic information systems, and remote sensing with elements of mathematics, statistics, the natural sciences, the social sciences, and engineering. The resulting array of geospatial concepts, methods, technologies, and datasets are used to address a wide range of pertinent questions about the functioning of the biosphere and its implications for sustainability of natural resources, agricultural productivity, biodiversity, environmental quality, and human welfare in a rapidly-changing world.

The program consists of faculty from the Geospatial Sciences Center of Excellence and the Image Processing Laboratory in the department of Electrical Engineering & Computer Science. Other participating departments include Agricultural & Biosystems Engineering, Civil & Environmental Engineering, Geography, and Natural Resource Management. Current faculty research interests include quantitative remote sensing, sensor design and calibration, land cover and land use change, geography, hydrology, landscape ecology, climate change, and fire science as well as applications of geospatial technologies in agriculture, meteorology, natural resource management, public health, and other fields. The program seeks highly motivated students with strong backgrounds in the geospatial sciences or a closely-related field to complement these efforts.

Student Learning Outcomes

- Problem solving: Demonstrate proficiency in the application of appropriate geographical technologies and techniques to address issues in the physical and/or human sciences.
- Written communication: Communicate geographic ideas clearly and effectively (e.g., maps, writing, oral presentations, posters, photos, flowcharts, tables, graphs, and illustrations).
- Creative thinking: Apply observations from laboratory and/or field experiences to analyze problems and offer solutions.
- Critical thinking: Demonstrate foundational and specialized knowledge in both the physical and human sciences and their interconnectedness at local, regional, and global scales.
- Critical thinking: Interpret the ethical consequences of global issues concerning the environment to strengthen commitment to local, national, and global citizenship.
- Creative thinking: Demonstrate the ability to collect, organize, analyze, and synthesize information about people, places, and environments in a spatial-temporal context.
- Inquiry and analysis: Explore complex local, regional, and global issues using a geographical perspective to formulate questions and draw informed conclusions that are based on critical scientific analysis and interpretation of information.
- Transferable Skill: Career Preparedness (e.g. networking, career explorations, interviewing, writing cover letters and resumes, myIDP) (Transferable Skill: Career Preparedness)

Course Delivery Format

Program coursework is offered in classroom, laboratory, and field-based settings.

Facilities & Services

The program facilities are housed in various locations on campus at SDSU, including the Geospatial Sciences Center of Excellence in Wecota Hall and the Image Processing Laboratory in Daktronics Engineering Hall, as well at the United States Geological Survey's Center for Earth Resources Observation and Science near Baltic, South Dakota.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

- GEOG 710 - Evolution of Geographic Thought Credits: 3
- GSE 740 - Introduction to Geospatial Science and Engineering Credits: 3
- GSE 790 - Seminar Credits: 1-3 (3 credits required)
- GSE 898 - Dissertation PhD (COM) Credits: 1-12 (36 credits required)
- Specialization Coursework Credits: 6
- Supporting Electives (Students should consult their advisors to identify courses suitable for their area of interest) Credits: 9-39

Additional Admission Requirements

Admission to the GSE program is competitive and limited by the availability of personnel, facilities, and funding necessary to provide quality graduate education. GSE is an interdisciplinary program with participating faculty members from several departments. The scope of the geospatial sciences is broad, and individual faculty members will only advise students within their particular area of specialization. Financial support for students is provided by individual faculty members through their research grants or other funding sources. Students can also bring their own funding, which could be obtained through a fellowship program or through the support of their employer. For these reasons, the application process is highly competitive, and meeting the minimum standards does not guarantee admission. In particular, the critical criterion for admission into the PhD program is that a GSE faculty member must agree to serve as the student's advisor.

Before applying to the program, prospective students are strongly encouraged to contact individual faculty to identify prospective advisors, discuss their research interests and educational goals, and determine if graduate research assistantships are available. Prospective students may also contact Dr. Xiaoyang Zhang, the program coordinator, for additional information.

All applications must meet the admission criteria of the Graduate School before being accepted into the GSE program, and formal offers of graduate assistantships will not be made until students have been officially accepted by the Graduate School.

GRE: Required
TOEFL: Score of 525 paper-based, 71 Internet-based
IELTS: 5.5

Two letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant should be sent directly to the GSE graduate coordinator.

Applicants must provide a written describing their research interests and academic goals in pursuing a Ph.D. and identifying one or more faculty members as potential advisors. The letter of intent should be submitted with the other application materials.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Mechanical Engineering (Ph.D.)

Program Coordinator/Contact

Kurt Bassett, Department Head
Zhong Hu, Professor
Department of Mechanical Engineering
Crothers Engineering Hall 221, Box 2219
605-688-5426

Program Information

The Ph.D. in Mechanical Engineering is designed to develop the depth of knowledge that will allow students to investigate new concepts and new applications of technology to advance the state of the art in the discipline. It will also provide students with practical training and experience in the scientific methods needed to conduct reliable experiments and to apply and properly validate engineering models of physical systems. Critical thinking and communication skills developed in the program will prepare students for leadership roles. Overall, the knowledge and skills gained will prepare them for life-long careers in highly desirable research and development positions.

Students who undertake this graduate degree normally have as their goal an advanced understanding of the body of knowledge in the discipline, and a desire to make new and substantive contributions to that knowledge. Problems in energy conversion, materials, thermal-fluid systems, automation and control, and mechanical systems are typical applications. Graduate studies improve the student's ability to think critically and creatively, and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

This program offers students an opportunity to undertake research and advanced study in emphasis areas such as:

- advanced manufacturing processes, including research and development of innovative automation and control strategies and techniques such as additive manufacturing/3D printing;
- development of biomedical processes, equipment and systems in support of the growing high-impact regional medical industry;
- engineering of systems used in production agriculture, including technology for precision agriculture;
- biomaterials, renewable energy and bio-resource conversion technologies.
- advanced materials and quality control technologies focused on composition, properties, and integrity of materials,
- systems modeling using computational fluid dynamics and finite element methods leveraging high-performance computing technologies.

Student Learning Outcomes

- Acquire and apply the knowledge and skills to make an original contribution to the mechanical engineering field.
- Conduct independent research within a supportive framework.
- Understand and critically evaluate the relevant engineering literature.
- Communicate relevant engineering principles and theories by written, oral, and visual means.
- Apply engineering principles and procedures to the recognition, interpretation, and understanding of prior and current knowledge in the field.
- Exhibit an appropriate awareness of and commitment to the ethical conduct of research.

Course Delivery Format

The program engages students in lecture, laboratory, and in hands-on, field-based learning experiences.

Available Options for Graduate Degrees

Doctor of Philosophy	72 Credit Plan

Core Requirements

- GSR 601 - Research Regulations Compliance Credits: 1
- ME 790 - Seminar (COM) Credits: 1 (2 credits required)
- ME 898D - Dissertation Credits: 1-12 (36 credits required)
- Electives** Credits: 33

*Students may apply up to 24 credits of coursework and up to 6 research credits from a previous M.S. degree to the Ph.D. requirements, subject to approval by the student's graduate advisory committee. The 6 research credits transferred must be ME 798 - Thesis (COM) or equivalent.

**All electives must be approved by the student's graduate advisory committee. Up to 12 credits of elective coursework can be taken from other disciplines.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 550 paper-based, 79 Internet-based
IELTS: 5.5

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Nursing (Ph.D.)

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

The Doctor of Philosophy in Nursing prepares nurse scientists to assume roles as health care researchers, faculty, and health care administrators with an emphasis on health promotion and disease prevention in under-served and rural populations. The Ph.D. program educates nurse scientists in academic, research, practice and policy roles to address healthcare issues in urban, rural, frontier, and reservation areas.

Program Competencies

The graduate of the Doctor of Philosophy in Nursing program will demonstrate the competencies:

- Conduct original research relevant to the discipline of nursing.
- Integrate nurse scholar and scientist role components of research, teaching, leadership, mentoring, and service to the profession.
- Contribute to the advancement and dissemination of nursing science.

Student Learning Outcomes

- Conduct original research: Conduct original research relevant to the discipline of nursing. (Communication Skills; Transferable Skill: Leadership - Management)
- Integrate nurse scholar and scientist role: Integrate nurse scholar and scientist role components of research, teaching, leadership, mentoring, and service to the profession. (Communication Skills; Transferable Skill: Diversity Awareness; Awareness of Public Policy - Regulatory Affairs)
- Contribute to advancement of nursing science: Contribute to the advancement and dissemination of nursing science. (Communication Skills; Transferable Skill: Leadership - Management)

Accreditation, Certification, & Licensure

Licensure

Students who are Registered Nurses must provide evidence of professional registration by submitting a copy of the most current RN license. International students who are Registered Nurses must provide evidence of national registration in good standing in their home country.

Course Delivery Format

Nursing courses are delivered online.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

** Courses required to be completed only as part of the 90 Credit Plan.

- HSC 631 - Biostatistics I Credits: 3
- HSC 731 - Biostatistics II Credits: 3
- NURS 615 - Foundations of Advanced Nursing Credits: 3 **
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3 **
- NURS 675 - Cultural Competence in Health Care Credits: 3 **
- NURS 810 - Doctoral Seminar Credits: 1 (3 credits required)
- NURS 815 - Philosophical Basis for Nursing Inquiry Credits: 3
- NURS 820 - Theory Development in Nursing Credits: 3
- NURS 825 - Qualitative Research Methods in Nursing Credits: 3
- NURS 830 - Quantitative Methods in Nursing Research Credits: 3
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 840 - Health Promotion Theory and Research in Underserved Populations Credits: 3 **
- NURS 845 - Measurement and Instrument Evaluation in Health Sciences Research Credits: 3 **
- NURS 895 - Practicum Credits: 1-3 (3 credits required)
- NURS 898D - Dissertation - PhD (COM) Credits: 1-24 (19-22 credits required)
- Electives Credits: 12-15 (60 credit plan), 27-30 (90 credit plan)

*Must include one additional statistics or research methods course. Methods or statistics will be found in the title. Graduate students must consult with their advisors prior to registration.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current RN licensure. International students who are nurses are required to show proof of current licensure/registration as a Registered Nurse (or equivalent), in good standing, in their home country, and maintain that licensure throughout the duration of the program.
- Completed an approved statistical methods course within 5 years.
- Example of scholarly written work.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) or a related field of study with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing or a related field of study (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Nutrition & Exercise Sciences (Ph.D.)

Program Coordinator/Contact

Kendra Kattelmann, Distinguished Professor and Department Head
Department of Health and Nutritional Sciences
Wagner Hall 425, Box 2275A
605-688-5161

Program Information

The Ph.D. in Nutrition and Exercise Sciences will prepare graduates for careers as researchers in healthcare settings, government, industry, corporations, and universities. The research and teaching emphasizes public health nutrition, molecular and biochemical nutrition, epidemiology, obesity prevention and behavior nutrition, cardiovascular physiology, biomechanics, sport and exercise physiology.

Course Delivery Format

The program consists of lecture, laboratory, experiential learning opportunities and research. Some courses are delivered online.

Course Load Information

Students enrolled in six or more state-supported credits within a given semester will be charged the current special discipline fee.

Student Support & Engagement Opportunities

The Department of Health and Nutritional Sciences aims to provide premier academic programs and high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified graduate students.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan

Core Requirements

Advanced Research Methods

Credits: 3

- HNS 783 - Research Methods in Health and Nutritional Sciences Credits: 3
- NUTR 782 - Epidemiology Credits: 3
- or other class approved by the committee

Advanced Statistics

Credits: 3

- HSC 631 - Biostatistics I Credits: 3
- HSC 731 - Biostatistics II Credits: 3
- STAT 541 - Statistical Methods II Credits: 3
- or other class approved by the committee

Other Core Requirements

- EXS 750 - Advanced Exercise Physiology Credits: 3
- GSR 601 - Research Regulations Compliance Credits: 1
- HNS 790 - Seminar (COM) Credits: 1
- HNS 898D - Dissertation (COM) Credits: 1-12 (28 credits required)
- NUTR 702 - Macronutrients in Human Nutrition Credits: 3
- NUTR 760 - Vitamins and Minerals in Human Nutrition Credits: 3
- Electives Credits: 15

Additional Admissions Requirements

GRE: Required
TOEFL: required score of 550 paper-based, 79-80 Internet-based
IELTS: 6.0

Letter of application stating to include the following: primary area of interest (nutrition, exercise science, etc); desired research focus; long-term goals outlining career goals; interest in assistantship (teaching or research); reason(s) for attending

graduate school; current professional certifications and credentials; an interview (in person or via phone) is highly encouraged but not required.

Two recommendations letters from professionals knowledgeable in applicants graduate school potential.

Entering students for the Ph.D. degree will usually have a Master's degree in dietetics, exercise science, nutrition, biology, chemistry, epidemiology, or other related field from an approved accredited institution. In those cases where applicants do not have a Master's degree, departmental requirements will apply, either requiring completion of a Master's degree or permitting an individual to move directly into a doctoral program.

Prerequisites for Ph.D. degree include Master's degree in a health-related field (nutrition, dietetics, exercise physiology, public health, etc), NUTR 422/522 or equivalent, STAT 541 or equivalent, or biochemistry.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Pharmaceutical Sciences (Ph.D.)

Program Coordinator/Contact

Omathanu Perumal, Department Head
Department of Pharmaceutical Sciences
Avera Health and Science Center 271, Box 2202C
605-688-5314 or 605-688-5598

Program Information

The Department of Pharmaceutical Sciences offers courses and research opportunities in pharmaceutical and biomedical sciences leading to the Doctor of Philosophy (Ph.D.) degree in Pharmaceutical Sciences. The Department also offers opportunity for combination Doctor of Pharmacy (Pharm.D.)/Ph.D. degrees in Pharmaceutical Sciences. The didactic courses, along with the research concentration in a specific area of pharmaceutical sciences, provide a strong foundation for academic, industry and other research careers. The program places a strong emphasis on a comprehensive and high quality graduate education and research experience for the students.

Student Learning Outcomes

Graduates of the Ph.D. in Pharmaceutical Sciences will:

- Integrate and apply knowledge of the pharmaceutical and biomedical sciences to problems in drug discovery and development.
- Conduct research with skill and competence, including hypothesis development, experimental design, data analysis, and interpretation.
- Critically evaluate scientific literature and analyze contemporary scientific issues.
- Communicate effectively in both written and oral forms to a wide range of audiences.
- Demonstrate professionalism and ethical conduct. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Coursework is provided primary through lectures, discussion and laboratory work.

Facilities & Services

The graduate program is housed in the Avera Health and Science Center on the Brookings campus. The Avera Health and Science Center has well-equipped classrooms that utilize modern technology for delivering the curriculum. The facility has modern research laboratories that support our growing research program.

Student Support & Engagement Opportunities

Graduate students may choose to take part in Peer Mentoring or get involved with the College's Honorary societies and other student organizations including the student chapter of the American Association of Pharmaceutical Scientists.

Available Options for Graduate Degrees

Doctor of Philosophy	90 Credit Plan

Core Requirements

- PHA 725 - Advanced Concepts in Biomedical Sciences and Pharmacogenomics Credits: 3
- PHA 820 - Advanced Concepts in Medicinal Chemistry Credits: 3
- PHA 840 - Advanced Concepts in Pharmacology Credits: 3
- PHA 846 - Techniques in Pharmaceutical Research Credits: 3
- PHA 847 - Grant Writing and Academic Development Credits: 3
- PHA 859 - Advanced Concepts in Pharmaceutics Credits: 3
- PHA 890 - Seminar Credits: 1 (2 credits required)

Note: The first credit of PHA 890 will be taken at the early stage of the program and the second will be taken at the later stage of the program.

- PHA 898D - Dissertation Credits: 1-10 (58 credits required)
- STAT 541 - Statistical Methods II Credits: 3
- Electives Credits: 9*

  *Elective courses may be selected from pharmacy (PHA) and related disciplines (e.g. BIOS, BIOL, CHEM, ABS, STAT prefixes)

Additional Admission Requirements

GRE: General GRE required
TOEFL: Minimum score of 550 paper-based, 79 Internet-based
IELTS: 6.0 or higher

- **Letters of Recommendation** Two personal reference letters from people acquainted with the academic ability and professional competence of the applicant are required.
- **TOEFL/GRE Scores** Test of English as a Foreign Language (TOEFL) scores are required for international students from non-English speaking countries. A minimum score of 550 paper-based, 79 Internet-based or above is required. The International English Language Testing System (IELTS) band score is also acceptable (6.0 or higher). No minimum score is set for GRE test. The Institutional Code for SDSU is 6653.
- **A Statement of Personal Goals and Philosophy** The statement should be brief and no more than one page.

For more information on applying to the Ph.D. in Pharmaceutical Sciences visit the program website. The Department admits students based on the availability of funds and research openings in faculty laboratories. Applicants should check for research openings with the individual faculty before submitting their application materials. The faculty contact information can be found on the department website.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Plant Science (Ph.D.)

Program Coordinator/Contact

David Wright, Department Head
Brent Turnipseed, Assistant Department Head
Senthil Subramanian, Professor/Graduate Coordinator
Department of Agronomy, Horticulture, and Plant Science
244 Berg Hall, Box 2207A
605-688-4600

Program Information

The Agronomy, Horticulture, and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. Departmental diversity encourages collaborations among disciplines and research programs that support this graduate training.

Student Learning Outcomes

- Demonstrate an understanding of the scientific method and the ability to conduct scientific research.
- Be knowledgeable of agricultural and/or biological systems at an appropriate level.
- Demonstrated training in an area of focus or specialization, yet broad-based enough in knowledge to be marketable in other related disciplines.
- Demonstrate a proficiency in technical methods necessary to conduct research in the Plant Sciences.
- Demonstrated ability to think critically and solve problems.

- Graduates will demonstrate effective intellectual and critical thinking traits..
- Demonstrated professional development and competence to be able to succeed in industry or academia, and an understanding of the need to continue being a lifelong learner.
- Demonstrate effective written and oral skills. Ability to relate at the professional and layman level.
- Be able to relate with people of diverse backgrounds with integrity and professionalism
- Demonstrate an understanding of professional ethics in research and conduct. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)
- Be able to conduct and publish scholarly research.

Course Delivery Format

The program coursework is available on campus, in classroom and laboratory settings, as well as field-based settings.

Facilities & Services

The department is housed in seven buildings across campus. These buildings provide research and teaching laboratories, greenhouses, seed house facilities and access to the functional genomics core facility. The on and off-campus facilities also include the SDSU Seed Testing Laboratory, SDSU Plant Diagnostics Clinic, Seed Certification, and Foundation Seed Stocks Division, which operates as services for the public. In addition, the department conducts research at five research farms near campus and five research stations across the state. The Field Specialists are housed in seven regional extension offices across the state.

Student Support & Engagement Opportunities

Students are encouraged to join and participate in the Plant Science Graduate Student Association (PSGSA) which conducts professional and social events on a regular basis. In addition, students are encouraged to participate and mentor undergraduate students in the Arboriculture Club, Agronomy and Conservation Club, or Horticulture and Urban Agriculture Club which offers opportunities for fellowship, leadership, and career planning for undergraduate students.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

Ph.D. students required to have 3 credits of Graduate Seminar, at least one oral and one in poster format. All students are required to have at least one teaching experience during their Ph.D. program.

- PS 781 - Plant Science Graduate Seminar Credits: 1 (3 credits required) (over three different semesters)
- PS 792 - Topics (COM) Credits: 1-6 Teaching Experience (1 credit required)

Additional Admission Requirements

GRE: Recommended, but not required
TOEFL: Minimum requirement of 560 paper-based, 83 Internet-based
IELTS: Minimum total score of 6.0

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Wildlife & Fisheries Sciences (Ph.D.)

Program Coordinator/Contact

Michele Dudash, Department Head
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138, Box 2140B
605-688-6121

Program Information

The Department of Natural Resource Management offers graduate programs in both Biological Science with a Specialization in Natural Resource Management and Wildlife and Fisheries Sciences. Both degree programs award M.S. and Ph.D. degrees.

Wildlife & Fisheries Sciences

The Ph.D. degree program in Wildlife and Fisheries Sciences is intended to educate students for upper-level management, research and administrative positions with state and federal agencies, private companies, and academic institutions. Academic career opportunities also exist for Ph.D. graduates in all the Departmental disciplines, preparing students for the responsibilities of teaching, research, and service, required for faculty positions with universities and colleges. By building on the educational foundation that students obtain from B.S. and M.S. degree work, we endeavor to raise them to a higher intellectual plateau. While coursework is involved, this educational experience is primarily based on research and mentoring. This degree requires original thought and research contributions, synthesis and development of information, and contributions to the world and its natural resources.

Student Learning Outcomes

- Be knowledgeable regarding biological systems at a level appropriate to a Ph.D. degree holder.
- Be able to effectively express themselves orally and in written form.
- Understand the scientific method of solving problems.
- Be computer and statistically capable.
- Be specialized in some area of wildlife or fisheries, but still be broadly based in knowledge.
- Be able to conduct scholarly research.
- Understand the relationships between biological information and socioeconomic factors.
- Demonstrate professional development, especially in regard to the need for continued learning after their degree program.
- Develop a concern and feeling for the natural resources of the world.

Accreditation, Licensure, & Certification

Certification

Certification is available through the American Fisheries Society and The Wildlife Society.

Course Delivery Format

The Wildlife and Fisheries Sciences graduate program is primarily an on-campus program. However, field research may require extended time periods away from campus.

Facilities & Services

The department is housed within the McFadden Biostress Laboratory at SDSU. The Department houses the Oak Lake Field Station and also hosts the South Dakota Cooperative Fish and Wildlife Research Unit.

Available Options for Graduate Degrees

Doctor of Philosophy	60 Credit Plan
	90 Credit Plan

Core Requirements

60 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 582 - Natural Resource Management Biometry Credits: 3

  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar Credits: 1 (2 credits required)
- WL 898D - Dissertation - PhD (COM) Credits: 1-12 (30-40 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 14-24

90 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 582 - Natural Resource Management Biometry Credits: 3

  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar Credits: 1 (2 credits required)
- WL 898D - Dissertation - PhD (COM) Credits: 1-12 (40-50 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 33-44

Additional Admission Requirements

GRE: Not Required
TOEFL: Department Requirement of 525 paper-based, 71 Internet-based
IELTS: 5.5

Admission to all degree programs requires that a faculty member from the department agrees to serve as the major advisor.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Professional Doctoral Degrees

Nursing (D.N.P.)

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext 2

Program Information

The D.N.P. program was established in 2009. The program was developed in response to the American Association of Colleges of Nursing (AACN) Position Statement on the Practice Doctorate in Nursing. The position statement supported moving the preparation of advanced practice nurses from the M.S. in Nursing to the Doctoral level by the year 2015.

The purpose of the D.N.P. program is to prepare Advanced Practice Registered Nurses (APRNs) to transform clinical practice as expert clinicians and leaders with a special focus on rural and underserved populations.

In addition to delivering evidence-based direct patient care at an advanced practice level to individuals across the lifespan in primary care settings, graduates of the D.N.P. program will learn skills needed to produce and implement valuable evidence to guide practice and are prepared to work collaboratively with rural communities in an effort to reduce health disparities.

Program Outcomes

- To prepare graduates as clinicians and leaders with a special focus on rural and underserved populations.
- To prepare graduates to deliver evidence-based direct patient care to individuals across the lifespan in primary care settings.
- To prepare graduates to produce and implement scientific evidence to guide practice.
- To prepare graduates to work collaboratively with frontier, urban, and rural communities in an effort to reduce health disparities.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following competencies:

- Integrate theoretical and scientific underpinnings of nursing and other disciplines to address emerging healthcare and practice issues.
- Engage in health policy at all levels to influence healthcare delivery concerns, such as health disparities, cultural sensitivity, ethics, access to care, health finance, and quality of care. (Transferable Skill: Diversity Awareness; Ethics - Moral Decision Making/Moral Reasoning)
- Employ evidence-based practice and advanced clinical judgment to comprehensively assess, design, and deliver care for individuals or populations.
- Demonstrate leadership at the organizational and/or systems level to address health outcomes of individuals and populations though evidence-based initiatives. (Transferable Skill: Leadership - Management)
- Utilize advanced nursing knowledge and information systems/technology related to clinical prevention and health promotion to address gaps in healthcare.
- Collaborate with the interprofessional team in the translation, implementation, analysis, and dissemination of evidence-based practice to improve healthcare outcomes. (Communication Skills)

Accreditation, Certification, & Licensure

Accreditation

The Doctor of Nursing Practice at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Course Delivery Format

Nursing courses are delivered face-to-face and enhanced with web-based instruction. Online course delivery is also offered for specified courses.

Facilities & Services

The College of Nursing provides world-class facilities and a variety of student services and programs for graduate student engagement.

- Simulation Lab
- Honor Societies

The program is open to registered nurses with a Master's Degree in nursing with CNP, CRNA, CNS, and CNM. The program is designed for part-time study (including summers) and requires 31-36 course credits. The program is delivered through an executive delivery model in Sioux Falls that includes online components.

Available Options for Graduate Degrees

Doctor of Nursing Practice	Post Masters to D.N.P. - NP, CRNA, CNS, and CNM	31-36 Credits

Core Requirements

Post Master's to D.N.P. - NP, CRNA, CNS, and CNM

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
- NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 875 - DNP Intensive Credits: 1-9 (3-8 credits required)
- NURS 880 - DNP Project Credits: 1-8 (8 credits required)
- PHA 738 - Health Informatics Credits: 1

Total Required Credits: 31-36 Credits (Post Master's to D.N.P.)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master to Doctor of Nursing Practice (who possess current certification as a NP, CRNA, CNM or CNS) must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- National certification as a NP, CRNA, CNM, or CNS.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.

- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Nursing Practice Degree Requirements.

Nursing (D.N.P.) - Family Nurse Practitioner Specialization

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

The D.N.P. program was established in 2009. The program was developed in response to the American Association of Colleges of Nursing (AACN) Position Statement on the Practice Doctorate in Nursing. The position statement supported moving the preparation of advanced practice nurses from the M.S. in Nursing to the Doctoral level by the year 2015.

The purpose of the D.N.P. program is to prepare Advanced Practice Registered Nurses (APRNs) to transform clinical practice as expert clinicians and leaders with a special focus on rural and underserved populations.

In addition to delivering evidence-based direct patient care at an advanced practice level to individuals across the lifespan in primary care settings, graduates of the D.N.P. program will learn skills needed to produce and implement valuable evidence to guide practice and are prepared to work collaboratively with rural communities in an effort to reduce health disparities.

Program Outcomes

- To prepare graduates as clinicians and leaders with a special focus on rural and underserved populations.
- To prepare graduates to deliver evidence-based direct patient care to individuals across the lifespan in primary care settings.
- To prepare graduates to produce and implement scientific evidence to guide practice.
- To prepare graduates to work collaboratively with frontier, urban, and rural communities in an effort to reduce health disparities.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following competencies:

- Integrate theoretical and scientific underpinnings of nursing and other disciplines to address emerging healthcare and practice issues.
- Engage in health policy at all levels to influence healthcare delivery concerns, such as health disparities, cultural sensitivity, ethics, access to care, health finance, and quality of care. (Transferable Skill: Diversity Awareness; Ethics - Moral Decision Making/Moral Reasoning)
- Employ evidence-based practice and advanced clinical judgment to comprehensively assess, design, and deliver care for individuals or populations.
- Demonstrate leadership at the organizational and/or systems level to address health outcomes of individuals and populations though evidence-based initiatives. (Transferable Skill: Leadership - Management)
- Utilize advanced nursing knowledge and information systems/technology related to clinical prevention and health promotion to address gaps in healthcare.
- Collaborate with the interprofessional team in the translation, implementation, analysis, and dissemination of evidence-based practice to improve healthcare outcomes. (Communication Skills)

Accreditation, Certification, & Licensure

Accreditation

The Doctor of Nursing Practice at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Certification

After completing the program of study, graduates may be eligible to complete certification through several professional organizations.

Specialization	*National Certification Eligibility*
Family Nurse Practitioner Specialization	ANCC and AANP certification examinations American Nurses Credentialing Center (ANCC) American Academy of Nurse Practitioners

Course Delivery Format

Nursing courses are delivered face-to-face and enhanced with web-based instruction. Online course delivery is also offered for specified courses.

Facilities & Services

The College of Nursing provides world-class facilities and a variety of student services and programs for graduate student engagement.

- Simulation Lab
- Honor Societies

Available Options for Graduate Degrees

Doctor of Nursing Practice	Post Master's to D.N.P.	69 Credits
	B.S.N. to D.N.P.	78 Credits

Core Requirements

Post Master's to D.N.P.

* Students who have not previously completed either NURS 623, NURS 631, or PHA 645 OR equivalent coursework within the previous five years, will be required to complete those courses as part of this program option. All previous coursework will need to be evaluated for equivalency and approved by the Associate Dean for Graduate Nursing in order to be included on the student's Plan of Study.

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (4 credits required) *
- NURS 631 - Advanced Assessment Across the Lifespan Credits: 4 *
- NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 0 *
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 765 - FNP Integration: Practicum I Credits: 7 (3, 4)
- NURS 768 - FNP Integration: Practicum II Credits: 4
- NURS 771 - FNP Integration: Practicum III Credits: 7 (3, 4)
- NURS 776 - FNP Integration: Practicum IV Credits: 8 (3, 5)
- NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
- NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1

- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 875 - DNP Intensive Credits: 1-9 (3 credits required)
- NURS 880 - DNP Project Credits: 1-8 (8 credits required)
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (4 credits required) *
- PHA 738 - Health Informatics Credits: 1

Total Required Credits: 69 Credits (Post Master's to D.N.P.)

B.S.N. to D.N.P.

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3
- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (4 credits required)
- NURS 631 - Advanced Assessment Across the Lifespan Credits: 4
- NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 0
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 765 - FNP Integration: Practicum I Credits: 7 (3, 4)
- NURS 768 - FNP Integration: Practicum II Credits: 4
- NURS 771 - FNP Integration: Practicum III Credits: 7 (3, 4)
- NURS 776 - FNP Integration: Practicum IV Credits: 8 (3, 5)
- NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
- NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 875 - DNP Intensive Credits: 1-9 (3 credits required)
- NURS 880 - DNP Project Credits: 1-8 (8 credits required)
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (4 credits required)
- PHA 738 - Health Informatics Credits: 1

Total Required Credits: 78 Credits (B.S.N. to D.N.P.)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

Additional Admissions Requirements for Post Master's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master's to Doctor of Nursing Practice - Family Nurse Practitioner Specialization must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Admission Requirements for Bachelor's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Bachelor's to Doctor of Nursing Practice - Family Nurse Practitioner Specialization must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Nursing Practice Degree Requirements.

Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

The D.N.P. program was established in 2009. The program was developed in response to the American Association of Colleges of Nursing (AACN) Position Statement on the Practice Doctorate in Nursing. The position statement supported moving the preparation of advanced practice nurses from the M.S. in Nursing to the Doctoral level by the year 2015.

The purpose of the D.N.P. program is to prepare Advanced Practice Registered Nurses (APRNs) to transform clinical practice as expert clinicians and leaders with a special focus on rural and underserved populations.

In addition to delivering evidence-based direct patient care at an advanced practice level to individuals across the lifespan in primary care settings, graduates of the D.N.P. program will learn skills needed to produce and implement valuable evidence to guide practice and are prepared to work collaboratively with rural communities in an effort to reduce health disparities.

Program Outcomes

- To prepare graduates as clinicians and leaders with a special focus on rural and underserved populations.
- To prepare graduates to deliver evidence-based direct patient care to individuals across the lifespan in primary care settings.
- To prepare graduates to produce and implement scientific evidence to guide practice.
- To prepare graduates to work collaboratively with frontier, urban, and rural communities in an effort to reduce health disparities.

Student Learning Outcomes

At the completion of the program, the graduate will successfully demonstrate the following competencies:

- Integrate theoretical and scientific underpinnings of nursing and other disciplines to address emerging healthcare and practice issues. (Transferable Skill: Intellectual Traits)
- Engage in health policy at all levels to influence healthcare delivery concerns, such as health disparities, cultural sensitivity, ethics, access to care, health finance, and quality of care. (Transferable Skill: Awareness of Public Policy- Regulatory Affairs)
- Demonstrate leadership at the organizational and/or systems level to address health outcomes of individuals and populations though evidence-based initiatives. (Transferable Skill: Leadership – Management)
- Utilize advanced nursing knowledge and information systems/technology related to clinical prevention and health promotion to address gaps in healthcare. (Transferable Skill: Intellectual Traits)
- Collaborate with the interprofessional team in the translation, implementation, analysis, and dissemination of evidence-based practice to improve healthcare outcomes. (Transferable Skill: Leadership – Management)
- Employ evidence-based practice and advanced clinical judgment to comprehensively assess, design, and deliver mental health care for individuals across the lifespan. (Transferable Skill: Diversity Awareness; Intellectual Traits)

Accreditation, Certification, & Licensure

Accreditation

The Doctor of Nursing Practice at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Certification

After completing the program of study, graduates are eligible to complete certification through the American Nurses Credentialing Center (ANCC).

National Certification Eligibility	*Certifying Body*
Psychiatric-Mental Health Nurse Practitioner (Across the Lifespan) Certification (PMHNP-BC)	American Nurses Credentialing Center (ANCC)

Course Delivery Format

The program coursework is delivered online and includes a field-based practicum.

Facilities & Services

The College of Nursing provides world-class facilities and a variety of student services and programs for graduate student engagement.

- Simulation Lab
- Honor Societies

Available Options for Graduate Degrees

Doctor of Nursing Practice	Post Master's to D.N.P.	49 Credits
	B.S.N. to D.N.P.	75 Credits

Core Requirements

Post Master's to D.N.P.

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3
- NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
- NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 3
- NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
- NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
- NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 4
- NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 5
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
- NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 875 - DNP Intensive Credits: 1-9 (3 credits required)
- NURS 880 - DNP Project Credits: 1-8 (8 credits required)
- PHA 738 - Health Informatics Credits: 1

Total Required Credits: 49 Credits (Post Master's to D.N.P.)

B.S.N. to D.N.P.

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3
- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (4 credits required)
- NURS 631 - Advanced Assessment Across the Lifespan Credits: 4
- NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 0
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
- NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 3

- NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
- NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
- NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 4
- NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 5
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
- NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 875 - DNP Intensive Credits: 1-9 (8 credits required)
- NURS 880 - DNP Project Credits: 1-8 (8 credits required)
- PHA 738 - Health Informatics Credits: 1

Total Required Credits: 75 Credits (B.S.N. to D.N.P.)

Additional Admissions Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

Additional Admissions Requirements for Post Master's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master's to Doctor of Nursing Practice - Psychiatric Mental Health Nurse Practitioner must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the D.N.P. program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Admission Requirements for Bachelor's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the B.S.N. to Doctor of Nursing Practice - Psychiatric Mental Health Nurse Practitioner Specialization must have:

- Current licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the D.N.P. program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

For additional information refer to the Doctor of Nursing Practice Degree Requirements.

Pharmacy (Pharm.D.)

Program Coordinator/Contact

Jane Mort, Dean
Dan Hansen, Associate Dean for Student Services
Teresa Seefeldt, Associate Dean for Academic Programs
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133
605-688-6197 or 605-688-5591

Program Information

The College of Pharmacy and Allied Health Professions offers a six-year course of study (2-year pre-pharmacy and 4-year professional program phase) leading to an entry level Doctor of Pharmacy degree. The Pharm.D. is a professional degree which enables graduates to pursue diverse career opportunities and ensures that their pharmacy education prepares them for future changes in the profession. The program provides unique opportunities for students who want to make a significant contribution to the health care needs of today's society.

Program Admission

Preparation for the Major

In high school the student should take an academic curriculum in preparation for entrance to college. A sound basic education in science and mathematics courses is an essential part of preparation for the study of pharmacy. Good written and verbal communication skills are important. Students planning to transfer from another college or university should consult with the College of Pharmacy and Allied Health Professions early in their academic careers to plan coursework that will

transfer to the College of Pharmacy and Allied Health Professions and meet the admission requirements.

Application Process

All students seeking admission to the 4-year professional program leading to the Doctor of Pharmacy degree must submit an application for the professional program. Applications are available from the College of Pharmacy and Allied Health Professions website. The deadline for applying for admission for the fall semester is February 1. Limitations in the size of the physical facilities, the number of faculty, and the number of advanced pharmacy practice experience sites make it necessary to limit the class size in the professional program. Each student admitted into the professional program is required to authorize and pay for a criminal background check. The background check report is automatically sent to the student and to the College and must be approved by the Admissions Committee.

Selection is competitive and based upon several factors including pre-pharmacy coursework, ACT or PCAT scores, written and oral communication skills, knowledge of the profession, residency status and other factors. Any student who anticipates successful completion of the pre-pharmacy mathematics, science and communication requirements prior to fall semester is eligible to apply.

Notification of acceptance into the professional program will be made by March 15. Students admitted to the professional program must submit a non-refundable pharmacy major fee to secure their position for the fall semester.

Curriculum Notes

- Eligible for B.S. in Pharmaceutical Sciences after completion of all general education requirements, 300 and 400-level required PHA courses, and general elective credits for a total of 138 credits.
- Successful completion of the capstone activities are required as part of the degree requirements for both the B.S. in Pharmaceutical Sciences and the Doctor of Pharmacy degrees.
- P3 year courses are taught at the Community College for Sioux Falls. Advanced Pharmacy Practice Experiences (APPEs) are completed during Summer Sessions, Fall, and Spring Semesters.

Pharmacy Regulations

Students in the College of Pharmacy and Allied Health Professions are governed by the regulations which apply to all students at SDSU but are also governed by requirements established by the College. These requirements are presented in detail in the Pharmacy Student Handbook and include:

Progression

Progression standards for students in the Pharm.D. program are set to assure graduates are prepared to provide pharmacy services to the public. The integrated curriculum relies on information and skills garnered in previous courses and therefore, students' success depends on achieving a minimum level of performance in each course. Minimum level of performance is defined as a grade of C or better based on University Catalog grade definitions. A grade of D is defined in terms of "insufficient" and "inadequate" according to the University Catalog. A grade of F is defined in terms of "failure." D, F, and U (unsatisfactory) grades do not represent a minimum level of performance need to develop skills, abilities, and knowledge of a general practitioner.

Refused Status - A student will be placed on refused status if the student:
a. Earns a D, F, or U in a pharmacy course.
b. Does not complete the Pharm.D. program within six years of starting the professional program.

Class Standing Requirements
Standing - In order for students to enroll in the fall semester of the pharmacy program, students must meet the class standing requirement. These are defined as follows (note: "completion" means a passing grade in each pharmacy course and maintaining semester and cumulative PHA GPA requirements):

- P1 Year Standing - The student must have been admitted into the professional program.
- P2 Year Standing - Completion of all PHA 300 level required courses and PHA 119/101 and PHA 219.
- P3 Year Standing - Completion of all PHA 400 level required courses. PHA 610, a bachelor's degree, and all capstone activities are required to begin the fall semester. Completion of all required PHA 700, non-advanced pharmacy practice experience courses are required to progress to the subsequent semester.
- P4 Year Standing - Completion of all PHA 600-700 level required, non-advanced pharmacy practice experience courses, and 300 hours of IPPE.

Student Learning Outcomes

The educational outcomes are the knowledge, skills and attitudes which the College desires each Pharm.D. graduate to possess. The Pharm.D. program consists of specific courses and other experiences which are designed to provide the knowledge, training and experience to allow each student to successfully attain these outcomes.

Foundational Knowledge

The professional program leading to the Doctor of Pharmacy degree (hereinafter "the program") develops in the graduate the knowledge, skills, abilities, behaviors, and attitudes necessary to apply the foundational sciences to the provision of patient-centered care.

1.1. Foundational Knowledge (Learner) – Develop, integrate, and apply knowledge from the foundational sciences (i.e., biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences) to evaluate the scientific literature, explain drug action, solve therapeutic problems, and advance population health and patient-centered care.

Essentials for Practice & Care

The program imparts to the graduate the knowledge, skills, abilities, behaviors, and attitudes necessary to provide patient-centered care, manage medication use systems, promote health and wellness, and describe the influence of population-based care on patient-centered care.

2.1. Patient-centered care (Caregiver) - Provide patient-centered care as the medication expert (collect and interpret evidence, prioritize, formulate assessments and recommendations, implement, monitor and adjust plans, and document activities).

2.2. Medication use systems management (Manager) – Manage patient healthcare needs using human, financial, technological, and physical resources to optimize the safety and efficacy of medication use systems.

2.3. Health and wellness (Promoter) – Design prevention, intervention, and educational strategies for individuals and communities to manage chronic disease and improve health and wellness.

2.4. Population-based care (Provider) – Describe how population-based care influences patient-centered care and influences the development of practice guidelines and evidence-based best practices.

Approach to Practice & Care

The program imparts to the graduate the knowledge, skills, abilities, behaviors, and attitudes necessary to solve problems; educate, advocate, and collaborate, working with a broad range of people; recognize social determinants of health; and effectively communicate verbally and nonverbally.

3.1. Problem Solving (Problem Solver) – Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution.

3.2. Education (Educator) – Educate all audiences by determining the most effective and enduring ways to impart information and assess learning.

3.3. Patient Advocacy (Advocate) – Represent the patient's best interests.

3.4. Interprofessional collaboration (Collaborator) – Actively participate and engage as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs.

3.5. Cultural sensitivity (Includer) – Recognize social determinants of health to diminish disparities and inequities in access to quality care.

3.6. Communication (Communicator) – Effectively communicate verbally and nonverbally when interacting with individuals, groups, and organizations.

Personal & Professional Development

The program imparts to the graduate the knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate self-awareness, leadership, innovation and entrepreneurship, and professionalism.

4.1. Self-awareness (Self-aware) – Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth. (Transferable Skill: Career Preparedness)

4.2. Leadership (Leader) – Demonstrate responsibility for creating and achieving shared goals, regardless of position.

4.3. Innovation and Entrepreneurship (Innovator) – Engage in innovative activities by using creative thinking to envision better ways of accomplishing professional goals.

4.4. Professionalism (Professional) – Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society. (Transferable Skill: Ethics-Moral Decision Making/Moral Reasoning)

Accreditation, Certification, & Licensure

Accreditation

The Pharm.D. program is accredited by the Accreditation Council for Pharmacy Education, 135 S. LaSalle Street, Suite 4100, Chicago, IL 60603-4810

Certification & Licensure

Graduates with a Doctor of Pharmacy degree are eligible to apply for licensure in any state. Licensure as a pharmacist requires graduation with the Pharm.D. degree from an accredited pharmacy program, a certified period of supervised internship experience and successful completion of the North American Pharmacist Licensure Examination and the Multistate Pharmacy Jurisprudence Examination in order to practice as a pharmacist.

These requirements vary slightly from state to state. Students interested in practicing in a particular state should contact the Board of Pharmacy of that state for information concerning requirements.

Course Delivery Format

The curriculum is divided into a 2-year pre-pharmacy and a 4-year professional program phase. The pre-pharmacy courses provide a solid knowledge base and ability to use critical thought processes in the biological and physical sciences.

The four years of the professional program incorporate a solid foundation of pharmaceutical science courses as well as a comprehensive sequence of therapeutics and professional practice courses. Students earn a B.S. in Pharmaceutical Sciences after successful completion of the first two years of the professional program. The application of drug knowledge, basic science, and critical thinking to resolve problems of drug distribution and patient care are emphasized throughout the curriculum. In their first three years of the program, students gain initial practice experience through introductory pharmacy practice experiences in settings such as community and hospital pharmacies.

In the final year of the program, students have an opportunity to apply knowledge and pharmacy care principles to pharmacy practice situations in a series of advanced pharmacy practice experiences in a variety of patient care settings which include patient care areas of hospitals, nursing homes, community pharmacies, hospital pharmacies, Indian Health Service facilities, and clinic pharmacies.

Facilities & Services

The graduate programs are housed in the recently constructed Avera Health and Science Center, a first-class educational and research facility on the Brookings campus. The Avera Health and Science Center has enabled the College to incorporate new teaching strategies into the curriculum that will lead to pharmacy graduates that are better prepared to provide patient care utilizing modern technology and a team-based approach. The facility has modern research laboratories that support our growing research program.

Student Support & Engagement Opportunities

Graduate students may choose to take part in Peer Mentoring or get involved with the College's Honorary societies and other student organizations.

Available Options for Graduate Degrees

Doctor of Pharmacy (Pharm.D.) 218 Credit Hours

Core Requirements

System General Education Requirements

- Goal #1 Written Communication: ENGL 101 - Composition I (COM) [SGR #1] Credits: 3 and ENGL 201 - Composition II (COM) [SGR #1] Credits: 3
- Goal #2 Oral Communication: SPCM 101 - Fundamentals of Speech (COM) [SGR #2] Credits: 3
- Goal #3 Social Sciences/Diversity: ECON 201 - Principles of Microeconomics (COM) [SGR #3] Credits: 3 and SGR #3 Elective Credits: 3
- Goal #4 Arts and Humanities/Diversity: SGR #4 Electives Credits: 6
- Goal #5 Mathematics: MATH 121-121L - Survey of Calculus and Lab (COM) [SGR #5] Credits: 5
- Goal #6 Natural Sciences: CHEM 112-112L - General Chemistry I and Lab (COM) [SGR #6] Credits: 3, 1 and CHEM 114-114L - General Chemistry II and Lab (COM) [SGR #6] Credits: 3, 1

Major Requirements

- BIOL 151-151L - General Biology I and Lab (COM) [SGR #6] Credits: 4
- BIOL 221-221L - Human Anatomy and Lab (COM) Credits: 4
- BIOL 325-325L - Physiology and Lab (COM) Credits: 4
- CHEM 326-326L - Organic Chemistry I and Lab (COM) Credits: 3, 1
- CHEM 328-328L - Organic Chemistry II and Lab (COM) Credits: 3, 1
- MICR 231-231L - General Microbiology and Lab (COM) [SGR #6] Credits: 4
- STAT 281 - Introduction to Statistics (COM) [SGR #5] Credits: 3
- PHA 119 - Introduction to the Pharmacy Profession Credits: 1
- PHA 219 - Fundamentals of Health Care Practice I Credits: 1
- PHA 313 - Pharmacy Calculations Credits: 1
- PHA 323 - Pharmaceutical Biochemistry Credits: 4
- PHA 324 - Biomedical Science I Credits: 4
- PHA 326L - Integrated Pharmacy Laboratory I Credits: 1
- PHA 331 - Pharmaceutics I Credits: 4
- PHA 332 - Pharmaceutics II Credits: 2
- PHA 340 - Medicinal Chemistry I Credits: 3
- PHA 341 - Medicinal Chemistry II Credits: 3
- PHA 342 - Self Care Pharmacotherapeutics I Credits: 1
- PHA 352 - Pathophysiology, Pharmacology and Toxicology I Credits: 3
- PHA 353 - Pathophysiology, Pharmacology and Toxicology II Credits: 3
- PHA 363L - Pharmacy Skills Laboratory I Credits: 1
- PHA 364L - Pharmacy Skills Laboratory II Credits: 2
- PHA 367 - Pharmacy Practice I: Introduction to Pharmacy Practice Credits: 1
- PHA 368 - Pharmacy Practice II: Drug Information and Communication Credits: 2
- PHA 410 - Introductory Practice Experience I Credits: 3 [3]
- PHA 415 - Biopharmaceutics and Pharmacokinetics Credits: 4
- PHA 419 - Fundamentals of Health Care Practice II Credits: 1
- PHA 425 - Biomedical Science II Credits: 3
- PHA 426L - Integrated Pharmacy Laboratory II Credits: 1
- PHA 430 - Pharmacy Practice Law Credits: 3
- PHA 445 - Pharmacotherapeutics I Credits: 3
- PHA 446 - Pharmacotherapeutics II Credits: 3
- PHA 452 - Pathophysiology, Pharmacology and Toxicology III Credits: 4
- PHA 453 - Pathophysiology, Pharmacology and Toxicology IV Credits: 4
- PHA 463L - Pharmacy Skills Laboratory III Credits: 2
- PHA 464L - Pharmacy Skills Laboratory IV Credits: 2
- PHA 467 - Pharmacy Practice III: Research Evaluation and Pharmacoeconomics Credits: 2
- PHA 468 - Pharmacy Practice IV: Medication Safety and Sterile Compounding Credits: 2

Must have a bachelor's degree[1,2] to begin the P3, 600-700 level courses [4]

- PHA 610 - Introductory Practice Experience II Credits: 3 [5]
- PHA 714 - Community Pharmacy Practice Experience Credits: 5
- PHA 716 - Hospital/Institutional Pharmacy Practice Experience Credits: 5
- PHA 719L - Pharmacy Capstone Credits: 1
- PHA 724 - U.S. Health Care Systems Credits: 2
- PHA 726L - Integrated Pharmacy Laboratory III Credits: 1
- PHA 727 - Professional Resources Management Credits: 4
- PHA 741 - Public and Population Health Credits: 2
- PHA 742 - Self Care Pharmacotherapeutics II Credits: 2
- PHA 756 - Pharmacotherapeutics III Credits: 4
- PHA 757 - Pharmacotherapeutics IV Credits: 4
- PHA 761 - Pharmacotherapeutics V Credits: 5
- PHA 762 - Pharmacotherapeutics VI Credits: 5
- PHA 763L - Pharmacy Skills Laboratory V Credits: 1
- PHA 764L - Pharmacy Skills Laboratory VI Credits: 1
- PHA 772 - Internal Medicine I Practice Experience Credits: 5
- PHA 774 - Ambulatory Care Practice Experience Credits: 5

Assigned Advanced Pharmacy Practice Experiences

Select 10 credits from the following. Advanced Pharmacy Practice Experiences (APPEs) are completed during Summer sessions, Fall, and Spring semesters.

- PHA 700 - Directed Studies Practice Experience Credits: 4-5
- PHA 706 - Critical Care Practice Experience Credits: 5
- PHA 707 - Infectious Disease Practice Experience Credits: 5
- PHA 717 - Community Health and Patient Monitoring Practice Experience Credits: 5
- PHA 770 - Pediatrics Practice Experience Credits: 5
- PHA 771 - Geriatrics Practice Experience Credits: 5
- PHA 773 - Internal Medicine II Practice Experience Credits: 5
- PHA 775 - Psychiatry Practice Experience Credits: 5

Elective Advanced Pharmacy Practice Experiences

Select 10 credits from the following.

- PHA 700 - Directed Studies Practice Experience Credits: 4-5
- PHA 701 - Home Health/Hospice Practice Experience Credits: 5
- PHA 702 - Indian Health Services Practice Experience Credits: 5
- PHA 703 - Pharmacy Administration Practice Experience Credits: 5
- PHA 704 - Nutrition Support Practice Experience Credits: 5
- PHA 705 - Clinical Research Practice Experience Credits: 5
- PHA 708 - Surgery Practice Experience Credits: 5
- PHA 709 - Nephrology Practice Experience Credits: 5
- PHA 710 - Pharmacokinetics Practice Experience Credits: 5
- PHA 711 - Oncology Practice Experience Credits: 5
- PHA 712 - Nuclear Pharmacy Practice Experience Credits: 5
- PHA 713 - Managed Care Practice Experience Credits: 5
- PHA 780 - International Pharmacy Practice Experience Credits: 5
- APPEs not utilized from list of Assigned APPEs

Electives

- General Electives Credits: 3
- Pharmacy Electives, PHA 700-level, nonAPPE Credits: 5

Total Required Credits: 218

Notes

[1] Eligible for B.S. in Pharmaceutical Sciences after completion of all general education requirements, 300 and 400-level required PHA courses, and general elective credits for a total of 138 credits.

[2] Students must meet progression standards and capstone requirements in order to advance within the program.

[3] PHA 410 must be completed during the summer between the P1 and P2 years.

[4] General Electives are a College of Pharmacy requirement and can be from any discipline but must be completed by the end of the P2 year. For all students, general elective credits can include credits in excess of System Graduation Requirements (SGR).

[5] PHA 610 must be completed during the summer between the P2 and P3 years.

Additional Admission Requirements

Applicants to the Doctor of Pharmacy (Pharm.D.) program will submit:

- The completed application
- Official transcripts
- Contact information for two references
- Documentation of your ACT, SAT, or PCAT scores
- A short essay on the topic of "Why I want to obtain a Doctor of Pharmacy Degree at SDSU"
- A completed shadowing form

The program requires an interview with the Pharmacy Admissions Committee before we make the final selections for the new Fall class. Those selected are required to send a non-refundable deposit to secure enrollment for the fall semester. Students must pass a criminal background check before final approval for admission into the professional program. Applicants receive notification of acceptance into the professional program by March 15.

For more information see frequently asked questions (FAQ).

General Requirements (Pharm.D.)

For additional information see Doctor of Pharmacy Degree Requirement.

Certificates

Academic Advising Certificate

Program Coordinator/Contact

Katelyn Romsa, Assistant Professor
Department of Counseling and Human Development
Wenona Hall 318, Box 507
605-688-6831

Program Information

The graduate certificate in Academic Advising will provide students a grounding in the foundational elements and essential competencies needed for effective advising practice. Academic advising is a practice-based profession intended to aid students in achieving educational, career, and personal goals through the use of the full range of institutional and community resources. The curriculum is aligned with the National Academic Advising Association (NACADA) Pillars of Academic Advising, which are guiding principles affirming the role of advising in higher education that anticipate the needs of 21st century students, academic advisors, and institutions. Topics will include student development theory, multicultural issues, career development, interpersonal relations for advising, and current issues of academic advising. The Academic Advising certificate will prepare individuals for a career in higher education such as:

- Academic advising
- Student success coaching
- Student affairs
- Career counseling
- Academic and career planning

The certificate is intended for students entering the field and for those experienced in the field. The program includes components to assist students in connecting with existing advising networks and professional organizations to support their practice and link them to new and emerging practices that may benefit their work. The Academic Advising certificate will be offered as a stand-alone credential for those who already hold a master's degree from a regionally accredited institution or may be offered in combination with the Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization or Counseling and Human Resource Development (M.S.) - College Counseling Specialization. The specializations are offered at the Brookings main campus and at Black Hills State University - Rapid City.

Student Learning Outcomes

Students completing this certificate will be able to:

- Demonstrate case conceptualization skills for context for the delivery of academic advising. Students will understand the history, role, and values of academic advising; theory relevant to academic advising; academic advising approaches, strategies, and expected outcomes; and how equitable and inclusive environments are created and maintained. Students will also be able to articulate a personal philosophy of academic advising.
- Apply a holistic, systems, legal, and evidence-based approach to advising. Students will learn institution specific history, mission, values, and culture; curriculum, degree programs, academic requirements and options; institution specific policies, procedures, rules, and regulations; legal guidelines of advising practice including privacy regulations and confidentiality; characteristics, needs, and experiences of major and emerging student populations; campus and community resources that support student success; information technology applicable to relevant advising roles; and engaging in on-going assessment and development of the advising practice.
- Demonstrate essential interviewing and counseling skills for academic advising. This includes creating rapport and building academic advising

relationships; communicating in an inclusive and respectful manner; planning and conducting successful advising interactions; promoting student understanding of the logic and purpose of the curriculum; and facilitating problem solving, decision-making, meaning-making, planning, and goal setting.

- Collaborate within the higher education community to develop academic advising initiatives that promote the academic, social, and career success of individuals in higher education settings. This includes partnering with academic advisors and advising networks during professional development opportunities to learn new and emerging practices.

Course Delivery Format

Instruction occurs through didactic (classroom) and clinical experience. Most classes are enhanced with internet supplement.

Certificate Requirements

- CHRD 691 - Independent Study Credits: 1-3 (3 credits required) (Academic Advising Workshop Series)
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- CHRD 773 - Current Issues in Academic Advising and Student Affairs Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3

Total Required Credits: 12

Additional Admission Requirements

Admission is open to graduate students admitted to the Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization or Counseling and Human Resource Development (M.S.) - College Counseling Specialization. An application to the graduate certificate program will be needed beyond the default requirements listed by the Graduate School. Admission is also open to those who already hold a master's degree in any field from a regionally accredited institution. For those candidates, an application to the graduate certificate program and official transcripts must be submitted to the Graduate School.

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Advanced Graduate Mathematics Certificate

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The Advanced Graduate Mathematics Certificate is a program designed for current high school mathematics teachers who are either enrolled in or have completed a master's degree, are interested in getting credentials to teach concurrent dual credit math courses, and have already completed nine credit hours of graduate mathematics courses through the Graduate Mathematics Certificate or another avenue (for example the SDSU Data Science Certificate) in order to meet HLC requirements. The 18 credit sequence of the Graduate Mathematics Certificate and Advanced Graduate Mathematics Certificate would allow them to do that.

Student Learning Outcomes

- Content Knowledge: Demonstrate depth and breadth of content knowledge in a core area of mathematics. (Transferable Skill: Teaching/Training)
- Critical Thinking: Read, analyze, write and present mathematical arguments with clarity.
- Inquiry Analysis: Research current mathematical practices/theorems and communicate findings.

Course Delivery Format

Coursework for this program will be delivered online.

Certificate Requirements

All courses used to meet the certificate requirements are MATH or STAT prefixed courses and must include at least one analytic and one abstract course in the collection of three courses (nine credits). One course from a non-SDBOR University may be substituted. Courses cannot be used to fulfill the requirements of both the Graduate Mathematics Certificate and the Advanced Graduate Mathematics Certificate.

Abstract Component - Select one of the following:

- MATH 513 - Abstract Algebra I Credits: 3
- MATH 514 - Abstract Algebra II Credits: 3
- MATH 536 - Number Theory and Cryptography Credits: 3
- MATH 537 - Cryptography and Codes Credits: 3
- MATH 561 - Geometry Credits: 3
- MATH 713 - Advanced Algebra I Credits: 3
- MATH 714 - Advanced Algebra II Credits: 3
- MATH 716 - Theory of Algebraic Structures I Credits: 3

Analytic Component - Select one of the following:

- MATH 523 - Advanced Calculus I Credits: 3
- MATH 524 - Advanced Calculus II Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 622 - Difference Equations Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 721 - Complex Variables Credits: 3
- MATH 723 - Real Variables I Credits: 3
- MATH 724 - Real Variables II Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 751 - Applied Functional Analysis Credits: 3

Graduate Math Elective

- Any MATH or STAT content course 500-level or higher not used as the Abstract or Applied Mathematics course for this Certificate. Credits: 3

Total Required Credits: 9

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admissions

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Animal Science Certificate

Program Coordinator/Contact

Jeff Clapper, Professor
Department of Animal Science
Animal Science Complex 103A
605-688-5166

Program Information

The Animal Science Certificate program is designed to provide students with courses in the major disciplinary areas of animal science. The goal of the program is to provide foundation courses across many facets of animal science, serving as a basis for further study in one of the disciplines or in a particular animal species. Because the courses are delivered online they allow for greater flexibility and access to course content than traditional classroom based courses. The Animal Science Certificate program will be marketed to working professionals who wish to further their education but lack the flexibility to devote themselves to a full-time graduate program.

Student Learning Outcomes

- Demonstration of a comprehensive knowledge at the graduate level of all basic disciplinary aspects of animal science including nutrition, reproductive physiology, animal selection and breeding, and meat science.

- Identification of the relationship of their selected area of emphasis with production and care of farm animals.
- Define issues and problems, retrieve scientific literature, apply relevant scientific principles, synthesize information, apply higher order thinking skills, and utilize effective communication skills relative to animal science.

Course Delivery Format

The online graduate certificate program in Animal Science has been developed to support continuing education needs of the workforce in food animal agriculture. The consortium offering the certificate is affiliated with AG IDEA and is governed by its structure. The institutions involved in this effort consist of South Dakota State University, Clemson University, North Carolina State University, North Dakota State University, and the University of Georgia. The program is also intended to benefit traditional graduate programs through additional course availability.

The courses in this program are online and taught by the instructors who teach on campus at the participating universities. Curriculum is specially adapted for the online environment to ensure students receive the same quality education as they would experience on campus.

Course schedules are determined by the teaching institution but do not have set class times, allowing students to access course content when it is convenient for them. Students meet deadlines as outlined by the instructors, and interact with instructors and other students through e-mail, chats, discussion boards, and other interactive methods. Students must have access to a computer, e-mail, and the Internet.

Certificate Requirements

- AS 541 - Advanced Meat Science Credits: 3
- AS 720 - Advanced Selection of Domestic Animals Credits: 3
- AS 732 - Advanced Physiology of Reproduction Credits: 3

Select one of the following courses

- AS 712 - Ruminant Nutrition Credits: 3
- AS 736 - Monogastric Nutrition Credits: 3
- AS 760 - Advanced Equine Nutrition Credits: 3
- AS 770 - Advanced Beef Production Credits: 3
- AS 780 - Evaluation and Use of Breeds in Livestock Credits: 3

Total Required Credits: 12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Community Development Certificate

Program Coordinator/Contact

Mary Emery, Department Head
Meredith Redlin, Professor/Graduate Coordinator
Department of Sociology and Rural Studies
Hansen Hall 004
605-688-4132

Program Information

The certificate in Community Development provides students the opportunity to study with leading educators and researchers from several different universities representing a diversity of fields including Community and Regional Planning, Architecture, Sociology, American Indian Studies, Economics and Natural Resources. This program is designed for people doing community development work in non-profit organizations, colleges, communities, community organizations and governments. The program welcomes those working in all areas to help communities and regions build their capacity for an inclusive, sustainable future; those who volunteer their time and resources to support community; and most of all those with a passion for working toward a brighter future and a willingness to share their experience and wisdom with others via the Internet community. A student guide to the program is located on the department website.

Student Learning Outcomes

- Facilitate Communities/Community Action: Apply critical thinking skills to understanding and evaluating how communities work and take action, as well as to use, design and evaluate tools and strategies to assist communities in making change.
- Promote broad-based decision making and action: Have a broad conceptual view of community and organizational decision-making processes and strategies and can identify, use, design, and evaluate tools and strategies for promoting broad-based decision making and action. (Transferable Skill: Diversity Awareness)
- Identify strategies to improve economic, social, cultural, and environmental conditions: Apply critical thinking skills to identifying, using, designing, and evaluating strategies to improve economic, social, cultural and environmental conditions.
- Apply a systemic holistic approach: Have a broad conceptual view of the need for communities to balance development among all the community capitals and identify, use, design, and evaluate strategies to assist communities and organizations in seeking balance.
- Appreciate the norms of behavior for the profession.

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (Great Plains-IDEA). Courses will be entirely Internet based and will be taught by faculty within the Alliance (Iowa State University, Kansas State University, North Dakota State University, South Dakota State University, and University of Nebraska). Courses are offered fall, spring and summer semesters.

Certificate Requirements

- CD 601 - Organizing for Community Change Credits: 3
- CD 605 - Principles and Strategies of Community Change Credits: 3
- CD Electives Credits: 6

Total Required Credits: 12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Data Science Certificate

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

Data science is one of the hottest careers in the nation today, with demand predicted to grow even more in the future. It's common to see it rated as the number one career in the nation on major employment websites such as CareerCast and Glassdoor. The SDSU Graduate Certificate in Data Science provides training in a wide range of powerful data science analysis and computation methodologies that have proven to be extremely valuable in today's data rich businesses and organizations. Even better, it is completely online, making it a great option for working professionals wishing to enhance their skills in this critical area.

Student Learning Outcomes

- Gather requirements from organizational contexts and goals in order to clearly articulate a data science problem.
- Prepare, transform, and analyze data using appropriate methodologies.
- Interpret the results of the analysis in such a way as to generate actionable intelligence.
- Communicate the results of the analysis to stakeholders in the optimal combination of written, graphical/visual, and verbal means.

- Aware of the ethical implications of professional actions in data science and other contexts. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning)

Course Delivery Format

Courses will typically be delivered in on-campus classrooms, with occasional courses offered online.

Certificate Requirements

- STAT 541 - Statistical Methods II Credits: 3
- STAT 600 - Statistical Programming Credits: 3
- STAT 601 - Modern Applied Statistics I Credits: 3
- STAT 602 - Modern Applied Statistics II Credits: 3

Total Required Credits: 12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admissions

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Family Financial Planning Certificate

Program Contact/Coordinator

Wookjae Heo, Assistant Professor
Department of Consumer Sciences
Wagner Hall 229, Box 2275A
605-688-5196

Program Information

The graduate certificate program in Family Financial Planning is designed for students who want graduate coursework that meets the educational requirement to sit for the CFP® Certification Examination but who do not need a Master's degree. Family financial planning is an emerging area with job opportunities in areas related to insurance, real estate, investments, retirement, tax and estate planning. Financial planners are increasingly in demand as Americans seek advisers to help manage their income, assets, and debts.

Student Learning Outcomes

- Students will communicate a financial plan with consumers and communities.
- Students will recognize ethical standards for financial planners as prescribed by the CFP Board. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning; Awareness of Public Policy - Regulatory Affairs)
- Students will demonstrate listening and counseling skills needed to help families with financial management. (Transferable Skill: Mentoring)
- Students will calculate time value of money calculation.

Accreditation, Certification, & Licensure

The Family Financial Planning graduate program is registered by the CERTIFIED FINANCIAL PLANNER™ Board of Standards. CFP® and CERTIFIED FINANCIAL PLANNER™ are federally registered service marks of the CERTIFIED FINANCIAL PLANNER™ Board of Standards, Inc. They are granted by the CFP® Board to those persons who have fulfilled a comprehensive educational requirement, passed the CFP® Certification Examination, satisfied a work experience requirement and agreed to abide by the CFP® Board code of ethical conduct.

- The graduate certificate in Financial Planning does not guarantee a student will pass the CFP® exam.
- In earning the graduate certificate in Financial Planning through the Great Plains IDEA, students receive the education required to take the exam.
- After completing the necessary educational requirements, students work with the CFP Board on examination, experience and ethics requirements for CFP® certification.

Certified Financial Planner™ professionals have the satisfaction of helping people solve their financial problems and reach their financial goals. The CFP Board website at www.cfp.net has extensive CFP® certification information.

Students admitted to the Great Plains IDEA online degree program are advised to obtain the Guide to CFP® Certification. The guide includes an application for the exam, exam fee information, exam procedures and information on the required work experience.

- Certified Financial Planner Board of Standards Inc. owns the marks CFP®, CERTIFIED FINANCIAL PLANNERTM, and CFP (with flame logo)®, which it awards to individuals who successfully complete initial and ongoing certification requirements.
- Great Plains IDEA institutions do not certify individuals to use the CFP®, CERTIFIED FINANCIAL PLANNERTM and CFP (with flame logo)® certification marks. CFP® Certification is granted only by the Certified Financial Planner Board of Standards Inc. to those persons who, in addition to completing an educational requirement such as this CFP Board-Registered Program, have met its ethics, experience and examination requirements.

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (GP-IDEA). Courses will be entirely Internet based and will be taught by faculty within the Alliance (Iowa State University, Kansas State University, Montana State University, North Dakota State University, Oklahoma State University, South Dakota State University, University of Missouri, and University of Nebraska). Courses are offered fall, spring and summer semesters.

Certificate Requirements

- CA 660 - Investing for Family's Future Credits: 3
- CA 680 - Insurance Planning for Families Credits: 3
- CA 704 - Estate Planning for Families Credits: 3
- CA 725 - Family, Employment Benefits and Retirement Planning Credits: 3
- CA 735 - Personal Income Taxation Credits: 3
- CA 755 - Financial Planning Case Study Credits: 3

Total Required Credits: 18

Notes

Students without a background in financial planning should take CA 640 - Fundamentals of Family Financial Planning.

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Financial & Housing Counseling Certificate

Program Contact/Coordinator

Wookjae Heo, Assistant Professor
Department of Consumer Sciences
Wagner Hall 229, Box 2275A
605-688-5196

Program Information

The program prepares students to apply for the Certified Housing Counselor (CHC) and the Accredited Financial Counselor (AFC) certifications, which are appropriate to meet the needs of military spouses, active duty service members, civilians providing services, and retired military or civilians in the areas of financial and housing counseling.

Student Learning Outcomes

- Students will communicate a financial plan with consumers and communities.
- Students will recognize ethical standards for financial planners as prescribed by the CFP Board. (Transferable Skill: Ethics - Moral Decision Making/Moral Reasoning; Awareness of Public Policy - Regulatory Affairs)
- Students will demonstrate listening and counseling skills needed to help families with financial management. (Transferable Skill: Mentoring)
- Students will calculate time value of money calculation.

Certification & Licensure

In collaboration with the Association for Financial Planning and Counseling Education (AFCPE), students successfully completing the Financial & Housing

Counseling (FHC) Certificate program will be able to sit for the Accredited Financial Counselor (AFC) examination or the Certified Housing Counselor (CHC) examination.

To become an Accredited Financial Counselor (AFC), candidates must have 1000 hours of experience in admissible financial counseling experience to enroll. To become a Certified Housing Counselor (CHC), candidates must have 1500 hours of admissible housing counseling experience. For additional information on AFC and CHC certification, visit the AFCPE website.

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (GP-IDEA). Courses will be entirely internet based and will be taught by faculty within the Alliance (Iowa State University, Kansas State University, North Dakota State University, Oklahoma State University, South Dakota State University and University of Nebraska). Courses are offered fall, spring and summer semesters.

Certificate Requirements

- CA 612 - Financial Counseling Credits: 3
- CA 621 - Financial Theory and Research I Credits: 3
- CA 640 - Fundamentals of Family Financial Planning Credits: 3
- CA 715 - Housing and Real Estate in FFP Credits: 3

Electives

Select six credits from the following:

- CA 595 - Practicum Credits: 3-6 (3 credits required)
- CA 645 - Military Personal Financial Readiness Credits: 3
- CA 660 - Investing for Family's Future Credits: 3
- CA 680 - Insurance Planning for Families Credits: 3
- CA 704 - Estate Planning for Families Credits: 3
- CA 725 - Family, Employment Benefits and Retirement Planning Credits: 3
- CA 735 - Personal Income Taxation Credits: 3

Total Required Credits: 18

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Graduate Mathematics Certificate

Program Coordinator/Contact

Kurt D. Cogswell, Department Head
Donald Vestal, Associate Professor/Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

Program Information

The online Graduate Mathematics Certificate and the Advanced Graduate Mathematics Certificate are programs (each has 9 graduate math credits) designed for current high school mathematics teachers that are either enrolled in or have completed a master's degree that would like to become concurrent dual credit math instructors.

Student Learning Outcomes

- Content Knowledge: Demonstrate depth and breadth of content knowledge in a core area of mathematics. (Transferable Skill: Teaching/Training)
- Critical Thinking: Read, analyze, write and present mathematical arguments with clarity.
- Inquiry Analysis: Research current mathematical practices/theorems and communicate findings.

Course Delivery Format

Coursework for this program will be delivered online.

Certificate Requirements

All courses used to meet the certificate requirements are MATH or STAT prefixed courses and must include at least one analytic and one abstract course in the collection of three courses (nine credits). One course from a non-SDBOR University may be substituted. Courses cannot be used to fulfill the requirements of both the Graduate Mathematics Certificate and the Advanced Graduate Mathematics Certificate.

Abstract Component - Select one of the following:

- MATH 513 - Abstract Algebra I Credits: 3
- MATH 514 - Abstract Algebra II Credits: 3
- MATH 536 - Number Theory and Cryptography Credits: 3
- MATH 537 - Cryptography and Codes Credits: 3
- MATH 561 - Geometry Credits: 3
- MATH 713 - Advanced Algebra I Credits: 3
- MATH 714 - Advanced Algebra II Credits: 3
- MATH 716 - Theory of Algebraic Structures I Credits: 3

Analytic Component - Select one of the following:

- MATH 523 - Advanced Calculus I Credits: 3
- MATH 524 - Advanced Calculus II Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 622 - Difference Equations Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 721 - Complex Variables Credits: 3
- MATH 723 - Real Variables I Credits: 3
- MATH 724 - Real Variables II Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 751 - Applied Functional Analysis Credits: 3

Graduate Math Elective

- Any MATH or STAT content course 500-level or higher not used as the Abstract or Applied Mathematics course for this Certificate. Credits: 3

Total Required Credits: 9

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admissions

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Grassland Management Certificate

Program Coordinator/Contact

Alexander (Sandy) Smart, Assistant Department Head and Professor
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138, Box 2140B
605-688-6121

Program Information

Grasslands represent a fundamental resource of the region that determines the environmental and economic future of the Great Plains. Many of the managers or advisors on these grasslands have B.S. degrees in natural resources or agriculture and want to further develop their expertise in grassland management through university programs. However, constraints associated with their work schedule and responsibilities limit their ability to pursue conventional on-campus coursework and graduate degrees. The Grassland Management Graduate Certificate Program was developed to address the needs of working professionals as well as other students interested in distance education opportunities. Students will interact with their institutional advisors to develop a plan of study most beneficial to the student. Coursework may be transferred in on a case-by-case basis with the approval of the student's advisor.

Student Learning Outcomes

- Effectively use oral and written communications to convey knowledge of grassland management.

- Demonstrate high level of analytical and critical thinking skills to enable problem solving in grassland management. (Transferable Skill: Argument Deconstruction)
- Demonstrate quantitative skills including field sampling and data interpretation for effective analysis and management of natural resources.
- Demonstrate knowledge of ecological principles as a foundation for understanding and applying principles of natural resource management.

Course Delivery Format

This program is delivered fully online through the AG*IDEA Program, an affiliate of the Great Plains IDEA, a national consortium of universities offering programs and courses in agriculture disciplines. AG*IDEA's fully online program provides flexibility, enabling students to balance career advancement with professional, social and financial commitments.

Certificate Requirements

Complete a minimum of 12 credits from the following courses:

- RANG 510 - Grassland Monitor & Assessment Credits: 2
- RANG 520 - Watershed Management Credits: 3
- RANG 521 - Grassland Fire Ecology Credits: 3
- RANG 530 - Ecology of Invasive Species Credits: 3
- RANG 540 - Grassland Plant Identification Credits: 2
- RANG 710 - Principles of Forage Quality Credits: 3
- RANG 750 - Grazing Ecology and Management Credits: 3

Total Required Credits: 12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Management Foundations Certificate

Program Coordinator/Contact

Teresa Keys Hall, Department Head
Department of Construction and Operations Management
Solberg Hall 116, Box 2223
605-688-6417

Program Information

The certificate in Management Foundations is designed with flexibility to the meet the working professionals who want additional professional development, but also has the flexibility to meet the needs of students who want to supplement their graduate degree with additional credentials.

Student Learning Outcomes

- Understand the differences between leading and managing in a project-based workplace environment. (Transferable Skill: Leadership - Management)
- Formulate data-based decisions to solve problems encountered in productive organizations.
- Use professional communication skills in personal interactions and written form.

Course Delivery Format

Program coursework is delivered fully online with selected courses on campus.

Certificate Requirements

- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- GE/ OM 569 - Project Management Credits: 2-3 (3 credits required)
- OM 650 - Manufacturing Systems Management Credits: 3

  or ME/ OM 767 - Decision Theory Credits: 3
  or ME 760 - Quality Control Credits: 3
- OM 660 - Operations Management Credits: 3

Total Required Credits: 12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admissions

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Merchandising Certificate

Program Coordinator/Contact

Kendra Kattelmann, Department Head
Department of Consumer Sciences
Wagner Hall 425, Box 2275A
605-688-5196

Program Information

The certificate provides an introduction to merchandising, with emphasis on current trends in the United States factors that will distinguish graduates among their peers. Graduates with a certificate are prepared to work in product development, promotions, and retail management in this ever-expanding industry.

Student Learning Outcomes

- Students will demonstrate the ability to identify and understand theories, principles, practices and terminology related to the merchandising industry. (Transferable Skill: Argument Deconstruction)
- Students will demonstrate strong research, analytical and strategic decision-making skills. (Transferable Skill: Leadership - Management)

Course Delivery Format

The online program has been developed by faculty from the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). Courses will be entirely Internet based and will be taught by faculty within the Alliance (Kansas State University, North Dakota State University, Oklahoma State University, South Dakota State University, and University of Nebraska). Courses are offered fall, spring and summer semesters.

Certificate Requirements

- MRCH 510 - Consumer Behavior in Merchandising Credits: 3
- MRCH 520 - Professional Advancement in Merchandising Credits: 3
- MRCH 530 - Product Design, Development, and Evaluation Credits: 3

  or MRCH 540 - Promotional Strategies in Merchandising Credits: 3
- MRCH 550 - Retail Theory and Current Practice Credits: 3

Total Required Credits: 12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Native Communities & Economic Development Certificate

Program Coordinator/Contact

Mary Emery, Department Head
Meredith Redlin, Professor/Graduate Coordinator
Department of Sociology and Rural Studies
Hansen Hall 004
605-688-4132

Program Information

This certificate is designed for graduate students interested in expanding their skills and understanding in regard to Native community and economic development and an interest in working with native communities. Today students taking these courses are often employed or seeking employment in native-serving organizations and agencies who have extended their programming to Native-majority communities and neighborhoods.

Student Learning Outcomes

- Demonstrate understanding of tribal sovereignty and apply to all aspects of work with tribal partners and communities. (Transferable Skill: Diversity Awareness)
- Understand and apply indigenous methodologies to scholarship and practice; be cognizant of indigenous critiques of mainstream sociological and economic approaches to development.
- Understand and apply appropriate ethical considerations, respect for data sovereignty, and tribal governance.
- Demonstrate understanding of various approaches to economic development and potential connects and disconnects with specific tribal nations.
- Understand traditional approaches to leadership, cultural and spiritual priorities, and natural resource management and be able to apply community and economic development theories and practices within that context.

Course Delivery Format

Courses are offered online through the Sociology and Rural Studies Department at SDSU. Students enrolled in Great Plains Interactive Distance Education Alliance (Great Plains IDEA) program may sign up for courses through the Community Development program.

Certificate Requirements

- CD 613 - Introduction to Native Community Development Credits: 3
- CD 624 - Building Native Community in Economic Capacity Credits: 3
- CD 634 - Native American Natural Resource Management Credits: 3
- Electives Credits: 3

Total Required Credits:12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admission
Distance Education

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Post-Graduate Clinical Nurse Leader Certificate

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

The Post-Graduate Clinical Nurse Leader Certificate is focused on integrating the vital work of Clinical Nurse Leaders into every hospital. This certificate program is designed for nurses who currently hold a Master's Degree in Nursing Education or Nursing Administration or Clinical Nurse Specialist.

Courses for the certificate are designed to meet the national AACN requirements for the student to become a certified Clinical Nurse Leader and assist students to meet the following CNL competencies: Critical thinking; Communication; Health Assessment; Nursing Technology and Resource Management; Health Promotion, Risk Reduction, and Disease Prevention; Illness and Disease Management; Information and Health Care Technologies; Ethics; Human Diversity; Global Health Care; Health Care Systems and Policy; Provider and Manager of Care; Designer/Manager/Coordinator of Care, and; Member of a Profession.

Program Outcomes

To prepare clinical nurse leaders, nurse educators, family nurse practitioners and psychiatric mental health nurse practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning, and
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings.

Student Learning Outcomes

- Display competence within the legal scope of practice for chosen specialization.
- Evaluate and utilize research within advanced nursing practice.
- Integrate cultural learning into nursing practice to effectively tailor health care to the diverse lifeways of clients.

Accreditation, Certification, & Licensure

Accreditation

The post-graduate APRN certificate at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Certification

Upon completion of the Post-Graduate Clinical Nurse Leader Certificate, students may be eligible for the following certification:

National Certification Eligibility	*Certifying Body*
Clinical Nurse Leader (CNL)* *requires graduation from a CNL master's education program or a student in their last term of a CNL education program that meets the criteria delineated in the CNL Competencies and Curricular Expectations for Clinical Nurse Leader [SM] Education and Practice are eligible to sit for this certification examination.	Commission on Nurse Certification (CNC)

Course Delivery Format

The program coursework is delivered online and includes a field-based practicum.

Certificate Requirements

- NURS 645 - CNL I: Improvement Science: A Microsystem Approach Credits: 5
- NURS 646 - CNL II: Clinical Immersion and Capstone Project Credits: 6
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3

Total Required Credits: 14

Notes

- The Post-Graduate Clinical Nurse Leader Certificate program of study is individualized. Interested applicants will contact the graduate nursing department to discuss options.
- For additional information, refer to the Graduate Nursing Department webpage.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse (and if applicable, APRN and licensure) in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.

- Completed graduate level courses in Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) with a course grade of 3.0 within the last 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Post-Graduate Family Nurse Practitioner Certificate

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

Nurses who have a master's in nursing but are not nurse practitioners are eligible to apply. Graduates of this program are prepared to deliver evidence-based direct patient care at an advanced practice level to individuals across the lifespan in primary care settings. Graduates are eligible to write certification examinations in Family Nurse Practitioner from either the American Nurses Credentialing Center (ANCC) or the American Academy of Nurse Practitioners Certification Program (AANPCP).

The program has many online courses, and some where intermittent in-person attendance is required. Students who have completed graduate nursing courses in pharmacology, pathophysiology and advanced health assessment in the last five years may be able to use those course towards certificate requirements. Students complete a minimum of 1000 hours of clinical practice preceptorship in a variety of settings, including mandatory practice in rural settings.

Program Outcomes

To prepare clinical nurse leaders, nurse educators, family nurse practitioners and psychiatric mental health nurse practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning, and
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings.

Student Learning Outcomes

- Display competence within the legal scope of practice for chosen specialization.
- Evaluate and utilize research within advanced nursing practice.
- Integrate cultural learning into nursing practice to effectively tailor health care to the diverse lifeways of clients.

Course Delivery Format

The program coursework is delivered online and face-to-face. Students complete a minimum of 1000 hours of clinical practice preceptorship.

Certificate Requirements

- NURS 765 - FNP Integration: Practicum I Credits: 7 (3, 4)
- NURS 768 - FNP Integration: Practicum II Credits: 4
- NURS 771 - FNP Integration: Practicum III Credits: 7 (3, 4)
- NURS 776 - FNP Integration: Practicum IV Credits: 8 (3, 5)

Total Required Credits: 26

Notes

For additional information, refer to the Graduate Nursing Department webpage.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse (and if applicable, APRN and licensure) in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed graduate level courses in Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) with a course grade of 3.0 within the last 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a

minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Post-Graduate Nurse Educator Certificate

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

The Post-Graduate Nurse Educator certificate program prepares graduates to utilize theories of teaching and learning in a variety of settings with emphasis on nursing education. Graduates demonstrates the ability to plan, implement, and evaluate nursing education programs. Individuals who have earned a Master's in Nursing degree from SDSU or any other CCNE or ACEN accredited nursing program are eligible to apply for the Post-Graduate Nurse Educator Certificate program. Additionally, graduates may be eligible to earn National Certification as a Certified Nurse Educator.*

Program Outcomes

To prepare clinical nurse leaders, nurse educators, family nurse practitioners and psychiatric mental health nurse practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning, and
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings.

Student Learning Outcomes

- Display competence within the legal scope of practice for chosen specialization.
- Evaluate and utilize research within advanced nursing practice.
- Integrate cultural learning into nursing practice to effectively tailor health care to the diverse lifeways of clients.

Accreditation, Certification, & Licensure

Accreditation

The post-graduate APRN certificate at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Certification

Upon completion of the Nurse Educator Post-Graduate Certificate, students may be eligible for the following certification:

National Certification Eligibility	*Certifying Body*
Certified Nurse Educator* *Individuals must meet eligibility requirements before they can take the CNE examination. An active registered nurse license is necessary. Students must also have a master's or doctoral degree in nursing and full-time experience in a nurse faculty role within the past 5 years. If the college degree emphasized on nursing instruction, individuals will need 2 years of experience in a nurse faculty role. Four years of experience is required if the graduate nursing degree did not emphasize on education.	National League for Nursing (NLN)

Course Delivery Format

The program coursework is delivered online with an on-campus requirement for NURS 631-631L and includes a field-based practicum.

Certificate Requirements

- NURS 710 - Curriculum Development and Program Evaluation in Nursing Credits: 3
- NURS 720 - Teaching and Learning Methodologies in Nursing Credits: 3
- NURS 721 - Assessment and Evaluation in Nursing Education Credits: 3
- NURS 778 - Nurse Educator Didactic/Practicum Credits: 1-5 (5 credits required)

Total Required Credits: 14

Notes

*Individuals must meet eligibility requirements before they can take the CNE examination. An active registered nurse license is necessary. Students must also have a master's or doctoral degree in nursing and full-time experience in a nurse faculty role within the past 5 years. If the college degree emphasized non-nursing instruction, individuals will need 2 years of experience in a nurse faculty role. Four years of experience is required if the graduate nursing degree did not emphasize on education.

For additional information, refer to the Graduate Nursing Department webpage.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse (and if applicable, APRN and licensure) in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed graduate level courses in Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) with a course grade of 3.0 within the last 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

Program Coordinator/Contact

Melinda Tinkle, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 217, Box 2275
605-688-5178 or 1-888-216-9806, Ext. 2

Program Information

Advanced nursing practice in psychiatric mental health covers both outpatient and inpatient care, children through elderly individuals, and mild depression and anxiety to significantly disabling conditions including substance abuse, bipolar disorders and schizophrenia. This certificate prepares graduates to provide much needed high-quality mental health care to all populations and conditions in a variety of rural and urban settings. All courses are online and include 540 clinical hours. Graduates are prepared to sit for ANCC Psychiatric Mental Health Nurse Practitioner certification exam.

Program Outcomes

To prepare clinical nurse leaders, nurse educators, family nurse practitioners and psychiatric mental health nurse practitioners who:

- apply knowledge of evidence-based practice,
- engage in life-long learning, and
- serve South Dakota, the region, the nation, and the world in urban, rural, and frontier health care settings.

Student Learning Outcomes

- Display competence within the legal scope of practice for chosen specialization.
- Evaluate and utilize research within advanced nursing practice.
- Integrate cultural learning into nursing practice to effectively tailor health care to the diverse lifeways of clients.

Accreditation, Certification, & Licensure

Accreditation

The post-graduate APRN certificate at South Dakota State University is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 20036, 202-887-6791.

Certification

After completing the program of study, graduates are eligible to complete certification through the American Nurses Credentialing Center (ANCC).

National Certification Eligibility	*Certifying Body*
Psychiatric-Mental Health Nurse Practitioner (Across the Lifespan) Certification (PMHNP-BC)	American Nurses Credentialing Center (ANCC)

Course Delivery Format

The program coursework is delivered online and includes a field-based practicum.

Certificate Requirements

- NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
- NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 3
- NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
- NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
- NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 4
- NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 5

Total Required Credits: 18

Notes

For additional information, refer to the Graduate Nursing Department webpage.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 81 Internet-based, OR
IELTS: 6.5 total band

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current licensure as a Registered Nurse (and if applicable, APRN and licensure) in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to the first clinical course.
- Completed graduate level courses in Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) with a course grade of 3.0 within the last 5 years.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed an approved statistical methods course within 5 years of enrollment in the designated research course within the DNP program coursework.
- Interview assessment reviewed by graduate faculty.
- Applicants who have begun but not completed a graduate nursing program at another college or university must submit a letter to the College of Nursing indicating their reason for leaving that said program. A letter of recommendation must also be submitted to the College of Nursing from the dean/director of their former program that includes the applicant's standing in that program upon exit.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Systems Management Certificate

Program Coordinator/Contact

Carrie Steinlicht, Senior Lecturer
Department of Construction and Operations Management
Solberg Hall 116, Box 2223
605-688-6417

Program Information

Offered through the College of Engineering, the certificate in Systems Management has the flexibility to be used for a variety of students, including for corporate professional development. The Certificate in Systems Management is targeted at working professionals in a variety of managerial positions.

Student Learning Outcomes

- Apply systems theory and models to solve problems in organizations.
- Recognize opportunities to leverage information, resources, and/or timing to position the organization for competitive advantage. (Transferable Skill: Leadership - Management)
- Use professional communication skills in personal interactions and written form.

Course Delivery Format

Program coursework is delivered primarily on campus with selected courses offered online.

Certificate Requirements

- CSC 740 - Management Information Systems Credits: 3

  or OM 603 - Designing the Work Place for Production Credits: 3
  or OM 563 - Supply Chain Management Credits: 3
- OM 650 - Manufacturing Systems Management Credits: 3
- ME 765 - Systems Analysis Credits: 3
- ME/ OM 767 - Decision Theory Credits: 3

Total Required Credits: 12

Additional Admission Requirements

Please refer to the following for additional information:

Graduate School Admissions

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Transdisciplinary Childhood Obesity Prevention Certificate

Program Coordinator/Contact

Jessica Meendering, Professor
Department of Health and Nutritional Sciences
Wagner Hall 425, Box 2275A
605-688-5161

Program Information

The Transdisciplinary Childhood Obesity Prevention (TOP) graduate certificate is a graduate certificate program aimed to engage students in transdisciplinary approaches to childhood obesity prevention through coursework and community based experiential learning opportunities. This program is unique, as it provides expertise in a job market that is desperate for trained professionals in the prevention of childhood obesity. The program will expose students to a variety of disciplines involved in the prevention of childhood obesity, allow students the opportunity to design childhood obesity prevention initiatives, and prepare students to conduct transdisciplinary research on the behavioral, social, biological, and environmental causes of childhood obesity. Students will develop skills required to implement evidence based transdisciplinary approaches to prevention. Faculty from Nutrition, Exercise Science, Early Childhood Education, and Nursing work collaboratively with SDSU Extension to implement the TOP graduate certificate program. Students will obtain a TOP program certificate upon completion of the requirements for both the certificate and the Masters or Doctoral degree from their respective college.

Student Learning Outcomes

- Understand the need for transdisciplinary teams and gain skills required to work effectively within a transdisciplinary team.
- Define the Social Ecological Model and demonstrate the ability to apply the model to obesity prevention for a variety of populations.
- Understand the current epidemiology of childhood obesity and be able to identify and discuss a multitude of factors that contribute to the obesity epidemic using current evidence.
- Identify a problem that contributes to obesity prevalence and the issues the contribute to it. Define the level of the Social Ecological Model of each issue and use the information to think comprehensively about strategies that have been attempted to improve the problem, and innovative transdisciplinary ideas for future impact.
- Identify and describe multiple methods of assessing nutrition and physical activity.
- Utilize multiple methods of assessing nutrition and physical activity.
- Interpret and evaluate nutrition and physical activity data.
- Synthesize material and apply knowledge to discuss the application of nutrition and physical activity assessment tools in different scenarios.

Course Delivery Format

The core classes within the TOP program are delivered online.

Student Support & Engagement Opportunities

The College of Education and Human Sciences and the Department of Health and Nutritional Sciences offers a limited number of qualified graduate student applicants scholarships as well as funded assistantships. Additionally, the department offers a number of opportunities for students to be involved. The student organizations provide opportunities for professional development and social interaction through numerous events on campus as well as service learning projects. Travel opportunities are available, including regional and national conferences.

Certificate Requirements

This certificate will be granted when the individuals meet the requirements for their respective graduate education majors (Ph.D. and Masters) and complete the course requirements listed above.

- NUTR 750 - Issues in Obesity Credits: 3
- NUTR 751 - Nutrition and Physical Activity Assessment and Evaluation Credits: 3
- NUTR 795 - Practicum (COM) Credits: 1-3 (1 credit required)

Electives

Select 2-3 credits from the following:

- CHRD 723 - Counseling the Family Credits: 3
- ECE 711 - Developmental Theory and Application Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- FCSE 761 - Advanced Methods and Assessment in Family & Consumer Sciences Education Credits: 3
- HDFS 630 - Lifespan Development Credits: 3
- HDFS 742 - Family Theory and Research Credits: 3
- HLTH 520 - K-12 Methods of Health Instruction (COM) Credits: 2
- HSC 631 - Biostatistics I Credits: 3
- NUTR 560 - Nutrigenomics and Molecular Nutrition Credits: 3
- NUTR 715 - Public Health Nutrition Credits: 3
- NUTR 775 - Nutrigenomics and Health Credits: 3
- NUTR 782 - Epidemiology Credits: 3
- SOC 711 - Qualitative Research Methods Credits: 3

Total Required Credits: 9-10

Additional Admission Requirements

Please refer to the following for additional information.

Admission to the TOP program requires completion of the TOP application.

TOP program webpage

Graduate School Admissions

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Coursework Only

French, German, Global Studies, History, Political Science, Philosophy, Religion, & Spanish

Program Coordinator/Contact

Christine Garst-Santos, Director
School of American and Global Studies
Wagner Hall 121, Box 2275
605-688-5102

Program Information

The School of American and Global Studies offers dual listed, topics, and independent study courses on an as needed basis. Occasional courses are offered for teachers needing in-service or continuing education credit. Graduate degrees are not available in these disciplines, but students may use these courses in an approved plan of study.

Music

Program Coordinator/Contact

David Reynolds, Director
School of Performing Arts
Performing Arts Center 123B, Box 2830
605-688-5188

Program Information

The School of Performing Arts is shaped by the university's Land Grant status and the spirit of the Morrill Act. Within that context, it is the mission of the School of Performing Arts to musically serve the university, state, and region through teaching/advising, research/creative activity, and outreach/general service. The School of Performing Arts does not offer a graduate level degree in music. However, students may enroll in graduate courses provided by the department.

Physics

Program Coordinator/Contact

Douglas Raynie, Department Head
Department of Physics
Daktronics Engineering Hall 255, Box 2222
605-688-5428

Program Information

The Department of Physics does not offer a graduate degree program. However, the Physics program's coursework supports graduate degrees in a variety of departments in the science and engineering fields.

Psychology

Program Coordinator/Contact

Rebecca Martin, Interim Department Head
Department of Psychology
Hansen Hall 029
605-688-4930

Program Information

The Department of Psychology provides a robust and challenging undergraduate curriculum. A graduate degree is not available, but students may use departmental courses in an approved plan of study.

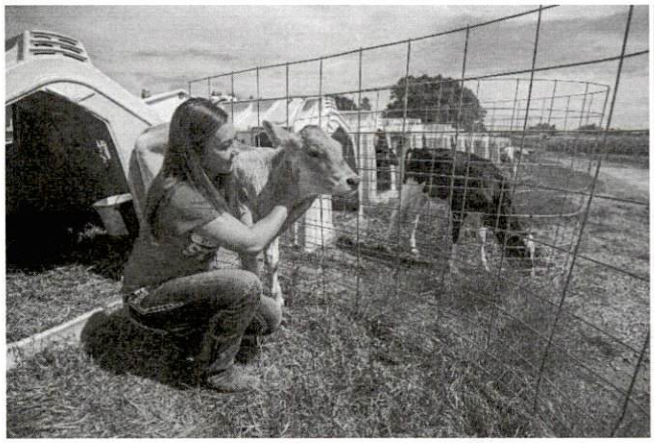
Studio Arts

Program Coordinator/Contact

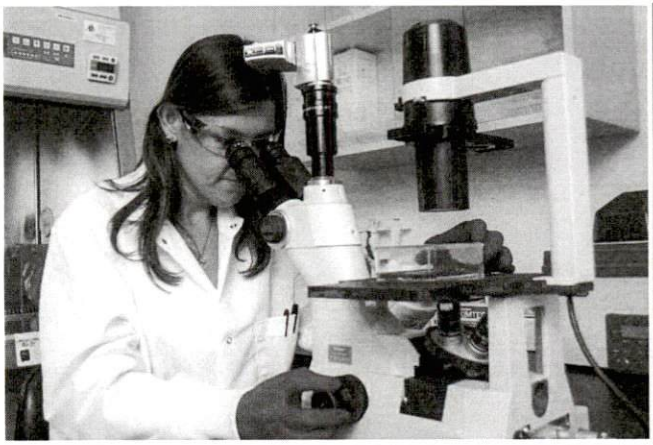
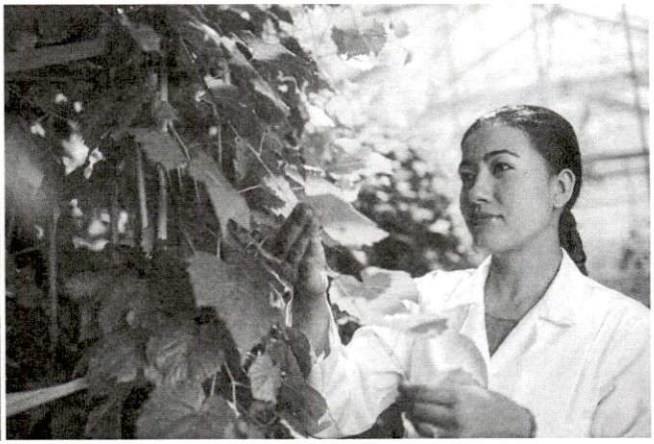
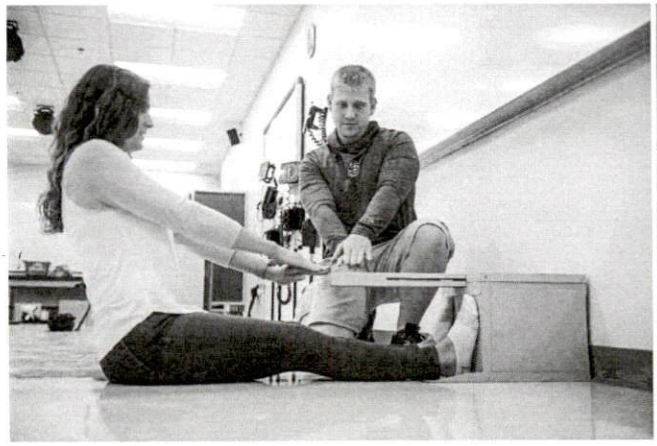
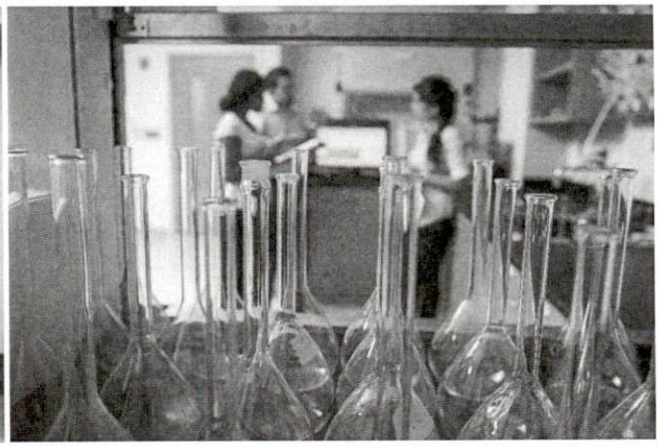
Diana Behl Program Coordinator Studio Arts
School of Design
Grove Hall 101, Box 2802
605-688-4103

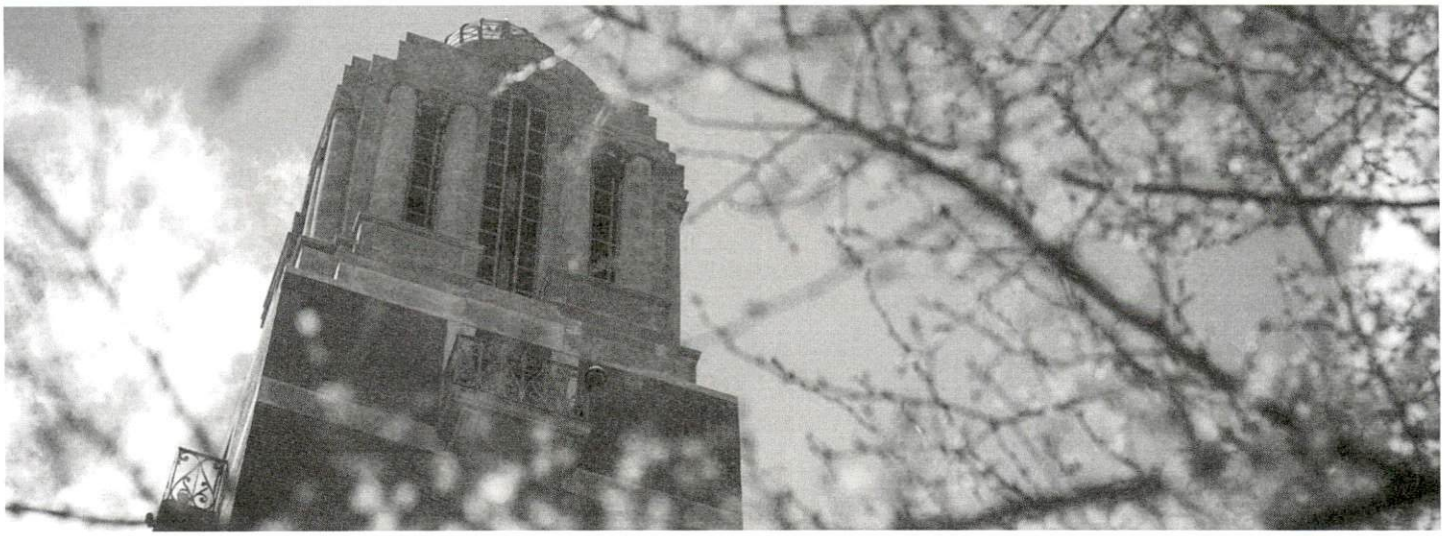
Program Information

The School of Design offers courses in animation, art education, art history, ceramics, computer graphics, drawing, film, interactive design, graphic design, painting, printmaking, sculpture and web design. The School does not offer a graduate level degree in Studio Arts. However, students may enroll in graduate courses provided by the School.







Course Information

Curriculum Entries

Course Descriptions

BIOL[1] 583[2] Developmental Biology[3] (COM)[4] . . . . . 3[5]
Analysis of the processes of animal development beginning with the formation of female and male gametes (ova and sperm) and ending with organ differentiation. Evolutionary concepts of animal development, developmental genetics, and molecular biological approaches to the analysis of development. Prerequisites: BIOL 151, BIOL 153, and BIOL 371 or BIOL 204 or BIOL 471 or 571 or BIOL 475 or BIOL 575.[6]

1. Course subject.
2. Course number.
3. Course Title.
4. Common Course within the Regental System.
5. Number of credits assigned to the course. One credit is usually interpreted as one hour of class work per week or as two to four hours of lab work per week.
6. A brief description of the course. This section includes other information affecting your enrollment in the course. A course description might include prerequisites, co-requisites, and registration restrictions. Other information included in various course descriptions would be: "Alternate years," "Not open to majors," "May be repeated for a total of six credits," etc.

Course Numbering

(SDBOR Policy 2:8, section 1)

Graduate Courses

500-599	Entry level graduate (may be dual listed with a 400 level undergraduate course and may include limited enrollment by undergraduates)
600-699	Graduate level (undergraduate enrollment only by exception) Also open to senior students for graduate credit under the following conditions:
700-799	Graduate level (graduate students only)
800-899	Doctoral and post-doctoral level (doctoral and post-doctoral students only)

Course Types/Instructional Methods

(SDBOR Academic Affairs Guidelines 5.4)

Clinical Experience

- This course entails provision of direct patient care in a clinic-based setting.
- Through observation and treatment of patients, students focus on developing specific skill sets designed to improve health (physical and/or mental).
- Oversight and instruction are provided by a faculty member and/or approved site supervisor.
- Enrollments are small (1 to 9) due to the inherent nature of this experience.

Clinical Laboratory

- Learning takes place in a clinical laboratory, an operation which conducts diagnostic tests performed on samples taken on/from the human body.
- These clinical laboratories may be free-standing or situated within hospitals or medical clinics.
- Faculty members are heavily involved; they maintain direct and close supervision of students.
- Enrollment is limited; it varies from 1 to 9 students.

Competency-Based/Self-Paced Study

- Each enrolled student advances at his/her preferred rate.
- Successful mastery of content is based on achievement of competencies as opposed to completion of assignments.
- Student progression through course content is often assisted by technology.
- Individual or group tutorials may be provided to supplement individual learning.

Design/Research

- This course focuses on designing and conducting research; a viable and appropriate plan is developed as a collaborative effort between faculty member and student.
- Interaction between faculty member and student researcher is both extensive and intensive.
- This instructional method is not intended for either research methods courses (which are grounded in theory) or graduate thesis/dissertation courses.

Discussion/Recitation

- Communication between the faculty member and students is two-way; all are participants who actively share experiences, ideas, viewpoints, and feedback.
- Student involvement is strong; it entails conversation, dialogue, and/or debate.
- Enrollment maximum is typically 35 students.

Independent Study

- The format is individualized; content is tailored to the student(s) and particular situation.
- Enrollment varies; typically, however, section size is small (1 to 5 students).
- For each section, a suitable plan of study and meeting schedule are negotiated and established.

Internship/Practicum

- This field-based learning experience is monitored and supervised; examples include discipline-specific field work, student teaching, and cooperative education.
- Students acquire relevant, real-world experience; each follows a prearranged plan of study.
- Such experience may or may not be associated with payment of wages.
- Enrollment is variable; it depends on factors such as availability of placements, requisite level of supervision, etc.

Laboratory

- Course instruction takes place in a specialized physical setting – that is, the laboratory.
- The laboratory component complements the lecture; instruction promotes hands-on application of concepts presented during lectures.
- Enrollment maximum varies, but typically does not exceed 25.

Lecture

- Content is largely rooted in facts, principles, ideas, and theory.
- Communication is primarily one-way; the faculty member formally relays information, while students listen.
- Classes can be sizable; enrollment maximums – which widely vary – depend on course level, discipline, and university preference.

Music Ensemble, Large

- Intended for large groups, either instrumental or vocal in nature; examples include band, orchestra, and choir.
- Enrollments vary (10 or greater students) with regularly scheduled instructional meetings and/or faculty-led practices.
- Performers can register for a credit bearing or non-credit bearing experience; however, those who are enrolled for 0 credits must also register for other courses which are credit bearing.

Music Ensemble, Small

- Intended for small groups, either instrumental or vocal in nature.
- The course involves regularly scheduled instructional meetings and/or faculty-led practices.
- Enrollments vary between 3 and 9 students (trio, quartet, quintet, etc).

Physical Education Activity

- This course is devoted to participation in/performance of a physical activity; faculty instruction includes proper form and technique.
- The enrollment maximum varies, depending on factors such as nature of the particular sport, availability of venue and equipment, and safety considerations.

Private Instruction

- This course centers on personalized training; two common examples include music performance and flight instruction.
- Course content is consistent with prescribed learning outcomes; it is not negotiable.

Seminar

- A highly focused and topical course with strong, direct faculty-student interaction.
- The course features significant emphasis on student exploration of scholarly literature; research; and professional challenges, problems, and practices.
- This instructional method is exclusive to graduate and upper level undergraduate (300, 400) course work.
- The enrollment maximum is typically 20 students.

Small Group

- Because of known and ongoing constraints, section size is extremely limited; such constraints are physical in nature; they tie to limited numbers of work stations, specimens, crucial pieces of equipment, etc.
- Section size is restricted to 9 or fewer students; because of inflexible physical constraints, teaching 10 or more is impossible.

Studio

- Course content compels significant one-to-one student/instructor interaction; the course is very hands-on with extensive student engagement.
- This instructional method is intended for fine arts courses that fit with criteria specified in bullet #1; possible content areas include ceramics, painting, dancing, etc.

Thesis

- A formal treatise presenting the results of study, which is submitted in partial fulfillment of the student's degree requirements.
- The faculty thesis director is a strong presence; he/she provides considerable mentoring, guiding, and directing. Members of the thesis committee engage in more limited – but still important - interaction with the student.
- Should the student not complete all thesis requirements in the current term, a transitional grade (see BOR 2:10) must be assigned.

Thesis/Research Sustaining

- This 0-credit course is used to track students who are actively conducting graduate research, but not registered for credit-bearing course work during the current term.
- Enrollment allows graduate programs to retain active status.
- Caution is strongly advised; administrative oversight is imperative.

Workshop

- A very intense, rigorous academic experience, focusing on a specific, narrowly tailored topic of current interest and professional relevance.
- Each credit hour requires approximately 45 hours of student work.
- Workshops may vary in time range but typically use a compressed time-period for delivery. They may include lectures, conferences, committee work, and group activity.
- The workshop is typically used in graduate level instruction; use of the workshop at the undergraduate level is approved on rare, limited basis with appropriate justification.
- No more than 3 graduate credit hours in any graduate program can be a workshop (see SDBOR Policy 2:8).

Other Important Definitions

Common Course Numbering

The South Dakota Regental institutions utilize common course numbering. A common course (COM) is a course offered by one Regental institution that has essentially the same content (subjects/breadth) and level of instruction (depth) as a course offered by at least one other Regental university. Any courses on the following pages without the COM designation are considered to be unique to SDSU.

Cross-listed Courses

A cross-listed course is a course which carries more than one course prefix (i.e., HIST, POLS, GEOG) with credit being offered under any one of the listed prefixes at the same time. Students choose to take the course under the prefix that is more beneficial to their course of study. All students meet at the same time in the same place, with the same instructor(s). A cross-listed course may also be multi-numbered.

Dual Numbered Courses

A multiple-numbered course is a single course specifically designed for simultaneous delivery at two or more levels with the two or more numbers taught simultaneously. In some instances, the course may be offered for credit at different levels (i.e., courses may be offered for upper/lower division credit or for undergraduate/graduate credit). The dual-numbered course may also be cross-listed.

x9x Common Course Descriptions

(SDBOR Academic Affairs Guidelines 1.11, section 4)

The following middle digit 9 course numbering scheme is used in the South Dakota public university system. These courses may have multiple sections. A section's title may or may not reflect the material covered in that section. See the academic department for section information, e.g., description, prerequisites such as instructor or department consent, GPA required, junior or senior standing, etc.

x90	Seminar	x97	Cooperative Education
x91	Independent Study	498	Undergraduate Research/Scholarship
x92	Topics	788	Master's Research Problems/Projects
x93	Workshop	789	Master's Research Problems/Projects Sustaining
x94	Internship	798/898S/898D	Thesis/Dissertation
x95	Practicum	799/899S/899D	Thesis Sustaining/Dissertation Sustaining
x96	Field Experience		

x90 Seminar

A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. A seminar may occur over electronic media such as the Internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

x91 Independent Study

Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study including significant one-on-one student/teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually three or fewer students. Meetings depend upon the requirements of the topic.

x92 Topics

Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists experts may serve as instructors. Enrollments are usually 10 or fewer students with significant one-on-one student/teacher involvement.

x93 Workshop

A very intense, rigorous academic experience, focusing on a specific, narrowly tailored topic of current interest and professional relevance. Each credit hour requires approximately 45 hours of student work. Workshops may vary in time range but typically use a compressed time-period for delivery. They may include lectures, conferences, committee work, and group activity. The workshop is typically used in graduate level instruction; use of the workshop at the undergraduate level is approved on rare, limited basis with appropriate justification. No more than 3 graduate credit hours in any graduate program can be a workshop (see SDBOR Policy 2:8).

x94 Internship

Applied, monitored, and supervised, field-based learning experience for which the student may (or may not) receive payment. Students gain practical experience; they follow a negotiated and or directed plan of study. Instructors provide a higher level of supervision than provided by instructors in Field Experience courses.

x95 Practicum

Applied, monitored, and supervised, field-based learning experience for which the student may (or may not) receive payment. Students gain practical experience; they follow a negotiated and or directed plan of study. Instructors provide a higher level of supervision than provided by instructors in Field Experience courses.

x96 Field Experience

Applied, monitored, and supervised, field-based learning experience for which the student may (or may not) receive payment. Students gain practical experience; they follow a negotiated and or directed plan of study established between the student, instructor and field experience supervisor. Due to the presence of a field experience supervisor, the instructor provides a lower level of supervision in these courses than is the case with an Internship or Practicum course.

x97 Cooperative Education

Applied, monitored, and supervised, field-based learning experience for which the student may (or may not) receive payment. Students gain practical experience; they follow a negotiated and or directed plan of study established between the student, instructor and field experience supervisor. Due to the presence of a field experience supervisor, the instructor provides a lower level of supervision in these courses than is the case with an Internship or Practicum course.

498 Undergraduate Research/Scholarship

(Includes Senior Project and Capstone Experience): Independent research problems/projects or scholarship activities. The faculty member and student negotiate the plan of study. Contact between the faculty and student may be extensive and intensive. Does not include theoretical research courses.

788 Master's Research Problems/Projects

Independent research problems/projects that lead to a research or design paper but not to a thesis. The faculty member and candidate negotiate the plan of study. Contact between the faculty member and candidate may be extensive and intensive. Does not include theoretical research courses.

789 Master's Research Problems/Projects Sustaining

A zero credit hour instructional method type used to track students who are not currently working with faculty on thesis or doctoral activities. Universities may require students to register under this instructional method type to remain active degree candidates.

798/898S/898D Thesis/Dissertation

A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and a faculty member with more limited interaction between and among the candidate and other members of the committee.

799/899S/899D Thesis Sustaining/Dissertation Sustaining

A zero credit hour instructional method type used to track students who are not currently working with faculty on thesis or research activities. Universities may require students to register under this instructional method type to remain active degree candidates.

Search for Class Sections

- Browse Classes

Contact Information:
Registrar's Office
Enrollment Services Center (SESC)
PO Box 511
605-688-6195

- Lifelong Learning/Non Credit Course Offerings

Course Descriptions

ABE (Agricultural and Biosystems Engineering)

ABE 534 - Natural Resources Engineering Credits: 4
Precipitation, infiltration, evapotranspiration and runoff from small agricultural watersheds and application to design of conservation structures, water erosion control practices. design of drainage and irrigation systems. Feedlot pollution control principles. Corequisites: EM 331.

ABE 534L - Natural Resources Engineering Lab Credits: 0
Laboratory to accompany ABE 534.

ABE 543 - Fundamentals of Bioprocessing Credits: 3
This course is designed for students who want a clear understanding of Bioprocessing principles as applied to the emerging bio-based industry. This course covers the fundamentals of mass and energy balances, fluid dynamics, heat and mass transfer, as applied to Bioprocessing. The microbial growth, kinetics and fermenter operation as applicable to Bioprocessing will be covered in this course. Industrial Bioprocessing case studies that involve the integration of the course contents will be discussed. Prerequisites: MATH 123, CHEM 108, PHYS 211. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 544 - Unit Operations of Biological Materials Processing Credits: 4
Transport processes of heat and mass are applied to the following unit operations: evaporation, drying gas liquid separation processes (humidification cooling towers), vapor-liquid separation processes (distillation), soil-liquid separation processes (leaching), membrane separations (ultrafiltration, reserve osmosis), mechanical separation processes, extrusion. Corequisites: ABE 544L. Prerequisites: Senior standing or instructor consent.

ABE 544L - Unit Operations of Biological Materials Processing Laboratory Credits: 0

ABE 551 - Fundamentals of Conversion Credits: 3
This web-based class is an overview of the technology involved in the conversion of biomass to energy; sustainability issued associated with this technology will also be covered. An overview of biomass structure and chemical composition will be presented. Biochemical and thermochemical conversion platforms will be covered. Important issues, such as energy crop production related to water consumption and soil conservation will be addressed. Topics include: biomass chemistry, logistics, and resources; biological processes; and thermochemical processes. Prerequisites: MATH 103; ENGL 101; CHEM 112 or BIOL 150 or PHYS 111. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 553 - Biochemical Engineering for Renewable Resources Credits: 3
The analysis and design of biochemical processing systems with emphasis on fermentation kinetics, continuous fermentations, aeration, agitation, scale up, sterilization, and control. Notes: Suggested prerequisite chemical kinetics and reactor design course. Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 555 - Principles Biological Separation Processing Credits: 3
Biological separation principle and process development for isolation of value added products from renewable agricultural based materials. The mass and heat transfer as well as engineering scale up will be applied to chromatography separation (gel filtration, ion exchange, metal affinity, hydrophobic interaction, and bio-affinity), membrane separation (Micro-filtration, ultra-filtration, and extraction, and solvent extraction). Hands-on laboratory experiments will be an integral part of this course. Students will be expected to complete comprehensive laboratory reports which include scale up computations. Corequisites: ABE 555L.

ABE 555L - Principles of Biological Separation Processes Laboratory Credits: 0
Corequisites: ABE 555.

ABE 590 - Seminar (COM) Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ABE 632 - Environmental/Ecological Risk Assessment Credits: 3
This course will examine the process and methodologies associated with human environmental and ecological risk assessments. The participants will apply the methods learned in the course to a project to gain experience in defining and quantifying uncertainty associated with human perturbation, management and restoration of environmental and ecological processes. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 662 - Life Cycle Assessment Credits: 3
This course will examine the process and methodologies associated with life cycle analysis. The participants will apply the methods developed in the course to a project to gain experience in defining and quantifying uncertainty associated with human perturbation, management and utilization of biofuels and other complex processes. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 732 - Advanced Hydrology in Agriculture Credits: 2
Small watershed hydrology principles. Unit hydrograph theory. Infiltration and evapotranspiration processes. Small watershed surface runoff simulation. Soil erosion principles. Pre-requisite: instructor consent.

ABE 733 - Ground Water Engineering in Agriculture Credits: 3
Saturated and unsaturated ground water flow theory. Steady and transient well hydraulics. Aquifer groundwater flow simulation. Infiltration models. Vadose zone simulation. Groundwater recharge. Prerequisites: Instructor consent.

ABE 734 - Advanced Irrigation Engineering Credits: 3
Basic soil-water-crop relationships. Theory and design of pumping plants, surface, sprinkler, and drip irrigation systems. Corequisites: ABE 734L. Prerequisites: ABE 434

ABE 734L - Advanced Irrigation Engineering Lab Credits: 0
Laboratory to accompany ABE 734. Corequisites: ABE 734.

ABE 738 - Computer Models in Water Resources Management Credits: 3
This course offers students in agricultural, biosystems, and environmental engineering and related fields an understanding of hydrological modeling and associated skills. Computer models currently utilized in industry and government agencies for decision support will be studied and used to enhance the understanding of hydrological processes. Hands-on experiences will be organized with local case studies for analysis and practice-oriented learning using software tools.

ABE 748 - Bioseparations Credits: 3
Study of separations important in food and biochemical engineering such as leaching, extraction, expression, absorption, ion exchange, filtration, centrifugation, membrane separation, and chromatographic separations. Prerequisites: CBE 218, ABE 444 or ABE 544. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 752 - Theoretical Micro-Climatology Credits: 2
Derivation and application of physical laws to air layer near the ground occupied by plants and animals. Instruments used to take measurements in layer near ground. Prerequisites: MATH 125 and PHYS 211.

ABE 754 - Advanced Unit Operations of Food/Biomaterials Processing Credits: 3
Advanced study of engineering principles as they apply to unit operations for food preservation and processing, including effect of heat and time on the lethality of undesirable food microorganisms, heat transfer with foods and containers and its effect on food safety, freezing and refrigeration technology, high temperature short time extrusion processing, and aseptic processing. Corequisites: ABE 754L.

ABE 754L - Advanced Unit Operations of Food/Biomaterials Processing Laboratory Credits: 0
Corequisites: ABE 754.

ABE 763 - Instrumentation Credits: 3
Principles of transducers, amplifiers and terminating devices in measurement systems with emphasis on transducers and systems performance. Techniques and methods for use in engineering and scientific measurement. Corequisites: ABE 763L. Prerequisites: PHYS 213, MATH 225, STAT 541, and (EE 300 OR ABE 463).

ABE 763L - Instrumentation Laboratory Credits: 0
Corequisites: ABE 763.

ABE 765 - Advanced Biomass Thermochemical Conversion Credits: 3
Advanced study, evaluation, and application of thermochemical conversion pathways in biofuel production. Specific topics include biomass gasification, pyrolysis, liquefaction, and heterogeneous catalysis. Prerequisites: ME 314 and ABE 444. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ABE 771 - Graduate Seminar Credits: 1
Discussion and reports of current topics and investigations in Agricultural and Biosystems Engineering. Notes: Limit of 2 credits

ABE 788 - Master's Research Problems/Projects (COM) Credits: 1-2
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

ABE 790 - Seminar (COM) Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

ABE 791 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

ABE 792 - Topics Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ABE 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ABE 898D - Dissertation - PhD (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ABME (Agricultural, Biosystems and Mechanical Engineering)

ABME 790 - Seminar (COM) Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

ABME 792 - Topics (COM) Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

ABME 898D - Dissertation (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ABS (Agriculture and Biological Sciences)

ABS 582 - International Experience Credits: 2-4
This will be a team-mentored class. Students will work one on one or in small groups with professors that have knowledge of the global region and culture that will be visited. Students will participate in a one-to-three week travel/study abroad experience to another nation(s) to experience and evaluate diverse food/agricultural systems. Notes: ABS 203 is a recommended prerequisite.

ABS 705 - Research Methodology Credits: 1-10
Advanced instruction in research methodology. Credit earned will depend on the module(s) taken. Each module will provide in-depth coverage on one type of techniques. Modules will involve lectures on the theory behind a technique, simulations/demonstrations of the techniques, and hands on experiments. Each module requires a colloquium (reports and discussions) designed to show the student how these techniques can be combined to solve a research problem. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: Electrophoresis, liquid chromatography, spectroscopy, centrifugation, hybridization, cloning, PCR, monoclonal antibodies, protein characterization, light microscopy, electron microscopy, in situ hybridization, fluorescent imaging, chromosomal analysis, plant tissue culture, mammalian tissue culture, anaerobic bacterial culture, design of ecological field studies, sampling of terrestrial plants, sampling of aquatic plants, sampling of terrestrial animals, sampling of aquatic animals, geographic information systems and global positioning systems in ecology, analysis of ecological data, modeling and simulation in ecology, crop breeding techniques, and other topics as needed. Prerequisites: Module instructor consent.

ABS 792 - Topics (COM) Credits: 1-6
Includes Current Topics, Advanced Topics and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually 10 or fewer students with significant one-on-one student/teacher involvement.

ACCT (Accounting)

ACCT 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ACCT 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ADV (Advertising)

ADV 576 - Global and Multicultural Advertising Credits: 3
This course develops an understanding of global and multicultural advertising and marketing. Students gain experience in decisions that reflect an understanding of global and multicultural markets and explore the social and ethical issues in such advertising and marketing.

ADV 692 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

AGEC (Agricultural Economics)

AGEC 530 - Agribusiness Marketing and Prices Credits: 3
Economic theory and quantitative techniques used in analysis of procurement and sales, construction of economic models, statistical estimates of supply and demand, and price forecasting. Prerequisites: AGEC 354 and STAT 281.

AGEC 540 - International Economics Credits: 3
Explored the economic interaction between sovereign states, including the gains from trade, the pattern of trade, protectionism, the balance of payments, exchange rate determination, international policy coordination, and the international capital market. Prerequisites: ECON 201 and ECON 202. Cross-Listed: ECON 540.

AGEC 571 - Advanced Farm and Ranch Management Credits: 3
Strategic and operational business planning of farms and ranches covering all essential topics from long-term financing, technology adoption, intellectual property rights, marketing, land use changes and climate change, biofuels, and trade. Selected quantitative tools and procedures for analysis and decision making in farm and ranch business management will provide students the right blend of knowledge and tools to become future farm and ranch managers.

AGEC 572 - Resource and Environmental Economics (COM) Credits: 3
Resource and environmental economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on environmental economics including the problems of pollution, population, and economic growth. Methods for evaluating projects and programs are considered. Cross-Listed: ECON 572.

AGEC 584 - Trading in Agricultural Futures and Options Credits: 3
This course utilizes fundamental and technical analysis techniques to analyze agricultural futures and options. This is a hands-on commodity trading class. Students will analyze selected agricultural commodity markets, generate trading proposals, and initiate, manage, and close positions in selected agricultural commodity futures and options markets.

AGEC 585 - Farming and Food Systems Economics Credits: 3
Economic concepts and methods for analyzing farming system and food system alternatives, investments, and issues. Includes economic feasibility analysis methods for assessing potential farm/ranch, value-added, and other food enterprises. Economic structure and organization of food systems in US and other parts of the world are examined.

AGEC 590 - Seminar (COM) Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

AGEC 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

AGEC 593 - Workshop (COM) Credits: 1-3
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

AGEC 596 - Field Experience (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

AGEC 672 - Bioenergy & Resource Economics Credits: 3
Bioenergy and Resource Economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on the trade offs and issues related to the production of biomass and development of the biofuels market including resource allocation, valuation methodology, economic growth, and market development. Prerequisites: ECON 201, MATH 121 or MATH 123.

AGEC 691 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

AGED (Agricultural Education)

AGED 501 - Parliamentary Procedure Credits: 2
This course will focus on the function of deliberative assemblies and the orderly conduct of meetings. The course will utilize the current version of Roberts Rules of Order Newly Revised to prepare students to provide parliamentary advice to student organizations, school boards, commodity groups, and other deliberative assemblies.

AGED 531 - Work Based Learning Credits: 2
Strategies for developing curriculum and designing methods of instruction for teaching employability skills, career decision making and occupational areas of family and consumer sciences. A field experience will be included. Cross-Listed: FCSE 531.

AGED 592 - Topics (COM) Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

AGED 620 - Curriculum for Agricultural Science Education (CASE) Credits: 3-5
Obtain practical application of agricultural education content, review lab and classroom activities.

AGED 625 - Future Directions for Career and Technical Education Credits: 3
This course will discuss current educational and political influences on CTE through the lens of the constructivist foundations of the field. Students will examine trends in CTE to attempt to predict and prepare for the CTE classrooms of tomorrow. Primary focus of the course will be on agricultural and family and consumer science education.

AGED 650 - Foundations of Agricultural Education Credits: 3
An understanding of the historical and philosophical development of agriculture food and natural resource systems places current events in their proper historical frame. This course explores the history of agriculture in North America, the philosophies which guided its evolution, and agricultural progress from the 1600s to present day. Inquiry includes public school and county extension education, the USDA, the Land-Grant system, the National FFA Organization, and 4-H youth development.

AGED 690 - Seminar Credits: 1-2
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to fewer than 20 students.

AGED 788 - Research Problems in Agricultural Education (COM) Credits: 1-7
A problem is selected, analyzed, and reported in form approved by the research advisor. Required of all graduate students in education qualifying for the degree under Option B. Can be elected under Option C, if desired.

AGED 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AHED (Adult Higher Education)

AHED 711 - Assessment and Program Design Credits: 3
Organization and implementation of adult education programs. Particular emphasis on curriculum development, financing, staffing, marketing, and evaluation of adult programs. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

AHED 720 - Principles of Postsecondary Education (COM) Credits: 3
This course provides an overview of the postsecondary education system in the US. It surveys the history, major features, and effects of this system.

AHED 755 - Principles of College Teaching Credits: 3
An analysis of teaching methodologies, planning procedures, evaluation techniques, and professional relationships. Emphasis will be on learning and using strategies suitable for teaching.

AHED 794 - Internship (COM) Credits: 1-8
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.

ANTH (Anthropology)

ANTH 521 - Indians of North America Credits: 3
Provides prospective teachers and those interested in Indian people with a basic knowledge of Indian heritage and culture. Emphasis on the Dakota Indians.

ANTH 591 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ARCH (Architecture)

ARCH 501 - Writing Architecture Credits: 3
This course looks at both the history and the practice of writing about architecture from the end of the nineteenth century to the present with particular attention to the rise of criticism in architectural culture.

ARCH 502 - Reading Architecture Credits: 3
Introduces fundamental theoretical texts and their influence on architectural thinking. Students will read explore and discuss historical and contemporary issues through the lens of assigned texts.

ARCH 521 - Media Tech VI Credits: 2
Students will develop the skills necessary to produce professional contract documents, construction documents and outline specifications, with an emphasis on sustainable building technologies. Computer aided drafting (CAD) and Building Information Modeling (BIM) will be covered. Prerequisites: ARCH 351.

ARCH 522 - Media Tech VII Credits: 2
Continued development of skills necessary to produce professional contract and construction documents, with an emphasis on building envelope assembly and large scale detailing. Computer aided drafting (CAD) and Building Information Modeling (BIM) will be covered. Prerequisites: ARCH 521.

ARCH 533 - Technology of Structures Credits: 3
The course builds both an intuitive and empirical understanding of the basic principles of systems thinking in architecture through mechanical study and integrative analysis of building structure performance in space and against gravity.

ARCH 534 - Technology of Systems Credits: 3
The course builds both an intuitive and empirical understanding of the basic principles of systems thinking in architecture through environmental study and integrative analysis of building service system performance.

ARCH 542 - History of Ideas Credits: 3
Studying architecture through the frame of history emphasizing the 20th century development of the modern culture of architecture. Buildings, both local and global, from across diverse societies put into historical context as cultural, socio-political, and corporate artifacts of the profession.

ARCH 543 - Urban History Credits: 3
Studying architecture in a broad survey of the development of contemporary cities through architectural practices, both local and global and from across diverse societies. Cities are put into historical context as a system of cultural, socio-political, and economic artifacts.

ARCH 544 - History of Profession Credits: 3
Studying architecture through the frame of history emphasizing building as a professional and disciplinary practice. The course focuses on historical study of the genesis of the profession across time and cultures in Renaissance and Baroque Italy (1350-1650).

ARCH 551 - Architecture Studio IV Credits: 6
Professional architectural studio focused on the categories of site, structure, systems, and type. Students will prepare detailed and coordinated drawings and models describing a complex building design project. Prerequisites: ARCH 452.

ARCH 552 - Comprehensive Building Design Credits: 6
Comprehensive professional architectural studio measuring competency across all aspects of a coordinated building design. Students will prepare detailed drawings, documents and models describing a complex building program, integrated systems and structure, and an appropriate relationship to site.

ARCH 554 - Building Studio Credits: 5
The research studio is the collaborative performance of a systematic inquiry whose goal is communicable knowledge. They are topical investigations either 'into', 'for' or 'through' architecture and guided by polemical questions that come out of contemporary issues in faculty research and creative activity.

ARCH 554L - Research Lab Credits: 2
The research lab records and reflects the processes and products of the research studio as communicable knowledge. Media utilized will be topical to the workflow of the studio.

ARCH 555 - Building Studio Credits: 5
Building design performed in the integrative digital modeling of function, site, construction, surface, structure, systems, form, and composition.

ARCH 555L - Building Lab Credits: 2
Building design projected in the graphics of planimetric drawings, diagrams, and animations of function, site, construction, surface, structure, systems, form, and composition.

ARCH 561 - Shop Credits: 2
Workshop studies in craftsmanship, assembly, and fabrication through hands-on demonstrations and projects.

ARCH 571 - Architectural Practice I Credits: 2
This course introduces regulations as they relate to architectural registration, including building codes and ordinances, professional service contracts, environmental regulation, and other legal responsibilities connected with the profession. Prerequisites: ARCH 351.

ARCH 572 - Architectural Practice II Credits: 2
This course presents architectural production as an evolving cultural and financial practice. Topics include traditional delivery methods, the client's role, and alternative contemporary models. Prerequisites: ARCH 571.

ARCH 592 - Topics (COM) Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

ARCH 603 - Practicing Architecture Credits: 1
Preparatory course in which a proposal for completion of the independent project and documentation is prepared and approved. This class will require students to create an independent project and necessary documentation. They will also create the necessary calendar and schedule for the project.

ARCH 631 - Technology of Envelopes Credits: 2
Introduction to building systems, daylighting, environmental systems, building services, and sustainable technologies with an emphasis on the building exterior surface.

ARCH 632 - Technology of Interiors Credits: 2
Introduction to technological issues of interior systems and construction including plumbing systems, mechanical air handling, lighting, finish materials, and sustainable practices in interior design.

ARCH 651 - Professional Design Practice I Credits: 6
Topic option studio relating to present day situations. Prerequisites: ARCH 552.

ARCH 652 - Professional Design Practice II Credits: 6
Topic option studio relating to present day situations. Prerequisites: ARCH 552.

ARCH 653 - Independent Performance Credits: 6
Performance of a self-initiated service, research, teaching, or practical training exercise. Prerequisites: ARCH 603.

ARCH 654 - Research Studio Credits: 5
The research studio is the collaborative performance of a systematic inquiry whose goal is communicable knowledge. They are topical investigations either 'into', 'for' or 'through' architecture and guided by polemical questions that come out of contemporary issues in faculty research and creative activity.

ARCH 654L - Research Lab Credits: 2
The research lab records and reflects the processes and products of the research studio as communicable knowledge. Media utilized will be topical to the workflow of the studio.

ARCH 655 - Independent Documentation Credits: 3
Written, photographic, and graphical recording, description, and reflection of the self-initiated exercise performed in ARCH 653.

ARCH 671 - Architectural Practice III Credits: 2
This course will cover the responsibilities architects have to society. Topics include sustainability, community outreach, collaboration, leadership, ethics, and professional judgment. Prerequisites: ARCH 572.

ARCH 672 - Architectural Practice IV Credits: 2
This course introduces architectural project management and practice management. Topics include basic principles of project team selection, delivery methods, and professional organizational models. Prerequisites: ARCH 671.

ARCH 673 - Professional Practice I Credits: 3
A study of the theories, responsibilities, and opportunities in regulation and stewardship in professional practice.

ARCH 674 - Professional Practice II Credits: 3
A study of the theories, responsibilities, and opportunities in economics and management in architectural practice.

ARCH 691 - Independent Study (COM) Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

ARCH 692 - Topics (COM) Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

ART (Art)

ART 591 - Independent Study (COM) Credits: 1-12
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ART 592 - Topics (COM) Credits: 1-9
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

AS (Animal Science)

AS 533 - Applied Mineral Nutrition of Livestock Credits: 1
This course is designed to provide an overview of macro and micromineral nutrition of domestic livestock. Students will explore the general functions of various minerals, mineral requirements, potential interactions, bioavailability of different mineral sources, and signs of mineral deficiencies or toxicities.

AS 534 - Applied Vitamin Nutrition of Livestock Credits: 1
This course is designed to provide an overview of vitamin nutrition of domestic livestock. Students will explore the general functions of various vitamins, vitamin requirements, effectiveness of different vitamin sources, and signs of vitamin deficiencies or toxicities.

AS 541 - Advanced Meat Science Credits: 3
In-depth study of muscle anatomy and physiology, postmortem metabolism, rigor mortis, meat proteins, meat quality, and meat tenderness. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance. Even Spring.

AS 591 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one . student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic. Notes: Fall, Spring, and Summer.

AS 592 - Topics (COM) Credits: 1-6
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

AS 711 - Ruminology Credits: 3
Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. Cross-Listed: DS 711.

AS 712 - Ruminant Nutrition Credits: 3
Principles of nutrition for ruminants in relation to growth, reproduction and lactation. Notes: Even Spring on-campus. Other sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

AS 720 - Advanced Selection of Domestic Animals Credits: 3
Quantitative and population genetic theory of sound breeding programs for domestic animals including, variation, heredity, selection, estimation of breeding values, systems of mating, and performance testing. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

AS 730 - Endocrinology Credits: 3
This course covers topics pertaining to endocrine gland and hormone function; hormone synthesis; control of hormone secretion, circulation and metabolism; physiological roles of hormones; and mechanisms of hormone action. Specific areas of study involve pituitary and hypothalamic function, pancreatic function, and hormones regulating growth and metabolism, thyroid hormones, gonadal and adrenal hormones. Notes: Odd Spring.

AS 732 - Advanced Physiology of Reproduction Credits: 3
Anatomical and physiological process of reproduction in domestic animals with special emphasis on research techniques and the findings of recent research. Prerequisites: AS 433. Notes: Odd Fall on-campus. Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

AS 734 - Protein and Energy Nutrition Credits: 3
Principles of protein and energy metabolism and the partitioning of these nutrients for maintenance, growth and production in domestic farm animals.

AS 736 - Monogastric Nutrition Credits: 3
Nutrition principles for nonruminants related to reproduction, lactation and growth. Prerequisites: AS 233, AS 323, CHEM 361, VET 223 or ZOOL 325. Notes: Even Fall on-campus. Other sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

AS 740 - Metabolism Credits: 3
The metabolism of domestic animals and humans will be covered. This will include the structure and function of proteins, enzyme kinetics, and catalysis. The major pathways of amino acid, carbohydrate, lipid, and nucleotide metabolism including their regulation will be emphasized. Notes: Fall.

AS 750 - Animal Growth and Development Credits: 3
Growth of animals at the cellular level, including hormones, growth factors, receptors and signaling and growth at the whole animal level. Notes: It is recommended that students have completed undergraduate biochemistry (or AS 640) and physiology courses. Even Spring on-campus. Other sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

AS 753 - Research Topics in Meat Science Credits: 3
Current research issues in meat science. Interpreting meat science research results. Experience in scientific writing for proposals and journal articles. Prerequisites: AS 241. Notes: Odd Spring.

AS 760 - Advanced Equine Nutrition Credits: 3
This course explores concepts in equine nutrition including digestive physiology of horses, nutrient requirements for different classes of horses and feed management. Ration evaluation and balancing, as well as problem solving will be a core component to this course. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

AS 770 - Advanced Beef Production Credits: 3
This class is aimed at students with an interest in the Beef Cattle Industry. The course combines principles of farm and ranch land acquisition and management, along with: breeding, nutrition, reproduction, health and disease prevention, life cycle management of the calf crop, as well as marketing alternatives for the producer. Retained ownership of the calf crop past weaning through the stocker and/or feedlot phase will be discussed and evaluated financially. New and emerging technologies will also be discussed. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

AS 780 - Evaluation and Use of Breeds in Livestock Credits: 3
Evaluation of breeds of cattle, sheep, and swine with emphasis on breed comparison research and breed history. Examination of appropriate use of existing breed resources and development of new breeds. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

AS 790 - Seminar Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

AS 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

AS 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AS 898D - Dissertation - PhD Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AST (Agricultural Systems Technology)

AST 563 - Agricultural Waste Management Credits: 3
Understand agricultural or biological wastes. Develop an understanding of regulatory requirements and best management practices that advocate responsible environmental stewardship. Topics include production, collection, handling, treating, and reusing agricultural and biological wastes. Course will emphasize written and oral reports. Prerequisites: PS 213 or PS 313.

AST 791 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

AT (Athletic Training)

AT 600 - Introduction to Patient Management Credits: 2
Introduction to the role of the athletic trainer in the healthcare system and contemporary healthcare competencies that support expected standards of care. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 610 - Interventions I Credits: 3
Exploration of foundational principles, theories, and skills associated with the development and implementation of evidence-based plans of patient care. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 611 - Prophylactic Interventions Credits: 1
Students will develop the ability to select and apply taping, bracing, and other commonly used techniques and devices designed to prevent and/or minimize risk of injury or re-injury in physically active clients and patients. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 651 - Clinical Experience I Credits: 1
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 652 - Clinical Experience II Credits: 1
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors. Prerequisites: AT 651 and must be a graduate student admitted to the M.S. in Athletic Training.

AT 722 - Patient Examination and Treatment I Credits: 6
Students will develop the professional knowledge and skills necessary to accurately examine and care for common musculoskeletal conditions affecting the lower extremity and spine. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 725 - Principles of Acute Care in Athletic Training Credits: 3
Students will develop the knowledge, skills and clinical decision-making ability to act efficiently and effectively in emergency situations involving life-threatening and/or non-life-threatening conditions. Ethical and legal issues related to emergency care and the practice of Athletic Training will also be addressed. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 725L - Principles of Acute Care Lab Credits: 0
Lab to accompany AT 725. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 732 - Patient Examination and Treatment II Credits: 6
Students will develop the professional knowledge and skills necessary to accurately examine and care for common musculoskeletal conditions affecting the upper extremity and spine. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 735 - Health Care Administration for Athletic Training Credits: 2
Students will develop the professional knowledge, skills and values that an athletic trainer must possess to administer and manage a health care facility and associated venues that provide health care to athletes and others involved in physical activity. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 740 - Functional Movement Credits: 3
Students will develop the ability to evaluate and correct movement patterns as part of the injury prevention, performance enhancement, and rehabilitative processes. Students will also learn how to apply these techniques to sport specific movements for the purposes of injury prevention and performance enhancement. Prerequisites: Must be a graduate student in the Department of Health and Nutritional Sciences.

AT 740L - Functional Movement Lab Credits: 0
Lab to accompany AT 740. Prerequisites: Must be a graduate student in the Department of Health and Nutritional Sciences.

AT 742 - General Medical Examination Credits: 3
Students will develop the professional knowledge and skills necessary to evaluate and care for general medical conditions, illnesses, and system disorders. Foundational principles of pathophysiology will be included in addition to relevant pharmacologic and behavioral health concepts. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 753 - Clinical Experience III Credits: 2
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors. Prerequisites: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 754 - Clinical Experience IV Credits: 2
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors. Prerequisites: AT 753 and must be a graduate student admitted to the M.S. in Athletic Training.

AT 755 - Clinical Experience V Credits: 5
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors. Prerequisites: AT 754 and must be a graduate student admitted to the M.S. in Athletic Training.

AT 756 - Clinical Experience VI Credits: 5
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors. Prerequisites: AT 755 and must be a graduate student admitted to the M.S. in Athletic Training.

AT 788 - Master's Research Problems/Projects (COM) Credits: 1
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

AT 790 - Seminar (COM) Credits: 2
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

AT 795 - Practicum (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses. Notes: Throughout the course of the two-year curriculum, students will complete five (5) separate AT 795 Practicum courses that are linked to students' clinical experiences: AT 795: Practicum – Clinical Experience I (2 credits), AT 795: Practicum - Modalities (2 credits), AT 795: Practicum – Upper Extremity Assessment (2 credits), AT 795: Practicum – Fall Camp Experience (1 credit), and AT 795: Practicum – Clinical Experience III (2 credits).

BADM (Business Administration)

BADM 511 - Investments (COM) Credits: 3
This course is a thorough study of the equity market including fundamental valuation techniques, asset allocation, the efficient markets hypothesis and its implications, portfolio theory, risk and return, the primary and secondary market mechanisms, security market indicators, and international investing. An overview of the bond market including bond valuation, duration, and bond portfolio management, and an introduction to options, futures, and forward contracts are provided. The vital roles of computer technology and electronic trading are also explored. Prerequisites: BADM/FIN 310. Cross-Listed: FIN 511.

BADM 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

BADM 593 - Workshop (COM) Credits: 1-3
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

BIOL (Biology)

BIOL 515 - Mycology Credits: 2-3
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs. Corequisites: BIOL 515L. Cross-Listed: PS 515.

BIOL 515L - Mycology Laboratory Credits: 0-1

BIOL 539 - Biology of Aging Credits: 3
Physical, sensory, and physiological changes with age, aging of cells and tissues. Cellular, developmental, endocrine and other theories of aging. Pathologies of aging. Prerequisites: BIOL 325.

BIOL 548 - Molecular and Microbial Genetics Credits: 4
This course in molecular genetics will cover the concepts and the molecular mechanisms in genetics of prokaryotic and eukaryotic organisms. Students will study the molecular processes underlying gene structure and function, will learn the major components and their basic structures in molecular genetics, will understand the molecular mechanisms of major biological processes such as gene expression and regulation, and will learn to interpret the results from the literature in molecular genetics. In addition, the course will provide a comprehensive coverage of the common molecular tools and their applications. Cross-Listed: MICR 548.

BIOL 567 - Parasitology Credits: 3
This course will prepare students in the area of ecological effects of toxic substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to wildlife toxicology. Corequisites: BIOL 567L.

BIOL 567L - Parasitology Laboratory Credits: 0

BIOL 570 - Cancer Biology Credits: 3
This course will address the current research directed at understanding the molecular and cellular basis of cancer and explore potential therapeutic targets. Topics covered will emphasize cell cycle regulation and apoptosis, cellular control of proliferation and differentiation, genetic alterations, growth factors and signal transduction, invasion and metastasis, and angiogenesis. Prerequisites: BIOL 202 or BIOL 204 or instructor consent.

BIOL 576 - Advanced Mammalian Physiology Credits: 4
An advanced study of the physiological mechanisms utilized by mammals to regulate body functions with the nervous and endocrine systems, to acquire and use chemical energy from their environment, and to integrate the functions of the organs' systems to maintain the health of the animal. Emphasis is placed on applying physiological concepts and principles to solve problems. Previous courses in anatomy, physiology, and biochemistry are recommended. Prerequisites: BIOL 221 or VET 223.

BIOL 583 - Developmental Biology (COM) Credits: 3
Analysis of the processes of animal development beginning with the formation of female and male gametes (ova and sperm) and ending with organ differentiation. Evolutionary concepts of animal development, developmental genetics, and molecular biological approaches to the analysis of development. Prerequisites: BIOL 151, BIOL 153, and BIOL 371 or BIOL 204 or BIOL 471 or 571 or BIOL 475 or BIOL 575.

BIOL 592 - Topics (COM) Credits: 1-5
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

BIOL 594 - Internship (COM) Credits: 1-12
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

BIOL 645 - Microimaging Techniques Credits: 3
Preparation and observation of animal and plant tissues for microscopic and photomicrioscopic study. Emphasis will be given to various techniques used in current research areas.

BIOL 645L - Microimaging Techniques Laboratory Credits: 1-3

BIOL 719 - Professional Development Seminar Credits: 1-4
The course includes: alternative career prep, mentoring, CV/application packet review, interviewing & negotiation skills, MCAT (or alternative professional exam) preparation, field experiences, case studies, intellectual integration of material presented in disparate courses evaluated through written and oral presentations, scaffolded learning in the areas of professionalism, academic and non-academic writing and oral communication, bioethics and healthcare case studies. Prerequisites: Students must be enrolled in the M.S. in Human Biology.

BIOL 721 - Advanced Human Anatomy Credits: 4
Regional dissection of the human body that capitalizes on the systems-based approach. Structure, function, and fetal development are used in combination with medical cases/clinical correlations to enhance student learning. Corequisites: BIOL 721L. Prerequisites: BIOL 221-221L and BIOL 325-325L or equivalent coursework. Must be graduate student admitted to the M.S. in Human Biology or M.S. in Athletic Training. The BIOL 494 Anatomy Internship is strongly recommended prior to enrollment in this course.

BIOL 721L - Advanced Human Cadaver Dissection Credits: 0
Corequisites: BIOL 721.

BIOL 743 - Cell Biology (COM) Credits: 3
Emphasis on the integration of structure and function in the cell.

BIOL 782 - Epidemiology Credits: 3
The course introduces concepts and methodologies for the study of health and disease in human populations. Different study designs and their methods of analysis will be discussed, as well as sources, handling, and interpretation of epidemiologic data. Cross-Listed: HSC 782/NUTR 782.

BIOL 788 - Master's Research Problems/Project (COM) Credits: 1-3
Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

BIOL 790 - Seminar (COM) Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

BIOL 791 - Independent Study (COM) Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

BIOL 792 - Topics (COM) Credits: 1-6
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

BIOS (Biological Sciences)

BIOS 662 - Advanced Molecular Biology Credits: 3
This course will provide the students a cutting-edge, comprehensive knowledge in molecular biology. It will give the students a perspective both on what is known and on what is unknown about the structure, organization and functions of genes, genomes and genetic mechanisms. Notes: Undergraduate courses in genetics and cell biology are recommended prior to taking the course.

BIOS 663 - Advanced Concepts in Infectious Disease Credits: 6
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular pathogenesis and the immune response. It will give a perspective both on what is known and current research in the areas of general pathology, immunology, virology, and bacteriology. The course will cover the importance of host-pathogen interactions in infectious disease, which will serve as the basis for further study within more specialized topics in higher-level courses. Prerequisites: BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.

BIOS 664 - Molecular Plant Physiology Credits: 3
This course discusses current molecular advances in plant biology. A wide range of topics in plant growth and development as well as plant interactions with abiotic and biotic factors will be covered. Each topic is led by a researcher who is experienced in the subject area being discussed, and consists of an introduction lecture and a case study followed by a class discussion on a recent research paper in the field.

BIOS 788 - Master's Research Problems (COM) Credits: 1-3
Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

BIOS 790 - Seminar Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

BIOS 791 - Independent Study (COM) Credits: 1-6
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

BIOS 792 - Topics (COM) Credits: 1-6
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

BIOS 794 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

BIOS 796 - Field Experience (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

BIOS 798 - Thesis (COM) Credits: 1-10
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

BIOS 898D - Dissertation (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

BLAW (Business Law)

BLAW 551 - Public Health Law Credits: 3
Will investigate issues across a range of specific contexts in public health such as communicable disease control, public health class action litigation and medical care e.g., the right to have and refuse medical care, confidentiality and privacy). Issues include how health policies are developed; the impact current and potential policies have and will have on public health; the courts role and interpretations of public health law; and the interaction of national, state, local, and interest group politics in the formation of policies. The course will focus on the states' roles and the constitutions of the states as well as the Tenth Amendment of the United States Constitution. Cross-Listed: HLTH 551.

BLAW 567 - Labor Law and Economics Credits: 3
Explores history and development of the U.S. labor movement; the labor market from firm's and union's viewpoint; contract administration; collective bargaining; and public policy toward collective bargaining. Also explores current topics in employment law, discrimination, and employment at will. Cross-Listed: ECON 567.

BLAW 590 - Seminar (COM) Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

BLAW 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

BLAW 592 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

BLAW 594 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

BLAW 596 - Field Experience (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

BLAW 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

BLAW 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

BOT (Botany)

BOT 505 - Grasses and Grasslike Plants Credits: 3
A systematic study of grasses, and grasslike plants of the northern Great Plains; field and lab practice in collection and identification of graminoid plants; discussion of unique biological aspects of grass and grasslike plants that make them economically and ecologically significant. Prerequisites: BIOL 101 or BIOL 151.

BOT 505L - Grasses and Grasslike Plants Laboratory Credits: 0

BOT 515 - Aquatic Plants Credits: 3
A systematic survey of vascular plants that grow in wetland habitats, and a study of their adaptations to life in the water. Field and laboratory practice in identification and recognition of common aquatic plants. Corequisites: BOT 515L. Prerequisites: BIOL 103 or BIOL 153.

BOT 515L - Aquatic Plants Laboratory Credits: 0
Corequisites: BOT 515.

BOT 715 - Advanced Plant Ecology Credits: 4
Analysis of the energy relationships of communities with emphasis on productivity. Literature readings. Laboratory work in techniques of community analysis.

BOT 715L - Advanced Plant Ecology Laboratory Credits: 0
Analysis of the energy relationships of communities with emphasis on productivity. Literature readings. Laboratory work in techniques of community analysis.

BOT 791 - Independent Study Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

BOT 792 - Topics (COM) Credits: 1-5
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CA (Consumer Affairs)

CA 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CA 595 - Practicum Credits: 3-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses. Prerequisites: Completion of 24 credits hours of CA courses at the 500 level or higher. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 612 - Financial Counseling Credits: 3
Theory and research regarding the interactive process between the client and the practitioner, including communication techniques, motivation and esteem building, the counseling environment, ethics, and methods of data intake, verification, and analysis. Other topics include legal issues, compensation, uses of technology to identify resources, information management, and current or emerging issues. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 621 - Financial Theory and Research I Credits: 3
Theories of family functioning, macroeconomic theory related to family resource allocation decisions, the family as an economic unit, and the interaction of the economy and families. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 640 - Fundamentals of Family Financial Planning Credits: 3
Issues and concepts related to the overall financial planning process, and establishing client-planner relationships. Services provided, documentation required and client and CFP licensee responsibilities are explored. Competencies related to gathering of client data, determining goals and expectations, and assessing the client's financial status by analyzing and evaluating data are developed. Emerging issues and the role of ethics in financial planning are an integral part of the course. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 645 - Military Personal Financial Readiness Credits: 3
This course gives an overview of the topics relevant to the financial planning process. The course adapts the topics to address the unique needs of and resources available to military service members and their families. Topics covered are: status of service member; financial readiness; financial management; record-keeping; cash flow management; risk management; credit and debt management; savings, education planning, and investment management; tax management; retirement management; estate management; and special topics. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 660 - Investing for Family's Future Credits: 3
An in-depth study of investment options for clients, this course will include common stocks, fixed income securities, convertible securities, and related choices. Relationships between investment options and employee/employer benefit plan choices will be studied. Current and emerging issues, and ethics will be an integral part of the course. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 680 - Insurance Planning for Families Credits: 3
An in-depth study of risk management concepts, tools, and strategies for individuals and families, including life insurance; property and casualty insurance liability insurance; accident, disability, health and long-term care insurance; and government-subsidized programs; current and emerging issues, as well as ethical considerations, relative to risk management will be discussed. Case studies will provide experience in selecting insurance products suitable for individuals and families. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 704 - Estate Planning for Families Credits: 3
Fundamentals of the estate planning process will be studied, including estate settlement, estate and gift taxes, property ownership and transfer, and powers of appointment. Tools and techniques used in implementing an effective estate plan; ethical considerations in providing estate planning services and new and emerging issues in the field will be explored. Case studies will provide experience in developing estate plans suitable for varied family forms. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 715 - Housing and Real Estate in FFP Credits: 3
The role of housing and real estate in the family financial planning process, including taxation, mortgages, financial calculations, legal concerns, and ethical issues related to home ownership and real estate investments. Emphasis on emerging issues in the context of housing and real estate. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 721 - Financial Theory and Research II Credits: 3
Microeconomic theory as it relates to family resource allocation decisions, theories of household behavior, the lifecycle hypothesis, behavioral economics, behavioral finance, theories of behavioral change, and psychological theories of family well-being. Focus on empirical research investigating household financial decision-making. Prerequisites: CA 621. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 725 - Family, Employment Benefits and Retirement Planning Credits: 3
Study of micro and macro considerations for retirement planning. Survey of various types of retirement plans, ethical considerations in providing retirement planning services, assessing and forecasting financial needs in retirement, and integration of retirement plans with governmental benefits. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 735 - Personal Income Taxation Credits: 3
This course provides in-depth information of income tax practices and procedures including tax regulations, tax return preparation, the tax audit processes, the appeals process, preparation for an administrate or judicial forum, and ethical considerations of taxation. New and emerging issues related to taxation will be covered. Family/individual case studies provide practice in applying and analyzing tax information and recommending appropriate tax strategies. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 745 - Professional Practices in Financial Planning Credits: 3
Challenges of managing financial planning practices including, but not limited to: business evaluation, personnel, marketing, client services, ethics and technological applications. Relying both on a theoretical as well as an applied approach, students will analyze case studies that provide relevant, practical exposure to practice management issues, with a strong emphasis on current research findings. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 755 - Financial Planning Case Study Credits: 3
This course examines professional issues in financial planning, including ethical considerations, regulation and certifications requirements, communication skills, and professional responsibility. Students are expected to utilize skills obtained in other courses and work experiences in the completion of personal financial case studies, the development of a targeted investment policy, and other related financial planning assignments. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 788 - Master's Research Problems/Projects (COM) Credits: 3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 790 - Seminar (COM) Credits: 3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CA 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CA 798 - Thesis (COM) Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CD (Community Development)

CD 592 - Topics (COM) Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

CD 600 - Foundations of Community Development Credits: 3
This course is available only to graduate students registered in the Community Development specialization. This seminar serves as an orientation to on-line learning and an introduction to the courses, faculty and curriculum connected to the on-line master's degree program. Students will have an opportunity to meet each other on-line, practice using the technology to support learning objectives, and develop a basic understanding of the field. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 601 - Organizing for Community Change Credits: 3
This course will examine the role of civil society in community planning efforts and offer students a comparative approach to planning theories and approaches. It will also focus on change within communities and the roles of government, planners, and citizens in reacting to or shaping change. Students will have an opportunity to explore current issues related to planning and dealing with change by examining controversial practices such as covenants and land trusts, as well as by studying various community responses to change. Students will understand how citizens, firms and governments act to improve their community and region; the structure and implications of power; the relation between social relationships and economic activity, coalition building, concepts of inclusiveness (class, gender, ethnicity, geography), voice, and conflict and its management in communities and regions. The course will cover dimensions of social capital and the context of change. Students will learn to use this knowledge to promote equitable change at the community and regional level. They will study the implications of economic and demographic shifts on strategies and tactics for change and explore various resources for supporting these efforts. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 602 - Community and Regional Economic Policy and Analysis Credits: 3
A firm grounding in the reality of the local economy is necessary for successful programs in community economic development and for designing successful state and local policy and programs in economic development. The course introduces concepts of communities and regions, theories of economic growth, drivers of economic growth, the economic base of a community, course of growth or decline in the community, roles of local government and institutions, analytical tools, and strategies for local economic development. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 603 - Community Natural Resource Management Credits: 3
The course will introduce students to the breadth of consideration involved in community resource management. Included in the course are theoretical frameworks, methodological investigation and applied practices to enhance the ability of community development professionals to work with their communities to plan, develop, and monitor the conversation and development of natural resources with multiple functions. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 604 - Community Analysis Credits: 3
This course provides an introduction to research methods relevant to community development. Course topics include how to formulate and begin a research effort, methods of data collection and how conceptual frameworks are used to develop the questions and analyze data. Also included are strategies for reporting findings and applying findings in community action. The course will also look at methods of evaluating the entire research process. Significant attention is paid to issues of research ethics and inclusiveness throughout the course. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 605 - Principles and Strategies of Community Change Credits: 3
This interdisciplinary course analyzes principles and practices of community change and development, beginning with definitions of community and the role of communities in social and economic change. Using case studies and the students' communities of reference, the course will relate Community Development approaches to conceptual models from diverse disciplines. Conceptual models include conflict, neo-classical economic growth, participatory democracy, and others. Students will be exposed to professional practice principles and will leave the course having constructed their personal framework for the practice of community development. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 611 - Impact Analysis Credits: 1
The course teaches the basics of economic and fiscal impact analysis. It includes the scenario construction, basics of input-output analysis, careful use of multipliers, estimations of local revenues and expenditures and discounting. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 612 - Housing and Development Credits: 3
Review and evaluation of historical and current housing issues, production, and financial systems, Examination of federal, state, and local policies and programs for community development. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 613 - Introduction to Native Community Development Credits: 3
This course is designed as a base knowledge course for students currently working within or in partnership with native communities or considering working in this area. Students taking this course will develop a basic understanding within the context of community development of the diversity of tribal structures and cultures and the unique history and jurisdictional considerations of these nations. Course topics will include: working with tribes, Federal and Indian relations, and governance and cultural issues. Students taking this course will complete a holistic analysis and conceptual mapping of a tribe. This course is required before students may take other courses in this track. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 616 - Public and Nonprofit Budgeting Credits: 3
The purpose of this three-credit hour graduate level distance education course is to introduce students to the fundamental theories and practices of budgeting in the public and nonprofit sectors. Topics include overview of budgeting and budget reform, taxation, expenditures, budget preparation and adoption, budget implementation, and performance budgeting. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 617 - Tribal Colleges in Economic Development Credits: 1
This course will focus on the role of tribally-chartered colleges and universities in economic development within Native communities. Students will learn the historical and contemporary case for tribal self-determination in higher education vis-a-vis economic development. Using a social capital analytical framework, students will examine and evaluate the tribal college model of economic development. Topics will include the use of bonding and bridging social capital as an analytical tool, the historical and contemporary case for tribally-chartered higher education, the economic impact of tribal colleges on their local economies, and opportunities and challenges of broad and diverse economic networks. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 623 - Ecological Economics Credits: 3
The course seeks a synthesis across the notion of utility as represented in traditional environmental/natural resource economics and the notion of ecology in the newer ecological economics. This course seeks ways to treat both economy and community/ecosystem as being on par, each influencing the other. This synthesis results in a search for the win-win through recognizing the potential for a kind of symbiotic complementarity between the two perspectives, the two systems, and the forces each puts in place. We seek sustainability in both economy and community over longer time periods. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 624 - Building Native Community in Economic Capacity Credits: 3
This course will focus on non-western approaches to helping native communities build their capacity. Students will learn to take a participatory, culture-centered, and strength-based approach to development. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 626 - Economic Development Strategy Credits: 3
Course explores theories of local economic development and addresses the development issues faced by communities in the 21st century. Students will understand and apply concepts from economic development planning, economic analysis, business development, human resource development, community-based development, and high-technology development. This course is limited to GPIDEA student registration, pending student's department approval. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 631 - Evaluation of Organizations/Programs Credits: 3
The purpose of this three-credit hour graduate level distance education course is to the philosophy, techniques, and methodologies of organizational and program evaluation. Topics covered include overview of program evaluation and theory, techniques to evaluate program processes and performance, evaluation designs, assessing program deficiency, models to diagnose organizations, and methods to assess organizational performance. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 633 - Introduction to Environmental Law Credits: 3
This course offers students an introduction to American environmental law. We will begin with a basic introduction to sources of law and jurisdiction. We will survey tort law, as the historic and conceptual basis for environmental law in property law. We will emphasize administrative law and environmental legislation, as these are the areas of environmental law that most of you will encounter as professionals in community development. We will spend the majority of the course learning about how governmental agencies regulate private activities that affect land, air, water, and wildlife. Because we will consider the legal process largely from the perspective of someone working for or dealing with a public agency, we will deal with such topics as administrative procedure and judicial review of agency actions. We will also consider the roles of individuals and nonprofit organizations in the administrative and litigation processes. Therefore, we will pay close attention to such issues as standing to sue and the availability of attorney fee awards. The course will cover a wide range of substantive issues including such topics as the regulation of toxic waste, the Clean Air Act, the National Environmental Policy Act, the Endangered Species Act, common law environmental torts and the public trust doctrine. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 634 - Native American Natural Resource Management Credits: 3
This course will introduce students to the breadth of considerations involved in Native American resource management. Included in the course are theoretical frameworks, methodological investigations and applied practices by which we will explore the impact of structural inequality, globalization and sovereignty on planning, sustainability and development of natural resources on the reservation. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 635 - Sustainable Communities Credits: 3
This course links the management of natural capital to other community-based actions around resource allocation and the impacts on quality of life. The literature on community-based natural resource management will be examined and alternative ways of valuing natural capital will be assessed. Contrasting theories of the role of natural capital in communities and human society will be linked to their implications for community sustainability in terms of economic vitality, social well-being, and ecosystem health.

CD 637 - Immigration and Communities Credits: 3
International migration has historically impacted rural and urban communities around the world. Taking a comparative approach, this course examines community-immigration interactions and how that influences community development and immigrant inclusion. Students will read and relate theories of immigrant and community change to case studies of immigrants and communities and gather primary data to assess the capacity of communities to include new international immigrants. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 638 - Community and Regional Economic Analysis II Credits: 3
Substantive grounding in the theories and practice of measuring community economic dynamics; build solid foundation skills for applied community economic analysis.

CD 641 - Leadership for Change Credits: 3
Course focus is on the role of leadership in community development and change, including situation leadership in the community development process, reviewing the effectiveness of different leadership styles, and relating leadership to community. Skills and processes that facilitate effective shared leadership, including facilitation, conflict resolution, use of participatory techniques, etc, are explained. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 642 - Grant Writing Credits: 3
The intricacies of grantsmanship provide the focus of this course. Topics covered will include identification of fund sources, procedures for proposal preparation, composition of grants, and the effects of organizational and personal linkages. Students will prepare a grant application based upon an RFP or to a continuous funding source (e.g. Kellogg Foundation, NW Foundation, or IDED). This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 643 - Nonprofit Management Credits: 3
Managing nonprofits including the role of nonprofit organizations in addressing various social problems. Focus will be on the growth of the nonprofit sector and its impact on the community as a source of citizen empowerment. Topics include individual giving and volunteering, board and executive leadership, government and nonprofit relationship, ethics and accountability, and issues and challenges in nonprofit management. This course is available only to graduate students registered in the Community Development specialization. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 644 - Participatory Action Research Methods Credits: 3
A graduate level course to develop participatory action research knowledge and skills through real-world applications. PAR is a method of collecting information by community members in collaboration with a researcher that respects, places community central to, and reflects the experiences and culture of the people most directly impacted by the issue under consideration. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 645 - Community Developer as Community Educator Credits: 3
A graduate level course on education strategies and tools for use in community development. This course will develop students' identities as community educators and provide knowledge on appropriate methodologies for working with adults in community settings, as well as develop their creativity and critical thinking skills. Students will engage in peer-to-peer teaching and critical analysis of community education activities. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

CD 792 - Topics (COM) Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

CD 794 - Internship (COM) Credits: 3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

CD 795 - Practicum (COM) Credits: 3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

CEE (Civil and Environmental Engineering)

CEE 511 - Asphalt Materials and Mix Design Credits: 3
Properties of aggregates and asphaltic materials related to asphalt mixes. Various types of asphalt pavements and mix design methods. Plant operations, construction methods and equipment used in the production of asphalt. Asphalt mix design and testing with an emphasis on Superpave mix design method. Introduction to recycling and sustainable asphalt pavement materials. Corequisites: CEE 511L. Prerequisites: CEE 216-216L, CEE 363, and EM 321.

CEE 511L - Asphalt Materials and Mix Design Lab Credits: 0
Performance of standard tests on asphalt products and mixtures to determine various characteristics. Emphasis will be placed on professional communication and the interpretation of test results. Corequisites: CEE 511.

CEE 522 - Environmental Engineering Instrumentation Credits: 3
Development of an understanding of standard analytical methods for parameters commonly measured in liquid environmental systems. Corequisites: CEE 522L.

CEE 522L - Environmental Engineering Instrumentation Laboratory Credits: 0
Analysis of water and wastewater samples using environmental laboratory instrumentation. Development of laboratory skills in water and wastewater analysis.

CEE 523 - Municipal Water Distribution and Collection System Design Credits: 3
Design of municipal water distribution and collection systems utilizing modern design tools including the utilization of software to simulate system behavior in response to environmental changes.

CEE 524 - Industrial Waste Treatment Credits: 3
Characteristics and composition of industrial wastes, sampling and methods of analysis of these wastes and remedial measures for treatment and disposal.

CEE 535 - Water Resources Engineering Credits: 3
Topics related to water resources engineering including: multiple purpose river development, economic analysis of flood control measures, aspects of water law, advanced topics related to surface and ground water hydrology and administrative aspects of water resources planning. Prerequisites: CEE 225.

CEE 536 - Advanced Hydraulic Engineering Credits: 3
Advanced topics related to hydraulic engineering including: dimensional analysis, turbulence in open-channel flows, mechanics of sediment transport, coastal hydraulics and stream channel mechanics, hydraulic structures, unsteady flows, numerical and physical modeling. Prerequisites: EM 331.

CEE 538 - Environmental Fluid Mechanics Credits: 3
Develop a basic understanding of the physical processes in turbulent flows that are important to the transport and dispersion of contaminants and materials in surface waters. This course will introduce the analytical, computational, and experimental tools commonly used to solve environmental fluid mechanics problems. Topics covered include dynamics of turbulence, turbulent diffusion, shear flow dispersion, stratified flows and mixing in rivers and lakes. Prerequisites: EM 331.

CEE 543 - Matrix Analysis of Structures Credits: 3
Theory and application of matrix methods in structural analysis. Prerequisites: CEE 353.

CEE 546 - Advanced Geotechnical Engineering Credits: 3
Development of a fundamental understanding of engineering properties of soils and the factors controlling their magnitude and changes with time and environment. Development of why this knowledge is important and how it can be used in the solution of geotechnical and geoenvironmental problems. Prerequisites: CEE 346.

CEE 547 - Foundation Engineering (COM) Credits: 3
Application of the fundamental concepts of soil behavior to evaluation, selection, and design of shallow and deep foundation systems. Related topics such as temporary support systems for excavations and pile driving are also included. Prerequisites: CEE 346.

CEE 552 - Prestressed Concrete Credits: 3
Theory and design of prestressed concrete including pre-tensioning and post-tensioning. Prerequisites: CEE 456.

CEE 558 - Design of Timber Structures Credits: 3
Gravity and lateral loads, physical and mechanical properties of wood, properties of dimension lumber and glued laminated timber, design of beams and columns, properties of structural wood panels. Design of sheathing, diaphragms and shearwalls. Design of connections.

CEE 567 - Transportation Engineering Credits: 3
Engineering principles in various common modes of transportation. Prerequisites: CEE 363.

CEE 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CEE 691 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

CEE 692 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CEE 702 - Advanced Civil and Environmental Engineering Credits: 1
Introduction to graduate study and professional communication skills required for further study in Civil and Environmental Engineering. Course may be repeated as needed to meet plan of study requirements.

CEE 720 - Water Treatment Plant Design Credits: 3
Water supply sources, design of treatment plants, cost estimates of water supply systerms. Prerequisites: CEE 323 or instructors consent.

CEE 725 - Biological Principles of Environmental Engineering Credits: 3
Ecology, energetics and kinetics of biochemical systems. Analysis and modeling of suspended growth and fixed film biological processes used in environmental engineering. Laboratory procedures for developing biokinetic data. Prerequisites: CEE 323 or instructors consent.

CEE 725L - Biological Principles of Environmental Engineering Lab Credits: 0

CEE 726 - Physical and Chemical Principles of Environmental Engineering Credits: 3
Fundamental concepts of fluid/particle interactions, process kinetics, and equilibrium chemistry applied to natural and engineered aquatic environmental systems. Coagulation, fluid/particle separation, oxidation/reduction, precipitation/dissolution, carbonate systems, absorption, ion exchange, and gas/liquid interfaces. Corequisites: CEE 726L. Prerequisites: CEE 323 or instructors consent.

CEE 726L - Physical and Chemical Principles of Environmental Engineering Laboratory Credits: 0

CEE 729 - Wastewater Treatment Plant Design Credits: 3
Design of waste collection and disposal facilities, waste treatment plants, cost estimates of waste disposal and treatment systems. Prerequisites: CEE 323. Graduate standing.

CEE 729L - Wastewater Treatment Plant Laboratory Credits: 0
Practical design problems in wastewater treatment plant design.

CEE 732 - Advanced Foundation Engineering Credits: 3
Advanced treatment of foundations and earth retaining structures. Bearing capacity, lateral resistance and settlement of deep foundations; earth pressures on sheet pile walls, braced excavations and buried pipes; numerical methods and computer use in design and analysis applications. Prerequisites: CEE 346.

CEE 733 - Topics in Water Resources Engineering Credits: 3
Topics related to water resources engineering including: Multiple purpose river development, economic andalysis of flood control measures, aspects of water law, advanced topics related to surface and ground water hydrology and administrative of water resources planning. Notes: Course may be repeated.

CEE 749 - Geotechnical Testing Credits: 3
Determination of engineering properties of soils. Measurement of stress-strain behavior, compressibility, permeability. Use of direct shear test, triaxial compression test, consolidation test, permeameter tests. Interpretation of test data for engineering applications. Use of computerized data acquisition methods. Corequisites: CEE 749L. Prerequisites: CEE 346.

CEE 749L - Geotechnical Testing Lab Credits: 0

CEE 754 - Advanced Design of Steel Structures Credits: 3
Review of LRFD concepts and basic member design, fundamentals of ASD, column buckling, plate buckling, fundamentals of structural stability, frame stability and frame design. Design of plate girders, composite girders, bracing members and the basics of PR and FR connections. Prerequisites: CEE 455.

CEE 755 - Advanced Reinforced Concrete Design Credits: 3
Design of rigid frames, effect of plastic behavior, details for complex structures, analysis of flat plate and other two-way floor systems. Design comparisons. Prerequisites: CEE 456.

CEE 756 - Reinforced Masonry Design Credits: 3
Development of masonry construction. Material properties. Structural design of loadbearing walls, columns, beams and shear walls. Design of masonry buildings due to gravity loads, lateral forces and earthquakes. Prerequisites: CEE 456.

CEE 759 - Structural Dynamics Credits: 3
Dynamic analysis of structural system with one and several degrees of freedom. Determination of natural frequencies. Analysis of free and forced vibration systems including damping. Introduction to earthquake engineering. Prerequisites: CEE 353.

CEE 765 - Pavement Design Credits: 3
Introduction to pavement types, wheel loads, stresses and strains in pavement components, material characterization, basic principles of design and pavement evaluation. Prerequisites: CEE 363.

CEE 769 - Bridge Design Credits: 3
Determination of bridge loadings and bearings. Design of concrete and steel bridge systems. Specifications and detailing related to bridge. Prerequisites: CEE 455, CEE 456.

CEE 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

CEE 790 - Seminar (COM) Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

CEE 791 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

CEE 792 - Topics (COM) Credits: 1-12
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CEE 798 - Thesis (COM) Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CEE 898D - Dissertation (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CHEM (Chemistry)

CHEM 548 - Biophysical Chemistry Credits: 3
A study of the fundamental principles governing the physical chemistry of biological systems. Topics covered include the forces governing protein and nucleic acid stability, the thermodynamics of protein folding and protein-ligand interactions, bioenergetics, kinetics of biochemical reactions, biological membranes and membrane transport. The physical basis of protein purification, probing protein-ligand interactions, and the determination of macromolecular structure is also discussed. Prerequisites: CHEM 344 and CHEM 705.

CHEM 555 - Surface Engineering and Functionalization (COM) Credits: 1
This course will provide an introduction to the fundamentals and applications of surface engineering and functionalization technologies. Course topics will include thin film deposition technologies, thick coating, and organic coating methods. The course will also introduce concepts on surface functionalization, coating characterization, and electrochemical surface modifications. Students enrolled at the graduate level will be held to a higher standard than those enrolled at the undergraduate level.

CHEM 567 - Essentials of Glycobiology Credits: 3
This course focuses on glycobiology, the field of science that studies the structure, biosynthesis, biology, and evolution of saccharides (sugar chains or glycans) that are found in all living life systems. This course with will include the following topics: general principles of carbohydrates and carbohydrate chemistry, structure and biosynthesis, glycans in evolution and development, glycan binding proteins, the role of glycans in complex biological systems, glycans in physiology and disease, and various chemical techniques in which to analysis or manipulation glycans. Special emphasis will be placed on understanding the role glycans play in cancer biology and progression. Prerequisites: CHEM 360 or CHEM 464.

CHEM 584 - Chemical Toxicology Credits: 3
Understanding of the principles of toxicity, including the molecular basis for toxicity and the environmental fate and transport of chemicals in the environment. Prerequisites: CHEM 360 or CHEM 464.

CHEM 691 - Independent Study (COM) Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

CHEM 701 - Advanced Organic Chemistry I Credits: 3
Review and discussion of nomenclature, stereochemistry, resonance theory, equilibria, elementary kinetics, intermediate and mechanisms. Chemistry of polymers, heterocyclics, and natural products. Prerequisites: CHEM 229, CHEM 328.

CHEM 703 - Advanced Physical Chemistry Credits: 3
A review of the principles and applications of physical chemistry. Topics such as thermochemistry, quantum mechanics, spectroscopy, kinetics, and electrochemistry considered. Prerequisites: CHEM 242 and MATH 123.

CHEM 704 - Advanced Inorganic Chemistry Credits: 3
Inorganic systems including theoretical, representative group and transition metal topics. Prerequisites: CHEM 242 and CHEM 452.

CHEM 705 - Principles of Biochemistry Credits: 2-5
Chemistry of biological processes occurring in plants and animals. Prerequisites: CHEM 464.

CHEM 706 - Advanced Analytical Chemistry Credits: 3
Theoretical treatment of principles involved in non-instrumental analytical chemistry including sampling and statistics. Prerequisites: CHEM 242 and CHEM 332.

CHEM 707 - Chemical Communication Skills Credits: 2
Searching chemical literature by traditional and computer assisted methods; techniques of written and oral communication of chemical information.

CHEM 711 - Chemical Education Research Credits: 2
Course will provide an introduction to the primary literature on research in chemical education. Students will survey the fundamental areas of focus such as learning theories, pedagogical methodology, assessment, and current topics of interest. Prerequisites: Instructor consent.

CHEM 713 - Qualitative Research Methods Credits: 2
A survey of theoretical traditions in qualitative methods for chemical education. Research will include methods of data collection, analysis, and reporting for each tradition. Emphasis will be placed on differences between qualitative and quantitative research methods in chemical education research. Prerequisites: Instructor consent.

CHEM 714 - Quantitative Research Methods Credits: 2
The course will include fundamental issues regarding the use of statistical analysis in chemical education research. Topics will include different quantitative strategies such as descriptive statistics, nonexperimental designs, single-subject designs, inferential statistics, and an introduction to current statistical program packages. Prerequisites: Instructor consent.

CHEM 715 - Chemistry Instruction in Higher Education Credits: 2
Instructional processes, learning theories, and issues specific to chemistry instruction in higher education. Topics including learning theory in the context of chemistry, lecture and laboratory settings, assessment strategies, demonstrations, and group work. Prerequisites: Instructor consent.

CHEM 722 - Synthesis of Natural Products Credits: 3
Synthetic strategies and pathways for the formation of natural products. Prerequisites: CHEM 328.

CHEM 724 - Structural Determination of Organic Compounds Credits: 3
Determination of the structure of organic compounds primarily by spectroscopic techniques. Corequisites: CHEM 724L. Prerequisites: CHEM 328.

CHEM 724L - Structural Determination of Organic Compounds Laboratory Credits: 0

CHEM 725 - Genetics of Human Disease (COM) Credits: 3
The course will cover advanced genetic concepts, classical and modern mammalian genetic techniques, and the underlying genetic bases of a variety of Mendelian and complex disorders. Students will gain an understanding of how genetic abnormalities result in and contribute to human disease.

CHEM 731 - Advanced Environmental Chemistry Credits: 3
In-depth treatment of the principles of the environmental chemistry and geochemistry of the atmospheric, aquatic and lithospheric environments. Prerequisites: CHEM 342, instructor consent.

CHEM 733 - Atmospheric Chemistry Credits: 3
Structure and functions of the atmosphere; principles of atmospheric chemical processes; chemical reactions and fate of pollutants in the atmospheric environment. Prerequisites: CHEM 342.

CHEM 739 - Chromatography and Separation Credits: 3
Theory and practice of solvent extraction and paper, thin layer, gas and liquid chromatographic techniques. Prerequisites: CHEM 232.

CHEM 740 - Analytical Spectroscopy Credits: 3
In-depth treatment of the quantitative applications and theory of modern spectroscopy techniques including atomic absorption, emission, and fluorescence; molecular absorption and fluorescence; and X-ray spectroscopy. Prerequisites: CHEM 434.

CHEM 760 - Laboratory Rotations in Biochemistry Credits: 1-2
Investigative laboratory experiences for doctoral students in biochemistry, as supervised by faculty members participating in the Biochemistry PhD.

CHEM 762 - Molecular Mechanisms of Disease (COM) Credits: 3
Advanced course covering current topics in human disease mechanisms. Course topics include disorders associated with defects in lipid metabolism, nucleotide metabolism, metal metabolism, and organelle function, as well as signaling mechanisms underlying rare and complex diseases. The course applies fundamental biochemical and cell biological concepts to human disease. Prerequisites: Instructor consent.

CHEM 763 - Developmental Biology of Disease (COM) Credits: 3
This course focuses on mammalian development and human diseases resulting from developmental abnormalities. Topics include early development, organogenesis, maternal effects, and the use of models systems and techniques for studying human developmental diseases. Students who take this course will have a better understanding of the underlying causes of human diseases and congenital abnormalities.

CHEM 766 - Biochemistry II Credits: 3
Study of the metabolism of amino acids, proteins, nucleotides and nucleic acids. Includes some aspects of enzymology and the mechanism of intra and intercellular communication. Prerequisites: CHEM 705.

CHEM 770 - Atomic Theory & Bonding Credits: 3
This course will examine topics in atomic theory including wave-particle duality, wavefunctions, atomic spectra, quantum numbers, and the relationship between electronic structure and the periodic table. These topics will provide a foundation to explain molecular bonding. Topics of molecular bonding will include ionic and covalent bonding, electronegativity, polarizability, valence-shell-electron-pair-repulsion (VSEPR), valence-bond theory, and molecular orbitals. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher. Prerequisites: Instructor consent.

CHEM 771 - Intermolecular Interactions & Phases of Matter Credits: 3
This course will examine the impact on a variety of physical properties made by attractive forces between molecules, atoms, and ions. Topics will include explaining the existence and predicting the strengths of intermolecular interactions, predicting physical properties such as viscosity, boiling points, and melting points based on the presence of intermolecular forces, and the impact of intermolecular interactions on phases of matter. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher. Prerequisites: Instructor consent.

CHEM 772 - Thermodynamics Credits: 3
This course will focus on the relationship between energy, entropy, and the progress of chemical reactions. Major topics will include the relationship between heat and chemical reactions, calorimetry, reaction enthalpy, standard enthalpy, entropy, and free energy. An emphasis will be made on the mathematical techniques used to calculate these relationships and on how these concepts explain chemical behavior. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher. Prerequisites: Instructor consent.

CHEM 773 - Equilibria & Acid-Base Chemistry Credits: 3
This course will examine the reversibility of chemical reactions. The concept of dynamic equilibria will be studied and the law of mass action used to quantify the condition of equilibrium. Students will be able to predict the extent and direction of a chemical reaction and quantify species at equilibrium. Le Chatelier's principle will used to study the impact different factors on the equilibrium status of a chemical reaction. Topics in acid/base chemistry will be used to further explain equilibria processes. Additionally, Bronsted-Lowry and Lewis theories, molecular structure relationships to acid/base behavior, weak acid/ base behavior, the acidic/basic behavior of salts, titration, and buffer solutions will be discussed. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher. Prerequisites: Instructor consent.

CHEM 774 - Kinetics, Nuclear, & Electrochemistry Credits: 3
This course will focus on three important topics in chemistry: kinetics, nuclear, and electrochemistry. Students will utilize mathematical methods to study the speed of chemical reactions including average and instantaneous rates of reaction, rate laws, the law of initial methods, and integrated rate laws. Additionally, discussion of changes within the nucleus of an atom resulting in the alteration of that atom will occur by identifying fundamental processes of nuclear chemistry. Biological effects related to nuclear reactions will also be discussed both qualitatively and quantitatively. Finally, this course will focus on oxidation/reduction reactions as students manipulate redox reactions by balancing chemical reactions, predicting spontaneity of redox reactions, and explaining the function of voltaic cells. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher. Prerequisites: Instructor consent.

CHEM 775 - Organic & Biochemistry Credits: 3
This course will focus on topics in organic and biochemistry that provide a basis for future instruction in these content areas. Topics in organic chemistry will include nomenclature, functional groups, and basic organic reactions and mechanisms. Biochemistry topics will include nomenclature and structures of simple molecules including carbohydrates, proteins, and nucleic acids. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher. Prerequisites: Instructor consent.

CHEM 776 - Laboratory Development Credits: 3
This course will focus on the development of laboratory strategies for the secondary chemistry classroom. Students will receive guided instruction in laboratory development techniques from content experts. The outcome of the course will be the development of several new laboratory exercises which will be shared among participants. Prerequisites: Instructor consent.

CHEM 777 - Action Research in the Secondary Classroom Credits: 2
This course will engage science instructors in processes used to assess the efficacy of using specific strategies for teaching in the classroom. The methodology for conducting educational research in the classroom will be the initial focus. One outcome of the course will be the inception of a project that could be implemented by the science instructor to investigate the use of a new teaching strategy in the classroom. Prerequisites: Instructor consent.

CHEM 778 - Chemistry Teaching Strategies Credits: 3
This course will focus on pedagogical and curricular strategies and the educational research which supports using these methods. The incorporation of pedagogical methods into science classrooms as modifications for or enhancement of traditional instruction will be the goal for participants. Additionally the development of integrated curricula which use multiple content areas will be discussed. Pedagogical and curricular strategies developed during the course will be peer-evaluated and tested in individual classrooms. Prerequisites: Instructor consent.

CHEM 788 - Research Problems in the Chemistry Classroom Credits: 1-2
This capstone course will involve the application of the project conceived of during CHEM 616. Students will be expected to design, implement, and assess the outcomes of the project in their classroom. Results from this work will be summarized and defended in an oral exam format. Prerequisites: Instructor consent and CHEM 776.

CHEM 790 - Seminar (COM) Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

CHEM 792 - Topics (COM) Credits: 1-6
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CHEM 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CHEM 898D - Dissertation - PhD (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CHRD (Counseling & Human Resource Development)

CHRD 571 - Gerontology Issues in Counseling Credits: 3
This course is designed to familiarize helping professionals with psychological aspects of the aging process. Students will gain skills in establishing rapport and interacting in a professional, caring manner with older adults and learn about appropriate resources and techniques to assist older clients.

CHRD 585 - Careers in Counseling and Student Affairs Credits: 3
This course is designed for students who are considering a career in counseling or student affairs. Students will be required to demonstrate an understanding of the various facets of the profession through a variety of individual and small group activities.

CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
This course provides an introduction and orientation to the counseling profession with a focus on ethics. More specifically, ethical standards of ACA and other related specialty areas will be covered along with the use of ethical decision-making models.

CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
The course explores various research designs and methodologies applicable to the field of counseling. The course will emphasize qualitative and quantitative research, critical evaluation of research reports, the use of internet databases for writing a research paper, a thorough understanding of APA format. Cross-Listed: HDFS 602.

CHRD 610 - Developmental Issues in Counseling Credits: 3
Provides an understanding of the developmental needs of humans across the life span and adolescents and appropriate intervention methods to be used in counseling.

CHRD 661 - Theories of Counseling Credits: 3
This course takes a practice-based approach to teaching students counseling theory. The course focuses on several major theories, such as Adlerian, Person-Centered, Cognitive-Behavioral, and Family Systems theories. Students are encouraged to understand the utility of theory-based practice. Course work involves applying theory to case studies and developing treatment plans based on the tenets and techniques of the theories studied.

CHRD 690 - Seminar Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

CHRD 691 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

CHRD 692 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CHRD 693 - Workshop Credits: 1-3
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

CHRD 701 - Professional Issues and Ethics II Credits: 1
This course serves as an advanced view of the ethical standards of ACA and other related specialty areas. Application of the code and an ethical decision-making model is expected. Prerequisites: Consent.

CHRD 702 - Advanced Human Sexuality Credits: 3
Clinical, scientific, and philosophical studies of human sexuality. Emphasis on contemporary research and insights into human sexual experience, behavior, and social /cultural values and beliefs about sexuality throughout the lifespan. Topics will include sexual and psychosexual development, sexual health and disease, sexual variations, and sexual dysfunction and therapy.

CHRD 705 - Motivational Interviewing & Behavior Change Coaching Credits: 3
This course is intended to provide a comprehensive study of the change process as enhanced through Motivational Interviewing. An emphasis will be placed on these concepts as they apply to behavioral changes in various areas including healthy eating, obesity, disordered eating, etc.

CHRD 706 - Introduction to Play Therapy: Theory and Techniques Credits: 2
Basic theoretical approaches of play therapy are explored as well as the theory related to techniques, assessment and treatment. Play materials and use of play media to facilitate expression, self-understanding and growth are introduced. This course is designed for those who have completed a theory course in their respective degree area.

CHRD 707 - Advanced Play Therapy and Techniques Credits: 2
Advanced theoretical approaches of play therapy are applied, as well as nature of theory related to techniques, assessment and treatment. Students will develop proficient skills in use of play materials to facilitate expression, self-understanding and growth.

CHRD 708 - Play Therapy: Filial and Family Credits: 1
This course focuses on working with and training parents and caregivers to be therapeutic agents in their children's lives through the utilization of play therapy skills in parent-child structured play sessions.

CHRD 709 - Applications of Play Therapy Credits: 2
Students are required to demonstrate proficiency in play therapy principles and practices. Students engage in advanced study of play therapy, including theories, application of skills, parent consultation. Group play therapy will be examined and reviewed.

CHRD 710 - Clinical Experiences in Play Therapy I Credits: 1
This course is designed to provide introductory clinical experiences in play therapy. Students will demonstrate proficiency in basic play therapy principles, practices, and skills, as well as application of play therapy theory to practice. Parent consultation and special topics in play therapy will be explored. Prerequisites: CHRD 707.

CHRD 711 - Clinical Experiences in Play Therapy II Credits: 1
This course is designed to provide advanced clinical experiences in play therapy. Students will demonstrate proficiency in advanced play therapy principles, practices, and skills, as well as application of play therapy theory to practice. Parent consultation, filial techniques, and special topics are incorporated. Prerequisites: CHRD 710.

CHRD 713 - Administration and Management of Mental Health Organizations Credits: 3
Developing and managing a comprehensive counseling program in agencies. Emphasis on the planning process, management, budgeting, organizational structure, supervision, evaluation and consultation.

CHRD 716 - Human Resources Management in Business and Industry Credits: 3
This course will focus on the human factors affecting the workplace. Specific topics to be covered will include employee assistance programs, wellness programs, management training, conflict resolution, and career planning.

CHRD 721 - School Counseling Credits: 3
A study of the role and function of a K-12 school counselor including individual counseling, small group counseling, classroom guidance, and consultation with parents, teachers, administrators.

CHRD 722 - Administration and Management of School Counseling Programs Credits: 3
Developing and managing a comprehensive counseling program in a school setting. Emphasis on the planning process, management, budgeting, organizational structure, supervision, evaluation and consultation.

CHRD 723 - Counseling the Family Credits: 3
Counseling the Family is a course which describes the major systems of family therapy and the resulting impact upon the counseling process. An inter-psychic, systematic framework will be formulated as a supplemental way to view familial problems and promote change.

CHRD 725 - Couples and Advanced Family Counseling Credits: 3
This course is designed to help students increase their theoretical and practical knowledge, along with skill development in working with couples and families. Treating couples and families from an ecological systems context (i.e. community, social, cultural, economic, etc.) with specific attention on current issues including gender, race, ethnicity, sexuality, family patterns, and economic conditions.

CHRD 728 - Child and Adolescent Counseling Credits: 2
This course is intended to provide a comprehensive study of therapeutic approaches and techniques applicable for use with children and adolescents in a counseling setting. Emphases will be placed on developmental problems, creative interventions, crisis management, exceptional children, and collaboration with the community, family, and school systems.

CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
This course aims to provide an understanding of the cultural context of relationships, issues and trends in a multicultural and diverse society related to such factors as culture, ethnicity, nationality, age, gender, sexual orientation, mental and physical characteristics, education, family values, religious and spiritual values, socioeconomic status and unique characteristics of individuals, couples, families, ethnic groups, and communities.

CHRD 736 - Appraisal of the Individual Credits: 3
Assessment methods used in studying individuals. Standardized instruments, self-report inventories, observation, case study techniques and other non-standardized assessment tools are used. Recording, analyzing, compiling and interpreting data for use in counseling setting.

CHRD 742 - Career Counseling and Planning Credits: 3
Examination of the career development and counseling process through the life span. Assist those intending to counsel at elementary, secondary, higher education and the community/workplace. Explores strategies and resources for career/life planning. Various interest inventories and personality assessment methods are used.

CHRD 751 - Overview of Rehabilitation and Mental Health Counseling Credits: 3
Provides an orientation to the field of rehabilitation and mental health counseling. Includes historical antecedents, philosophical and traditional connections with the field of rehabilitation counseling, assessment, planning and service delivery methods for those intending to work in rehabilitation focused programs serving persons with psychiatric disabilities.

CHRD 752 - Medical and Psychological Aspects of Disability Credits: 3
Provides instruction in the causes and processes of medical diseases and conditions that result in severe and persistent disability. Basic anatomy, physiology, and central nervous system functions will be reviewed. The course will explore the relationship between physical and psychiatric processes. Individual and family adjustment to disability will be covered. Students will be oriented to current approaches and concepts in prosthetics, assistive technology, medication, and wellness.

CHRD 753 - Case Management Principles and Plan Development Credits: 3
Covers practice and provides methods for managing cases and making caseload management decisions. Principles and practice in areas covered include intake interview; medical, psychological, and vocational evaluation, career and lifestyle alternatives, plan development, transitions, placement, and community integration. The course will also provide instruction in writing professional case reports, proposals, and progress notes. Time and work flow management strategies will be examined.

CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
This course is designed to introduce students to the DSM-IV and to help develop their diagnostic and treatment planning skills. Students will focus on particular disorders and how to effectively treat those disorders in clinical and school settings. Among the disorders and treatment plans that will be covered in class are: depressive disorders, anxiety disorders, substance abuse disorders, schizophrenia, disorders first diagnosed in infancy, childhood and adolescence, as well as personality disorders.

CHRD 756 - Counseling the Addictive Client Credits: 3
Counseling the addictive client is a course which describes how one can identify and treat addictive behaviors. Emphasis is on preventive and remedial action.

CHRD 757 - Case Consultation and Supervision Credits: 3
This course reviews consultation and supervision theories and applications in a counseling setting. Clinical decision making skills in a counselor practice are also covered.

CHRD 766 - Group Counseling Credits: 3
Processes and procedures used in small group counseling. Students participate in group counseling, facilitate in-class counseling sessions and develop structured units for specific populations. Prerequisites: CHRD 601, CHRD 610, CHRD 661 and EDER 760 or CHRD 602.

CHRD 770 - Student Development: Theory and Practice Credits: 3
This course introduces various theories of college student development and includes attention to developmental issues of special populations, such as minority students, international students, and nontraditional students. Research in several areas of student affairs work is emphasized.

CHRD 771 - Student Personnel Services Credits: 3
Two basic orientations provide the framework for this course: understanding the transition from theory to practice, and becoming a reflective, ethical practitioner. Students will gain a broad knowledge of student affairs functions as well as good overview of current issues in higher education.

CHRD 772 - Administration and Leadership in Student Affairs Credits: 3
This course provides an overview of administrative and leadership practice in the student affairs profession. The course will emphasize historical foundations of the profession and will utilize these foundations in understanding current practice. Students will gain broad knowledge about the role and function of student affairs functions in a variety of higher education settings. Cross-Listed: AHED 772 .

CHRD 773 - Current Issues in Academic Advising and Student Affairs Credits: 3
This course is designed to build upon the foundational practices of professional academic advising in post-secondary education. Course content will include core competencies of academic advising including student development theory, academic success, and professional preparation. Current issues in academic advising/student affairs and best advising practices to support diverse student populations will be explored.

CHRD 785 - Pre-Practicum Credits: 3
This course provides an introduction to basic therapeutic skills and structures compatible with a wide range of theoretical approaches. Students learn to conduct counseling interviews in order to successfully identify clients' conflicts, determine clients' desire for change, explore options and assist client action. This course serves as a foundation of CHRD 786 Counseling Practicum. Prerequisites: CHRD 601, CHRD 610, CHRD 661 and EDER 760 or CHRD 602.

CHRD 786 - Counseling Practicum Credits: 3-5
This course builds on the basic counseling skills learned in CHRD 785 Pre-Practicum and preferably directly follows that course in students' course work. In addition to enhancing basic counseling skills, this course is designed to help students integrate theory and practice. As part of their course work, students are asked to develop theory-based conceptualizations of client concerns. The faculty reserve the right to deny admission to CHRD 786 if they have reason to suspect a student might be unable to provide quality counseling services to clients. A minimum of 20 semester credit hours, including, CHRD 601, 602, 610, 661, 766, and 785, with a grade of B or better in 766 and 785. Retakes limited to two retakes. Prerequisites: CHRD 601 and CHRD 602 or CHRD 610, CHRD 661 and EDER 760.

CHRD 788 - Research Problems in Counseling and Guidance Credits: 1-3
A problem is selected, analyzed, and reported in a form approved by the research advisor. Required of all graduate students in counseling qualifying for Master's degree under Option B. Can be elected under Option C if desired.

CHRD 791 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

CHRD 794 - Internship Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses. Prerequisites: CHRD 786 with a grade of B or better.

CHRD 798 - Thesis Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CJUS (Criminal Justice)

CJUS 516 - Drugs and Society Credits: 3
The course will examine explanations of drug use and the social construction of drug policies. Students will discuss the methods used to study patterns of drug use and theories of drug abuse and take an in-depth look at the histories, pharmacologies, and patterns associated with the most popular drugs. Students will study the social control of drugs, the connections between drugs and crime, and the causes and consequences of modern U.S. international drug policies. Cross-Listed: SOC 516.

CJUS 591 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

CJUS 592 - Topics (COM) Credits: 3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CM (Construction Management)

CM 500 - Risk Management and Construction Safety Credits: 3
Construction safety and health and effective management of risk.

CM 543 - Construction Planning and Scheduling Credits: 3
Planning and scheduling construction projects. Both manual methods and computer programs will be used to schedule activities, control cost and manage resources. Prerequisites: CM 232 or Instructor permission.

CM 555 - Residential Construction Credits: 3
The study of the residential construction process including design, documentation, and construction.

CM 560 - Sustainable Building Systems Concepts and Analysis Credits: 3
The analysis of energy efficient and environmentally responsible building design and construction. Material selection, energy, and climate analysis, and practical applications of new technology will be covered.

CM 573 - Construction Law and Contracts Credits: 3
The study of the legal rights and liabilities for the construction manager and design professionals. Topics include obligations and remedies, bond requirements, dispute resolution, contract administration, and risk mitigation.

CM 585 - Site Development and Feasibility Analysis Credits: 3
Tools and techniques used to evaluate the cost of new site development; risk assessment and market feasibility analysis for properties to be acquired for economic development. Corequisites: CM 585L.

CM 585L - Site Development and Feasibility Analysis Lab Credits: 0
Lab to accompany CM 585. Corequisites: CM 585.

CM 591 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

CSC (Computer Science)

CSC 522 - GUI Programming Credits: 3
This course is event-driven graphical user interface (GUI) programming and will cover topics such as C++ programming for Windows.

CSC 533 - Computer Graphics (COM) Credits: 3
Principles of computer graphics. A study of the algorithms used to generate raster and vector graphics. Prerequisites: CSC 285, MATH 215 and MATH 125

CSC 547 - Artificial Intelligence (COM) Credits: 3
Introduction to ideas, issues and applications of Artificial Intelligence. Knowledge representation, problem solving, search, inference techniques, theorem proving. Expert systems. Artificial intelligence programming languages. Prerequisites: CSC 290.

CSC 574 - Computer Networks Credits: 3
Analysis of current and future computer networks with emphasis on the OSI model. Local and wide area networks. TCP/IP, SNA, token ring, ethernet and other common networks will be covered. Protocol and interfaces within and across networks including the OSI layers, routers, bridges and gateway. Prerequisites: CSC 300 or CSC 600.

CSC 587 - Network Security Credits: 3
An introduction to cryptography and its application to network and operating system security: security threats, applications of cryptography, secret key and public key cryptographic algorithms, hash functions, basic number theory, authentication, and security for electronic mail. Prerequisites: "C" or better in CSC 300.

CSC 592 - Topics (COM) Credits: 1-5
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CSC 600 - Accelerated Computer Science Fundamentals Credits: 3
This course teaches the fundamental and advanced techniques of graduate computer programming using C++. The C++ language is used for this course because it is the standard language used for most graduate courses. In this course, students will learn how to write efficient and reliable code through advanced programming techniques.

CSC 630 - Principles Data Base System Design Credits: 3
Fundamental concepts. Physical data organization. Data models. Data Manipulation languages. Data base design. Application of data base concepts in design and development of data base systems and applications. Design of current commercial as well as research oriented data base systems. Techniques of using data base systems for application security and integrity. Performance evaluation. Prerequisites: CSC 484.

CSC 705 - Design and Analysis of Computer Algorithms (COM) Credits: 3
Design and analysis of algorithms to determine their time and space requirements. The study of efficient algorithms for various computational problems. Analysis of specific algorithms for internal sorting, hashing, and string search. Sorting manipulation of data structures, graphs, matrix multiplication, the Fast Fourier Transform, arithmetical operations and pattern matching. Study and implication of advanced topics on lists, stacks, trees, sets and dynamic allocation. Prerequisites: CSC 300.

CSC 710 - Structure and Design of Programming Languages (COM) Credits: 3
Evolution of concepts in programming languages. Data and control abstraction. Run-time effects of binding, scope and extent; structure of ALGOL-like and interpretive languages. Data types, problem areas and implementation models. Control structures, exception handling, concurrency. Functional programming. Examples from representative languages. Prerequisites: CSC 300.

CSC 720 - Theory of Computation (COM) Credits: 3
Formal models of computation. Recursive function theory, computable functions, decidable and enumerable sets, unsolvable programs, correctness of programs, undecidability and incompleteness and complexity of computation. Prerequisites: CSC 445.

CSC 740 - Management Information Systems Credits: 3
Computer appreciation course providing technical background for understanding and raising issues treated in other courses. Structure and operation of computer systems. Hardware technology and software development. Tools and methods for developing computer applications. Structure and components of Management Information Systems. Using the computer to support operations of management in planning and control and decision making. MIS development, organization, management and evaluation. Acquiring computer resources. The computer industry and profession. Prerequisites: CSC 325.

CSC 750 - Recent Advances in Parallel Process Credits: 3
A survey of topics related to the architecture of highly parallel machines, programming and algorithms. Pipelined computers, associative machines, array processors. Interconnection networks. Parallel algorithms. Prerequisites: CSC 705.

CSC 770 - Software Engineering Management Credits: 3
Management issues arise in the development of software systems. The topics include planning documentation for requirements, design, implementation and testing, cost projection and modeling, documentation standards, code control, tracking of defects management psychology, group interaction and communication, and the management of reviews and walkthroughs. Prerequisites: CSC 470 or instructor consent.

CSC 788 - Master's Research Problems/Project (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

CSC 790 - Seminar (COM) Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

CSC 791 - Independent Study (COM) Credits: 1-5
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

CSC 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

CSC 798 - Thesis (COM) Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CSS (Computational Science and Statistics)

CSS 890 - Seminar in Computational Science and Statistics (COM) Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as Internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students

CSS 891 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student- teacher involvement. The faculty member and students negotiate the details of the study plans Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

CSS 898D - Dissertation PhD (COM) Credits: 1-36
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

DS (Dairy Science)

DS 500 - Dairy Chemistry and Analysis Credits: 5
An examination of the physical and chemical properties of milk constituents and their effects on processing, testing, and nutritive value of milk and its' products. The role of intentional or accidental additives including impacts, effects and significance. An examination of laboratory protocols utilized in compositional analysis of milk and milk derived products as they relate to procurement, process control and regulatory compliance. Corequisites: DS 500L. Notes: Fall.

DS 500L - Dairy Chemistry and Analysis Lab Credits: 0
Corequisites: DS 500. Notes: Fall.

DS 513 - Physiology of Lactation Credits: 4
A study of the anatomical, biochemical and physiological factors in the mammary gland that regulate mammary development, milk synthesis and secretion, and impact milk quality and udder health. Machine milking settings and troubleshooting related to milking efficiency, animal handling in the milking parlor and milking procedures will be also covered. Corequisites: DS 513L. Notes: Even spring.

DS 513L - Physiology of Lactation Lab Credits: 0
Lab to accompany DS 513. Corequisites: DS 513.

DS 542 - Dairy Product and Process Development Credits: 3
Students will work in small groups to design and produce a prototype dairy product. The course will include standards of identity for dairy products, nutritional labeling requirements, least cost formulation, design of manufacturing processes and methods for planning product development. Prerequisites: DS 500. Notes: Odd spring.

DS 580 - Dairy Farm Operations I Credits: 4
The first course in a two-semester sequence course addressing dairy herd management practices. Dairy farm capital, budgets and credit; factors affecting economic returns of dairy farming; nutrition and feeding of lactating dairy cattle; and nutritional implications related to herd replacements. Corequisites: DS 580L. Notes: Odd Fall.

DS 580L - Dairy Farm Operations I Lab Credits: 0
Corequisites: DS 580.

DS 581 - Dairy Farm Operations II Credits: 4
The second semester of a two-semester sequence course addressing dairy herd management practices. Production testing and records interpretation; impacts of cropping systems and commodity markets; labor requirements and Human Resources implications; building and equipment requirements; animal health and reproduction; merchandising of cattle and milk; and factors affecting economic returns of dairy farming. Corequisites: DS 581L. Prerequisites: DS 580. Notes: Even Spring.

DS 581L - Dairy Farm Operations II Lab Credits: 0
Corequisites: DS 581. Notes: Even Spring.

DS 711 - Ruminology Credits: 3
Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. Cross-Listed: AS 711. Notes: Odd Fall.

DS 722 - Advanced Dairy and Food Microbiology Credits: 3
Emerging concepts in dairy microbiology related to food preservation, microbial detection techniques, molecular aspects of lactic acid bacteria and applications as probiotics, bacterial pathogenesis, and food safety management systems. Notes: Even Spring.

DS 731 - Laboratory Techniques in Dairy Science Credits: 3
Research design, laboratory techniques, and data management and presentation in Dairy Science. Laboratory procedures include photometry, gas chromatography, and microbiological (aerobic and anaerobic) assays. Notes: Even Fall.

DS 790 - Seminar (COM) Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students. Notes: Spring.

DS 791 - Independent Study Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Student complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

DS 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 of fewer students with significant one-on-one student/teacher involvement.

DS 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

DS 898D - Dissertation - PhD Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

DSCI (Decision Science)

DSCI 553 - Risk Management - Personal and Business Credits: 3
Applications of risk modelling and evaluation skills to personal or business project management. Topics include risk initiation, identification, assessment, and response planning. Cross-Listed: ECON 553.

DSCI 590 - Seminar (COM) Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

DSCI 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

DSCI 592 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

DSCI 594 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

DSCI 596 - Field Experience (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

DSCI 752 - Advanced Business Decision Science Credits: 3
The application of quantitative methods to business management and complex strategic and tactical decisions. Applications of mathematical modelling, regression, simulations, & other tools of analysis to business decisions. Prerequisites: BADM 360, ECON 301 and STAT 281. Cross-Listed: ECON 752.

DSCI 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

DSCI 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

DSCI 793 - Workshop (COM) Credits: 1-3
Special, intense sessions in specific topic areas. 45 hours of student work is required for each hour of credit earned. Workshops may vary in time range, but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

DSGN (Design)

DSGN 592 - Topics (COM) Credits: 1-9
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

ECE (Early Childhood Education)

ECE 591 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ECE 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ECE 645 - Contemporary Perspectives in Early Childhood Education Credits: 3
The course is designed to present contemporary perspectives in the field of early childhood education. Current influences from Dewey to Reggio Emilia on curriculum development and assessment and teaching and learning will be explored.

ECE 676 - Early Childhood Educational Administration and Practices Credits: 1-4

ECE 711 - Developmental Theory and Application Credits: 3
In-depth study of human development. Emphasis upon current theories and their application to an understanding of the developmental growth processes; relationship between cognitive, social, physical and emotional development and behavior; range of normality in growth and behavior. Focus on normal development but with consideration of impact of deviance from normative development on child, family, neighborhood.

ECE 715 - Cognitive Development Credits: 3
This course will focus on the study of human growth and development across the lifespan. Topics include historical and modern views of human development, neurobiological, cognitive and socio-emotional processes and periods of development from conception through adulthood and theories of development.

ECE 788 - Individual Research and Study Credits: 1-7

ECE 791 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ECE 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ECE 794 - Internship (COM) Credits: 1-7
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.

ECE 795 - Practicum (COM) Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

ECE 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ECON (Economics)

ECON 513 - Macroeconomics Policy Credits: 3
Students study government policies designed to shape macroeconomic activity. These policies include fiscal policy, monetary policy, foreign-exchange policy, growth policy, and tax policy. Students study these policies and their macroeconomic consequences theoretically and empirically.

ECON 533 - Public Finance (COM) Credits: 3
Public Finance covers the role of government in the United States economy. The necessity of government in a market economy, optimality in government expenditures and taxation, and a survey of patterns and trends of governmental economic activity are discussed.

ECON 540 - International Economics Credits: 3
Explored the economic interaction between sovereign states, including the gains from trade, the pattern of trade, protectionism, the balance of payments, exchange rate determination, international policy coordination, and the international capital market. Prerequisites: ECON 201 and ECON 202. Cross-Listed: AGEC 540.

ECON 550 - Industrial Organization (COM) Credits: 3
Industrial organization studies how different industry structures influence firm performance and business practices, and how government policies affect competitiveness and the economy.

ECON 553 - Risk Management - Personal and Business Credits: 3
Applications of risk modelling and evaluation skills to personal or business project management. Topics include risk initiation, identification, assessment, and response planning. Cross-Listed: DSCI 553.

ECON 560 - Economic Development Credits: 3
Developing and developed national economies. Factors impacting economic development. Role of public policies in development. Agricultural and rural development issues emphasized.

ECON 567 - Labor Law and Economics Credits: 3
Explores history and development of the U.S. labor movement; the labor market from firm's and union's viewpoint; contract administration; collective bargaining; and public policy toward collective bargaining. Also explores current topics in employment law, discrimination, and employment at will. Cross-Listed: BLAW 567.

ECON 572 - Resource and Environmental Economics (COM) Credits: 3
Resource and environmental economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on environmental economics including the problems of pollution, population, and economic growth. Methods for evaluating projects and programs are considered. Cross-Listed: AGEC 572.

ECON 576 - Marketing Research (COM) Credits: 3
This course provides an in-depth study of the primary methodologies of marketing research. Emphasis is placed on collecting, analyzing, interpreting and presenting information for the purpose of reducing uncertainty surrounding marketing and management decisions. Cross-Listed: MKTG 576.

ECON 590 - Seminar (COM) Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

ECON 591 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ECON 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ECON 593 - Workshop (COM) Credits: 1-3
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

ECON 662 - Bioenergy Economic/Sustainability Credits: 3
This course will provide an understanding of the economic issues relating to overall supply chains producing bioenergy and bio-based products. The course will address the economic, sustainability and social dimensions of these industries. Participants will gain an understanding of triple bottom line objectives, life cycle analysis and the principles of feasibility analysis. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ECON 663 - Bio-Energy Feasibility and Commercialization Credits: 3
This course will introduce the student to the concepts involved in feasibility and commercialization of bio-fuel and bio-based projects. Participants will gain an understanding of issues and processes in moving a project from pilot scale into commercialization. Prerequisites: ECON 201. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ECON 672 - Bioenergy & Resource Economics Credits: 3
Bioenergy and Resource Economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on the tradeoffs and issues related to the production of biomass and development of the biofuels market including resource allocation, valuation methodology, economic growth, and market development. Prerequisites: ECON 201, MATH 121 or MATH 123. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

ECON 691 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ECON 692 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ECON 703 - Advanced Macroeconomics Credits: 3
Advanced Macroeconomics studies the economy as a whole. The course investigates the sources of long-run economic growth and short-run aggregate shocks. Some of the models examined include Solow, Infinite Horizon, Overlapping Generations, New Growth, and Real Business Cycle. Also theories of incomplete nominal adjustment, rational expectations, unemployment and inflation, and monetary and fiscal policies are studied. Prerequisites: ECON 428 or instructor consent.

ECON 704 - Advanced Microeconomics Credits: 3
Rigorous analysis of topics in microeconomics including: methodology of economic science, economic choice, production, resource allocation, distribution, welfare economics, and general equilibrium. Prerequisites: ECON 428 or instructor consent.

ECON 705 - Econometrics Credits: 3
Practice in the application of micro-and macro-economic theory to solutions of real and hypothetical problems. Selection and use of appropriate statistical and other analytical methods suitable for complex problems. Prerequisites: ECON 423 and ECON 428.

ECON 707 - Research Methodology in Applied Economics Credits: 1-3
Planning and conducting empirical research in applied economics. The organization of research, philosophy and the aim of science and research. Research project proposal and presentation are required.

ECON 713 - Monetary Theory and Practice: The American Experience Credits: 3
Examine how the money supply and other nominal economic variables, including inflation rates and nominal interest and exchange rates, relate to real economic variables, including real output, income, and employment. Examine this relationship theoretically, empirically, and in the context of the US experience from 1913 to the present.

ECON 740 - Investment Science Credits: 3
The course will apply econometrics, advanced statistics, and differential calculus to the process of stock analysis and pricing, portfolio composition, options pricing, and risk management. Its focus is on minimizing risk while seeking a target rate of return. Cross-Listed: FIN 740.

ECON 751 - Advanced Managerial Economics Credits: 3
Advanced analysis of management decisions that business industry professionals face on a daily basis in their role as managers of agribusiness, commercial and manufacturing enterprises using microeconomics and econometric methods. Topics include economic analysis of demand, production, cost, market structure, government regulation, risk, and capital budgeting. Cross-Listed: MGMT 751.

ECON 752 - Advanced Business Decision Science Credits: 3
The application of quantitative methods to business management and complex strategic and tactical decisions. Applications of mathematical modelling, regression, simulations, & other tools of analysis to business decisions. Prerequisites: MGMT 360, ECON 301 and STAT 281. Cross-Listed: DSCI 752.

ECON 753 - Financial Management Credits: 3
Advanced techniques for managing working capital, capital budgeting, analysis of financial structure and cost of capital, valuation, financial planning and control. Prerequisites: FIN 310, STAT 281, or instructor consent. Cross-Listed: FIN 753.

ECON 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

ECON 792 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ECON 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EDAD (Educational Administration)

EDAD 705 - Introduction to School Administration Credits: 3
A broad overview of administration. Will examine administration as an applied science and analyze the organizational, political, and human relations systems as forces affecting administration. Specific topics will include conflict resolution, crisis management, planning, staff development, evaluation, and communications theory.

EDAD 706 - Supervision Credits: 3
A study of leadership styles and the effects different styles have on motivating people. Emphasis on utilizing and developing human potential.

EDAD 707 - The Principalship Credits: 2
Emphasis is on the principal as an instructional leader with major topics focusing on staff recruitment, supervision and evaluation, student services, rights and responsibilities, research on effective schools, parent community relationships and the principal's role in dealing with current issues facing our schools. Corequisites: EDAD 709.

EDAD 708 - Elementary Principalship Practicum Credits: 1
Field-based problem-centered experience. Corequisites: EDAD 707.

EDAD 709 - Secondary Principalship Practicum Credits: 1
Field-based problem-centered experience. Corequisites: EDAD 707.

EDAD 731 - School Finance Credits: 2
Develop an understanding and working knowledge of school finance theory and practice. Prerequisites: Emphasis will be placed on the school finance reform movement in recent years.

EDAD 736 - Educational Law and Legislation Credits: 3
Legal foundations of elementary and secondary education in our society; legal powers and relationships of school boards, administrators, teachers, parents (guardians) and students. Emphasis will be placed upon the values underlying these foundations, powers and relationships.

EDAD 741 - Community and Public Relations Credits: 3
Maintaining working relations between school and community from the perspective of the building administrator. Includes working with community organizations and public relations. This course is a prerequisite or co-requisite for EDAD 794 Internship.

EDAD 790 - Seminar (COM) Credits: 1-9
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

EDAD 791 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

EDAD 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

EDAD 794 - Internship (COM) Credits: 1-8
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses. Prerequisites: EDAD 707, EDAD 706, EDAD 741 or concurrent.

EDER (Education Evaluation and Research)

EDER 610 - Introduction to Research Credits: 3
Determining research focus; developing research problems and objectives; reviewing the literature and establishing a theoretical framework; establishing procedures for data collection and analysis; ethical issues.

EDER 612 - Inquiry and Action Research Credits: 3
This course will focus on research design relative to inquiry practices in P-12 classrooms. Primary emphasis will be placed on design, delivery, and analysis of action research in educational settings. Students will complete small scale research projects in their internship sites using this model of educational research.

EDER 614 - Advanced Educational Research Design and Analysis Credits: 3
This course will focus on research design, delivery and analysis in education. Primary emphasis will be placed on survey design, delivery, and analysis, qualitative design, interviewing, transcription and analysis, and classical experimental design and execution in educational settings. Students will draft research publications utilizing journal requirements and prepare them for submission.

EDER 691 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

EDER 711 - Educational Assessment (COM) Credits: 3
Examines the theory and principles of educational assessment.

EDER 760 - Informational Literacy Credits: 3
Particular emphasis is placed on the knowledge needed to be an informed and effective consumer of research. This course helps students become critical consumers of professional information by addressing the location, evaluation, use, and communication of information.

EDER 788 - Master's Research Problems/Projects (COM) Credits: 1-6
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical. Notes: Course is repeatable for additional credit.

EDER 792 - Topics (COM) Credits: 1-6
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

EDFN (Education Foundations)

EDFN 527 - Middle School: Philosophy and Application Credits: 2
Group processes and issues in affective education at the middle school/junior high level. Topics for study are group processes, interdisciplinary team planning, cooperative learning, student advisory programs, self-esteem building, and student/teacher relationships. Prerequisites: Consent (Admission to teacher education program, junior standing, an adolescent psychology/development course).

EDFN 560 - Applied Linguistics for Teaching English as a Second Language (COM) Credits: 3
The study of social and linguistic structures which undergird different discourse forms. Emphasis will be on discourse forms which are particularly important for full participation in US culture such as the rhetoric of public and school interactions.

EDFN 561 - Cultural and Psychological Perspectives in the Acquisition of English as a Second Language Credits: 3
Addresses the social and cognitive processes involved in the acquisition of a second language including developmental influences.

EDFN 562 - Teaching Language Arts for English as a Second Language Across the Curriculum Credits: 3
The teaching of reading and writing to students with limited English proficiency. Emphasis will be on reading and writing as it pertains to performance in educational and public settings.

EDFN 563 - Methods of Teaching English as a Second Language Credits: 3
Develops the central concepts, tools of inquiry, and structure of teaching English to students with limited English proficiency. Includes the evaluation of instructional processes, learning resources, curriculum, and programs. Emphasis will be on teaching students to use English in educational and public settings.

EDFN 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

EDFN 600 - Advanced Pedagogy Credits: 3
A study of the nature and principles of curriculum and curriculum development in schools. Process of curriculum change, development and evaluation will be examined. Roles of teachers, administrators, students and the public in curriculum change will be studied and applied in a clinical setting.

EDFN 691 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

EDFN 700 - Exceptional Learners Credits: 3
Assist regular classroom teachers to better understand and more effectively teach students with special learning needs. Focuses on learning disabilities, mental retardation, and behavior disorders. Also includes short sections regarding hearing impairments, visual impairments, orthopedic or health impairments, speech/language disorders, and the gifted. Regular classroom curricular adaptations and modifications are included. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

EDFN 701 - Capstone Credits: 1
A highly focused, and topical course integrated with the final internship. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media.

EDFN 725 - Education in a Pluralistic Society Credits: 3
Focus on school issues surrounding pluralism in a democratic society. This course relates to working with the diversity of populations within our schools. This diversity is represented in our schools by the multi-cultural nature of American society, and differences associated with exceptionality, gender, age, religion, and socio- economic status. The course will focus on preparing educators to confront issues relating to pluralism and diversity and to work productively in a variety of settings. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

EDFN 727 - Group Processes Credits: 3
A survey of small group constructs, research, and principles of application. Emphasis on learning methods and skills of group observation as well as developing knowledge of group roles and dynamics. members will learn experimentally about groups by participating, observing and analyzing opportunities to experience their own behaviors and styles as they deem appropriate.

EDFN 730 - Current Issues in Education (COM) Credits: 3
Analysis of current trends and issues in education. Focus on the change process in educational and social settings.

EDFN 750 - Educational Technology Credits: 3
This course provides an advanced grounding in the educational uses of computing and communications technology. It includes integration of technology into the classroom, distance education, multimedia production, and school management systems.

EDFN 751 - Teaching Reading Across Disciplines Credits: 3
Examines the latest research on how readers comprehend and learn from written tests, and the classroom applications of this research. Intended for teachers of content subjects (science, English, math, history, etc.) in grades 4 through the early years of college. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

EDFN 754 - Clinical Practice in Reading Credits: 1-3
Supervised experience in utilizing best techniques and materials to effect desirable solution to reading difficulties; practical experience in writing case studies, in diagnosing reading disability. Proposing effective remediation, keeping records and in evaluating progress of student.

EDFN 790 - Seminar (COM) Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

EDFN 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

EDFN 794 - Internship (COM) Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.

EDFN 798 - Thesis (COM) Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EE (Electrical Engineering)

EE 536 - Photovoltaic Systems Engineering Credits: 3
Fundamentals of hybrid photovoltaic power systems. Topics may include: an overview of energy and electricity use; solar resource characteristics; load assessment; the fundamentals of solar cells, batteries, power electronics, and generators and other power sources; power system design; the National Electric Code; and energy economics. Corequisites: EE 536L.

EE 536L - Photovoltaic Systems Engineering Laboratory Credits: 1
This lab provides practical experience in the design of hybrid photovoltaic power systems. Corequisites: EE 536.

EE 554 - Biomedical Instrumentation and Electrical Safety Credits: 3
The design of electronic instrumentation for physiological applications. Emphasis on modeling and design of biopotential electrode/amplifier systems, physiological measurement techniques, therapeutic and prosthetic devices, and electrical safety in healthcare facilities. Prerequisites: EE 321.

EE 560 - Sensors and Measurements Credits: 2
Introduction to the operation, design, testing and applications of modern sensors in use and under development. Signal conditioning and system integration are also reviewed. Corequisites: EE 560L.

EE 560L - Sensors and Measurements Laboratory Credits: 0

EE 562L - Electronic Materials Laboratory Credits: 1
An introduction to microelectronic fabrication including evaporative and sputter deposition, photolithography, mask design, and packaging. Prerequisites: Instructor consent.

EE 575 - Digital Image Processing Credits: 3
Introductions to the fundamentals of digital image processing. Topics include image formation, transforms, enhancement, restoration, compression, and analysis. Prerequisites: EE 317.

EE 591 - Independent Study (COM) Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

EE 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

EE 592L - Topics in Laboratory Experience (COM) Credits: 1
This course provides opportunities for students to engage in hands-on experience in subject material that does not already have a laboratory component.

EE 691 - Independent Study (COM) Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

EE 692 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

EE 716 - Digital Fabrication: Materials and Processes (COM) Credits: 3
The principles of interfacial phenomenon, solution thermodynamics, and colloid chemistry will be used in illuminated process by which metallic nanoparticulates can be formed and incorporated into inks for use in manufacturing of a variety of products. Students will learn 1) the methods and science behind the manufacture of a variety of functional nanoparticles, 2) the methods of incorporating these particles into inks and the printing of these inks for digital fabrication applications, and 3) the interfacial processes involved in line spreading and curing of the printed traces. Cross-Listed: MES 677 and NANO 677 at SDSM&T; CHEM 716 at USD.

EE 722 - Advanced Statistical Communications (COM) Credits: 3
Advanced concepts of probability and random processes; linear systems and random processes; performance of amplitude angle and pulse modulation systems in noisy environments; digital data transmission; and basic concepts of information theory.

EE 731 - Advanced Power Electronics Credits: 4
This course presents an overview of switching power devices and power electronics converters focused on power electronic interfaces for renewable energy systems, switch mode power supplies and UPS systems. The course emphasizes power electronic circuit analysis, design, and the fundamentals of modeling and control of power converters. Qualitative and quantitative analysis of power electronics converters is presented focusing on the design and performance of AC/DC, DC/DC, DC/AC, and AC/AC converters including the control system performance. Corequisites: EE 731L.

EE 731L - Advanced Power Electronics Lab Credits: 1
This course presents a practical overview of switching power devices and power electronic converters focused on power electronic interfaces for renewable energy systems, switch mode power supplies and UPS systems. The course is project based and provides the experience for students to practice in the lab the knowledge obtained in the lecture section. Corequisites: EE 731.

EE 732 - Modeling and Control of Power Electronic Systems Credits: 3
This course presents approaches for computer-aided analysis and design of power electronic interfaces for renewable energy systems. Techniques for modeling electric generators, power converters and renewable energy sources (i.e. wind and solar), and for designing converters with feedback control are discussed. Corequisites: EE 732L.

EE 732L - Modeling and Control of Power Electronic Systems Lab Credits: 1
This course presents a laboratory experience for computer-aided analysis and design of power electronic interfaces for renewable energy systems. Techniques for modeling electric generators, power converters and renewable energy sources (i.e. wind and solar), and for designing converters with feedback control are presented. Corequisites: EE 732.

EE 733 - Advanced Power System Analysis Credits: 3
This is an advanced course to power systems engineering, designed to provide a student with the knowledge of steady-state analysis in power system operation. Course content includes power flow analysis, state estimation, power system security, automatic generation control, economic dispatch, optimal power flow, unit commitment, fuel scheduling, and production cost modeling. Corequisites: EE 733L.

EE 733L - Advanced Power System Analysis Lab Credits: 1
This course presents computer (PSS/E) modeling and simulation of power system operation and control, including load-flow, contingency analysis, unit commitment, economic dispatch, optimal power flow, etc. The course is project based and will provide the experience for students to practice in the lab the knowledge obtained in the lecture section. Corequisites: EE 733.

EE 734 - Power System Dynamics and Stability Credits: 3
This course will cover modeling, analysis and mitigation of power system stability and control problems. Planning and operations of a modern interconnected power grid under disturbances to ensure system performance and reliability will also be covered. Students will learn both analytical and numerical methods to solve realistic power system stability and control problems. Corequisites: EE 734L.

EE 734L - Power System Dynamics and Stability Lab Credits: 1
This course presents computer (PSS/E) modeling and simulation of power system stability and control, including, synchronous machine modeling, automatic generation control, transient stability, voltage stability, small signal stability, etc. The course is project based and will provide the experience for students to practice in the lab the knowledge obtained in the lecture section. Corequisites: EE 734.

EE 735 - Photovoltaics (COM) Credits: 3
This course will cover modern silicon photovoltaic (PV) devices, including the basic physics, ideal and nonideal models, device parameters and design, and device fabrication. The emphasis will be on crystalline and multicrystalline devices, but thin films will also be introduced. PV applications and economics will also be discussed.

EE 736 - Advanced Photovoltaics (COM) Credits: 3
This course will cover advanced photovoltaic concepts, including thin films, compound semiconductors, spectral conversion devices, and organic and polymeric devices. Advanced device designs will be emphasized. Evaluation will include a research paper addressing a current PV topic. Prerequisites: EE 735.

EE 737 - Organic Photovoltaics (COM) Credits: 3
Organic photovoltaic provides a variety of interesting and new properties which facilitate solar energy utilization. The objectives of this course are to introduce material properties of polymers, small molecules, dyes, and nanomaterials for photovoltaics; describe device mechanisms and behavior or organic photovoltaics; understand the photophysical processes in organic photovoltaics; and introduce different processing techniques for device fabrication.

EE 751 - Linear Systems Theory Credits: 3
State variables, Laplace transform theory, matrix analysis and complex variable theory as applied to problems in circuit analysis. Topology, network theorems and network functions.

EE 765 - Electric Properties of Materials Credits: 3
Topics covered include electromigration, diffusion, theory of rate processes, relaxation, effects, phase transformations, physics of failure in electrical circuit applications.

EE 766 - Thin Films and Plasma Processing Credits: 3
This course will focus on the state-of-the art thin film materials and plasma processing. The contents include thin film optics theory, function principle of optoelectronic materials and devices, and fundamental plasma science and technologies. Hands on training on plasma processing and optical filter design will be provided. Specific materials and processes to be studied will be decided by the course instructor.

EE 770 - Information and Signal Processing Credits: 3
Foundation of information theory and its relationship to the measure and transmission of information; comparison of analog and digital system implementations. Topics include random processes, signal representation, spectral analysis, channel capacity, rate distortion, coding, data compression. Z-transforms and digital filtering. Prerequisites: EE 310 or EE 316.

EE 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

EE 790 - Seminar (COM) Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

EE 791 - Independent Study (COM) Credits: 1-9
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

EE 792 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

EE 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EE 898D - Dissertation - PhD Credits: 1-6
A formal treatise presenting the results of a study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EES (Ecology and Environmental Science)

EES 525 - Disturbance and Restoration Ecology Credits: 3
Introduction to basic concepts of disturbance and restoration ecology. Demonstration and discussion of linkages between basic biology and management of natural resources. Corequisites: EES 525L. Prerequisites: NRM 311.

EES 525L - Disturbance and Restoration Ecology Lab Credits: 0
Corequisites: EES 525.

EES 692 - Topics (COM) Credits: 1-7
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

EES 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

EES 792 - Topics (COM) Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

ELED (Elementary Education)

ELED 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

EM (Engineering Mechanics)

EM 522 - Theory of Elasticity Credits: 3
Analysis of stress and strain; equilibrium and compatibility equations; Hooke's law; fundamental problems in the theory of elasticity; plane-stress and plane-strain problems of the narrow beam, rotating discs and a plate with a circular hole. Prerequisites: EM 321, MATH 331 or equivalent.

EM 523 - Theory of Plasticity Credits: 3
Analysis of stress and strain; plastic behavior of materials; basic laws of plastic flow; applications to bending of beams, torsion of bars and thick-walled cylinders; slip line theory and its application to extrusion problems; limit analysis theorems and their applications to structural problems. Prerequisites: EM 522 or instructor consent.

EM 624 - Theory of Plates and Shells Credits: 3
Small-deflection theory of plates. Laterally-loaded rectangular plates. Navier and Levy solutions. Plates of various shapes, boundary conditions, and loading systems. Basic equations of the theory of shells. Design problems in cylindrical shells.

EM 731 - Advanced Fluid Mechanics Credits: 3
Fundamental notions of continuum, stress at a point velocity field, and vorticity. General principles of kinematics and dynamics of a fluid. Potential flow and vortex motion. Prerequisites: EM 331, MATH 331.

EM 741 - Finite Element Analysis Credits: 3
Theoretical basis of the method of finite element analysis-an approximate method which analyzes problems using small, but finite elements rather than the infinitesimal elements of the calculus. Two-and three dimensional stress analysis, plate bending and shell problems, static, dynamic and stability problems. Geometric and material non-linearities. Introduction to both heat and fluid flow problems. Prerequisites: MATH 321.

ENGL (English)

ENGL 534 - English 18th Century Literature (COM) Credits: 3
Literature of the later 17th and 18th centuries (1660-1800), including major works and developments in literature and thought.

ENGL 538 - English Victorian Literature Credits: 3
English literature of the Victorian Period (1840-1900).

ENGL 554 - American Realism and Naturalism (COM) Credits: 3
The development of realistic and naturalistic literature in America.

ENGL 560 - Contemporary American Literature Credits: 3
American literature since WWII.

ENGL 581 - Travel Studies Credits: 1-5
This travel study course is designed to provide extra-mural educational experiences, as approved by and under the direction of a faculty member, and may be in cooperation with faculty and administrators of other institutions. Students will participate in hands-on activities and design educational activities for presentation at selected locations.

ENGL 583 - Advanced Creative Writing (COM) Credits: 3
A course allowing students with experience in creative writing to specialize in a particular genre (poetry, fiction, etc.). Prerequisites: Pre-requisite: ENGL 383 or instructor consent.

ENGL 591 - Independent Study (COM) Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ENGL 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ENGL 704 - Introduction to Graduate Studies Credits: 3
An introduction to literary criticism and study of bibliographic tools (including electronic sources) and research methods needed for scholarly writing in the Humanities. Required of all candidates for the M.A. degree in English.

ENGL 705 - Seminar in Teaching Composition Credits: 3
Study of the methods, theories, and history of writing instruction. Prerequisites: A course for English GTAs and required of them.

ENGL 710 - Seminar in Rhetoric Credits: 3
Intensive study of selected periods or topics in rhetoric, with special emphasis on their relation to issues in criticism and composition.

ENGL 723 - Seminar in English Literature To 1660 Credits: 3
Intensive study of a selected type, theme, author, or period of English Literature from the beginning to 1660.

ENGL 726 - Seminar in English Literature Since 1660 Credits: 3
Intensive study of a selected type, theme, author, or period of English literature since 1660.

ENGL 728 - Seminar in American Literature To 1900 Credits: 3
Intensive study of a selected type, theme, author, or period of American literature to 1900.

ENGL 729 - Seminar in American Literature Since 1900 Credits: 3
Intensive study of a selected type, theme, author, or period of American literature since 1900.

ENGL 742 - Seminar in American Indian Literature Credits: 3
Intensive study of American Indian literature of the past or present with concentration on the Plains Indians.

ENGL 756 - Seminar in Minority Literature Credits: 3
American literature of specific cultural or ethnic minorities other than Native American (African American, Asian American, Hispanic, Jewish, or woman writers, for example). May be repeated once with different content.

ENGL 788 - Master's Research Problems/Projects (COM) Credits: 1-6
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

ENGL 791 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ENGL 792 - Topics (COM) Credits: 1-4
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

ENGL 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ENTR (Entrepreneurship)

ENTR 592 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

ENTR 792 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

EPSY (Educational Psychology)

EPSY 723 - Adolescent Psychology Credits: 3
This course covers the mental, social, and emotional development of boys and girls during the adolescent period. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

EPSY 740 - Advanced Educational Psychology Credits: 3
A study of theories of learning. The goal of the course is for each student to gain insight into their own beliefs about how learning occurs.

EXCH (Exchange Programs)

EXCH 589 - Student Exchange - International (COM) Credits: 0-18
This course allows students to register as full- time students while taking part in an Exchange Program. Students will register on their home campus for the number of credit hours they intend to take while enrolled at another campus.

EXPL (Experiential Learning)

EXPL 587 - Study Abroad (COM) Credits: 0-18
The goal of the course is to track student enrollment in a study abroad experience as well as to award credit for the time and effort necessary in the preparation, culture-learning, and re-entry processes of study abroad.

EXS (Exercise Science)

EXS 550 - Clinical Exercise Physiology Credits: 3
This course is designed to provide the clinical exercise physiology student with assessment and prescription techniques appropriate to special populations. Prerequisites: EXS/PE 350.

EXS 555 - ECG and Clinical Stress Testing Credits: 3
This course is designed to fill the needs of students who desire the ability to interpret the normal and abnormal, resting and exercise ECG, as well as provide opportunities to learn and practice the basic components of maximal stress testing during a variety of exercise conditions. Since clinical stress testing and ECG interpretation is a vital component of the laboratory skills needed by today's exercise physiologist, emphasis in this course will be focused on understanding and interpreting ECG tracings and related pathophysiology, preparation of the exercise 12-lead ECG, and interpretation of maximal stress test results regarding exercise tolerance for various clinical populations and comparing them to normal individuals. In addition, an overview of other diagnostic procedures that involve the use of exercise will be given. Prerequisites: Consent.

EXS 745 - Applied Biomechanics Credits: 3
This course provides students with an advanced application of mechanical principles to human movement. Specific topics will include the force-motion relation, kinetics and kinematics of human motion, and neuromuscular adaptations. Emphasis within these topics will be placed on evaluating and developing rehabilitation and performance techniques using motion capture, force platforms, and electromyography. Current research literature in each of the areas will be discussed and critically reviewed.

EXS 750 - Advanced Exercise Physiology Credits: 3
Physiological basis of factors which influence physical fitness and physical performance; application of physiological measures to fitness programs, critical analysis of current literature; emphasis on bioenergetics, neuromuscular and circulorespiratory function, body composition and physical training. Prerequisites: NES Majors only.

EXS 751 - Laboratory Techniques in Exercise Physiology Credits: 3
A study of methods measuring the effects of physical exercise including tests, and statistical manipulation of the results of specific evaluation tools. These tools include the methods of determining surface area of humans; resting and exercise blood pressure in humans; vertical, horizontal and lateral center of gravity in humans; determination of adipose tissue via skinfold and hydrostatics in humans; measurement of dynamic flexibility; evaluation of static flexibility; evaluation of lung capacities; measurement of lung volumes; measurement of bench press strength at three angles of elbow flexion; determination of leg extension strength; determination of knee flexion; determination of generated horse power in humans; prediction of oxygen uptake via sub-maximal treadmill test in humans.

EXS 755 - Applied Exercise Physiology Credits: 3
Focuses on the applied aspect of exercise physiology. Includes areas of environmental influences on performance, optimizing performance by developing and implementing training programs appropriate to the individual. In addition, training and performance characteristics of adolescent athletes and older adults as well as gender differences will be discussed. Notes: For NES majors only.

FCSE (Family and Consumer Sciences Education)

FCSE 531 - Work Based Learning Credits: 2
Strategies for developing curriculum and designing methods of instruction for teaching employability skills, career decision making and occupational areas of family and consumer sciences. A field experience will be included. Cross-Listed: AGED 531.

FCSE 591 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

FCSE 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 595 - Practicum Credits: 1-3
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with Field Experience courses. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 611 - History and Philosophy of Family and Consumer Sciences Credits: 3
The history, mission, philosophy and development of Family and Consumer Sciences (FCS) and career and technical education; the societal context for families and communities and the impact of selected legislation and consumer sciences programs. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 673 - Supervised Student Teaching in Family and Consumer Sciences Education Credits: 6-9
Student teaching is the capstone experience in a comprehensive program for the professional development of teacher candidates. MS-FCS teacher education candidates will spend 10-16 weeks in family and consumer sciences classrooms working directly with teaching-learning situations under the guidance of cooperating teachers and a university supervisor. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 721 - Occupational Programs in Family and Consumer Sciences Credits: 3
This course will include the planning and implementing of occupational FCS programs in career and technical education. Emphasis on cooperative education, career pathways and work- based education. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 741 - Supervision of Family/Consumer Sciences Education Credits: 2
This course will cover the philosophy, responsibilities, and techniques of supervision in the family and consumer sciences classroom and other learning environments.

FCSE 751 - Curriculum of Family/Consumer Sciences Education Credits: 3
The analysis and development of curriculum and methods of teaching family and consumer sciences in the context of the National Standards for Family and Consumer Sciences Students, the National Standards for Teachers of Family and Consumer Sciences and appropriate state standards. This course will include the content topics of learners and the learning environment, program leadership, beginning instructional strategies, Family, Career and Community Leaders of America (FCCLA); curriculum development; integration of technology in the FCS classroom and assessment. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 761 - Advanced Methods and Assessment in Family & Consumer Sciences Education Credits: 3
This course will address the application of theories of learning and human development in selecting teaching strategies and instructional resources for family and consumer sciences. The course will include long-range planning, classroom management, laboratory management, assessment and program evaluation, marketing/public relations, FCCLA and methods of teaching. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 788 - Master's Research Project (COM) Credits: 1-3
Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

FCSE 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

FCSE 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

FIN (Finance)

FIN 511 - Investments (COM) Credits: 3
This course is a thorough study of the equity market including fundamental valuation techniques, asset allocation, the efficient markets hypothesis and its implications, portfolio theory, risk and return, the primary and secondary market mechanisms, security market indicators, and international investing. An overview of the bond market including bond valuation, duration, and bond portfolio management, and an introduction to options, futures, and forward contracts are provided. The vital roles of computer technology and electronic trading are also explored. Prerequisites: BADM/FIN 310. Cross-Listed: BADM 511.

FIN 513 - Advanced Corporate Finance (COM) Credits: 3
This course utilizes a combination of cases and theory in studying the investment, financing and dividend decisions of the firm. The emphasis is on long-term debt and equity financing as well as managing financial risk.

FIN 517 - International Finance (COM) Credits: 3
International Finance explores the principles of financial management from an international perspective. Background material on foreign exchange markets and risk is provided, and the theory of foreign exchange markets is discussed. Emphasis is placed on corporate finance for international firms. Both direct and indirect investment as well as financing decisions for multinational corporations are covered.

FIN 520 - Student Managed Investment Fund Credits: 3
This course involves hands-on experiential learning of real money management. Students will actively participate in all aspects of security analysis and portfolio management, including understanding investment ethics, generation of trading ideas, investment analysis, asset valuation and allocation, trading of financial securities, and performance report.

FIN 590 - Seminar (COM) Credits: 3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

FIN 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

FIN 592 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

FIN 594 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

FIN 596 - Field Experience (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

FIN 740 - Investment Science Credits: 3
The course will apply econometrics, advanced statistics, and differential calculus to the process of stock analysis and pricing, portfolio composition, options pricing, and risk management. Its focus is on minimizing risk while seeking a target rate of return. Cross-Listed: ECON 740.

FIN 753 - Financial Management Credits: 3
Advanced techniques for managing working capital, capital budgeting, analysis of financial structure and cost of capital, valuation, financial planning and control. Prerequisites: BADM/FIN 310, STAT 281, or instructor consent. Cross-Listed: ECON 753.

FIN 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

FIN 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

FS (Food Science)

FS 500 - Food Chemistry and Analysis Credits: 5
Principles and techniques of physical and chemical analysis of food products. It will include proximate analysis of moisture, protein, lipid, and carbohydrates and chemical or instrumental analysis of vitamins, minerals and food additives. Corequisites: FS 500L. Notes: Fall.

FS 500L - Food Chemistry and Analysis Lab Credits: 0
Laboratory to accompany FS 500. Notes: Fall.

FS 551 - New Food Product Development Credits: 4
This course is designed as a capstone course for undergraduate Food Science students and an introductory course for graduate students in food-related majors. The principles and technologies of food storage, process and packaging will be discussed in depth. Emphasis will be placed in the development of new food products. Notes: Even Spring.

FS 551L - New Food Product Development Laboratory Credits: 0
Notes: Even Spring.

FS 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

FS 792 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

FS 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

FS 898D - Dissertation (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GE (General Engineering)

GE 510 - Human Factors in Design Credits: 3
Human factors engineering (HFE), sometimes called ergonomics, deals with optimizing working and living conditions through designing for human use. The central approach of HFE involves the systematic application of relevant information about user characteristics, behavior and expectations in the design of man-made products, equipment, facilities, and environments. The objectives of HFE are (1) to enhance the effectiveness and efficiency of work and other human activities; and (2) to enhance the product user's comfort, safety, health and satisfaction.

GE 525 - Occupational Safety and Health Management Credits: 3
This course covers methods to implement and manage a safe work environment. Study will address OSHA standards and other related governmental regulations, hazard recognition and control, accident cost assessment, ergonomics, and emphasis on a proactive approach to accident prevention.

GE 569 - Project Management Credits: 2-3
An overview of project management as it relates to integrated systems, product/project life cycle, and organizational change. Defining, estimating, scheduling, risk management, and project team leadership issues will be covered as they relate to projects. Cross-Listed: OM 569.

GE 591 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

GE 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

GE 685 - Management and Leadership in Technical Organizations Credits: 3
Study of the roles and responsibilities of managers in technology-driven organizations. Topics include leadership, strategic planning and implementation, staffing and training to meet organizational needs, personal management style, and communicating effectively with all levels of an organization.

GE 690 - Seminar Credits: 1-3
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

GE 691 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

GE 692 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

GE 696 - Field Experience (COM) Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study established between the student, instructor and field experience supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case in an internship or practicum course.

GE 750 - Capstone Credits: 1
Project that integrates technical knowledge in an engineering discipline, application of engineering, management and leadership concepts, and ability to effectively communicate.

GE 788 - Master's Research Problems/Projects (COM) Credits: 1-2
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

GE 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GEOG (Geography)

GEOG 510 - Soil Geography and Land Use Interpretation Credits: 2
Relationship of soil characteristics and soil classification to land use interpretations. Laboratory exercises involve field and laboratory procedures used in soil survey investigations. Corequisites: GEOG 510L. Prerequisites: GEOG 132-132L or PS 213-213L or instructor consent. Cross-Listed: PRAG 510.

GEOG 510L - Soil Geography and Land Use Interpretation Lab Credits: 1
Lab to accompany GEOG 510. Corequisites: GEOG 510. Cross-Listed: PRAG 510L.

GEOG 515 - Environmental Geography and Sustainability Credits: 3
Geographical aspects of environmental issues including historical geography of environmental problems, global driving forces, land ethics and stewardship, environmental externalities, population, resources, climate change, and environmental restoration. Focus on connections between human and natural systems; consequence chains between cause and effect; impact of time and space on problem perception, analysis, and solution; and natural and human laws. Term paper required.

GEOG 520 - Geography of Tourism Credits: 3
Based on fundamental tourism principles, this course will examine, from a geographical perspective, the social, cultural, environmental and economic complexities associated with tourism as a global, national and local phenomenon. This course will also consider the positive and negative factors that affect tourists and destinations, and the costs and benefits of tourism to communities and places, providing case-study examples from the United States and around the world. Cross-Listed: HMGT 520.

GEOG 521 - Research Methods in Geography Credits: 3
The use of qualitative and quantitative techniques designing and completing field research in geography and beyond. Special focus will include mixed methods for synthesis, research and survey design, interviewing, ethnography, and visual techniques such as the use of imagery, photography, sketch mapping, and Global Positioning Systems (GPS) for the collection and analysis of geospatial data.

GEOG 525 - Population Geography Credits: 3
Geographic analysis of such population characteristics as: numbers and distribution; growth and change; composition; mortality, fertility, and theories of population change; policy and family planning; migration and mobility; population, environment, food supply, and human wellbeing. Problems and prospects are considered in the context of each topic.

GEOG 530 - Geography of Europe Credits: 3
This course focuses on the physical, historical, and cultural features that have shaped the current landscapes of Europe.

GEOG 540 - Health Geography Credits: 3
The course will explore the history of health geography, its role in public health and other health applications, the use of maps, geospatial methods and GIS within health programs and initiatives, all from the geographic perspective and how place impacts the overall health of communities. Cross-Listed: PUBH 540.

GEOG 547 - Geography of the Future Credits: 3
A futuristic analysis of Earth's natural environmental elements, natural resources, population and settlement, and cultural institutions at the global, national, and state levels.

GEOG 554 - Sustainable Communities Credits: 3
This course investigates the intersection of sustainability and communities. This primary focus on this course is the interconnections between social, economic, and environmental systems and their reflexive interactions with community form and function. The goal is to examine policies and programs that can be used to achieve sustainable communities.

GEOG 559 - Political Geography Credits: 3
This course addresses geographic factors which influence current international relations and the policies of nations and political units with consideration given to aspects of geopolitics, racial/ethnic groupings, religions, languages, boundaries, and territorial changes.

GEOG 560 - Geopolitics Credits: 3
An introduction to geopolitics that addresses the fundamental links between power and space at the global, national, and local scales. Focuses on classical geopolitics, critical geopolitics, political-economic approaches to geopolitics, world orders and hegemonic cycles, historical development of the international state system, and geography of imperialism.

GEOG 561 - Urban Geography Credits: 3
Geography of cities: types, functions, and distribution of world cities. Special emphasis on planning of cities in the U.S.

GEOG 571 - Introduction to GIS Programming Credits: 3
This course aims to help students develop programming skills for GIS. Specifically, this course covers the following topics: fundamentals of programming, object-oriented programming (OOP), software development life cycle, GIS data processing, and popular GIS libraries. Prerequisites: GEOG 372 and INFO 101.

GEOG 573 - GIS Data Creation/Integration Credits: 3
This course introduces advanced tools and techniques of data creation, data integration, mapping, and spatial analysis in Geographic Information Systems (GIS). It provides basic approaches for solving problems of data integration including format identification, conversion, and spatial registration. Building on the skills and techniques learned in the introductory GIS course or equivalent, it gives a conceptual base to many methods and techniques associated with vector and raster-based spatial analysis including imagery. It provides an examination of the functions and capabilities of ArcGIS Desktop GIS software (including extensions). Corequisites: GEOG 573L.

GEOG 573L - GIS: Data Creation and Integration Lab Credits: 0
Hands-on experience to apply advanced tools and techniques of data creation, data integration, mapping, and spatial analysis in Geographic Information Systems (GIS). It provides basic approaches for solving problems of data integration including format identification, conversion, and spatial registration. Building on the skills and techniques learned in the introductory GIS course or equivalent, it gives a conceptual base to many methods and techniques associated with vector and raster-based spatial analysis including imagery. It provides an examination of the functions and capabilities of ArcGIS Desktop GIS software (including extensions). Corequisites: GEOG 573.

GEOG 574 - GIS: Vector & Raster Modeling Credits: 3
This course introduces basic concepts of vector and raster modeling in Geographic Information Systems (GIS) with special emphasis on construction and use of raster digital elevation models (DEMs). Provides in-depth experience with a range of geoprocessing techniques for handling and analyzing GIS data. Topics include vector processing in a model framework, weighted suitability modeling, path findings, modeling viewsheds, constructing surfaces from point samples, and spatial hydrologic modeling. Builds on the skills and techniques learned in the introductory GIS course or equivalent. Corequisites: GEOG 574. Prerequisites: GEOG 372.

GEOG 574L - GIS: Vector and Raster Modeling Lab Credits: 0
Hands-on experience to apply basic concepts of vector and raster modeling in Geographic Information Systems (GIS) with special emphasis is on construction and use of raster digital elevation models (DEMs). Provides in-depth experience with a range of geoprocessing techniques for handling and analyzing GIS data. Topics include vector processing in a model framework, weighted suitability modeling, path finding, modeling viewsheds, constructing surfaces from point samples, and spatial hydrologic modeling. Corequisites: GEOG 574.

GEOG 575 - GIS Applications Credits: 3
This course explores the latest software and its applications in Geographic Information Sciences. Corequisites: GEOG 575.

GEOG 575L - GIS Applications Lab Credits: 0
Hands-on experience to explore the latest software and its applications in Geographic Information Sciences. Corequisites: GEOG 575.

GEOG 576 - Web GIS Credits: 3
This course covers the basic theories, principles, and protocols of Web GIS. Students will learn how to acquire, manage, and publish GIS data in a web-based environment. Corequisites: GEOG 576L. Prerequisites: GEOG 372.

GEOG 576L - Web GIS Lab Credits: 0
Develop relevant skills to design and implement a Web GIS application. Corequisites: GEOG 576.

GEOG 577 - Spatial Databases Credits: 3
Spatial databases play a significant role in GIS. This course covers the basic theories, principles, and protocols of spatial databases. Learn how to design a spatial database and manage GIS data in the database. Corequisites: GEOG 577L.

GEOG 577L - Spatial Databases Lab Credits: 0
Develop relevant skills to design and implement a spatial database. Corequisites: GEOG 577.

GEOG 583 - Aerial Remote Sensing Credits: 3
Principles and techniques of extracting descriptive and numerical information about features on the Earth's surface from aerial imagery acquired in analog and digital forms from various aerial platforms, including small Unmanned Aircraft Systems. Applications emphasize feature extraction, planimetric mapping, and interpretation of physical and cultural landscapes. Corequisites: GEOG 583L.

GEOG 583L - Aerial Remote Sensing Lab Credits: 0
The lab is a hands-on experience using various software and the application of methods and principles of aerial remote sensing. Corequisites: GEOG 583.

GEOG 584 - Remote Sensing Credits: 3
Applications of remote sensing. Development of remote sensing; instrumentation; and techniques and methodology that will aid in the determination of need and proper utilization of our physical and cultural resources. Corequisites: GEOG 584L.

GEOG 584L - Remote Sensing Lab Credits: 0
This is a co-requisite for GEOG 584. Hands-on experience using various software and the application of methods and principles of remote sensing. Corequisites: GEOG 584.

GEOG 585 - Quantitative Remote Sensing Credits: 3
This course will concentrate on the digital processing and visualization of various types on remotely sensed imagery. Image sources, characteristics, formats and analysis techniques will be explored as well as the integration of remotely sensed imagery with GIS and GPS datasets.

GEOG 585L - Quantitative Remote Sensing Lab Credits: 0
Lab to accompany GEOG 585.

GEOG 590 - Seminar Credits: 1-4
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollments in generally limited to fewer than 20 students.

GEOG 591 - Independent Study (COM) Credits: 1-4
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

GEOG 710 - Evolution of Geographic Thought Credits: 3
The history and development of geography and its theories, schools of thought, and current ideas.

GEOG 714 - Research and Writing Credits: 3
Development of geographic research and writing skills including a survey of data sources and literature, and preparation of reports, papers, articles, and the master's thesis.

GEOG 741 - Quantitative Remote Sensory for Terrestrial Monitoring Credits: 3
The course will describe the science, algorithms, and computational approaches to generate and assess derived satellite products for long term Earth system monitoring. Emphasis will be on the principles of optical remote sensing and state-of- the-art quantitative algorithms for estimating biophysical and geophysical land surface variables from remotely sensed observations. Prerequisites: STAT 541 and GEOG 484 or consent. Cross-Listed: GSE 741.

GEOG 743 - Geospatial Analysis Credits: 3
This course covers concepts and methods of spatial data analysis, focusing on the analysis of broad-scale geographic datasets characterizing physical, biological, and socioeconomic landscape features. Students learn to develop scientific hypotheses about spatial relationships, and to test these hypotheses using appropriate spatial datasets and analytical techniques. Topics include exploratory data analysis, methods for quantifying spatial pattern, development of explanatory models to test spatial hypotheses, and development of predictive models for spatial interpolation. Prerequisites: One graduate level course in statistics (e.g. STAT 541 or equivalent). Cross-Listed: GSE 743.

GEOG 760 - Advanced Methods in Geospatial Modeling: Topical Credits: 3
Selected topics in advanced methods in geospatial modeling. May be repeated for credit. Specific topics covered will change each semester. Cross-listed: GSE 760. Prerequisites: Graduate standing in a degree program. Specific pre-requisites dependent on topic.

GEOG 765 - Advanced Studies in Land Utilization Credits: 1-4
The physical and cultural factors affecting the nature and pattern of land utilization. Local and/or regional utilization, planning, and problems will be studied in detail in relation to the topic. Course may be repeated under different topic.

GEOG 766 - Advanced Remote Sensing Application Credits: 3
Selected topics in advanced applications in remote sensing. May be repeated for credit. Specific topics covered will change each semester. Prerequisites: Graduate standing in a degree program. Specific pre-requisites dependent on topic. Cross-Listed: GSE 766.

GEOG 767 - Fire and Ecosystems Credits: 3
This course is a broad treatment of how fire and ecosystems combine to form the landscapes that we see. Course material examines the contributions of climate, topography, weather, and fuels to the fire environment and how these factors influence wildland fire behavior. We will explore the interactions between ecological processes and fire regimes in ecosystem dynamics and the ways in which human land use and land management affect the outcomes. Cross-Listed: GSE 767/NRM 767.

GEOG 768 - Global Climate Change Credits: 3
The course will provide a multidisciplinary examination of the drivers of the Earth's climate, how they interact, and how they change over time. We will critically examine the roles of greenhouse gases and anthropogenic land cover/use in affecting these changes as well as the types, strengths and limitations of global climate models. Class will combine lectures on various aspects of the Earth's climate system with class discussion of a variety of scientific papers exploring the current controversies and ideas central to climate research. Students will be challenged to develop their own projects/papers on course-related topics and use the most recent scientific research to decide for themselves about the importance of global climate change. Cross-Listed: GSE/NRM 768.

GEOG 786 - Geographic Information Systems Credits: 3
Practical application of GIS to problems and land-use planning, management of natural resources, transportation, as well as demographic data. Hands-on experience in the making of maps with computers, digitization, the storing and retrieving of geographic data, and the design of simple GIS.

GEOG 788 - Research Paper in Geography (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

GEOG 790 - Seminar Credits: 1-4
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

GEOG 791 - Independent Study Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

GEOG 792 - Topics (COM) Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually 10 or fewer students with significant one-on-one student-teacher involvement.

GEOG 794 - Internship Credits: 1-3
Applied, monitored and supervised, field based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

GEOG 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GER (German)

GER 544 - German Culture and Language in Translation (COM) Credits: 3
This course offers students a balanced approach to translating written German by equally emphasizing the basic rules of the language, reading skills, history, and culture. Students learn how cultural and historical contexts can make translation both easier and more challenging. Interdisciplinary comparisons and intercultural competence are of special concern. Topics and types of texts will differ according to student interest. This course is taught in English.

GER 591 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

GERO (Gerontology)

GERO 515 - Intergenerational Issues Credits: 3
Exploration of intergenerational issues (impacting both younger and older generations). Examination of intergenerational practice in the United States and internationally, including naturally occurring intergenerational activities and intentional programming, as a means of addressing intergenerational issues.

GERO 586 - Service Learning Credits: 1-3
Service learning in Gerontology, including service planning, interaction with community, and reflection.

GERO 591 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

GERO 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

GLST (Global Studies)

GLST 581 - Travel Studies Credits: 1-6
This course is taken as part of an approved study abroad program under faculty supervision. The number of credit hours depends upon the length of the study abroad program, number of course contact hours, and course content.

GSE (Geospatial Science and Engineering)

GSE 740 - Introduction to Geospatial Science and Engineering Credits: 3
The interdisciplinary course provides an overview of the science and technology of Earth observation, including the fundamentals of remote sensing, geographic information systems, computational and analytical approaches, and professional practices, including research information resources, graphical and oral presentation, proposal writing, publishing, and research ethics. Prerequisites: Admission to the GSE PhD program.

GSE 741 - Quantitative Remote Sensing for Terrestrial Monitoring Credits: 3
The course will describe the science, algorithms, and computational approaches to generate and assess derived satellite products for long term Earth system monitoring. Emphasis will be on the principles of optical remote sensing and state-of-the-art quantitative algorithms for estimating biophysical and geophysical land surface variables from remotely sensed observations. Prerequisites: STAT 541 and GEOG 484 or consent. Cross-Listed: GEOG 741.

GSE 743 - Geospatial Analysis Credits: 3
This course covers concepts and methods of spatial data analysis, focusing on the analysis of broad-scale geographic datasets characterizing physical, biological, and socioeconomic landscape features. Students learn to develop scientific hypotheses about spatial datasets and analytical techniques. Topics include exploratory data analysis, methods for quantifying spatial pattern, development of explanatory models to test spatial hypotheses, and development of predictive models for spatial interpolation. Prerequisites: One graduate level course in statistics (e.g. STAT 541 or equivalent). Cross-Listed: GEOG 743.

GSE 760 - Advanced Methods in Geospatial Modeling: Topical Credits: 3
Selected topics in advanced methods in geospatial modeling. May be repeated for credit. Specific topics covered will change each semester. Recent topics have included: Image Geometry and Photogrammetry; Change Analysis; Land Cover Mapping. Prerequisites: Graduate standing in a degree program. Specific prerequisites dependent on topic. Cross-Listed: GEOG 760.

GSE 766 - Advanced Remote Sensing Applications: Topical Credits: 3
Selected topics in advanced applications in remote sensing. May be repeated for credit. Specific topics covered will change each semester. Recent topics have included: Water Resources; Conservation; Weather & Climate. Prerequisites: Graduate standing in a degree program. Specific pre-requisites dependent on topic. Cross-Listed: GEOG 766.

GSE 767 - Fire and Ecosystems Credits: 3
This course is a broad treatment of how fire and ecosystems combine to form the landscapes that we see. Course material examines the contributions of climate, topography, weather, and fuels to the fire environment and how these factors influence wildland fire behavior. We will explore the interactions between ecological processes and fire regimes in ecosystem dynamics and the ways in which human land use and land management affect the outcomes. Cross-Listed: GEOG 767/NRM 767.

GSE 768 - Global Climate Change Credits: 3
The course will provide a multidisciplinary examination of the drivers of the Earth's climate, how they interact, and how they change over time. We will critically examine the roles of greenhouse gases and anthropogenic land cover/use in affecting these changes as well as the types, strengths and limitations of global climate models. Class will combine lectures on various aspects of the Earth's climate system with class discussion of a variety of scientific papers exploring the current controversies and ideas central to climate research. Students will be challenged to develop their own projects/papers on course-related topics and use the most recent scientific research to decide for themselves about the importance of global climate change. Cross-Listed: GEOG/NRM 768.

GSE 790 - Seminar Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as Internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

GSE 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student- teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

GSE 792 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually 10 or fewer students with significant one-on-one student/teacher involvement.

GSE 898 - Dissertation PhD (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GSR (Graduate School & Research)

GSR 592 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

GSR 600 - Graduate School Tracking Credits: 0
Course used to track students who are enrolled at a different university for a given semester. The course keeps students active so they can qualify for financial aid at SDSU. Restrictions: Advisor or Department Head Approval.

GSR 601 - Research Regulations Compliance Credits: 1
The course consists of lecture/seminars on compliance with governmental regulations in research at SDSU. The course includes completion of educational modules and associated paperwork required for the performance of research at South Dakota State University. The course also serves as the foundation for SDSU's education program for compliance with current and pending regulatory guidelines. Topics to be covered include: Animal Care and Use, Human Subjects Research, Recombinant DNA, Radiation Safety, Laboratory/Biological Safety, Integrity in Research, Conflict of Interest in Research, Financial Accountability, and Intellectual Property Issues.

GSR 602 - Program Continuation (COM) Credits: 1
This course is suitable for graduate students to maintain enrollment in their programs of study.

GSR 701 - Graduate School and Beyond Credits: 1
Focus on skills and knowledge necessary to succeed in a graduate program and post-graduate career including work/life balance, gender issues, and alternative career options.

HDFS (Human Development Family Study)

HDFS 501 - Foundations and Principles of Community Service Credits: 3
An introduction to the field of family studies and related professions that involve working with families and communities. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 510 - Parenting Credits: 3
The study of theories, models, research and skills regarding parenting effectiveness and parent-child relations in the context of Western, Native American, and other cultures living in the U.S. Included are comparisons of the relative strengths and weaknesses of various parenting approaches, historical perspective on parenthood and children, and the developmental perspectives of children and parenting. Best practices for individual and community parent education programs will be addressed. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 525 - Family Resiliency Credits: 3
Literature on stress experienced by individuals and families with an emphasis on a systemic analysis of the conceptual/clinical literature of individual and family resilience will be examined. Individual and family characteristics of resilient families and prevention and solution-based principles will be explored in order to understand and promote family resilience in a developmental and ecological context. Students in counseling and human development as well as education, nursing, and other behavioral, social, and health sciences may benefit from this course. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 586 - Service Learning Credits: 1-3
Service learning in Human Development and Family Studies, including service planning, interaction with community, and reflection.

HDFS 591 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

HDFS 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 602 - Research and Evaluation in Counseling and Human Development Credits: 3
The course explores various research designs and methodologies applicable to the field of counseling. The course will emphasize qualitative and quantitative research, critical evaluation of research reports, the use of internet databases for writing a research paper, a thorough understanding of APA format.

HDFS 605 - Program Administration and Management Credits: 3
An introduction to the development, administration, and management of youth, family, and community service organizations. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 610 - Family Resource Management Credits: 3
Survey course of personal finance and family resource management literature to provide an overview of how individual and family members develop and exercise their capacity to obtain and manage resources to meet life needs. Resources include the self, other people, time, money, energy, material assets, space, and environment. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 614 - Adult Development Credits: 3
Study of research, theoretical adult development; physical, intellectual and personality development of the adult integrates issues of individual, family, gender, and career development and provides opportunity for application in working with adults.

HDFS 620 - Family Dynamics Credits: 3
An examination of theories of family function and dysfunction, techniques of assessment, and models of family intervention. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 630 - Lifespan Development Credits: 3
An examination of human development from both lifespan and bio-ecological perspectives focusing on major theories of development and current research on micro-macro relationship. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 635 - Crises Across the Lifespan Credits: 3
Exploration of resources related to managing stress and coping with crises across the lifespan including the bio psychosocial nature of stress; methods of coping with stress, anxiety, and conflict; models of effective family functioning in the presence of stress and crises; and the current literature on how families cope with a variety of life transitions and crises. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 640 - Interpersonal Relationships Credits: 3
An in-depth examination of interpersonal relationships, including theoretical perspectives, research methods, relationship forms, relationship processes, and how context affects relationships. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 701 - Current Issues in Developmental Sciences Credits: 3
Current issues in the field of Developmental Sciences. Introduction to current theoretical works and issues on human development, including socio-emotional, cognitive and biological areas. Focus on implications for research and applications.

HDFS 702 - Advanced Human Sexuality Credits: 3
Clinical, scientific, and philosophical studies of human sexuality. Emphasis on contemporary research and insights into human sexual experience, behavior, and social /cultural values and beliefs about sexuality throughout the lifespan. Topics will include sexual and psychosexual development, sexual health and disease, sexual variations, and sexual dysfunction and therapy.

HDFS 710 - Program Design, Evaluation, and Implementation Credits: 3
An overview of the program development process and outcome evaluation of community, children, and family programs. Modes of outcome scholarship and their implications for community-based programs are discussed. Students will develop knowledge through participating in a community-based project involving the practical application of program design and evaluation methods. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HDFS 730 - Grant Writing Credits: 3
An overview of the complete grant writing process and potential outcomes. Students will develop knowledge through the actual grant writing, budgeting, and reviewing grant proposals.

HDFS 742 - Family Theory and Research Credits: 3
Current theoretical approaches to family interactions; impact of various forces (social, personal, intrapersonal) upon dynamic aspects of family relationships; patterns and sequences of coalitions and alliances; factors which result in stress and breakdown or enhanced and rewarding relationships. Emphasis upon normal families but families but family problems are also studied.

HDFS 744 - Diverse Families Credits: 3
Assess and explore key theories and concepts in diversity, specifically examining the role of social context in shaping perspectives, experiences, and opportunities of families. Study the impact of factors such as race, culture, gender, economic status, religion, sexual orientation, and ability on family processes, socialization, residential patterns, and educational opportunities.

HDFS 745 - Work and Family Credits: 3
The Work and Family course utilizes a bioecological perspective to explore the challenges individuals, families, employers, and communities of managing work and family in today's world. Topics include the history of the work-family relationship, gender roles and the work-family relationship, demographic and cultural changes within the workforce, leisure and the work-family relationship, and organizational work-family policies.

HDFS 753 - Family Public Policy Credits: 3
The impact of the professional in shaping family policy and effecting positive family policy formation; study of family policy priority issues and alternative strategies.

HDFS 791 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

HDFS 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

HDFS 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

HIST (History)

HIST 509 - Environmental History of the U.S. (COM) Credits: 3
Examines the relationship between the natural environment and the historical movements of humans by tracing U.S. environmental changes, beginning with the activities of the Native American peoples through the Euro-American presence to the Cold War era.

HIST 545 - Nazi and Soviet Europe Credits: 3
This course presents an analysis of Nazi and Soviet history in early twentieth-century Europe. The class will examine not only the political origins of these regimes, but also the economic, social, intellectual and cultural developments.

HIST 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is no wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

HLTH (Health)

HLTH 502 - Rural Healthcare Matters Credits: 3
This course explores the complexity and uniqueness of healthcare needs, trends, and issues faced in rural settings. Through investigation of evidence and literature, students will have the opportunity to explore the challenges in rural healthcare and examine strategies for improving rural healthcare delivery. Students will reflect on collaborative opportunities to address rural healthcare problems. Cross-Listed: HSC 502.

HLTH 520 - K-12 Methods of Health Instruction (COM) Credits: 2
Curriculum content at elementary and secondary levels. Methods of presentation including direct, correlated, and integrated health instruction. Organization of health and safety education. Cross-Listed: HSC 520 .

HLTH 551 - Public Health Law Credits: 3
Will investigate issues across a range of specific contexts in public health such as communicable disease control, public health class action litigation and medical care e.g., the right to have and refuse medical care, confidentiality and privacy). Issues include how health policies are developed; the impact current and potential policies have and will have on public health; the courts role and interpretations of public health law; and the interaction of national, state, local, and interest group politics in the formation of policies. The course will focus on the states' roles and the constitutions of the states as well as the Tenth Amendment of the United States Constitution. Cross-Listed: BLAW 551.

HMGT (Hospitality Management)

HMGT 520 - Geography of Tourism Credits: 3
Based on fundamental tourism principles, this course will examine, from a geographical perspective, the social, cultural, environmental and economic complexities associated with tourism as a global, national and local phenomenon. This course will also consider the positive and negative factors that affect tourists and destinations, and the costs and benefits of tourism to communities and places, providing case-study examples from the United States and around the world. Cross-Listed: GEOG 520.

HNS (Health and Nutritional Science)

HNS 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

HNS 592 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HNS 594 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HNS 783 - Research Methods in Health and Nutritional Sciences Credits: 3
By studying prevalent quantitative and qualitative research techniques, students will become critical consumers and potential producers of research relevant to Health, Nutrition, Physical Education, Sport, and Recreation. Computer work, development of grant and research proposals, and preparation for writing for professional papers.

HNS 788 - Master's Research Problems/Projects Credits: 1-7
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HNS 790 - Seminar (COM) Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

HNS 791 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

HNS 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

HNS 794 - Internship (COM) Credits: 1-7
Applied, monitored and supervised, field based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HNS 795 - Practicum (COM) Credits: 1-9
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HNS 796 - Field Experience (COM) Credits: 1-9
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

HNS 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

HNS 890 - Seminar (COM) Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

HNS 898D - Dissertation (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

HO (Horticulture)

HO 511 - Fruit Crop Systems Credits: 1-6
Studies in perennial fruit crop production and management systems. Credit earned will depend on the number of 1 credit modules taken. Course may be repeated as long as the topic module(s) are not repeated. Topic modules could include: tree fruit production systems; small fruit production systems; viticulture; perennial fruit integrated pest management; native fruit production systems; fruit harvest, quality, and postharvest care; vines and wines; fruit value-added systems; pruning fruit crops; cover crop management, marketing specialty fruit crops. Cross-Listed: PS 511.

HO 513 - Greenhouse and High Tunnel Management Credits: 3
Greenhouse construction, environmental control, production and scheduling of major greenhouse crops. Trips to commercial greenhouse operations and laboratory work in greenhouse crop production. Corequisites: HO 513L. Cross-Listed: PS 513.

HO 513L - Greenhouse and High Tunnel Management Lab Credits: 0
Laboratory to accompany HO 513L. Corequisites: HO 513. Cross-Listed: PS 513L.

HO 514 - Plant Propagation Credits: 3
Fundamental anatomical and physiological principles and methods of reproducing herbaceous and woody plants by seeds, cuttings, grafts, layers and division. Corequisites: HO 514L. Prerequisites: HO 111, BOT 201 or consent. Cross-Listed: PS 514.

HO 514L - Plant Propagation Lab Credits: 0
Corequisites: HO 514. Cross-Listed: PS 514L.

HO 516 - Landscape Nursery Management Credits: 3
A study of current nursery and garden center crop cultural practices and business management. Topics to be covered include nursery and garden center design and organization, field and container crop production, transplanting, pricing, and shipping techniques. The working relationship between nurseries, landscape designers and contractors is also discussed. Prerequisites: HO 111, PS 213. Cross-Listed: PS 516.

HO 526 - Production of Wine Beer Spirits Credits: 3
Students will learn the procedures required for the biological and agricultural production of wine, beer and spirits coupled with the science of fermentation and the methodology required for the tasting of wine and beer for flavor/odor identification per industry guidelines. Lecture topics of student inquiry include: (1) the brewing of beer and the functional contributions of its ingredients, (2) wine production from vine to bottle, (3) the distillation of spirits and (4) the marketing, pairing and service of wine, beer and spirits. This course is designed for students/graduates who will potentially go into the business of not only growth and production, but also marketing and serving wine, beer and spirits. Corequisites: HO 526L. Prerequisites: Participants must be 21 years of age or older to enroll. Cross-Listed: NUTR/PS 526.

HO 526L - Production of Wine Beer Spirits Laboratory Credits: 0
Laboratory investigation includes hands-on opportunities involving the production of beer and wine. Students will experiment with production parameters and investigate quality defects. Wine and beer quality will be assessed through laboratory testing coupled with taste testing without consumption (taste and spit) both per industry specifications. Students will develop skills in identifying specific flavors/odors such as oak, butter or lemon in wine and similar tasting techniques in beer. Corequisites: HO 526. Prerequisites: Participants must be 21 years of age or older to enroll. Cross-Listed: NUTR/PS 526L.

HO 534 - Local Food Production Credits: 2
Topics include planning, planting, cultivation, harvest, season extension and marketing of fruits and vegetable crops. Experiential learning model. Cross-Listed: PS 534.

HO 544 - Vegetable Crop Systems Credits: 1-6
Studies in vegetable crop production and management systems. Credit earned will depend on the modules taken. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: root crop systems; cucurbit production systems; vegetable legumes; herbs; solanaceous crops; heirloom vegetable crops; integrated pest management; market gardening; organic production systems; extended season crop management; leaf and cool season crops: annual crop rotation systems; marketing specialty crops. Cross-Listed: PS 544.

HO 547 - Organic Plant Production Credits: 3
This course provides a detailed overview of organic farming for both small scale suburban and urban settings. The topics covered will include: organic certification, soil and nutrient management, pest and disease ID and management, High-Tunnel management, and marketing. Cross-Listed: PS 547.

HO 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is no wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

PS 526 - Production of Wine Beer Spirits Credits: 3
Students will learn the procedures required for the biological and agricultural production of wine, beer and spirits coupled with the science of fermentation and the methodology required for the tasting of wine and beer for flavor/odor identification per industry guidelines. Lecture topics of student inquiry include: (1) the brewing of beer and the functional contributions of its ingredients, (2) wine production from vine to bottle, (3) the distillation of spirits and (4) the marketing, pairing and service of wine, beer and spirits. This course is designed for students/graduates who will potentially go into the business of not only growth and production, but also marketing and serving wine, beer and spirits. Corequisites: PS 526L. Prerequisites: Participants must be 21 years of age or older to enroll. Cross-Listed: HO/NUTR 526.

HRM (Human Resource Management)

HRM 590 - Seminar (COM) Credits: 3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

HRM 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

HRM 592 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

HRM 594 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HRM 596 - Field Experience (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

HRM 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

HRM 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

HSC (Health Science)

HSC 502 - Rural Healthcare Matters Credits: 3
This course explores the complexity and uniqueness of healthcare needs, trends, and issues faced in rural settings. Through investigation of evidence and literature, students will have the opportunity to explore the challenges in rural healthcare and examine strategies for improving rural healthcare delivery. Students will reflect on collaborative opportunities to address rural healthcare problems. Cross-Listed: HLTH 502.

HSC 533 - Occupational Health Credits: 3
Occupational Health is a survey course dealing with health concerns in the workplace and the scope, objectives, and functions of occupational programs. Work related injuries and diseases and the effects of harmful exposure to chemical and physical agents which cause discomfort, stress, inefficiency or disease are examined. Emphasis is placed on preventative measures and early intervention to assure a reasonable, healthful work environment.

HSC 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

HSC 631 - Biostatistics I Credits: 3
Basic principles of statistics applied to health science. Emphasis is on the role of statistics in evaluation of human health data and the use of a statistical computing package to input and manipulate datasets; explore, analyze, and interpret data; and present results. Topics include probability distributions, point and interval estimations, hypothesis tests, linear regression, correlation tests of association for categorical data, and analysis of variance.

HSC 731 - Biostatistics II Credits: 3
Continuation of Biostatistics I. Intermediate principles and methods of statistics applied to health science. Emphasis is on the role of statistics in evaluation of human health data and the use of a statistical computing package to input and manipulate datasets; explore, analyze, and interpret data; and present results. Topics include introductions to multiple linear regression, logistic regression, survival analysis, selected ANOVA designs, and selected multivariate. Prerequisites: HSC 631.

HSC 733 - Environmental Health Credits: 3
This course examines causes and approaches to control environmental health problems including consideration of human health risks and effects of biological, chemical, and physical agents affecting individuals and communities. Topics include the environmental regulatory framework; identification of susceptible populations; approaches to environmental risk assessment, abatement, protection, and prevention; environmental justice principles and stakeholder interests; and the public health basis for environmental health policy decisions. Prerequisites: Admission into the Master of Public Health program or permission of instructor. Cross-Listed: PUBH 733.

HSC 755 - Program Planning and Evaluation Credits: 3
An introduction to public health program planning and evaluation including: target population needs assessment; stakeholder engagement; and public health program design, organization, leadership, utilization, resource management, and evaluation. Prerequisites: Admission into the Master of Public Health program or permission of instructor. Cross-Listed: PUBH 755.

HSC 764 - Applied Dissemination and Implementation Research in Health Credits: 3
An introduction to theories and methods in dissemination and implementation research applied to clinical and public health. Analysis of factors and application of frameworks and processes to enhance uptake and utilization of population-based interventions (dissemination research) and successfully integrate and implement evidence-based interventions to achieve desired outcomes in targeted clinical and community settings (implementation research). Cross-Listed: PUBH 764.

HSC 782 - Epidemiology Credits: 3
The course introduces concepts and methodologies for the study of health and disease in human populations. Different study designs and their methods of analysis will be discussed, as well as sources, handling, and interpretation of epidemiologic data. Cross-Listed: BIOL 782/NUTR 782.

HSC 785 - Advanced Epidemiology Credits: 3
This is an advanced course on epidemiologic methods designed to improve the student's ability to conduct and interpret epidemiologic studies. Prerequisites: PUBH 710 or BIOL 782/HSC 782/NUTR 782.

HSC 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

HSC 832 - Mixed Methods Research Credits: 3
An introduction to the design and conduct of mixed methods research in health and human sciences including theoretical underpinnings, method designs, sampling strategies, analysis, and ethical issues common to mixed methods. Students will develop skills in conducting and evaluating mixed methods research. Prerequisites: NURS 825 and NURS 830. Cross-Listed: NURS 832.

LING (Linguistics)

LING 520 - The New English Credits: 3
Diverse new theories and applications in English linguistics: lexicography, pragmatics, stylistics, sociosemantics, semiotics, and discourse theory.

LING 552 - General Semantics Credits: 3
Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistics assumptions; and the objective systematization of language.

MATH (Mathematics)

MATH 515 - Advanced Linear Algebra (COM) Credits: 3
Advanced topics in linear algebra. This course may cover topics useful in such applications as matrix factorizations, finite element methods, multivariable statistics, stochastic models, and parallel programming for scientific computations. Prerequisites: MATH 315.

MATH 535 - Complex Variables I Credits: 3
Algebra of complex numbers, classifications of functions, differentiation, integration, mapping, transformations, infinite series.

MATH 571 - Numerical Analysis I (COM) Credits: 3
Analysis of rounding errors, numerical solutions of nonlinear equations, numerical differentiation, numerical integration, interpolation and approximation, numerical methods for solving linear systems. Prerequisites: MATH 225.

MATH 575 - Operations Research (COM) Credits: 3
Philosophy and techniques of operations research, including game theory; linear programming, simplex method, and duality; transportation and assignment problems; introduction to dynamic programming; and queuing theory. Applications to business and industrial problems. Pre-requisites: Introductory statistics and one year of calculus; STAT 575 and CSC 575, or instructor consent.

MATH 591 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

MATH 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MATH 625 - Advanced Calculus Credits: 3
Topics will include set theory; point set topology in Rn and in metric spaces; limits and continuity; infinite series; sequences of functions. Prerequisites: MATH 425.

MATH 675 - Operations Research II Credits: 3
A continuation of Operations Research I. Topics include the theory of the simplex method, duality theory and sensitivity analysis, game theory, transportation and assignment problems, network optimization models, and integer programming. Prerequisites: MATH 475-575.

MATH 691 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

MATH 716 - Theory of Algebraic Structures I Credits: 3
Abelian Groups, homomorphisms, permutation groups, Sylow theorems, group representations and characters. Prerequisites: MATH 413.

MATH 741 - Measure and Probability Credits: 3
Fundamentals of measure theory and measure-theoretic probability, and their applications in advanced probabilistic and statistical modeling.

MATH 751 - Applied Functional Analysis Credits: 3
Selected topics from functional analysis and its applications to differential equations and numerical methods, concept and theory of functional analysis, variational formulation of boundary value problem. Existence and uniqueness of solutions, variational methods of approximation, finite element methods.

MATH 770 - Numerical Linear Algebra Credits: 3
Analysis of numerical methods for solving linear systems of equations. Methods for solving underdetermined and overdetermined systems. Methods for numerically calculating eigenvalues and eigenvectors of symmetric and non-symmetric matrices. Knowledge of programming language and of matrix algebra. Prerequisites: MATH 315 and MATH 571.

MATH 771 - Numerical Analysis II Credits: 3
Continuation of MATH 571 including approximation theory, matrix iterative methods and boundary value problems for ordinary and partial differential equations. Prerequisites: MATH 571.

MATH 773 - Numerical Optimization Credits: 3
This course will survey widely used methods for continuous optimization, focusing on both theoretical foundations and implementation using numerical software. Topics include linear programming (optimization of a linear function subject to linear constraints), line search and trust region methods for unconstrained optimization, and a selection of approaches (including active-set, sequential quadratic programming, and interior methods) for constrained optimization.

MATH 779 - Advanced Mathematics Synthesis Credits: 1
Synthesis of concepts from advanced mathematics courses. Prerequisites: Instructor consent.

MATH 788 - Research Paper Credits: 1-2

MATH 791 - Independent Study (COM) Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems and Special Projects. Student complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

MATH 792 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MATH 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

MCOM (Mass Communication)

MCOM 513 - International Media (COM) Credits: 3
This course is a survey of international media systems, news and related issues, the role and characteristics of international journalists, and issues facing media around the world.

MCOM 516 - Mass Media in Society Credits: 3
Rights and responsibilities of the press; relation of the media to individuals and society; role of media in a free society.

MCOM 517 - History of Journalism Credits: 3
Development, impact and importance of individual journalists and media in U.S.

MCOM 519 - Women in Media Credits: 3
This course examines contributions of women to the mass media from colonial era to present. It also studies the portrayal of women by the news media and by advertising, and it studies the roles currently played by women in the media and in supporting areas of advertising and public relations. Cross-Listed: WMST 519.

MCOM 530 - Media Law (COM) Credits: 3
Study of the sources, processes, content and application of law and regulation in the mass communication context and of the ethics of communications practitioners.

MCOM 574 - Media Administration and Management (COM) Credits: 3
Business practices, newspaper, magazine, and broadcast management.

MCOM 585 - Science Writing Credits: 3
This class explores the process of science writing and examines various kinds of science writing through readings, guest speakers, and writing assignments. A key emphasis is how to present scientific information to a lay audience.

MCOM 592 - Topics (COM) Credits: 1-5
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MCOM 615 - Opinion Writing Credits: 3
Opinion function of periodicals; great editorials and editorial writers; writing editorials, shaping policy.

MCOM 653 - Mass Communications Teaching Methods Credits: 1-4
Techniques, materials and resources for teaching mass communication in the classroom and supervising student media. For secondary school or college instructors and publication advisors. Notes: Mass Communications teacher education candidates are required to earn at least 3 credits.

MCOM 691 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

MCOM 692 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MCOM 693 - Workshop (COM) Credits: 1-4
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

MCOM 705 - Introduction to Master of Mass Communication Credits: 3
This course introduces students to the online professional master's degree program in Mass Communication. Students will become familiar with graduate procedures, program requirements, coursework, D2L, and online university resources.

MCOM 710 - Cross-Platform Storytelling Credits: 3
In this course, students will explore several forms of professional journalistic and media writing. Students create a portfolio of writing samples.

MCOM 730 - Media Law Case Studies Credits: 3
Students will examine current legal issues that affect professional media practice, e.g., First Amendment, fair use, copyright, privacy, freedom of speech, and freedom of expression.

MCOM 746 - Cross-Platform Campaigns Credits: 3
In this course, students will investigate and create public relations, marketing and social media campaigns. Includes research, design, implementation and evaluation.

MCOM 760 - Social Marketing for Health and Behavioral Change Credits: 3
This course is designed to give students a thorough orientation to marketing for the public good and its application to a range of problems in health contexts. Students will acquire practical skills in the design, implementation, and evaluation of health intervention initiatives that use social marketing.

MCOM 785 - Health Journalism Credits: 3
This course provides students with foundational training to report on medical and health journalism for varied media.

MCOM 786 - Conducting Professional Research Credits: 3
In this course, students will learn the application of research methods commonly used in the media professions, including but not limited to surveys, elementary statistical procedures, focus groups and media analytics.

MCOM 788 - Master's Research Problems/Projects (COM) Credits: 1-6
Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

MCOM 791 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

MCOM 794 - Internship (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MCOM 795 - Practicum (COM) Credits: 3
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MCOM 798 - Thesis (COM) Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ME (Mechanical Engineering)

ME 510 - Principles of HVAC Engineering Credits: 3
Comfort and health requirements for space conditioning. Psychrometrics, steady-flow processes involving air-vapor mixtures. Heating and cooling load calculations. Basic air conditioning systems. Emphasis on systems design approach. Corequisites: ME 515. Prerequisites: Take ME 312 and EM 331 or ME 314 and EM 331.

ME 512 - Internal Combustion Engines Credits: 3
Theory, design and operation of spark ignition and compression-ignition engines. Performance characteristics and efficiencies; combustion and thermochemistry of fuel-air mixture exhaust emissions as they pertain to air pollution. Prerequisites: ME 312 and EM 331.

ME 513 - Turbomachinery Credits: 3
Theory, design, operation and energy transfer in Turbo-machines. Steam, gas and hydraulic turbines. Pumps, fans and centrifugal and axial flow compressors. Prerequisites: ME 312 and EM 331.

ME 514 - Air Pollution Control Credits: 3
Control of particulates and gaseous pollutants. Design and operating characteristics of gravity settlers, cyclones, electrostatic precipitators, fabric filters, scrubbers, incinerators, adsorption beds and absorption towers. Prerequisites: ME 311.

ME 516 - Renewable Energy Systems Credits: 3
Students will learn to apply the principles of energy conversion, energy conservation, and value engineering to the analysis of energy conversion systems, renewable energy generation equipment and systems. Students will become familiar with energy consumption requirements for conventional systems and the applications of renewable energy systems to provide alternative energy sources. Energy efficiency and global environmental sustainability are emphasized. A background in basic thermodynamics is assumed.

ME 517 - Computer-Aided Engineering Credits: 3
Introduction to applied structural and thermal design and analysis using the ANSYS finite element software package. One-, two-, or three-dimensional static structural problems modeled using the direct generation method as well as solid modeling techniques. Steady-state and transient thermal analyses are performed. Thermally-induced stressed and displacements that occur in non-uniform temperature structures, solutions of two- or three-dimensional fluid mechanics problems, and optimization techniques are discussed. Corequisites: ME 517L required.

ME 517L - Lab/Computer Aided Engineering Credits: 0
Corequisites: ME 517 required.

ME 518 - Design of Thermal Systems Credits: 3
Systems approach to design, mathematical modeling, simulation and optimization of systems, with particular emphasis on thermal systems. Prerequisites: ME 312, ME 415 and EM 331.

ME 531 - Aerodynamics Credits: 3
Airfoil characteristics, wing shapes, static and dynamic forces, viscosity phenomena, boundary layer theory, flaps and slots, propellers, stability, control and performance. Prerequisites: EM 331.

ME 533 - Non-Destructive Testing and Evaluation Credits: 3
Various non-destructive testing techniques will be introduced with emphasis on ultrasound techniques. For ultrasound, physical principles of acoustic waves in solid media will be introduced, and acoustic sensor design and properties will be discussed. For other techniques, including eddy current techniques, X-ray techniques, acoustic emission, etc., basic physics of the method and modern applications will be introduced. Experiments and demonstrations will be conducted to enhance students' understanding of the concepts and applications. Corequisites: ME 533L.

ME 533L - Non-Destructive Testing and Evaluation Lab Credits: 0
Various non-destructive testing techniques will be introduced with emphasis on ultrasound techniques. For ultrasound, physical principles of acoustic waves in solid media will be introduced, and acoustic sensor design and properties will be discussed. For other techniques, including eddy current techniques, X-ray techniques, acoustic emission, etc., basic physics of the method and modern applications will be introduced. Experiments and demonstrations will be conducted to enhance students' understanding of the concepts and applications. Corequisites: ME 533.

ME 537 - Gas Dynamics I Credits: 3
Objectives, applications, and scope of the subject. Methods of fluid dynamics and thermodynamics. Compressible flow in ducts, nozzles and diffusers. Propagation of plane waves; shock dynamics, characteristics, interaction of waves. General theorems of gas dynamics. Prerequisites: EM 331and MATH 331.

ME 539 - HVAC System Design Credits: 3
Analysis of heating, ventilating, and air conditioning requirements. Design of heating, ventilating, and air conditioning systems. Economic, energy, and environmental considerations. Use of computers as design aids. Corequisites: ME 539L. Prerequisites: ME 410.

ME 539L - HVAC System Design Lab Credits: 0
Accompanies ME 539. Corequisites: ME 539.

ME 540 - Numerical Methods for Engineering Design Credits: 3
The use of digital computer as a design tool. Techniques and algorithms which increase the rationality of the design process. Design principles and optimization theory. General approach to constrained optimization. Probabilistic approaches to design. Computer-aided design to reliability specification. Application of computer graphics to engineering design. The emphasis is on extending the designer's potential and not on automating those activities. Prerequisites: Competence of FORTRAN and instructor consent.

ME 541 - Robotic Systems Credits: 3
This course develops understanding of the kinematic and dynamic modeling, design, and control of robots functioning in both terrestrial and aerial environments. Topics include inertial and body reference frames, rigid body motion, homogeneous transformations, Denavit-Hartenberg representation, forward and inverse kinematics, Lagrangian dynamics, modeling in Simulink, linear control design, introduction to advanced controllers, optimal control of a quadrotor. Students conduct hands-on experiments with mobile robots, manipulators and quadrotors.

ME 542 - Applications of Computational Fluid Dynamics Credits: 3
This course provides a background and working knowledge of software analysis tools, techniques and methodologies utilized in modern engineering practice in computational fluid dynamics (CFD). The course builds upon fundamental concepts of thermodynamics, fluid mechanics, and computer-aided design and analysis and applies these principles within high-fidelity computational models to solve theoretical and practical problems commonly encountered with thermal fluid and energy systems. This course provides students with team-centered collaborative opportunities to practice CFD analysis in engineering design applications.

ME 546 - Engineering Mechanics in Biomedical Applications Credits: 3
This course focuses on biomedical applications of the principles of engineering mechanics. The concepts of kinematics, dynamics, thermal-fluid system analysis, and transport phenomena are applied in developing engineering models of various aspects of anatomy and physiology and in the design of prosthetics and biomedical devices. Topics include biomechanics; engineering properties of biomaterials; computer applications in medicine; research and development in biomedical engineering; and ethics at the nexus of medicine and engineering.

ME 548 - Mechanical Behavior of Biomaterials Credits: 3
The course explores the field of biomaterials with a focus on response to static and dynamic forces, structure-property correlation, and experimental techniques for biomedical applications. Material topics include mammalian tissue (skin, artery, muscle, bone etc.), interaction with properties of implant materials (metal, polymer, ceramic etc.) and related regulatory issues in material selection and design for medical implants. Students will learn through literature review, case studies, homework, labs and projects.

ME 561 - Analysis and Design Industrial System Credits: 3
Problems in product design and development, marketing, forecasting, capacity evaluation, plant layout, materials handling from standpoint of interrelated and integrated systems. Prerequisites: ME 362.

ME 590 - Seminar (COM) Credits: 1-2
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

ME 592 - Topics (COM) Credits: 1-5
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ME 691 - Independent Study (COM) Credits: 1-5
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

ME 692 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ME 700 - Graduate Colloquium Credits: 0
A topical course in which graduate students present the results of their work for review and critique by faculty members and peers prior to scheduling the final oral exam. Students will normally enroll in this course in the final term of their graduate study. Pre-requisite: Instructor permission

ME 703 - Thermo-Fluid Energy Systems Credits: 3
Review of viscous fluid, basic modes of heat transfer, thermodynamics, and energy conversion. Discussion of energy sources, uses, conversion, transmission, and economics. Analysis of conventional energy generation, storage, and transmission systems, criteria for design and analysis of energy systems such as nuclear, wind, solar, geothermal, etc.

ME 711 - Advanced Heat Transfer I Credits: 3
Review of principles of heat conduction. Multidimensional steady and transient heat conduction in cartesian and cylindrical coordinates. Separation of variables and integral transforms. Review of principles of radiation. Spectral and directional radiative properties. Gaseous radiation. Radiative transport equation.

ME 712 - Convection Heat Transfer Credits: 3
Scale Analysis. Laminar Boundary Layer Flow. Laminar duct flow. Laminar natural convection. Natural convection in enclosures. Turbulent boundary Layer Flow. Turbulent duct flow.

ME 721 - Viscous Flow I Credits: 3
Review of fluid motion with friction. Boundary layer theory. Exact solutions of the Navier-Stokes equations. Creeping flow and the theory of lubrication. Exact similarity solutions and approximate integral methods for boundary layer flow. Wall turbulence. Logarithimic law of the wall. Mixing length model.

ME 731 - Advanced Analytical Methods Credits: 3
Differential systems related to practical engineering problems. Linear ordinary differential equations. Series solutions; Fourier series. Partial differential equations: parabolic, elliptic, hyperbolic. Integral equations.

ME 735 - Modeling and Simulation Credits: 3
A systems approach to the analysis of electrical, mechanical and hydraulic systems. Generalized modeling methods, governing equations, system response, synthesis and design of dynamic systems, and specific applications of modeling technique. Corequisites: ME 735L.

ME 735L - Modeling and Simulation Laboratory Credits: 0
Corequisites: ME 735 required.

ME 739 - Advanced Metallurgy Credits: 3
Crystal lattices and diffraction by crystals. Structure determination, defects, registration by microscopic methods, single crystal orientation and analysis of stress caused by phase transformation.

ME 741 - Advanced Stress Analysis Mechanical Design Credits: 3
Introduction to the theory of elasticity. Equilibrium equations, boundary conditions and compatibility relations. Plane stress and strain. Torsion and curved beams. Rectangular and polar-coordinates. Axisymmetric problems. Energy methods. Introduction to Finite Element methods.

ME 745 - Advanced Machine Design Credits: 3
Experimental, empirical and analytical methods in advanced design. Thermal stresses. Stability. Theories of failure. Creep and fatigue considerations. Introduction to fracture mechanics. Plates and shells.

ME 760 - Quality Control Credits: 3
Application of statistical techniques to the control of quality and the development of economical inspection methods. Collection analysis, and interpretation of operations data; control charts and sampling procedure. Prerequisites: STAT 281 or STAT 381. Cross-Listed: OM 760/STAT 760.

ME 761 - Operations Research Credits: 3
History and organization of operations research, mathematical and statistical models in industrial decisions. The evaluation of alternatives by means of linear programming, queuing theory, deterministic and stochastic inventory models, game theory and simulation.

ME 763 - Topics in Reliability Engineering Credits: 3
Probability concepts and typical models involved in the statistical prediction of reliability. Methods for estimating required parameters from experimental data. Reliability and maintainability techniques in practice, and a survey of recent developments in the field.

ME 765 - Systems Analysis Credits: 3
Analysis of industrial problems as systems of servicing stations with deterministic and stochastic inputs and service times using queuing theory as a principal approach. Development of theoretical models. Digital computer simulation of complex systems.

ME 767 - Decision Theory Credits: 3
Examination and evaluation of modern techniques of decision making. Mathematical models and measurement theory. Certainty, risk, and uncertainty.

ME 787 - Research Credits: 9

ME 788 - Master's Research Problems/Projects (COM) Credits: 1-9
Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive or intensive. Does not include research courses which are theoretical.

ME 790 - Seminar (COM) Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

ME 791 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

ME 792 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

ME 798 - Thesis (COM) Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ME 898D - Dissertation Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

MFL (Modern Foreign Languages)

MFL 591 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

MFL 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MICR (Microbiology)

MICR 521 - Soil Microbiology Credits: 3
Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these microorganisms. Corequisites: MICR 521L. Prerequisites: BIOL 151-151L and BIOL 153-153L or BOT 201-201L. Cross-Listed: PS 521.

MICR 521L - Soil Microbiology Laboratory Credits: 0

MICR 524 - Medical and Veterinary Virology Credits: 3
Basic course discussing the characterization, structure, and replication of viruses and the pathogenesis of viral disease in man and animals. Laboratory exercises emphasize techniques in virus isolation, characterization, and detection by immunological assays. Prerequisites: BIOL 204. Cross-Listed: VET 524.

MICR 533 - Medical Microbiology (COM) Credits: 3
Principles of medical microbiology including a survey of the most clinically significant bacterial, fungal, parasitic, and viral diseases in the world, with an emphasis on those most prevalent in North America. Case studies will address: morphology, physiology, and virulence of the microbes and the epidemiology, treatment, and prevention of the diseases they cause.

MICR 539 - Medical and Veterinary Immunology Credits: 3
This course covers the theory and mechanisms of immune-responses as they relate to human and veterinary medicine.

MICR 548 - Molecular and Microbial Genetics Credits: 4
This course in molecular genetics will cover the concepts and the molecular mechanisms in genetics of prokaryotic and eukaryotic organisms. Students will study the molecular processes underlying gene structure and function, will learn the major components and their basic structures in molecular genetics, will understand the molecular mechanisms of major biological processes such as gene expression and regulation, and will learn to interpret the results from the literature in molecular genetics. In addition, the course will provide a comprehensive coverage of the common molecular tools and their applications. Cross-Listed: BIOL 548.

MICR 550 - Application of Microbiology & Biotechnology Credits: 3
The rapid development of biotechnology techniques and their commercial application continues to be a major economic driver in the twenty-first century. Biotechnology uses living cells or their enzymes to produce chemicals, biomaterials, pharmaceuticals, and energy from renewable biomass feedstocks. This interdisciplinary course will examine theoretical and practical aspects of cell metabolism, metabolic engineering, fermentation and fermentor design, product recovery, process control, energy balances, and economics as related to several current bioprocesses. This course will integrate principles from microbiology, biochemistry, and engineering to provide students with the skills needed to fill roles in research, operations and commercialization. Prerequisites: MICR 231.

MICR 590 - Seminar Credits: 1-6
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

MICR 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MICR 667 - Bacteriology Credits: 3
Study of prokaryotes with focus on bacteria. The course will address cell morphology and organization, cell division, gene regulation and response to change, signaling, and systematics and evolution of bacteria.

MICR 791 - Independent Study Credits: 1-4
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

MICR 792 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MICR 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

MGMT (Management)

MGMT 590 - Seminar (COM) Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

MGMT 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

MGMT 592 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

MGMT 594 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MGMT 596 - Field Experience (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

MGMT 751 - Advanced Managerial Economics Credits: 3
Advanced analysis of management decisions that business industry professionals face on a daily basis in their role as managers of agribusiness, commercial and manufacturing enterprises using microeconomics and econometric methods. Topics include economic analysis of demand, production, cost, market structure, government regulation, risk, and capital budgeting. Cross-Listed: ECON 751.

MGMT 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

MGMT 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

MKTG (Marketing)

MKTG 576 - Marketing Research (COM) Credits: 3
This course provides an in-depth study of the primary methodologies of marketing research. Emphasis is placed on collecting, analyzing, interpreting and presenting information for the purpose of reducing uncertainty surrounding marketing and management decisions. Prerequisites: BADM/MKTG 370 and STAT 281. Cross-Listed: ECON 576.

MKTG 590 - Seminar (COM) Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

MKTG 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

MKTG 592 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

MKTG 594 - Internship (COM) Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MKTG 596 - Field Experience (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

MKTG 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

MKTG 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

MKTG 793 - Workshop (COM) Credits: 1-3
Special, intense sessions in specific topic areas. 45 hours of student work is required for each hour of credit earned. Workshops may vary in time range, but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

MNET (Manufacturing Engineering Technology)

MNET 560 - Engineering Economic Analysis Credits: 3
Economic analysis for practical application on industry projects; engineering economics; cost analysis, evaluation, and budget justification for capital expenditures. Cross-Listed: OM 560.

MNET 568 - Manufacturing Plant Management Credits: 3
A case-oriented capstone course designed to integrate the technical, managerial, analytical, and communication skills which have been acquired. Prerequisites: MNET 367.

MRCH (Merchandising)

MRCH 510 - Consumer Behavior in Merchandising Credits: 3
Evaluation of psychological, sociological, and cultural theories of consumers' behavior through the examination of factors influencing consumers' decision-making process. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 520 - Professional Advancement in Merchandising Credits: 3
Analysis of leadership and how it affects organizational culture and change through a prism of past and current experiences. Various leadership styles will be examined and a personal leadership philosophy will be developed for professional advancement in merchandising. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 530 - Product Design, Development, and Evaluation Credits: 3
Advanced study of issues and management strategies necessary to design and produce a competitively priced product. Examination of the role of globalization and rapidly changing technology on the development of a successful product. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 540 - Promotional Strategies in Merchandising Credits: 3
Examination of integrated marketing communications Prerequisites: (i.e. promotional strategies and techniques) while fostering cultural and global awareness, social responsibility and ethical decision-making in the field of promotion. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 550 - Retail Theory and Current Practice Credits: 3
Theoretical and applied analysis of merchandising strategies; assessment of internal and external environmental forces impacting strategic decisions by retail firms; synthesis of past and present trends in order to forecast probable future patterns. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 560 - Retail Analytics Credits: 3
This course addresses the use of quantitative data from the merchandising industry to support managerial decision-making; specifically, how to format and analyze typical consumer data. Students will apply analytical approaches to problem-solving using Microsoft Excel including: Formulas, Functions, Solver, and Pivot Tables. This course will strengthen a student's decision-making and analytical skills while providing new perspectives and approaches to apply quantitative techniques and methods to solve real-world business problems. Students will learn to summarize and present quantitative information designed for industry stakeholders. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 591 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

MRCH 610 - History and Contemporary Issues in Trade Credits: 3
Examination of fiber, textile, and apparel industries in a global context. Specifically, a look at the historical development of the global and US textile and apparel industries and how the global environment (economic, political, and social systems) affects textile and apparel production and trade. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 620 - International Merchandise Management Credits: 3
Comprehensive understanding of theory, practices and trends on international merchandise management. An analysis of global retail systems and the way goods are distributed to consumers in various countries. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 630 - Research Methods in Merchandising Credits: 3
Overview of the research process used in social science, including an overview and analysis of research methodologies. This class will also include a review of current merchandising literature with implications for future research. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 640 - Financial Merchandising Implications Credits: 3
The advanced study of financial trends in the merchandising industries; implications related to sole proprietors, partnerships, franchises, S corporations, and C corporations. Foci will be on the financial implications of recent advances in the field that assist graduate students as they embark on careers in academia and/or merchandising industries. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 650 - Strategic Planning in Merchandising Credits: 3
Examination of the executive planning process utilized to develop successful corporate strategies: emphasis on the importance of a market orientation for building customer value and sustaining a competitive advantage. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 695 - Practicum (COM) Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MRCH 798 - Thesis (COM) Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

MUS (Music)

MUS 591 - Independent Study (COM) Credits: 1-4
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

MUS 592 - Topics (COM) Credits: 1-5
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

NE (Nuclear Engineering)

NE 535 - Introduction to Nuclear Engineering Credits: 3
This course considers the design of nuclear fission and fusion reactors and particle accelerators including discussion of basic nuclear properties, the fission process and reactor control, fusion reactors, environmental effects and nuclear waste management. Prerequisites: PHYS 331 or MATH 321.

NRM (Natural Resource Management)

NRM 505 - Entomology (COM) Credits: 3
An introduction to the general biology and classification of insects. Course emphasis placed on taxonomy, methods of identification, and ecological role of insects. Students will become familiar with basic insect anatomy and morphology, classification at the order level with exemplary families that include taxa of agricultural or environmental interest, and acquire an ability to sight recognize particular species that have agricultural, environmental, wildlife, and human and livestock health importance. Corequisites: NRM 505L. Cross-Listed: PS 505.

NRM 505L - Entomology Lab Credits: 0
Laboratory experience that accompanies PS 505. Corequisites: NRM 505. Cross-Listed: PS 505L.

NRM 550 - Freshwater Monitoring and Assessment Credits: 3
This course will introduce policy's related to monitoring assessment of fresh waters, design of freshwater monitoring and assessment programs, standard field and laboratory techniques used by monitoring agencies, analysis and interpretation of monitoring data and uses of monitoring data to improve management of freshwater resources. Corequisites: NRM 550L. Prerequisites: NRM 282 and NRM 311.

NRM 550L - Freshwater Monitoring and Assessment Lab Credits: 0
Laboratory to accompany NRM 550. Corequisites: NRM 550.

NRM 564 - Ecosystem Ecology Credits: 3
Study of energy and material flows through the living (plants, animals, microbes) and non-living (soils, atmosphere) components of ecological systems. Discussion of the major elements cycles and patterns of energy flow through ecosystems, including how those fluxes and their controls differ for different ecosystems. Linkages between ecosystem structure and function will be emphasized. Prerequisites: NRM 282 and NRM 311.

NRM 566 - Environmental Toxicology and Contaminants (COM) Credits: 3
This course will prepare students in the area of Ecological Effects of Toxic Substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to Wildlife Toxicology.

NRM 582 - Natural Resource Management Biometry Credits: 3
Study and application of advanced quantitative methods used to assess natural resources. Estimation of parameters, hypothesis testing, and use of classical fisheries and wildlife sciences, ecology, environmental science, and range science statistical techniques. Corequisites: NRM 582L. Prerequisites: NRM 282.

NRM 582L - Natural Resource Management Biometry Lab Credits: 0
Laboratory to accompany NRM 582. Corequisites: NRM 582.

NRM 592 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

NRM 706 - Landscape Ecology Credits: 3
Study of the structure function and management of landscape ecosystems. Integrates the study of plants, animals and the physical environment at larger spatial scales, and application of these concepts to land management issues. An understanding of ecological principles is recommended prior to enrollment. Corequisites: NRM 706L

NRM 706L - Landscape Ecology Laboratory Credits: 0

NRM 767 - Fire and Ecosystems Credits: 3
This course is a broad treatment of how fire and ecosystems combine to form the landscapes that we see. Course material examines the contributions of climate, topography, weather, and fuels to the fire environment and how these factors influence wildland fire behavior. We will explore the interactions between ecological processes and fire regimes in ecosystem dynamics and the ways in which human land use and land management affect the outcomes. Cross-Listed: GEOG 767/GSE 767.

NRM 768 - Global Climate Change Credits: 3
The course will provide a multidisciplinary examination of the drivers of the Earth's climate, how they interact, and how they change over time. We will critically examine the roles of greenhouse gases and anthropogenic land cover/use in affecting these changes as well as the types, strengths and limitations of global climate models. Class will combine lectures on various aspects of the Earth's climate system with class discussion of a variety of scientific papers exploring the current controversies and ideas central to climate research. Students will be challenged to develop their own projects/papers on course-related topics and use the most recent scientific research to decide for themselves about the importance of global climate change. Cross-Listed: GEOG/GSE 768.

NRM 788 - Master's Research Problems/Projects Credits: 1-3
Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

NRM 790 - Seminar Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

NRM 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

NRM 792 - Topics (COM) Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

NURS (Nursing)

NURS 615 - Foundations of Advanced Nursing Credits: 3
Introduction to contemporary core concepts, issues, and trends common to multiple roles and educational pathways in the nursing discipline beyond basic licensure. Content includes overview of topics emphasized across roles and curricula following advances in nursing knowledge, clinical practice, technology, and priorities of the profession in changing healthcare environments.

NURS 620 - Role Development of the Nurse Educator Credits: 2
This course will focus on the issues and challenges related to the nurse educator role in both academic and clinical environments. Prerequisites: Department consent.

NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4
Normal physiologic and pathophysiologic concepts will be examined with emphasis on problems of the major body systems. Changes in normal function that result in symptoms indicative of illness and assessment of an individual's response to illness will be interpreted. Pathophysiologic changes will be examined in relation to expected growth and development throughout the lifespan. Prerequisites: NURS 615 (or Concurrent).

NURS 626 - Research in Nursing and Health Care Credits: 3
Overview of the research process in nursing science to understand development of the evidence base for nursing practice in healthcare and the discipline of nursing. Content includes research appraisal and basic elements of qualitative and quantitative methods including concepts, frameworks, and approaches in the design, conduct, analysis, and interpretation of nursing research studies. Prerequisites: NURS 615 (or concurrent).

NURS 630 - Advanced Assessment Across the Lifespan for the CNL/Nurse Educator Credits: 3
This course provides the opportunity for students to build on basic skills of individual health assessment and apply those skills to their respective practices. It includes assessment of physiological and psychosocial processes relevant to the health of all age groups, and the assessment of selected human pathologies. The course focuses on mastering advanced physical assessment skills for use in formulating plans for education of students or developing quality improvement plans for patient-centered care. Prerequisites: Department consent.

NURS 631 - Advanced Assessment Across the Lifespan Credits: 4
This course builds on basic skills of individual health assessment. It includes assessment of physiological and psychosocial processes relevant to the health of all age groups, and the assessment of selected human pathologies. Advanced assessment skills and tools necessary to identify health care needs and apply health maintenance protocols are included. Corequisites: NURS 631L. Prerequisites: NURS 615.

NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 0

NURS 645 - CNL I: Improvement Science: A Microsystem Approach Credits: 5
The CNL student will focus on the nursing leader role within complex healthcare systems and across various healthcare settings using evidence based knowledge for strategic leadership. The CNL student will develop skills and knowledge in integrating patient evaluation, risk assessment information, and inter-professional communication. Using information systems within clinical practice experiences, students will perform in depth analyses of microsystems, population focused programs, and strategies that promote health, improve outcomes, and facilitate the design of high-performing systems. Prerequisites: NURS 615, NURS 626, NURS 670, NURS 675, NURS 760, and NURS 860.

NURS 646 - CNL II: Clinical Immersion and Capstone Project Credits: 6
This course provides the opportunity for the CNL student to demonstrate understanding of clinical role practice within various healthcare settings and specialties through a guided role immersion experience. Students practice 300 hours with an approved preceptor in a selected clinical setting and complete a quality improvement project. Prerequisites: NURS 645.

NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
Legal, political, economic, and ethical issues related to health policy will be examined from the perspective of advanced practice nursing roles. Prerequisites: NURS 615.

NURS 675 - Cultural Competence in Health Care Credits: 3
This course will increase the student's awareness regarding the dimensions and complexities involved in caring for people from diverse cultural backgrounds. The issues of health care delivery will be explored and contrasted with the choices that people must make when attempting to deal with health care issues. Prerequisites: Admission to a graduate program in nursing or instructor consent.

NURS 691 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

NURS 692 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

NURS 710 - Curriculum Development and Program Evaluation in Nursing Credits: 3
This course will introduce the student to traditional and contemporary considerations for curriculum development and program evaluation as applied to nursing education in both academic and clinical environments

NURS 720 - Teaching and Learning Methodologies in Nursing Credits: 3
This course will examine innovations in education that support and promote a culture of active teaching and learning. Use of technologies, including but not limited to, online learning and simulation will be included. Evidence-based teaching strategies that be utilized for the design and delivery of instruction in both academic and clinical environments will be identified.

NURS 721 - Assessment and Evaluation in Nursing Education Credits: 3
This course will examine assessment and evaluation methods used by educators in both academic and clinical environments. Current issues, trends, and research related to educational testing instruments, alternatives to standardized evaluation methods, and outcome measurement in nursing education will be discussed. Prerequisites: NURS 720 and Department consent.

NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
The study of advanced psychopharmacological treatment of psychiatric symptoms and disorders. Neurobiological processes are emphasized. Medication selection, dosage and monitoring is covered including prescriptive issues. Prerequisites: Department consent.

NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 3
Emphasis on the etiology and epidemiology of selected psychopathological disorders and introduction to assessment and diagnosis of common clinical variations in health patterns. Use of the DSM is foundational. Prerequisites: Department consent.

NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
An overview of theories, interventions and research related to psychotherapeutic treatments utilized by the advanced practice psychiatric nurse in planning, implementing and evaluating care for individuals across the lifespan. Brief applications of cognitive behavioral therapy and motivational interviewing are studied. Prerequisites: Department consent.

NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
Communication skills, comprehensive history-taking techniques, advanced psychosocial and physical assessment skills, screening/diagnostic testing, and diagnostic reasoning skills required in advanced nursing practice are developed. The focus is on developing these skills from an evidence-based, culturally responsive perspective. Prerequisites: Department consent.

NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 4
This course expands clinical training in the full role of the psychiatric mental health nurse practitioner. Emphasis is on the integration of content areas to advance competencies in the ethical, safe, collaborative and evidenced-based provision of mental health care for all ages. Prerequisites: NURS 732, NURS 733, NURS 734, NURS 735, and department consent.

NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 5
This course continues and expands clinical training in the full role of the psychiatric mental health nurse practitioner. Emphasis is on the integration of content areas to advance competences in the ethical, safe, collaborative and evidence-based provision of mental health care for all ages. Prerequisites: NURS 736 and department consent.

NURS 750 - Transformational Leadership in Nursing Credits: 3
Analysis of effective and efficient methods of providing leadership and management for an education program, administrative unit or clinical area. Discussion of a variety of situations that leaders negotiate with regard to program and personnel development, strategic planning, budget preparation, fundraising, and program evaluation.

NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
Critical analysis and applications of community preventive service guidelines, health promotion and disease prevention theories and models, and implementation strategies. Foundations of social, cultural, behavioral, genomic, political, and environmental factors impacting health. Exploration of provider roles in assessing the health of individuals and aggregates in planning health promotion, disease prevention, and health maintenance programs with a focus on chronic conditions and vulnerable, rural, and underserved populations. Corequisites: NURS 615 (concurrent or prerequisite).

NURS 765 - FNP Integration: Practicum I Credits: 7
The emphasis of the course is on the application of evidence-based knowledge to clinical practice in primary care settings. Students will strengthen their health history and physical examination skills in the formulation of differential diagnoses and clinical decision-making relative to common primary care conditions and developmental variations such as pregnancy. Development of initial primary care procedural skills along with ordering and interpreting diagnostic testing will be included. This course provides the basis for integrating clinical data with knowledge of pathophysiology to formulate diagnostic hypotheses for clients across the lifespan. Prerequisites: NURS 623, NURS 631, and PHA 645.

NURS 768 - FNP Integration: Practicum II Credits: 4
Emphasis is placed on obtaining an accurate health history and performing appropriate physical examination skills to formulate differential diagnoses and utilize clinical decision-making relative to common primary care conditions. Developmental variations, culture, and patient preference are considered to determine appropriate diagnostic tests as well as pharmacologic and non-pharmacologic treatment plans. Prerequisites: NURS 765.

NURS 771 - FNP Integration: Practicum III Credits: 7
Emphasizes the integration of pathophysiology and specific disease and symptom complexes in the formulation of differential diagnoses and clinical management of acute and chronic health problems. Prerequisites: NURS 768.

NURS 774 - Nurse Administrator: Practicum Credits: 5
Provides the opportunity to integrate principles and theories from support courses in health service administration and nursing courses to the administration of a nursing department or agency. Emphasis is placed on advanced nursing practice needed to administer the work of nursing. This is a supervised administrative practicum focused on broad participation in the administrative process in a health care organization. Corequisites: NURS 774L. Prerequisites: Instructor consent.

NURS 774L - Nurse Administrator Practicum Clinical Laboratory Credits: 0

NURS 776 - FNP Integration: Practicum IV Credits: 8
Emphasizes the integration of pathophysiology, physical assessment, and pharmacology along with specific disease and symptom complexes in the formulation of differential diagnoses and clinical management of complex health problems. Prerequisites: NURS 771.

NURS 778 - Nurse Educator Didactic/Practicum Credits: 1-5
This course is designed to provide teaching experience in nursing education in either the academic of clinical environment under the supervision of a preceptor. Students will design, implement, and evaluate didactic or clinical education in either the academic or clinical environment. Prerequisites: NURS 615, NURS 710 and NURS 720.

NURS 780 - Clinical Genetics and Genomics: Advanced Concepts Credits: 1
Application of genetics and genomics concepts are presented to strengthen clinical decision-making skills and improve health outcomes of patients, families, and communities. Prerequisites: Department consent.

NURS 781 - Clinical Epidemiology: Advanced Concepts Credits: 1
Application of epidemiological concepts are presented to strengthen clinical decision-making skills and improve health outcomes of patients, families, and communities. Prerequisites: Department consent.

NURS 788 - Master's Research Problems/Projects Credits: 1-2
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical. Prerequisites: NURS 626.

NURS 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

NURS 810 - Doctoral Seminar Credits: 1
A one credit doctoral seminar that provides a forum for pre-candidates and dissertators to integrate and apply skills and content from coursework, life experiences, and independent study to doctoral student academic situations while addressing relevant questions related to faculty, doctoral student, and researcher roles toward completion of degree requirements. The goal is to facilitate learning and socialization for successful student progression through pre-candidacy, candidacy, and completion of dissertation.

NURS 815 - Philosophical Basis for Nursing Inquiry Credits: 3
Analysis of philosophy of science traditions and their relationship to knowledge development in nursing. Prerequisites: Admitted to PhD in Nursing.

NURS 820 - Theory Development in Nursing Credits: 3
Critical analysis of theory development and theory construction in nursing science. Evaluation of the relationship between theory construction and research methods to generate and test theories is explored Emphasis is placed on continued analysis of theories and their relationships with research and practice. The focus is on the fit between theoretical and operational foundations of research. Students conduct an extensive review of the literature on phenomena of concern to nursing in order to generate theory and empirical referents. Strategies for synthesis of concepts, statements, and theories are practiced. Prerequisites: NURS 815.

NURS 825 - Qualitative Research Methods in Nursing Credits: 3
Analysis of qualitative research methods in nursing, paradigmatic, theoretical, and conceptual issues related to these approaches, and the nature of the nursing knowledge generated.

NURS 830 - Quantitative Methods in Nursing Research Credits: 3
Analysis of research designs, problems of measurement, methods of data collection, and analysis and interpretation of data in quantitative research. An integral part of the course is the development and analysis of a pilot research proposal investigating a current nursing problem.

NURS 832 - Mixed Methods Research Credits: 3
An introduction to the design and conduct of mixed methods research in health and human sciences including theoretical underpinnings, method designs, sampling strategies, analysis, and ethical issues common to mixed methods. Students will develop skills in conducting and evaluating mixed methods research. Prerequisites: NURS 825 and NURS 830. Cross-Listed: HSC 832.

NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
An in-depth critical analysis of ethical dimensions encompassing health care, politics, policy, medicine, research, and clinical practice. Interdisciplinary perspectives are utilized to synthesize ethical positions and viewpoints on health-related issues for individuals, groups, and populations in contemporary society.

NURS 840 - Health Promotion Theory and Research in Underserved Populations Credits: 3
Study of the theoretical foundations of health behavior and health promotion as a basis for nursing research. The theory and principles of how health behavior patterns of individuals, families, and communities are acquired, maintained and changed are emphasized. The influence of social and psychological factors such as ethnicity, socioeconomic status, gender and social support is included. Research application of theories and models of health promotion are analyzed and relevant research methodologies are applied to under-served populations. Prerequisites: NURS 815, NURS 820 and NURS 825.

NURS 845 - Measurement and Instrument Evaluation in Health Sciences Research Credits: 3
Analysis of measurement theories and approaches to measurement in health sciences research. Inductive and deductive processes of constructing and evaluating instruments to measure behavioral, biological, social, cultural, and clinical concepts are examined. Content includes instrument scaling techniques and procedures to evaluate psychometric properties including reliability, validity, and factor analysis. Examination of measurement issues with different concepts and populations. Basic knowledge of concept analysis and inferential statistics is expected prior to enrollment. Prerequisites: NURS 830.

NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
This course will prepare the student to analyze significant practice issues with the theoretical and scientific underpinnings of knowledge-based practice. The student will employ advanced clinical judgment to assess the evidence from nursing theories and models, interdisciplinary theories, research findings, and value systems of clients.

NURS 855 - Translational Research in Health Care Credits: 3
Students will determine how evidence derived from research will guide the DNP Project's methodology to improve quality care provided to a population. Analysis, ethical considerations, and impact of the project will be explored. Prerequisites: NURS 850.

NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
Focuses on business skills needed by the nurse executive or advance practice nurse to lead, influence, and develop healthcare delivery systems. Principles of financial management, healthcare economics, human resource and productivity management, strategic management, marketing, and information management and their application to healthcare delivery systems will be examined. Students will apply these business skills to selected specialty areas.

NURS 875 - DNP Intensive Credits: 1-9
Focused clinical experiences aligned with the practice doctorate. Students and the program adviser and/or faculty will develop clinical experiences that augment current practice expertise.

NURS 880 - DNP Project Credits: 1-8
Literature and evidence will be synthesized with stakeholders and inter-professional collaborators to develop and implement a Doctor of Nursing Practice (DNP) Project for a rural or underserved population, health system, or community. The advanced practice registered nursing student will implement, evaluate, and defend an intervention that improves health care practice and quality of care. Seminar content will be followed by collaboration with the major advisor whose expertise matches the intent of the DNP Project.

NURS 895 - Practicum Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

NURS 898D - Dissertation - PhD (COM) Credits: 1-24
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and the professor with more limited interaction between and among the candidate and other members of the committee.

NUTR (Nutrition and Dietetics)

NUTR 522 - Advanced Human Nutrition and Metabolism Credits: 4
Principles of metabolism and application to human nutrition.

NUTR 523 - Medical Nutrition Therapy I Credits: 3
This course introduces the role of nutritional intervention in pathological conditions. Students will demonstrate the ability to screen for nutritional risk, collect data for nutritional assessment and calculate and/or define diets for common conditions.

NUTR 523L - Medical Nutrition Therapy I Laboratory Credits: 0
This course introduces the role of nutritional intervention in pathological conditions. Students will demonstrate the ability to screen for nutritional risk, collect data for nutritional assessment and calculate and/or define diets for common conditions.

NUTR 524 - Community Nutrition Credits: 3
Application of learning principles, teaching methods and knowledge of nutrition in community nutrition education programs and out-patient nutrition counseling. Corequisites: NUTR 524L required. Prerequisites: NFS 315 and NFS 323.

NUTR 524L - Community Nutrition Laboratory Credits: 0
Corequisites: NUTR 524 required.

NUTR 525 - Medical Nutrition Therapy II Credits: 3
Continuation of NFS 523. Prerequisites: NUTR 523.

NUTR 525L - Medical Nutrition Therapy II Laboratory Credits: 0

NUTR 526 - Production of Wine Beer Spirits Credits: 3
Students will learn the procedures required for the biological and agricultural production of wine, beer and spirits coupled with the science of fermentation and the methodology required for the tasting of wine and beer for flavor/odor identification per industry guidelines. Lecture topics of student inquiry include: (1) the brewing of beer and the functional contributions of its ingredients, (2) wine production from vine to bottle, (3) the distillation of spirits and (4) the marketing, pairing and service of wine, beer and spirits. This course is designed for students/graduates who will potentially go into the business of not only growth and production, but also marketing and serving wine, beer and spirits. Corequisites: NUTR 526L. Prerequisites: Participants must be 21 years of age or older to enroll. Cross-Listed: HO/PS 526.

NUTR 526L - Production of Wine Beer Spirits Laboratory Credits: 0
Laboratory investigation includes hands-on opportunities involving the production of beer and wine. Students will experiment with production parameters and investigate quality defects. Wine and beer quality will be assessed through laboratory testing coupled with taste testing without consumption (taste and spit) both per industry specifications. Students will develop skills in identifying specific flavors/odors such as oak, butter or lemon in wine and similar tasting techniques in beer. Corequisites: NUTR 526. Prerequisites: Participants must be 21 years of age or older to enroll. Cross-Listed: HO/PS 526L.

NUTR 560 - Nutrigenomics and Molecular Nutrition Credits: 3
Non-communicable diseases (NCD) or chronic diseases though highly preventable are the leading killer in both developing and developed economies around the world. This indicates inadequacy of current clinical practices and underscores the importance of lifestyle and dietary approaches in tackling this growing epidemic. Traditional nutrition research and education has focused on determining optimal dietary-needs and dietary-behavior for human development and sustenance. This course will introduce the principles of Nutrigenomics, a newer science that seeks to provide a molecular understanding for how diet and common dietary constituents affect human health by altering gene expression.

NUTR 580 - Travel Studies Credits: 1-5
This travel-study course is designed to provide extra-mural educational experiences, as approved by and under the direction of a faculty member, and may be in cooperation with faculty and administrators at other institutions. Students will participate in hands-on activities and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

NUTR 591 - Independent Study (COM) Credits: 1-6
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 660 - Maternal and Child Nutrition Credits: 3
Fundamental principles of nutrition during pregnancy, lactation, infancy, and childhood. Topics include: the physiologic and genetic events that occur during the process of conception, pregnancy and growth; nutritionally critical periods during pregnancy, lactation and growth; implications of nutrition on health, growth and mental/emotional development; development of food habits in children; and the current educational and support programs available to the mother and child. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 662 - Sociocultural Aspect of Nutrition Credits: 3
The study of diverse dietary patterns and their impact on nutritional health including food attitudes, socioeconomic structures, cultural patterns of food intake and their effect on nutrient composition of the diet. Prerequisites: NUTR 221 or NUTR 315. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 702 - Macronutrients in Human Nutrition Credits: 3
The course is an overview of macronutrients, including carbohydrates, lipids and proteins. It will cover recent findings on their functions in human nutrition and health. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 704 - Phytochemicals Credits: 3
The course is an overview of phytochemicals (non-nutritive biologically active compounds) from fruits, vegetables, cereals, and oilseeds. It will cover recent findings on chemistry, physiological functions, potential health implications of phytochemicals. It has been developed as an Internet-based course. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 705 - Functional Foods: Disease Prevention Credits: 3
Integrate and evaluate the regulatory principles, food science, nutrient science, and nutritional metabolism for the development of functional foods, mutraceuticals, and dietary supplements for chronic disease prevention Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 706 - Nutrition and Immunology Credits: 3
Principles and issues related to nutrition and immunology. Impact of nutrients and nutritional status on immune responses. Impact of disease states on nutritional status. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 708 - Evidence Based Analysis Credits: 3
This course will cover the process of evidence-based analysis which uses scientific evidence to formulate and standardize practice guidelines and to develop programs. A variety of disciplines such as dietetics, athletic training, medicine, psychology and education use evidence-based practice and/or programs. The emphasis of the course will be on a transdisciplinary process and how it can be utilized in a student's chosen field. When possible, students will be encouraged to use his/her thesis or dissertation topic in order to complete required assignments and activities.

NUTR 709 - Advanced Lipid Metabolism Credits: 3
The course is designed specifically to provide the student with an understanding of unique roles that dietary fatty acids play in chronic disease with a focus on the role of lipids in nutritional genomics. Additionally, this course is designed to provide the student with an understanding of the fundamental concepts involved in how nutrients regulate gene expression (nutrigenomics) and how an individual's genotype influences their nutrient requirements (nutrigenetics).

NUTR 710 - Dietary and Herbal Supplements Credits: 3
Explore the safety and efficacy of botanical/herbal and dietary supplements in health applications including: dietary supplementation in the prevention and treatment of chronic disease. It is advised for students to complete Human Physiology prior to enrollment. Course is designed to meet professional education for the registered dietitian. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 711 - Clinical Aspects of Nutrition Support Credits: 3
The course is designed specifically to provide the student with an understanding of specialized nutrition assessment and support, review of energy expenditure and substrate utilization in specific disease states, current methods for the initiation and management of enteral and parenteral nutrition therapy including access, metabolic and mechanical complications. Evaluation of nutrition support methodology in selected disease states is also included. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 715 - Public Health Nutrition Credits: 3
This course provides information and activities related to the broad topic of public health nutrition and will focus on how nutrition research, policies and programs impact populations. Students will gain a broader understanding of public health nutrition through case studies, discussions and experiential learning experiences.

NUTR 722 - Nutrition Counseling/ Ed Methods Credits: 3
Nutrition education for groups and individuals in clinical and community settings. Includes discussion and experience in applying learning theory, assessing educational needs, stating goals and objectives, selecting learning activities, implementing and evaluating instruction, and documenting care provided. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 723 - Nutrition Focus on Life Stages Credits: 3
The influence of normal physiological stresses on nutritional needs throughout the life span will be explored. Evaluating dietary intake and identifying appropriate community nutrition services will be included in the on-line discussions. Specific considerations, such as the influence of age and cultural heritage, will be incorporated. An opportunity will be given to each student to plan, present, and evaluate a mini nutrition education lesson. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 724 - Nutrition Education in the Community Credits: 3
Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research in and evaluation of nutrition education for registered dietitians. Notes: Online. Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 725 - Nutrition and Human Performance Credits: 3
This course is designed to develop an understanding of nutrition, based upon knowledge of the biochemical and physiological process and functions of specific nutrients in meeting nutritional requirements. Emphasis will be placed upon the relationship of optimal nutrition and physical efficiency and performance. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 726 - Nutrition and Wellness Credits: 3
Course will address wellness promotion through nutrition. Nutritional risk and protective factors will be examined as they relate to public health and individual nutrition. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 727 - Obesity Across the Lifespan Credits: 3
Exploration of the effects that obesity has on public health, the healthcare system, and society in general. Overview of strategies to prevent obesity across the lifespan. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 728 - Pediatric Clinical Nutrition Credits: 3
This course examines the physiological, biochemical, and nutritional aspects of disease processes relevant to infants and children up to 18 years of age. Medical nutrition therapy for a variety of medical conditions found in this population will be discussed including inborn errors of metabolism, food hypersensitivity, obesity, and diseases of all major organ systems. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 729 - International Nutr/World Hunger Credits: 3
Advanced study of the magnitude, cause, and nature of hunger and undernutrition in low income countries; emphasis on programs, policies, and planning directed toward alleviating hunger. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 730 - Nutritional Aspects of Oncology Credits: 3
Students will gain understanding of basic cancer biology and methodology used to study nutrition and cancer relationships. Using current research as a basis, the role of nutrition in specific cancers will be explored. Students will learn about sources of information for cancer prevention programs, and how to apply this information to clinical patient management. Course is designed to meet professional education for the registered dietitian. Notes: Online. Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 734 - Research Methods in Dietetics Credits: 3
Dietetics, including the use of various research designs for answering research questions, methods for conducting research, evaluation of research articles, development of research proposals, communication of research findings, and demonstration of understanding of ethical issues in research. Basic components of the research process and the application of various research methods in dietetics. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 735 - Current Trends in Dietetics Practices Credits: 3
Review of current issues in the economic, social, ethical, political, legal, technological, and ecological environments and the effect of these changes on dietetics practice. Notes: Online. Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 741 - Grant Writing in Dietetics Credits: 3
Grant writing, identifying external funding, managing grants, preparing manuscripts for peer reviewed publications, and preparing papers and posters for presentation at professional meetings. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 742 - Entrepreneurship in Dietetics Credits: 3
Development and management of small businesses or private practice within the dietetics industry. Business plan development, marketing, cost considerations. Overview of consulting to healthcare and hospitality operations and examination of skills required for success. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 743 - Foundations in Leadership Credits: 3
This course builds upon leadership theories to develop the fundamental concepts and skills to bridge the gap between theory and practice. After completing this course, students will be able to successfully evaluate leadership theories (classic and contemporary); investigate current trends in leadership and identify positive applications in the dietetic community. Students will formulate a plan for professional growth as a leader in the field of dietetics and nutrition. The student will be asked to respond to critical thinking opportunities and demonstrate their understanding of key concepts through exercises, discussion questions, quizzes, a Learning Journal, and their Leadership Growth Plan. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 750 - Issues in Obesity Credits: 3
This course will introduce students to nutrition and physical activity related factors that contribute to obesity in the United States. Students will have the opportunity to explore and discuss complex obesity issues with students from a variety of disciplines and gain an appreciation for the need of interprofessional collaboration in obesity prevention efforts.

NUTR 751 - Nutrition and Physical Activity Assessment and Evaluation Credits: 3
This course will introduce students to a variety of nutrition and physical activity assessment tools. Students will have the opportunity discuss the strengths and weaknesses of different tools and gain experience collecting, analyzing, and interpreting nutrition and physical activity data.

NUTR 760 - Vitamins and Minerals in Human Nutrition Credits: 3
The study of the functional rolls of vitamins and minerals in human nutrition. Course content will include: identification of essential functions for the vitamins and minerals; health implications of varying amounts vitamins and minerals in the diet; interactions between vitamins; interactions between minerals; vitamin and mineral interactions and the process of establishing nutrient requirements. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 761 - Nutrition and Aging Credits: 3
Physiological and behavioral changes associated with aging and their impact on nutrition. Effect of nutrition on aging and lifespan. Common health problems of the aged and their implications. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 765 - Dietetic Accounting Concepts Credits: 3
An emphasis on financial statement analysis is the main objective of the course. A review of all major accounts in the income statement, balance sheet, and statement of cash flows is made in determining a firm's performance and financial condition in relation to what matters most to shareholders and investors. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 769 - Healthcare Administration for Dietetics Credits: 3
Comprehensive review of current health care institutions and their response to the economic, social/ethical, political/legal, technological, and ecological environments. Current issues in today's healthcare environment and challenges which must be met by healthcare administrators. Notes: Online. Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 770 - Food Writing for Professionals Credits: 3
Understanding and appreciating how to communicate effectively in writing about food and food-related topics. Hands-on experience in research and writing for various audiences and types of media. Course is designed for the registered dietitian. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 775 - Nutrigenomics and Health Credits: 3
Nutritional genomics (nutrigenomics), the junction between health and diet can be seen as the combination of molecular nutrition and genomics. Diet is the most important environmental factor influencing expression of genetic information because of the constant exposure to nutrients in foods. The advent of omics-based sciences has created unprecedented opportunities for increasing our understanding of how nutrients modulate gene expression, influence cellular and organismal metabolism and ultimately influence health. The course will be taught using integrative concepts of nutritional biochemistry, gene function, signal transduction and molecular biology in context of human diseases. Prerequisites: CHEM 464 and BIOL 371 (waiver by petition only).

NUTR 782 - Epidemiology Credits: 3
The course introduces concepts and methodologies for the study of health and disease in human populations. Different study designs and their methods of analysis will be discussed, as well as sources, handling, and interpretation of epidemiologic data. Cross-Listed: BIOL 782/HSC 782.

NUTR 794 - Internship (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

NUTR 795 - Practicum (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

NUTR 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

OM (Operations Management)

OM 560 - Engineering Economic Analysis Credits: 3
Economic analysis for practical application on industry projects; engineering economics; cost analysis, evaluation, and budget justification for capital expenditures. Cross-Listed: MNET 560.

OM 562 - Quality Management Credits: 3
Course focus is on managerial philosophies and techniques of quality planning and control. This includes quality improvement tools, reliability, cost of quality, and human factors that affect quality initiatives. Prerequisites: STAT 281 or instructor consent.

OM 563 - Supply Chain Management Credits: 3
Study and analysis of activities in the flow of materials from the supplier to the consumer. These include physical supply, operations planning and control, storage and warehousing, and physical distribution.

OM 569 - Project Management Credits: 2-3
An overview of project management as it relates to integrated systems, product/project life cycle, and organizational change. Defining, estimating, scheduling, risk management, and project team leadership issues will be covered as they relate to projects. Cross-Listed: GE 569.

OM 591 - Independent Study (COM) Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

OM 603 - Designing the Work Place for Production Credits: 3
Designing the workplace to support the structuring of interpersonal communication and action in the workspace and to optimize the use of human energy through the total integration of corporate policy and culture with the physical environment. Includes the evaluation of operation procedures, the construction of behavior, computer assisted facilities management, developing control and order in the workplace, perceived stability as corporate support, flexibility as a catalyst to successful innovation.

OM 620 - Analysis in Operations Management Credits: 3
Management analytics with emphasis on problem identification, model construction, data analysis-summary-interpretation, solution procedures, risk & uncertainty.

OM 650 - Manufacturing Systems Management Credits: 3
Production planning and control methods to improve efficiency. Study and application of low cost production for small to large systems. Workplace organization, value stream mapping, demand flow, and other management tools will be covered. Prerequisites: STAT 541.

OM 650 - Manufacturing Systems Management Credits: 3
Principles and methods of applied research in business and industry. Examination of methods to initiate research projects, generate proposals and execute research plans; data acquisition, analysis and interpretation are covered. Prerequisites: STAT 541.

OM 660 - Operations Management Credits: 3
Product planning, demand forecasting and management, capacity planning, scheduling, inventory planning and timing, materials management, quality, work standards and measurement.

OM 665 - Quality Control Applications Credits: 3
Quality control theory applied to problems in production systems, including probability concepts, control chart concepts, sampling inspection plans; mean time between failure; and, application of statistics for quality control in discrete-item manufacturing systems.

OM 670 - Research Methods in Management Credits: 3
Principles and methods of applied research in business and industry. Examination of appropriate methods to conduct literature reviews, design methodology, develop proposals for research projects, and present results.

OM 690 - Seminar (COM) Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media, such as internet, and are at the upper division or graduate levels. Enrollment is generally limited to 20 or fewer students.

OM 760 - Quality Control Credits: 3
Application of statistical techniques to the control of quality and the development of economical inspection methods. Collection analysis, and interpretation of operations data; control charts and sampling procedure. Prerequisites: STAT 281 or STAT 381. Cross-Listed: ME 760/STAT 760.

OM 767 - Decision Theory Credits: 3
Examination and evaluation of modern techniques of decision making. Mathematical models and measurements theory. Certainty, risk, and uncertainty.

OM 788 - Master's Research Problems/Projects (COM) Credits: 1-2
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

OM 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

OM 792 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

OM 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PE (Physical Education)

PE 585 - Travel Studies Credits: 1-5
This travel study course is designed to provide extra-mural educational experiences, as approved by, and under the direction of a faculty member, and may be in cooperation with faculty and administrators of other institutions. Students will participate in hand-on activities, and design educational activities for presentation at selected locations.

PE 742 - Psychological Aspects of Sport and Exercise Credits: 3
Psychological theories and principles applied to physical education, sport, and exercise. Interpretation and analysis of human behavior. Pre-requisite: instructor consent. Topics include personality, arousal and anxiety, motivation, self efficacy and self-esteem, attentional focus, audience effects, aggression, leadership, as well as intervention strategies.

PE 770 - Sport and Recreation Administration Credits: 3
This course provides theoretical and practical knowledge in the administration and leadership of sport and recreation organizations. Specific administration techniques and theories will be studied to provide the foundation for effective leadership in sport and recreation organizations. Prerequisites: Instructor consent.

PE 771 - Seminar in Sport and Recreation Administration Credits: 3
This course examines a variety of current issues related to the administration of sport and recreation organizations. Topics include social-cultural issues, mass communication, economic issues, legal issues, event management, fundraising and development, etc.

PE 772 - Financial Aspects of Sport and Recreation Administration (COM) Credits: 3
This course examines basic financial and managerial accounting concepts necessary to be financially literate in sport and recreation organizations. Budgeting and fundraising concepts will also be addressed, as well as, corporate financial principles.

PHA (Pharmacy)

PHA 610 - Introductory Practice Experience II Credits: 3
Students apply the academic and theoretical knowledge they have acquired in didactic courses to practical situations within a pharmacy setting. The drug dispensing process, patient counseling, and management of the pharmacy will be emphasized during the course. Notes: Pass/fail grading.

PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4
To provide the student with the knowledge and skills to assess, diagnose and manage (including the prescription of pharmacologic agents) a client's common health problems throughout the lifespan in a safe, high quality, and cost-effective manner. Notes: Graduate nursing students only.

PHA 647 - Pharmacological Issues in Mental Health Counseling Credits: 3
An overview and discussion of medications and medication issues that mental health counselors encounter. The role of the counselor with clients requiring counseling and pharmacotherapy treatments will be emphasized.

PHA 700 - Directed Studies Practice Experience Credits: 4-5
Advanced experiential course in pharmacy.

PHA 701 - Home Health/Hospice Practice Experience Credits: 5

PHA 702 - Indian Health Services Practice Experience Credits: 5

PHA 703 - Pharmacy Administration Practice Experience Credits: 5

PHA 704 - Nutrition Support Practice Experience Credits: 5

PHA 705 - Clinical Research Practice Experience Credits: 5

PHA 706 - Critical Care Practice Experience Credits: 5

PHA 707 - Infectious Disease Practice Experience Credits: 5

PHA 708 - Surgery Practice Experience Credits: 5

PHA 709 - Nephrology Practice Experience Credits: 5

PHA 710 - Pharmacokinetics Practice Experience Credits: 5

PHA 711 - Oncology Practice Experience Credits: 5

PHA 712 - Nuclear Pharmacy Practice Experience Credits: 5

PHA 713 - Managed Care Practice Experience Credits: 5

PHA 714 - Community Pharmacy Practice Experience Credits: 5
Clerkship experience at an affiliated site. Prerequisites: P4 year standing.

PHA 716 - Hospital/Institutional Pharmacy Practice Experience Credits: 5
Clerkship experience at an affiliated site. Prerequisites: P4 year standing.

PHA 717 - Community Health and Patient Monitoring Practice Experience Credits: 5
Clerkship experience in pharmaceutical care in a community pharmacy.

PHA 719L - Pharmacy Capstone Credits: 1
Capstone course evaluating integration and application of pharmacy knowledge and skills as well as readiness to enter Advanced Pharmacy Practice Experiences (APPEs).

PHA 720 - Introduction to Advanced Concepts in Pharmaceutical Sciences Credits: 3
An introduction to advanced concepts in pharmaceutical sciences. Prerequisites: Instructor consent.

PHA 724 - U.S. Health Care Systems Credits: 2
An overview of the health care system in the United States and its impact on pharmacy practice.

PHA 725 - Advanced Concepts in Biomedical Sciences and Pharmacogenomics Credits: 3
This course will cover advanced biomedical and pharmacogenomics concepts in human disease and therapy. The course will provide an understanding of molecular and cellular basis of current and new therapeutic targets. The course will emphasize gene expression regulation, relevance of cell cycle, cell division and programmed cell death in disease development and progression, immunotherapeutics, cellular signaling cascades and relevant therapeutic targets. The course will also cover the pharmacogenomics of drug transporters, drug receptors and drug metabolizing enzymes. Prerequisites: Instructor consent.

PHA 726L - Integrated Pharmacy Laboratory III Credits: 1
Continuation of Integrated Pharmacy Laboratory II. Enhancement, integration, and application of knowledge and skills from the biomedical, pharmaceutical, clinical, and social/administrative pharmacy sciences. Prerequisites: P3 year standing and PHA 426L.

PHA 727 - Professional Resources Management Credits: 4
Professional, economic, and social considerations influencing the organization and management of the delivery of pharmaceutical services. Prerequisites: P3 standing. Notes: Students admitted to the Pharmacy professional program prior to fall 2018 would complete PHA 727 - Professional Resources Management.

PHA 729 - Advanced Pharmacy Marketing and Management Credits: 2
Discussion of strategic marketing and advanced management principles for the pharmacy practitioner.

PHA 738 - Health Informatics Credits: 1
This course will introduce health professions graduate students to the field of health informatics. Students will explore a diverse range of topics including electronic health records, clinical decision support, telehealth, and regulatory issues.

PHA 741 - Public and Population Health Credits: 2
This course explores the role of the pharmacist in public health, disease prevention and health promotion, as well as key concepts and theoretical frameworks used in developing health promotion and health behavior interventions. Pharmaceutical care skills for assessment of humans in health and disease are also developed and applied. Prerequisites: P3 standing. Notes: Students admitted to the Pharmacy professional program prior to fall 2018 would complete PHA 741 - Public Health and Wellness.

PHA 742 - Self Care Pharmacotherapeutics II Credits: 2
Discussion of over-the-counter and dietary supplement products, common medical conditions amenable to self treatment, and recognition of situations when self-treatment is appropriate. Pharmaceutical care skills for assessment of humans in health and disease are also developed and applied. Prerequisites: P3 standing. Notes: Students admitted to the Pharmacy professional program prior to fall 2018 would complete PHA 742 - Patient Assessment and Self Care.

PHA 743 - Pharmacogenomics Credits: 1
Students will gain advanced knowledge on the effect of genetic variation on drug response, the ability to evaluate patients' genotyping data and retrieve pharmacogenomic data from databases, and an understanding of how the information can be used to provide quality personalized pharmaceutical care for patients.

PHA 744 - End of Life Care Credits: 1
Discussion of the dying process and how to improve end-of-life care for patients and families. An emphasis will be placed on legal and ethical principles relative to end-of-life care, resources available for end-of-life care, financial aspects, pain management, non-pain symptom management, and overview of cultural and spiritual diversity related to end-of life.

PHA 745 - Ambulatory Care Practice Credits: 2
This course is designed to provide the student with an introduction to ambulatory care. Various aspects of ambulatory care practice settings and opportunities for pharmacist involvement in ambulatory care practices will be discussed. At the end of the course, the student should have an increased ability to provide quality pharmaceutical care for patients in an ambulatory care setting, specifically through the development of clinical skills, including drug information, and oral and written communication.

PHA 746 - Professional Pharmacy Leadership Skills Credits: 1
This course will provide advanced instruction in professional leadership skills for students with an interest in becoming effective leaders and role models in the profession of pharmacy. Prerequisites: P3 year standing.

PHA 747 - Advanced Clinical Nutrition Credits: 1
Advanced study of clinical nutrition including parenteral and enteral nutrition regimens, compounding of nutrition products, and assessment of nutritional status and need. Prerequisites: P3 year standing.

PHA 748 - Topics in Neonatal and Pediatric Pharmacotherapy Credits: 1
Advanced study of organ development and system maturation that includes drug delivery, drug therapy, patient safety, medication error prevention, and drug related problem identification and problem solving in the pediatric patient population. Prerequisites: P3 year standing.

PHA 749 - Care of the Geriatric Patient Credits: 1
This course will enhance the student's ability to care for geriatric patients by providing the student with an understanding of age related socio-behavioral aspects that influence care, skills in the management of geriatric syndromes, practice in managing drug therapy for complex, frail geriatric patients, and training in the provision of pharmaceutical care in select settings and in a team approach. Prerequisites: P3 year standing.

PHA 750 - Critical Care Therapeutics Credits: 2
Principles of medication use in the critically ill patient. Prerequisites: P3 standing.

PHA 751 - Cultural Perspectives in Pharmacy Practice Credits: 1
Students will explore the ways in which social, psychological, political, cultural, and economic circumstances influence the chances for a healthy life. The course will combine theory from the social sciences with rigorous epidemiological methods to explain the connections between social factors and health status. An emphasis will be placed on social inequalities and health inequalities and disparities.

PHA 752 - Drugs of Abuse and Addiction Credits: 2
Discussion of psychoactive drugs, both legal and illegal, that have potential for abuse. Prerequisites: P3 standing.

PHA 753 - Women and Children's Health Credits: 2
Diseases and drug-related issues pertaining to women's and children's health. Prerequisites: P3 standing.

PHA 754 - Complementary and Alternative Medicine Credits: 1
Discussion of alternative, natural, and homeopathic medicines, with emphasis on their appropriate evaluation and use.

PHA 755 - Forensic Pharmacology Credits: 2
This course will provide the student with an introduction to forensic pharmacology using interactive teaching technology that will include topics like forensic case evaluation, legal policy, depositions, parliamentary procedure, and document development for forensic evaluations.

PHA 756 - Pharmacotherapeutics III Credits: 4
Discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. Prerequisites: P3 standing.

PHA 757 - Pharmacotherapeutics IV Credits: 4
This course is a continuation of PHA 756, Pharmacotherapeutics I with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. Prerequisites: P3 standing.

PHA 758 - Institutional Practice Based Research I Credits: 1
This course is part one of a two course series providing students with experience in pharmacy research and quality improvement in the institutional setting. In part one, students gain knowledge and experience in research design and IRB submission. Students will identify a research question and design a project protocol.

PHA 759 - Institutional Practice Based Research II Credits: 1
This course is part one of a two course series providing students with experience in pharmacy research and quality improvement in the institutional setting. In part one, students gain knowledge and experience in research design and IRB submission. Students will identify a research question and design a project protocol. Prerequisites: PHA 758.

PHA 761 - Pharmacotherapeutics V Credits: 5
This course is the continuation of PHA 757, Pharmacotherapeutics IV with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. Prerequisites: P3 standing.

PHA 762 - Pharmacotherapeutics VI Credits: 5
This course is a continuation of PHA 761, Pharmacotherapeutics V with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. Prerequisites: P3 standing.

PHA 763L - Pharmacy Skills Laboratory V Credits: 1
Continuation of Pharmacy Skills Laboratory IV. Application of contemporary pharmacy knowledge and skills and patient care principles. Prerequisites: P3 year standing and PHA 464L.

PHA 764L - Pharmacy Skills Laboratory VI Credits: 1
Continuation of Pharmacy Skills Laboratory V. Application of contemporary pharmacy knowledge and skills and patient care principles. Prerequisites: P3 year standing and PHA 763L.

PHA 770 - Pediatrics Practice Experience Credits: 5

PHA 771 - Geriatrics Practice Experience Credits: 5

PHA 772 - Internal Medicine I Practice Experience Credits: 5

PHA 773 - Internal Medicine II Practice Experience Credits: 5

PHA 774 - Ambulatory Care Practice Experience Credits: 5

PHA 775 - Psychiatry Practice Experience Credits: 5

PHA 780 - International Pharmacy Practice Experience Credits: 5
Study of healthcare systems and the practice of pharmacy at designated international sites. Prerequisites: P4 standing with consent.

PHA 791 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

PHA 792 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

PHA 820 - Advanced Concepts in Medicinal Chemistry Credits: 3
A study of the current advances in the area of drug design and discovery. Prerequisites: PHA 340, PHA 341 or equivalent or instructor consent.

PHA 825 - Topics in Advanced Pharmaceutical Sciences Credits: 3
A detailed study of selected topics in Pharmaceutical Sciences. Prerequisites: PHA 820, PHA 840, PHA 859 or equivalent or instructor consent.

PHA 840 - Advanced Concepts in Pharmacology Credits: 3
A study of the current advances in the area of pharmacology especially at molecular level. Prerequisites: Instructor consent.

PHA 846 - Techniques in Pharmaceutical Research Credits: 3
A study of the current techniques in pharmaceutical research. Prerequisites: Instructor consent.

PHA 847 - Grant Writing and Academic Development Credits: 3
A study of the current policies, procedures and skills required for successful grants writing. An understanding of ethics and scientific conduct needed for academic development. Prerequisites: Instructor consent.

PHA 859 - Advanced Concepts in Pharmaceutics Credits: 3
A study of the current advances in the area of drug formulations and delivery. Prerequisites: PHA 331, PHA 332 or equivalent or instructor consent.

PHA 890 - Seminar Credits: 1
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

PHA 898D - Dissertation Credits: 1-10
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PHIL (Philosophy)

PHIL 592 - Topics Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

PHYS (Physics)

PHYS 521 - Electromagnetism (COM) Credits: 4
Principles of electricity and magnetism, with applications to dielectric and magnetic materials. Development of Maxwell's equations, and applications.

PHYS 533 - Nuclear and Elementary Particle Physics (COM) Credits: 3
Radioactivity, nuclear spectra and structure, nuclear models, elementary particle theories and high energy physics. Prerequisites: PHYS 471 or instructor consent.

PHYS 539 - Condensed Matter Physics (COM) Credits: 3-4
This course looks at solid materials from a microscopic level. Topics include basic crystal structure; mechanical and thermal properties; and electronic processes with reference to electrical properties of metals, semiconductors, and insulators. Prerequisites: MATH 225, MATH 321 and PHYS 331.

PHYS 551 - Classical Mechanics (COM) Credits: 4
Newton's Laws, motion in one and three dimensions, central forces, harmonic oscillations, non-inertial reference frames, rotations of rigid bodies, and Lagrangian Mechanics. Prerequisites: MATH 225 and MATH 321.

PHYS 571 - Quantum Mechanics (COM) Credits: 4
This is a systematic introduction to quantum mechanics, emphasizing the Schrodinger equation. Topics include simple soluble problems, the hydrogen atom, approximation methods and other aspects of quantum theory. Prerequisites: MATH 225, MATH 321 and PHYS 331.

PHYS 581 - Mathematical Physics I (COM) Credits: 3
The first of two-semester sequence covering mathematical methods essential to the study of physics. The topics include differential and integral Vector Calculus, theory and applications of complex variables, ordinary differential equations and applications of series and transform methods in their solutions. Prerequisites: MATH 225 and MATH 321.

PHYS 590 - Seminar (COM) Credits: 1-2
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

PHYS 591 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

PHYS 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

PHYS 683 - Mathematical Physics II (COM) Credits: 3
A continuation of PHYS 581. The topics of emphasis are partial differential equations, boundary value problems, special functions, Green's Functions, and linear algebra. Additional topics of interest will be chosen; possible topics include differential forms and geometry, tensors in physics, group theory, distributions, statistical methods, integral equations, difference equations, numerical methods, variation techniques, etc. Prerequisites: PHYS 581.

PHYS 691 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

PHYS 721 - Electrodynamics I (COM) Credits: 3
Electrostatics and magnetostatics, including a study of boundary value problems and the multi-pole expansions, leading to the study of Maxwell's equations. The relationship between special relativity and electromagnetism will also be discussed. Prerequisites: PHYS 421.

PHYS 723 - Electrodynamics II (COM) Credits: 3
This course is the second course in a two-semester sequence and covers advanced topics in electrodynamics. Prerequisites: PHYS 721.

PHYS 739 - Condensed Matter Physics I (COM) Credits: 3
Topics include crystal structure and the reciprocal lattice, quantum theory of electrons and phonons, x-ray diffraction, crystal binding energies, and energy band theory. Additional topics may be chosen from the properties of metals, semiconductors, and insulators. Prerequisites: PHYS 439 or PHYS 539.

PHYS 743 - Statistical Mechanics (COM) Credits: 3
This is a one-semester course in classical and quantum statistical mechanics. Topics include ensembles, partition functions, identical particles, Fermi-Dirac and Bose-Einstein statistics. Other topics will be chosen from mean field theory, phase transformations, renormalization group theory, Monte Carlo techniques, and other topics of interest. Prerequisites: PHYS 341.

PHYS 749 - Condensed Matter Physics II (COM) Credits: 3
This course is the second course in a two-semester sequence and covers advanced topics in condensed matter physics. Prerequisites: PHYS 739.

PHYS 751 - Classical Mechanics (COM) Credits: 3
This is a one-semester course in classical mechanics. Topics include Newtonian Mechanics, Hamilton's Principle, Non-Inertial Frames of Reference, Lagrangian Mechanics. Other topics will be chosen from such areas of study as Rigid Body Motion, Chaos theory, Hamilton-Jacobi theory, Perturbation Theory, Quaternion applications to rotations, Lagrangian/Hamiltonian formulations for Continuous systems and fields, and other topics of interest. Prerequisites: PHYS 451.

PHYS 761 - Nuclear and Particle Physics (COM) Credits: 3
This is a one-semester course in nuclear and elementary particle physics. Nuclear physics topics may include nuclear structure (nuclear form factors, multipole moments, liquid and shell models); nuclear decay; nuclear reactions; and other topics of interest. Elementary particle physics topics may include the role of symmetry in particle physics. Quantum Electrodynamics and Quantum Chromodynamics; the Standard Model of Particle Physics; Strong and Weak interactions; Accelerator and Experimental Particle Physics; and other selected topics beyond the Standard Model. Prerequisites: PHYS 771.

PHYS 771 - Quantum Mechanics I (COM) Credits: 3
This is the first course of a two-semester sequence in quantum physics. Topics include the Schrodinger equation and its solutions, matrix mechanics, operator methods, the harmonic oscillator, the hydrogen atom, spin and angular momentum.

PHYS 773 - Quantum Mechanics II (COM) Credits: 3
This is the second course in a two-semester sequence. Additional topics include perturbation methods. Applications will be chosen from such topics as scattering theory, second quantization, theory of identical particals, relativistic quantum mechanics, creation and annihilation operators and other topics of interest. Prerequisites: PHYS 771.

PHYS 775 - General Relativity (COM) Credits: 3
This course includes study of Minkowski Space, tensor algebra and calculus, non-Euclidean Geometry, and the Einstein Field Equations. Applications will be chosen from such topics as the Schwarzchild, Kerr, and Reisner-Nordstrom solutions, gravitational waves, Post-Newtonian Formulisms, 3 + 1 formulism, and other topics of interest. Prerequisites: PHYS 421 and PHYS 451.

PHYS 779 - Group Theory (COM) Credits: 3
Topics may include symmetry transformations, continuous groups, finite groups, applications to valence theory, Lorentz group, and fundamental particles. Prerequisites: PHYS 471.

PHYS 783 - Quantum Field Theory (COM) Credits: 3
This course is the study of relativistic quantum field theory and its application to the standard model. The course covers quantization of relavistic field; perturbation theory and Feynman diagram; S-matrix; introduction to gauge theories and the standard model; and other topics of interest. Prerequisites: PHYS 771.

PHYS 785 - Astrophysics and Cosmology (COM) Credits: 3
This course introduces the broad base of fundamental topics in astrophysics and cosmology. Topics include observational properties of stars; stellar physics; stellar atmospheres; distance scales; galactic structures; interstellar medium, normal and peculiar galaxies and high energy astrophysics, cosmological observations and Friedmann models; the early universe at different epochs; the origin of dark matter and formation of galaxies and large scale structure. Prerequisites: PHYS 771.

PHYS 787 - Research Credits: 1-9

PHYS 788 - Master's Research Problems/Projects (COM) Credits: 1-5
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

PHYS 791 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

PHYS 792 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

PHYS 798 - Thesis (COM) Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PLAN (Planning)

PLAN 571 - Principles of State, Regional and Community Planning Credits: 3
Purpose, structure, and dynamics of the planning process. Identification of different types of planning. Inter-dependencies among persons who contribute to the planning process and are trained in separate academic disciplines. Basic techniques employed within different phases of the planning process.

PLAN 572 - Techniques of State, Regional and Community Planning Credits: 3
Brief review of basic approaches, procedures and methods employed within different phases of the planning process. Coordination required among persons trained in separate academic disciplines in order to carry out these basic techniques. Exercises in the practical application of selected techniques and review of their applications in ongoing to completed planning efforts. Prerequisites: PLAN 571.

PLAN 591 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

POLS (Political Science)

POLS 592 - Topics (COM) Credits: 1-4
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

PRAG (Precision Agriculture)

PRAG 510 - Soil Geography and Land Use Interpretation Credits: 2
Relationship of soil characteristics and soil classification to land use interpretations. Laboratory exercises involve field and laboratory procedures used in soil survey investigations. Corequisites: PRAG 510L. Prerequisites: GEOG 132-132L or PS 213-213L or instructor consent. Cross-Listed: GEOG 510.

PRAG 510L - Soil Geography and Land Use Interpretation Lab Credits: 1
Laboratory to accompany PS 510. Corequisites: PRAG 510. Cross-Listed: GEOG 510L.

PRAG 523 - Soil Fertility and Plant Nutrient Management Credits: 3
Soil fertility management and its effects on the growth of crops, including evaluation, uptake and utilization of specific ions by plants, use of fertilizer elements to alter soil fertility, importance of crop residue management to maintain and improve productivity, and chemical composition of fertilizers and their characteristics. Prerequisites: PS 213-213L.

PRAG 524 - Wheat Production Credits: 2
Topics in this course address agronomic management for spring and winter wheat production. Topics covered in this course include determining wheat crop insurance; seeding rates; seed treatments; weed management; wheat impact on crop rotations; nitrogen, phosphorus, potassium, chloride, and sulfur fertilizer management; fungicide and disease management; fertilizing for grain protein and yield; estimating yield in season; harvest parameters; and cover crops.

PRAG 525 - Soybean Production Credits: 2
Soybean crop production and management across all growth stages. Among the topics addressed in this course include soybean crop insurance; variety selection; seeding rates; seed treatments and inoculations; weed, disease, and pest management; fertilizers and applications; crop maturity factors that impact harvest.

PRAG 526 - Corn Production Credits: 2
The objective of this course is corn production management ranging across a year. Topics addressed in this course include corn crop insurance; variety selection; seeding rates; fertilizers and application methods; weed, disease and pest management; harvest issues; crop rotations and cover crops.

PRAG 527 - Precision Ag Data Mapping Credits: 2
Mapping agronomic field data and generating management zones using appropriate industry software on the commercial market.

PRAG 540 - Crop Management with Precision Farming Credits: 2
Principles of precision farming for crop production will be the focus. An integrated approach to crop management based on global positioning, geographic information systems, soil testing and fertility recommendations, spatial data storage, and data interpretation for farming and land use decisions will be covered. The use of spatial statistics to make site specific management recommendations will be discussed. Corequisites: PRAG 540L. Prerequisites: PS 427/527.

PRAG 540L - Crop Management with Precision Farming Lab Credits: 1
Corequisites: PRAG 540.

PS (Plant Science)

PS 503 - Seed Technology Credits: 2
Seed testing; history, testing methods, and seed testing organizations. Seed development, maturation, anatomy, physiology, dormancy, and aging processes. Identification and classification of crop and weed seeds. Corequisites: PS 503L. Prerequisites: PS 103-103L or HO 111-111L.

PS 503L - Seed Technology Lab Credits: 1
Corequisites: PS 503.

PS 505 - Entomology (COM) Credits: 3
An introduction to the general biology and classification of insects. Course emphasis placed on taxonomy, methods of identification, and ecological role of insects. Students will become familiar with basic insect anatomy and morphology, classification at the order level with exemplary families that include taxa of agricultural or environmental interest, and acquire an ability to sight recognize particular species that have agricultural, environmental, wildlife, and human and livestock health importance. Corequisites: PS 505L. Cross-Listed: NRM 505.

PS 505L - Entomology Lab Credits: 0
Laboratory experience that accompanies PS 505. Corequisites: PS 505. Cross-Listed: NRM 505L.

PS 507 - Insect Pest Management Credits: 2
Covers the major insect pests of the Northern Great Plains with emphasis on field biology, recognition, field scouting, and economic thresholds. Pest management strategies of insects affecting row crops, small grains, hayland and rangeland will be included. Pesticide application methods and safety are included.

PS 507L - Insect Pest Management Lab Credits: 1
Laboratory to accompany PS 507.

PS 511 - Fruit Crop Systems Credits: 1-6
Studies in perennial fruit crop production and management systems. Credit earned will depend on the number of 1 credit modules taken. Course may be repeated as long as the topic module(s) are not repeated. Topic modules could include: tree fruit production systems; small fruit production systems; viticulture; perennial fruit integrated pest management; native fruit production systems; fruit harvest, quality, and postharvest care; vines and wines; fruit value-added systems; pruning fruit crops; cover crop management, marketing specialty fruit crops. Cross-Listed: HO 511.

PS 512 - Environmental Soil Chemistry Credits: 3
Fundamentals of soil chemical properties and processes important for the sound management of soil resources. Topics include sorption/desorption of inorganic and organic compounds, bioavailability of nutrients and contaminants, oxidation/reduction, phase equilibria, soil organic matter, soil mineralogy, ion exchange, and saline/sodic soils. Prerequisites: PS 213-213 and CHEM 108-108L or CHEM 120-120L.

PS 513 - Greenhouse and High Tunnel Management Credits: 3
Greenhouse construction, environmental control, production and scheduling of major greenhouse crops. Trips to commercial greenhouse operations and laboratory work in greenhouse crop production. Corequisites: PS 513L. Cross-Listed: HO 513.

PS 513L - Greenhouse and High Tunnel Management Lab Credits: 0
Lab to accompany PS 513. Corequisites: PS 513. Cross-Listed: HO 513L.

PS 514 - Plant Propagation Credits: 3
Fundamental anatomical and physiological principles and methods of reproducing herbaceous and woody plants by seeds, cuttings, grafts, layers and division. Corequisites: PS 514L. Cross-Listed: HO 514.

PS 514L - Plant Propagation Lab Credits: 0
Corequisites: PS 514. Cross-Listed: HO 514L.

PS 515 - Mycology (COM) Credits: 2-3
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs. Corequisites: PS 515L. Cross-Listed: BIOL 515.

PS 515L - Mycology Laboratory (COM) Credits: 0-1

PS 516 - Landscape Nursery Management Credits: 3
A study of current nursery and garden center crop cultural practices and business management. Topics to be covered include nursery and garden center design and organization, field and container crop production, transplanting, pricing, and shipping techniques. The working relationship between nurseries, landscape designers and contractors is also discussed. Prerequisites: HO 111, PS 213. Cross-Listed: HO 516.

PS 521 - Soil Microbiology Credits: 2
Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these organisms. Corequisites: PS 521L. Prerequisites: BIOL 151-151L, BIOL 153-153L or BOT 201-201L. Cross-Listed: MICR 521.

PS 521L - Soil Microbiology Laboratory Credits: 1

PS 526L - Production of Wine Beer Spirits Laboratory Credits: 0
Laboratory investigation includes hands-on opportunities involving the production of beer and wine. Students will experiment with production parameters and investigate quality defects. Wine and beer quality will be assessed through laboratory testing coupled with taste testing without consumption (taste and spit) both per industry specifications. Students will develop skills in identifying specific flavors/odors such as oak, butter or lemon in wine and similar tasting techniques in beer. Corequisites: PS 526. Prerequisites: Participants must be 21 years of age or older to enroll. Cross-Listed: HO/NUTR 526L.

PS 531 - Insect Ecology and Biological Control Credits: 3
This course will examine the ecological relationships between insects and their environment. Topics will include natural history; population dynamics; interactions between insects and their food plants, predators, and diseases; insect evolutionary ecology; and insect agroecology. These topics will also be explored in the context of the biological control of arthropod and weed pests by natural enemies.

PS 533 - Field Crop Diseases and Management Credits: 3
Learn principles of plant disease management; develop strategies to manage plant diseases using fungicides (mode of action, product label, equipment, formulation, fungicide resistance, etc.), host resistance, cultural practices (cover crops, plant nutrition, etc.), biological control and precision agriculture. Prerequisites: PS 223-223L or instructor consent.

PS 534 - Local Food Production Credits: 2
Topics include planning, planting, cultivation, harvest, season extension and marketing of fruits and vegetable crops. Experiential learning model. Cross-Listed: HO 534.

PS 543 - Bioenergy Feedstock Production System Credits: 3
Overview of production and characteristics of cultivated crops, perennial grasses, and woody species as feedstocks for bioenergy. Fundamentals of plant growth factors, culture, harvest and storage, quality and improvement, and introduction to environmental impact, modeling, and resource utilization. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

PS 544 - Vegetable Crop Systems Credits: 1-6
Studies in vegetable crop production and management systems. Credit earned will depend on the modules taken. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: root crop systems; cucurbit production systems; vegetable legumes; herbs; solanaceous crops; heirloom vegetable crops; integrated pest management; market gardening; organic production systems; extended season crop management; leaf and cool season crops: annual crop rotation systems; marketing specialty crops. Cross-Listed: HO 544.

PS 545 - Weed Science Credits: 2
Fundamentals of mechanical, cultural, biological and chemical weed control practices and factors affecting control. Herbicide classification and mechanism of action. Plant and seed identification of common weeds of North Central States and their interaction with desirable plants. Corequisites: PS 545L. Prerequisites: Take PS 103-103L or HO 111-111L; and CHEM 108-108L or CHEM 120-120L or CHEM 326-326L.

PS 545L - Weed Science Lab Credits: 1
Corequisites: PS 545.

PS 547 - Organic Plant Production Credits: 3
This course provides a detailed overview of organic farming for both small scale suburban and urban settings. The topics covered will include: organic certification, soil and nutrient management, pest and disease ID and management, High-Tunnel management, and marketing. Cross-Listed: HO 547.

PS 562 - Environmental Soil Management Credits: 2
Management systems designed to maintain soil productivity and environmental quality are examined. Soil problems important in production systems and environmental management including compaction, erosion, and nonpoint pollution are analyzed based on underlying environmental and agronomic principles. Computer simulation models are used and applied to soil problems. Corequisites: PS 562L. Prerequisites: PS 213-213L.

PS 562L - Environmental Soil Management Lab Credits: 1
Laboratory experience that accompanies PS 562. Corequisites: PS 562.

PS 583 - Irrigation – Crop and Soil Practices Credits: 3
Problems of irrigated agriculture. Soil salinity and salt-affected soils, water quality, management of irrigated crops; cropping systems; water, fertility requirements of irrigated agriculture, water movement, storage, and release in soils. Prerequisites: PS 213-213L or instructor consent.

PS 664 - Molecular Plant Physiology Credits: 3
This course discusses current molecular advances in plant biology. A wide range of topics in plant growth and development as well as plant interactions with abiotic and biotic factors will be covered. Each topic is led by a researcher who is experienced in the subject area being discussed, and consists of an introduction lecture and a case study followed by a class discussion on a recent research paper in the field.

PS 714 - Genetics of Disease Resistance and Host-Plant Pathogen Interactive Credits: 3
Physiology, genetics, and molecular biology of host-plant pathogen interactions and disease resistance; pathogenic diversity and virulence dynamics of plant pathogens; crop vulnerability and plant disease epidemiology; and breeding plants for disease resistance. Corequisites: PS 714L. Prerequisites: Consent.

PS 714L - Genetics of Disease Resistance and Host-Plant Pathogen Interactive Laboratory Credits: 1

PS 721 - Advanced Integrated Pest Management Credits: 3
The biological and ecological basis of integrated pest management for midwestern crop insects and the understanding of economic thresholds are emphasized. Pest scouting techniques for major crop pests and simulated management decisions are discussed.

PS 723 - Hydrologic Modeling Credits: 1
This course will involve simulation of water, sediment and chemical movement at watershed scale using the Soil Water Assessment Tool (SWAT) model. The course will cover different methods used to estimate and measure the surface hydrologic processes (infiltration, evapotranspiration, runoff, peak runoff rate, soil water erosion, and chemical movement) include both field scale measurement method and empirical model. Students will use the process based hydrologic (SWAT) model with a better understanding of the underlying process to predict the stream flow and water quality parameters at watershed scale. The course involves detail understanding of the step involved in modeling, model setup, sensitivity analysis, calibration, validation and long-term scenario analyses. Corequisites: PS 723L. Prerequisites: PS 103 or PS 543. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

PS 723L - Hydrologic Modeling Lab Credits: 2
This course will involve simulation of water, sediment and chemical movement at watershed scale using the Soil Water Assessment Tool (SWAT) model. The course will cover different methods used to estimate and measure the surface hydrologic processes (infiltration, evapotranspiration, runoff, peak runoff rate, soil water erosion, and chemical movement) include both field scale measurement method and empirical model. Students will use the process based hydrologic (SWAT) model with a better understanding of the underlying process to predict the stream flow and water quality parameters at watershed scale. The course involves detail understanding of the step involved in modeling, model setup, sensitivity analysis, calibration, validation and long-term scenario analyses. Corequisites: PS 723. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

PS 732 - Field Studies in Pedology Credits: 2
Field techniques used in soil classification will be learned by studying soils during a week-long field exercise. Soil genesis and land use applications will be investigated. The impact of soils upon agronomic management and research will be presented. The class may be repeated for a maximum of 4 credits. Prerequisites: PS 310-310L or GEOG 310-310L.

PS 733 - Advanced Soil Genesis Credits: 3
Detailed study of the processes of soil genesis and an examination of soil and ecosystems with respect to the soil forming factors of time, parent material, topography, climate and organisms.

PS 735 - Next Generation Sequencing Data Analysis Credits: 2
This course covers bioinformatics applications in next-generation sequencing (NGS) data analysis for students in plant science, biology and microbiology, computer science, and mathematics and statistics. The students will be exposed to general/advanced computational techniques for NGS data analysis, public databases/web servers, and major bioinformatic algorithms and programs. A project-based strategy will be adopted throughout the class so that students can understand algorithms in the context of solving the biological problems. Prerequisites: STAT 535 or STAT 541.

PS 741 - Crop Breeding Techniques Credits: 1
A techniques course where artificial hybridization of crop plants will be demonstrated and carried out. Background material will be offered with each crop. Both field and horticultural crops are included.

PS 743 - Environmental Soil Physics Credits: 2
The exchange of energy and water at soil surfaces, infiltration and redistribution of water and soil physical properties related to plant growth. Emphasis on applications in development and utilization of soil and water resources in a manner consistent with preservation of environmental quality. Corequisites: PS 743L.

PS 743L - Environmental Soil Physics Lab Credits: 1
The exchange of energy and water at soil surfaces, infiltration and redistribution of water and soil physical properties related to plant growth. Emphasis on applications in development and utilization of soil and water resources in a manner consistent with preservation of environmental quality. Corequisites: PS 743.

PS 744 - Soil Nitrogen, Phosphorous, and Potassium Credits: 3
Plant-soil nutrient relationships including nutrient sink development, uptake, transport to roots, labile soil sources, nutrient deficiencies, and their corrections. Emphasis on nitrogen, phosphorus and potassium.

PS 746 - Plant Breeding Credits: 3
Plant Breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects. Prerequisites: PS 103-103L and BIOL 371.

PS 753 - Soil/Water Quality Bioenergy Feedstock Credits: 3
An examination of the fundamentals of soil and water quality applied to proposed and existing bioenergy feedstock production systems. Current research results related to biomass removal and by-product addition to soils will be discussed and evaluated. Prerequisites: PS 213 or PS 543. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

PS 756 - Quantitative Genetics Credits: 3
Theory and application of quantitative genetic analysis to applied breeding problems; estimation and partitioning of genetic variances; genetic covariance and regression; heritability and selection response; index selection; linkage and quantitative trait loci (QTL) analysis. Prerequisites: BIOL 371 and STAT 541.

PS 761 - Taxonomy of Insects Credits: 3
Collection, identification and classification of insects. Techniques of identifying the groups of economic insect pests that affect the production of feed, food and fiber. Corequisites: PS 761L.

PS 761L - Taxonomy of Insects Laboratory Credits: 1

PS 763 - Environmental and Physiological Aspects of Crop Production Credits: 3
Systems analysis of factors which limit or increase crop production and the potential for qualitative and quantitative adjustments. Prerequisites: BOT 327-327L.

PS 781 - Plant Science Graduate Seminar Credits: 1

PS 785 - Soil and Plant Analysis Credits: 2
The analysis of soil and plant material for constituent elements. Topics include: Material sampling and preparation, extraction and determination method, theoretical principles of analysis, accuracy and precision. Emphasis on common soil and plant test indices. Co-requisites: PS 785L. Prerequisites: Instructor consent.

PS 785L - Soil and Plant Analysis Laboratory Credits: 1

PS 787 - Advanced Plant Breeding Credits: 3
Consideration of issues relating to germplasm selection, hybridizataion, evaluation, and perpetuation through a plant breeding program where improved cultivar and/or germplasm release is the objective.

PS 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

PS 791 - Independent Study (COM) Credits: 1-5
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

PS 792 - Topics (COM) Credits: 1-6
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

PS 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PS 898D - Dissertation - PhD Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PSYC (Psychology)

PSYC 602 - Advanced I/O Psychology Credits: 3
An advanced survey course exploring the entire field of Industrial/Organizational Psychology. Topics include personnel selection, training, performance appraisal, motivation, leadership, and organizational development.

PSYC 625 - Job Analysis and Performance Appraisal Credits: 3
This course explores the methods and strategies used to measure employee performance. Topics include job analysis methods, performance management, methods of performance appraisal, job evaluation, rater training, cognitive and motivational biases in performance appraisal, and contextual issues related to performance appraisal.

PSYC 626 - Training Credits: 3
This course explores issues related to the training of personnel in organizations. Topics include needs assessment, instructional design, training delivery, program evaluation, specialized training (i.e. for managers), and legal issues in training and development.

PSYC 627 - Teams in Organizations Credits: 3
This course explores issues related to working in teams in organizations. Topics include defining team success, stages of team development, team communication, managing team conflict, team diversity, leadership in teams, and virtual teams.

PSYC 691 - Independent Study (COM) Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

PSYC 692 - Topics (COM) Credits: 1
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

PSYC 717 - Applied Research Methods in I/O Psychology Credits: 4
Integration of research design, methodology, and statistical analysis (regression and analysis of variance) as typically used by I/O psychologists. Students learn how to select appropriate methodologies for the study of issues in I/O psychology, analyze quantitative data using SPSS statistical software, interpret results accurately, and discuss and report statistical findings.

PSYC 728 - Leadership and Motivation Credits: 3
This course explores major leadership theories and processes including trait theories, behavioral theories, contingency theories, and modern theories of leadership, such as transformational leadership. Theories of leadership effectiveness are discussed. This course also explores human motivation in the workplace, including motivational theories such as self-regulation theory, the job characteristics model, and goal-setting theory.

PSYC 729 - Personnel Selection Credits: 3
This course explores the employee selection process, when an employee first joins an organization. Topics include the strengths and weaknesses of different selection instruments and strategies, legal issues related to selection, decision-making, and the importance of validity in the selection context.

PSYC 730 - Tests and Measurements Credits: 3
An overview of the development, use, and validation of psychological tests used in organizational contexts. Topics include reliability and validity, test construction, item analysis, ethics, test administration, and computerized testing.

PSYC 731 - Work Attitudes Theory and Measurement Credits: 3
Exploration of employee attitudes, attitude change, and the measurement of job-related attitudes through the use of organizational surveys. Through practical experience with surveys, students develop skills in survey techniques.

PSYC 735 - Organizational Development Credits: 3
This course explores the theory and practice of organizational change and development, change processes, organizational development interventions, and the evaluation organizational development initiatives within organizations.

PSYC 792 - Topics (COM) Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

PSYC 794 - Internship (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

PSYC 798 - Thesis (COM) Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PUBH (Public Health)

PUBH 540 - Health Geography Credits: 3
The course will explore the history of health geography, its role in public health and other health applications, the use of maps, geospatial methods and GIS within health programs and initiatives, all from the geographic perspective and how place impacts the overall health of communities. Cross-Listed: GEOG 540.

PUBH 702 - Public Health Theory and Practice (COM) Credits: 3
Introduction to the theory and practice of public health. This course will address foundational public health knowledge including topics related to the profession and science of public health as well as public health factors related to human health.

PUBH 720 - Public Health Practice (COM) Credits: 3
This is a supervised graduate practicum in a public health environment for MPH students to integrate program curriculum in an applied setting. Special attention will be given to ethical considerations of public health practices.

PUBH 721 - Public Health Applied Practice Experience I (COM) Credits: 1
Students will have the opportunity to build on public health knowledge gained throughout the program and develop practice-based skills that enhance individual career goals. Through course projects and community engagement, students will be able to demonstrate additional skills such as leadership, communication, and teamwork. Prerequisites: Admission into the Master of Public Health program.

PUBH 722 - Public Health Applied Practice Experience II (COM) Credits: 1
This course builds on knowledge and skills gained in Public Health Applied Practice Experience I. Students will continue to build on and apply knowledge gained throughout the program and develop practice-based skills that enhance individual career goals. Throughout this course students will gain community-based public health practice experience and begin developing their final capstone project. Prerequisites: PUBH 721.

PUBH 723 - Public Health Applied Practice Experience III (COM) Credits: 1
This is the final course in the Public Health Applied Practice Experience series. Students will finalize their capstone project outlines in preparation for the Public Health Integrative Learning Experience. Prerequisites: PUBH 722.

PUBH 729 - Leadership and Project Management in Public Health (COM) Credits: 3
This course will cover fundamentals of leadership and project management as they apply to public health. Students will apply this knowledge in the development of capstone project plans in preparation for the Public Health Integrative Learning Experience. Prerequisites: Admission into the Master of Public Health program and PUBH 721.

PUBH 730 - Public Health Integrative Learning Experience (COM) Credits: 3-6
This culminating course in the MPH program allows students to integrate and synthesize the curriculum in seminar discussion and through a large research paper on contemporary public health science and practices that can be published in a peer-reviewed journal or presented at a state or national professional meeting. Prerequisites: (PUBH 720 or PUBH 723) and PUBH 729.

PUBH 733 - Environmental Health Credits: 3
This course examines causes and approaches to control environmental health problems including consideration of human health risks and effects of biological, chemical, and physical agents affecting individuals and communities. Topics include the environmental regulatory framework; identification of susceptible populations; approaches to environmental risk assessment, abatement, protection, and prevention; environmental justice principles and stakeholder interests; and the public health basis for environmental health policy decisions. Prerequisites: Admission into the Master of Public Health program or permission of instructor. Cross-Listed: HSC 733.

PUBH 751 - Public Mental Health Credits: 3
Explore topics on the connection between physical and mental health, social determinants linked to behavioral disorders, community-based approaches to mental health care, and prevention strategies.

PUBH 755 - Program Planning and Evaluation Credits: 3
An introduction to public health program planning and evaluation including: target population needs assessment; stakeholder engagement; and public health program design, organization, leadership, utilization, resource management, and evaluation. Prerequisites: Admission into the Master of Public Health program or permission of instructor. Cross-Listed: HSC 755.

PUBH 761 - Social Epidemiology Credits: 3
This course will combine theory from the social sciences with rigorous epidemiological methods to explain the connections between social factors and health status. An emphasis will be placed on social inequalities and health inequalities/disparities. Throughout this course, students will gain an understanding of the ways in which social, psychological, political, cultural, and economic circumstances influence our chances for a healthy life.

PUBH 762 - Cultural Perspectives in Public Health Credits: 3
This course will offer an in-depth view of the concept of culture as one framework for understanding human behavior as it relates to the general relationship between culture and health and specifically population health.

PUBH 764 - Applied Dissemination and Implementation Research in Health Credits: 3
An introduction to theories and methods in dissemination and implementation research applied to clinical and public health. Analysis of factors and application of frameworks and processes to enhance uptake and utilization of population-based interventions (dissemination research) and successfully integrate and implement evidence-based interventions to achieve desired outcomes in targeted clinical and community settings (implementation research). Cross-Listed: HSC 764.

PUBH 767 - Public Health Toxicology Credits: 3
This course describes how selected classes of environmental contaminants interact with cellular processes, biochemical reactions, organs, tissues and the endocrine system. Students will explore the influences on individuals, populations and ecosystems and identify key public health prevention, removal techniques, and risk communication strategies with a focus on rural and underserved populations.

PUBR (Public Relations)

PUBR 592 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

RANG (Range Science)

RANG 510 - Grassland Monitor & Assessment Credits: 2
A course emphasizing the quantitative measures used in vegetation analysis, root growth, and utilization. Vegetation sampling theory and plot selection will be covered. Use of similarity index, health, and trend for grassland monitoring and assessment will be explained. Basic statistics and the microcomputer will be used to analyze biomass, basal cover, frequency, and density data. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

RANG 520 - Watershed Management Credits: 3
Study of the management of physical/biological settings and processes along with the human activities on water and watershed considering preventative and restorative strategies in a natural resource rangeland setting. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

RANG 521 - Grassland Fire Ecology Credits: 3
The course is designed to describe the ecological effects of fire on grassland ecosystems. It also provides insight into the history of fires, the people who use them and why, the parts of a fire, how fires behave in relation to fuel and weather, and the conducting and safety of prescribed burns. Cross-Listed: WL 521. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

RANG 525 - Rangeland Assessment and Monitoring Credits: 3
Principles and practical application of the assessment and monitoring of rangeland plant communities. Course will be offered in a hybrid format. In the online portion of the course, students will learn how to set objectives, determine parameters to measure, select appropriate techniques, and analyze quantitative data. The laboratory portion is a 1-week intensive field session held in late summer, providing substantial field experiences including performing a wide variety of sampling techniques, collection and analysis of assessment and monitoring data, and learning how state and federal agencies assess and monitor rangelands. Students will also work in teams to develop a monitoring plan for a specific property, collect and analyze initial data, and present the plan and results to the land owner. Corequisites: RANG 525L.

RANG 525L - Rangeland Assessment and Monitoring Lab Credits: 0
Laboratory to accompany RANG 525. Corequisites: RANG 525.

RANG 530 - Ecology of Invasive Species Credits: 3
Ecological principles and their application to invasive species. Discussion of population, community, and ecosystems level characteristics affecting a wide variety of invasive plant and animal species. Discussions will include current global consequences and governmental policies/programs designed to limit the spread of invasives. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

RANG 540 - Grassland Plant Identification Credits: 2
Study of plants that have ecological and/or agricultural importance in the Great Plains, Plant identification, Grassland ecosystems and plants forage value, palatability, and utilization by both domestic livestock and wildlife. Cultural and historical uses of grassland. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

RANG 591 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

RANG 592 - Topics (COM) Credits: 1-4
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

RANG 710 - Principles of Forage Quality Credits: 3
The course provides an in-depth study of the chemical characteristics of forage components and the interactions with ruminant physiology and digestion that influence forage feeding value and the laboratory procedures used to evaluate forages for grazing livestock. Students should have knowledge of the basic principles of chemistry, ruminant nutrition, and plant physiology so that they can develop an understanding of the chemical characteristics of forages and how they affect the value of forages to grazing livestock. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

RANG 750 - Grazing Ecology and Management Credits: 3
Ecological principles of domesticated livestock grazing and their application to manage grazing lands will be discussed. Theoretical and applied models of plant/animal interactions will be presented. Grazing systems and their management of ecosystem services will be presented as balance between production and conservation outcomes. Notes: Sections of this course are provided online through the Agriculture Interactive Distance Education Alliance.

RANG 791 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

RANG 792 - Topics (COM) Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

RECR (Recreation)

RECR 502 - Outdoor Recreation Resources Management Credits: 3
The course provides students the scope of outdoor recreation resources (U.S. land, water and wildlife) and major activities; knowledge about outdoor recreation management agencies and their mandates; an understanding of outdoor recreation issues, impacts, and visitors' behavior; knowledge about appropriate management tools for addressing impacts; and an understanding of the contribution of planning to effective recreation resource management.

RECR 515 - Sport and Recreation Facility Management Credits: 3
This course provides students with an advanced study of the management of recreation and sport facilities. Including planning and design, operations, fiscal and personnel management, legal considerations, safety and control, maintenance, and equipment.

RECR 750 - Foundations of Sport and Recreation Administration Credits: 3
This course will emphasize the management functions of planning, organizing, implementing, and controlling of the different fields within the sport and recreation management industry. Decision-making, problem solving, communications, ethics, issues, and trends will be covered.

RECR 760 - Advanced Sport and Recreation Marketing Credits: 3
This course provides students with an advanced study of the principles of marketing through sport and recreation including market research and analysis, development of a strategic marketing plan, using the 4 P's of marketing (promotion, place, price, and product) as they apply primarily to the collegiate sport and recreation setting.

RECR 762 - Ethics in Sport and Recreation Credits: 3
This course will enable students to gain a deeper understanding of the moral reasoning processes of sport and recreation administration professionals primarily in the collegiate setting. Students will develop the knowledge, skills, and abilities to apply moral reasoning in dealing with ethical dilemmas in sport and recreation administration. Additionally, students will explore and clarify their career goals, as well as, gain hands on experience to further their professional development.

SE (Software Engineering)

SE 592 - Topics (COM) Credits: 1-5
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

SEED (Secondary Education)

SEED 502 - Methods in Career and Technical Education Credits: 1-2
This course will introduce participants to the field of Career and Technical Education (CTE) and focus on effective teaching practices, curriculum development and methods of delivering instruction. The course is designed for individuals who are presently teaching in a technical education field and/or currently working toward CTE teacher certification. Instructional techniques appropriate for CTE are developed based on the models identified in competency-based or performance-based education.

SEED 592 - Topics (COM) Credits: 1-5
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

SOC (Sociology)

SOC 500 - Social Policy (COM) Credits: 3
A review of social welfare legislation; current trends and issues in, and implementation and administration of, social policy in a variety of practice areas.

SOC 501 - The Research Process Credits: 3
Topics include conceptions of research, the philosophy of science, formal and grounded theory construction, the use of research literature, and qualitative, quantitative, and mixed approaches to research design.

SOC 502 - Social Deviance (COM) Credits: 3
This course examines the nature of negatively evaluated behaviors and the process by which customs, rules and normative structure of society are constructed.

SOC 504 - Sociological Inquiry Credits: 3
An introduction to philosophy of science and connections with quantitative and qualitative research. Students will learn how to apply framework as used in applied sociology.

SOC 516 - Drugs and Society Credits: 3
The course will examine explanations of drug use and the social construction of drug policies. Students will discuss the methods used to study patterns of drug use and theories of drug abuse and take an in-depth look at the histories, pharmacologies, and patterns associated with the most popular drugs. Students will study the social control of drugs, the connections between drugs and crime, and the causes and consequences of modern U.S. international drug policies. Cross-Listed: CJUS 516.

SOC 533 - Leadership and Organizations (COM) Credits: 3
Emphasis is on the emergence of leadership patterns, group dynamics, small groups, and leadership in management.

SOC 540 - Urban Sociology (COM) Credits: 3
A study of the urban community, focusing on its development, social structures and institutional patterns. Prerequisites: SOC 100 or SOC 150.

SOC 555 - Juvenile Delinquency (COM) Credits: 3
A study of the youthful offender and the causes and consequences of delinquent behavior; preventive and rehabilitative programs are also discussed.

SOC 562 - Population Studies (COM) Credits: 3
A study of human populations with respect to size, distribution, and structure, with emphasis on theories of population growth and decline, population policies, and impacts on the environment.

SOC 583 - Sociology of Gender Roles (COM) Credits: 3
Female and male roles in relation to on another in a changing world are foci of this course. the nature of gender roles, their origin and maintenance, institutional features, and their variations over time and across cultures are examined. Prerequisites: SOC 100 or SOC 150.

SOC 590 - Seminar (COM) Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

SOC 594 - Internship (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

SOC 707 - Sociological Practice and Public Policy Credits: 3
This is an advanced course in the history, issues, theories, and methods of sociological practice; the social and political issues involved in sociological practice will also be covered.

SOC 709 - Evaluation Research Credits: 3
Focus on the conceptualization and design of evaluation studies of various governmental programs. Design includes clarification of objectives, selection of appropriate collection techniques, and specification of target groups.

SOC 710 - Research Methods Credits: 3
Major emphasis will be given to research design, problems of measurement, methods of data collection, and analysis and interpretation of data; including implications for basic and applied sociologies. An integral part of the course will be the development of a research project dealing with a current sociological issue or applied problem. Prerequisites: Instructor consent.

SOC 711 - Qualitative Research Methods Credits: 3
Qualitative research methods of data collection, analysis, and presentation are examined; emphasis on fieldwork involving participant observation and intensive interviewing; includes consideration of the rationale, theoretical underpinnings and limitations of qualitative research; including implications for basic and applied sociologies. Prerequisites: Instructor consent.

SOC 712 - Sociological Theory I Credits: 3
Critical examination and application of the main schools of sociological theory beginning with the system of Auguste Comte and ending with World War II. Prerequisites: Instructor consent.

SOC 713 - Sociological Theory II Credits: 3
Sociological theories and issues from World War II to present; includes implications for basic and applied sociologies. Prerequisites: Instructor consent.

SOC 714 - Race, Class, Gender Intersections Credits: 3
This class examines past and current research and theory in the discipline of sociology addressing race, class and gender intersections. Students will explore the transformation of these frameworks into concrete research at the micro-, meso-and macro-levels.

SOC 721 - Social Stratification Credits: 3
Theories of social stratification. Relationship between social class and education, occupational choice, political preference, religious affiliation and social mobility. Prerequisites: Instructor consent.

SOC 725 - Social Organization Credits: 3
Elements of social organization. Analysis of social groups and complex social organizations. Examination of conditions and factors related to the integration and disintegration of social organizations. Prerequisites: Instructor consent.

SOC 726 - Teaching Sociology Credits: 2
This course deals with pedagogical issues, theories, and techniques for teaching face-to-face and on-line college/university courses in sociology; students will identify and discuss the goals and purposes of higher education as they relate to teaching sociology; they will also design a course and develop a teaching philosophy statement, student learning outcomes, a course syllabi, lesson plans/training modules, and means of student assessment consistent with the teaching philosophy.

SOC 727 - Teaching Sociology Practicum Credits: 1-3
This is a supervised teaching experience; theoretical, pedagogical, and teaching issues will be discussed as they relate to this experience. Prerequisites: SOC 726.

SOC 738 - Scholarship of Teaching and Learning Credits: 2
This course focuses on the methods of systematic inquiry used to determine the extent to which an instructor's teaching produces desired learning outcomes.

SOC 739 - Scholarship of Teaching and Learning Practicum Credits: 1-3
This is a supervised SoTL experience; students will use systematic inquiry to determine the extent to which an instructor's teaching produces desired learning outcomes. Theoretical, methodological, and pedagogical issues will be discussed as they relate to this experience. Prerequisites: SOC 738.

SOC 740 - Rural Community Development Credits: 3
Changes occurring in rural areas and their effects upon rural communities. Basic concepts, procedures, and processes for planning in a rural environment. Some alternative approaches to rural planning. National and International perspectives. Prerequisites: Instructor consent.

SOC 762 - Applied Demography Credits: 3
Focus on demographic publications and resources including Census data material; areas included are population, housing, agriculture, economics, vital statistics reports, special surveys and international materials. Emphasis on a variety of applications across disciplines. Students will also learn techniques for producing, locating, analyzing, and disseminating sociodemographic information for various geographical areas, statistical units, and political divisions; students will complete projects and sociodemographic reports.

SOC 764 - Modern Demographic Theory Credits: 3
Overview of the explanatory factors and determinants related to the population process of fertility, mortality, and migration. Emphasis on theoretical models that focus on developed and developing countries.

SOC 766 - World Population Issues Credits: 3
Focus on policy formulation and program evaluation as related to population issues; the political economy of national and international efforts are considered; planning a micro- and macro-level decision-making is examined; issues covered are population and resources, the value of children, international migration and major health problems.

SOC 788 - Master's Research Problems/Projects (COM) Credits: 1-3
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

SOC 790 - Seminar Credits: 1-4
A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as internet and are at the upper division graduate levels. Enrollment is generally limited to few than 20 students.

SOC 791 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

SOC 792 - Topics (COM) Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

SOC 794 - Internship Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

SOC 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee. Notes: Sections of this course are provided online through the Great Plains Interactive Distance Education Alliance.

SOC 898D - Dissertation - PhD (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

SPAN (Spanish)

SPAN 591 - Independent Study (COM) Credits: 1-6
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

SPCM (Speech Communication)

SPCM 501 - Advanced Interpersonal Communication (COM) Credits: 3
Advanced study of contemporary issues that have significant impact on interpersonal relationships. Students develop an understanding of the current communication research, theory, and social practices associated with these relational issues.

SPCM 510 - Organizational Communication (COM) Credits: 3
Explores communication processes in organizational contexts, theories of leadership, decision making and conflict, the application of principles that facilitate communication in organizations, and other selected topics.

SPCM 515 - Communication and Gender (COM) Credits: 3
This course examines gendered verbal and nonverbal communication processes and the ways men and women tend to communicate in interpersonal, family, group, organizational, and mass media contexts.

SPCM 516 - Rhetorical Criticism Credits: 3
Critical evaluation of American speakers from Colonial to contemporary times.

SPCM 540 - Health Communication (COM) Credits: 3
This course will examine the contexts and processes of communication about health, focusing on how professionals, patients, and practitioners interact in ways that constitute and influence health and medicine.

SPCM 541 - Health Communication Campaigns Credits: 3
Creation of evidence-based communication interventions to address the health needs of communities. The course requires students to identify contemporary health needs, select appropriate forms of health communication intervention, develop intervention messages and create a plan for assessing effectiveness of interventions. Students will also learn how to collect, analyze and interpret data using techniques such as surveying, interviewing, and moderating focus groups.

SPCM 582 - Travel Studies Credits: 1-5
This travel study course is designed to provide extra-mural educational experiences, as approved by, and under the direction of a faculty member, and may be in cooperation with faculty and administrators of other institutions. Students will participate in hand-on activities, and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

SPCM 591 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

SPCM 592 - Topics (COM) Credits: 1-5
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

SPCM 700 - Instructional Communication Credits: 3
Students will explore problems and issues in teaching communication and media studies courses in higher education. Students will also develop a teaching philosophy and teaching materials for communication and media courses.

SPCM 702 - Theories of Communication and Media Credits: 3
In this course, students discuss the history and roots of communication and media theories; overview of key theories in communication and media studies; and explore how theory can be used to guide research or professional projects.

SPCM 720 - Professional Communication Credits: 3
In this course, students explore the role of oral and written communication across a variety of professional and applied contexts. Topics include tailoring communication to diverse stakeholders, entrepreneurship, freelancing, and practicing professional ethics.

SPCM 787 - Research in Communication and Media Credits: 3
Students will examine qualitative and quantitative methods of social science research used in communication and media studies. Cross-Listed: MCOM 787 .

SPCM 788 - Master's Research Problems/Projects (COM) Credits: 1-6
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

SPCM 791 - Independent Study (COM) Credits: 1-6
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

SPCM 792 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

SPCM 795 - Practicum (COM) Credits: 3
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

SPCM 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

STAT (Statistics)

STAT 510 - SAS Programming Credits: 3
Base SAS language and procedures for accessing data, manipulating data, creating data structures, managing data, producing graphs, producing reports, error handling, accessing data using SQL, and advanced programming techniques.

STAT 514 - Basic R Programming Credits: 1
An introduction to the R programming language. Topics will include the R programming language and environment, preparation and summarization of data, presentation of data, and programming basics.

STAT 515 - R Programming Credits: 3
The R programming language and environment, preparation and summarization of data, programming basics, data presentation and visualization, app creation, and advanced programming techniques. Prerequisites: CSC 150 or INFO 101.

STAT 535 - Applied Bioinformatics Credits: 3
This practical course is designed for students with biological background to learn how to analyze and interpret genomics data. Topics include finding online genomics resources, BLAST searches, manipulating/editing and aligning DNA sequences, analyzing and interpreting DNA microarray data, and other current techniques of bioinformatics analysis.

STAT 541 - Statistical Methods II Credits: 3
Analysis of variance, various types of regression, and other statistical techniques and distributions. Sections offered in the areas of Biological Science and Social Science. Prerequisites: STAT 281, MATH 381, or STAT 381. Credit not given for both STAT 541 and STAT 581.

STAT 545 - Nonparametric Statistics (COM) Credits: 3
Covers many standard nonparametric methods of analysis. Methods will be compared with one another and with parametric methods where applicable. Attention will be given to: (1) analogies with regression and ANOVA; (2) emphasis on construction of tests tailored to specific problems; and (3) logistic analysis.

STAT 551 - Predictive Analytics I Credits: 3
Introduction to Predictive Analytics. This course will examine the fundamental methodologies of predictive modeling used in financial and predictive modeling such as credit scoring. Topics covered will include logistic regression, tree algorithms, customer segmentation, cluster analysis, model evaluation, and credit scoring. Prerequisites: STAT 482 or STAT 686 and STAT 415-515 or STAT 600.

STAT 553 - Applied Bayesian Statistics Credits: 3
Introduction to the philosophy and practice of Bayesian statistics. Statistical methods from simple regression models through generalized linear multilevel models are studied from a Bayesian perspective. Emphasis is placed on building understanding through computational approaches using examples and simulation exercises. Prerequisites: MATH 125, STAT 482, and STAT 514 or STAT 515.

STAT 560 - Time Series Analysis (COM) Credits: 3
Statistical methods for analyzing data collected sequentially in time where successive observations are dependent. Includes smoothing techniques, decomposition, trends and seasonal variation, forecasting methods, models for time series: stationarity, autocorrelation, linear filters, ARMA processes, nonstationary processes, model building, forecast errors and confidence intervals. Prerequisites: STAT 441 or STAT 482 or STAT 541 or STAT 686.

STAT 591 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

STAT 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

STAT 600 - Statistical Programming Credits: 3
Fundamentals of statistical programming languages including descriptive and visual analytics in R and SAS, and programming fundamentals of SAS and R including logic, loops, macros, and functions. Prerequisites: STAT 410 or STAT 510 or CSC 150.

STAT 601 - Modern Applied Statistics I Credits: 3
This course will build upon STAT 541 and assume students have knowledge of SLR, MLR, ANOVA, and basics of statistical inference. The class will start by covering statistical graphics and the associated modern statistical computing language(s). The next section of the class will focus on non- and semi-parametric methods with a focus on the application and interpretation of the methods. The last section of the class will focus on longitudinal and repeated measure models and conclude with an overview of techniques from meta-analysis and large-scale inference. Prerequisites: STAT 541 and STAT 600.

STAT 602 - Modern Applied Statistics II Credits: 3
This course will start with an introduction to data mining techniques from multivariate data such as Principal Component Analysis, Multidimensional Scaling, and Cluster Analysis. From there we will move on to an introduction to supervised learning methods and pattern recognition with a focus on algorithmic methods. The course will finish with an overview of statistical prediction analysis relevant to business intelligence and analytics. Prerequisites: STAT 601.

STAT 651 - Predictive Analytics II Credits: 3
This course will examine advanced methodologies used in financial and predictive modeling. Topics covered include segmented scorecards, population stability, ensemble models, neural networks, MARS regression, and support vector machines. Prerequisites: STAT 451/STAT 551.

STAT 661 - Design of Experiments I Credits: 3
Analysis of variance, block designs, fixed and random effects, split plots and other experimental designs. Includes use of SAS proc GLM, Mixed, etc. Prerequisites: STAT 541 or STAT 582 .

STAT 684 - Statistical Inference I Credits: 3
A theoretical study of the foundations of statistics, including probability, random variables, expectations, moment generating functions, sample theory, and limiting distributions. Prerequisites: STAT 382.

STAT 685 - Statistical Inference II Credits: 3
A theoretical study of the foundations of statistics, including most powerful tests, maximum likelihood tests, complete and sufficient statistics, etc. Corequisites: STAT 684.

STAT 686 - Regression Analysis I Credits: 3
Methodology of regression analysis, including matrix formulation, inferences on parameters, multiple regression, non-linear regression, outlier detection, diagnostics, and multicollinearity. Prerequisites: MATH 515 and STAT 684.

STAT 687 - Regression Analysis II Credits: 3
Advanced regression methodology, including nonlinear regression, logistic regression, Poisson regression, and correlation analysis. Prerequisites: STAT 686.

STAT 691 - Independent Study (COM) Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depend upon the requirements of the topic.

STAT 715 - Multivariate Analysis I Credits: 3
Multiple, partial, canonical correlation test of hypothesis on means; multivariate analysis of variance; principal components; factor analysis; and discriminant analysis. Prerequisites: MATH 515 and STAT 685.

STAT 716 - Asymptotic Statistics Credits: 3
This course will cover modern statistical approximation theorems relating to the current statistical and machine learning literature in Mathematical Statistics. Specific topics to be covered are: Review of Stochastic Convergence (Almost-Sure representations, Convergence of Moments, Lindeberg-Feller Central Limit Theorem, etc.), Delta Method, Moment Estimators, and M- and Z-Estimators. An additional selection of 2-4 topics will also be covered that are related to the research focus of the PhD students in the class. Prerequisites: STAT 715, STAT 684, and MATH 741.

STAT 721 - Statistical Computing and Simulation Credits: 3
Computationally intensive statistical methods that would not be feasible without modern computational resources and statistical simulation techniques, including random variable generation methods, Monte Carlo simulation and importance sampling, Kernel smoothing and smoothing splines, bootstrap, jackknife and cross validation, regulation and variable selection in regression, EM algorithm, concepts of Bayesian inference, Markov chain Monte Carlo methods such as Gibbs sampling, and the Metropolis-Hasting algorithm. Prerequisites: STAT 686 and STAT 715.

STAT 731 - Survival Analysis Credits: 3
Introduction to survival data, censoring and truncation, survival function and hazard function, non-parametric methods for estimating survival curves, comparing two or more survival curves, semi-parametric proportional hazards regressions, model diagnostics, accelerated failure time and other parametric models. Prerequisites: STAT 541 or STAT 381.

STAT 736 - Bioinformatics Credits: 3
This course is an introduction to bioinformatics for students in mathematics and physical sciences. This course will include a brief introduction to cellular and molecular biology and will cover topics such as sequence alignment, phylogenetic trees and gene recognition. Existing computational tools for nucleotide and protein sequence analysis, protein functional analysis and gene expression studies will be discussed and used.

STAT 742 - Spatial Statistics Credits: 3
Geostatistical data analysis with variogram, covariogram and correlogram modeling. Spatial prediction and kriging, spatial models for lattices, spatial patterns. Prerequisites: STAT 541 or STAT 560 or STAT 684 or STAT 686.

STAT 752 - Advanced Data Science Credits: 3
This course will cover current research in the Mathematical and Statistical Sciences. The focus of the class is to introduce PhD students to the ongoing research programs of the faculty and advanced methodologies outside of the traditional core classes related to the rapidly evolving disciple of Data Science. This class can be taken multiple times for credit. Prerequisites: STAT 687 and STAT 715.

STAT 760 - Quality Control Credits: 3
Application of statistical techniques to the control of quality and the development of economical inspection methods. Collection, analysis, and interpretation of operations data; control charts and sampling procedure. Prerequisites: STAT 281 or STAT 381. Cross-Listed: ME 760/OM 760.

STAT 762 - Advanced Experimental Design Credits: 3
Linear Model interpretation in vector spaces and projections, use of generalized inverses, identifiability and estimability of contrasts, normal equations, Gauss-Markov Theorem, MVUE, distribution theory for quadratic forms, complex designs such as crossover, splitplot and repeated measures, asymptotics for general linear models, familiarity with nonparametric regression models. Prerequisites: STAT 685 and STAT 687.

STAT 779 - Advanced Statistics Synthesis Credits: 1
Synthesis of concepts from advanced statistics courses. Prerequisites: Instructor consent.

STAT 788 - Master's Research Problems/Projects (COM) Credits: 1-2
Independent research problems/projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

STAT 791 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

STAT 792 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is no wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

STAT 794 - Internship (COM) Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

STAT 798 - Thesis (COM) Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

THEA (Theatre)

THEA 791 - Independent Study (COM) Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

VET (Veterinary Science)

VET 524 - Medical and Veterinary Virology Credits: 3
Basic course discussing the characterization, structure, and replication of viruses and the pathogenesis of viral disease in man and animals. Prerequisites: BIOL 204 or instructor consent. Cross-Listed: MICR 524.

VET 576 - Advanced Mammalian Physiology Credits: 4
An advanced study of the physiological mechanisms utilized by mammals to regulate body functions with the nervous and endocrine systems, to acquire and use chemical energy from their environment, and to integrate the functions of the organs systems to maintain the health of the animal. Emphasis is placed on applying physiological concepts and principles to solve problems. Notes: Previous courses in anatomy, physiology, and biochemistry are recommended.

VET 591 - Independent Study Credits: 1-3
Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

VET 592 - Topics Credits: 1-3

VET 600 - Jackrabbit Orientation and Leadership Experience I (JOALE I) Credits: 2
Orientation to the Professional Program in Veterinary Medicine, peer and faculty mentoring, and an introduction to the academic and personal skills necessary for success in the curriculum and profession. Prerequisites: Admission into the Professional Program in Veterinary Medicine.

VET 601 - Microscopic Anatomy I Credits: 2
Introduction to microscopic and ultrastructural morphology of cells, tissues, organs, and organ systems. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 602 - Integrated Biochemistry and Physiology Credits: 7
Applications of basic biochemistry and physiology (muscle, cardiovascular, gastrointestinal, and nervous system) to the maintenance of animal wellness and interpretation of disease scenarios involving changes in physiological processes of these systems. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 603 - Anatomy I Credits: 4
Gross and developmental anatomy of domesticated mammals and carnivore dissection using the dog as a model with comparative features of the cat. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 604 - Clinical Skills I Credits: 2
Basics of management, handling, and restraint of common large and small animals; and introduction to foundational clinical skills. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 605 - Professional Development I Credits: 1
Personal management, animal welfare, ethics, and personal finance. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 606 - Critical Scientific Reading Credits: 1
Introduction to critical analysis and review of scientific literature, statistical analysis, and evidence-based medicine. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 607 - Immunology Credits: 2
Introduction to innate and adaptive immunity; multidisciplinary study of cells, molecules, and mechanisms of host defense against infectious agents and cancers; overview of antibody-antigen-based testing; immune-mediated pathologies. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 620 - Jackrabbit Orientation and Leadership Experience II (JOALE II) Credits: 2
Continuation of VET 600: orientation to the Professional Program in Veterinary Medicine, peer and faculty mentoring, and an introduction to the academic and personal skills necessary for success in the curriculum and profession. Prerequisites: VET 600 and admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 621 - Professional Development II Credits: 2
Social, economic, legislative, and health consequences of human-animal interaction and an introduction to production agriculture, population medicine, and veterinary career paths. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 622 - Anatomy II Credits: 3
Gross and developmental anatomy of domesticated mammals and an ungulate dissection that focuses on the horse with emphasis on clinically important aspects of ruminant and swine anatomy. Prerequisites: VET 603 and admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 623 - Clinical Skills II Credits: 2
Basics of animal management, handling, and restraint; and foundational clinical skills in large and small animals. Prerequisites: VET 604 and admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 624 - Physiology II Credits: 5
Applications of basic biochemistry and physiology (muscle, cardiovascular, gastrointestinal, and nervous system) to the maintenance of animal wellness and interpretation of disease scenarios involving changes in physiological processes of these systems. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 625 - Basic Pathology Credits: 2
Reactions of cells and tissues to injury, including retrogressive changes, cell death, pigments, circulatory disturbances, inflammation, and alterations of cell growth. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 626 - Agents of Disease I Credits: 4
Virology, bacteriology, and parasitology of common domestic species of animals. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 627 - Preventative Medicine Credits: 5
Preventive care of common domestic animal species; behavior, nutrition, vaccinology, parasite control, reproduction control, management of neonates, biosecurity, backyard poultry, and non-traditional pets. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 628 - Microscopic Anatomy II Credits: 1
Identification, description, and understanding of basic structure and elements of cells and basic tissues and the identification and description of the structure and organization of organ systems. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 629 - Clinical Correlations I Credits: 1
Integrative problem-based discussion of animal species to prepare students for clinical decision making and diagnostics. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 630 - Veterinary Genetics and Genomics Credits: 1
Genetic factors and modes of inheritance influencing animal health, including autosomal recessive disorders, inbreeding, mutation, and gene regulation and expression. Prerequisites: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 640 - Agents of Disease II Credits: 5
Virology, bacteriology, and parasitology of common domestic species of animals, and international diseases (continuation of VET 626). Prerequisites: VET 626 and enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 641 - Pharmacology I Credits: 2
Principles of pharmacokinetics as applied to the use of antimicrobials and other drugs in animal patients; clinical pharmacology of antibacterial, antifungal, and anti-parasitic drugs; principles of pharmacodynamics and adverse drug reactions; and the pharmacology of drugs affecting the autonomic nervous system and the medically-important target organs it innervates. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 642 - Systemic Pathology Credits: 5
Reactions of specific organ systems to injury and applications to diagnosis of specific diseases at gross and microscopic levels. Prerequisites: Enrollment in Year Two of the Professional Program in Veterinary Medicine or instructor consent.

VET 643 - Clinical Pathology I Credits: 3
Hematology; cytology; and integration of diagnostic plan, generation of clinical pathology data, statistical concepts, and interpretation of results to guide patient management. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 644 - Clinical Skills III Credits: 2
Advanced clinical skills in large and small animals and experiential learning at the CVM and external sites. Prerequisites: VET 623 and enrollment in Year Two of the Professional Program in Veterinary Medicine or instructor consent.

VET 645 - Clinical Epidemiology Credits: 2
Statistical and epidemiological concepts applied to veterinary medicine. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 646 - Public Health Credits: 2
An epidemiological approach to veterinary public health, including major zoonoses, animal sentinels, meat and milk inspection, food safety, environment, occupational health and safety, euthanasia and carcass disposal methods, cruelty investigation, and animal welfare issues. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 647 - Small Animal Medicine I Credits: 2
Multisystemic infectious diseases and hematological and immunological disorders in small animal species. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 648 - Diagnostic Laboratory Credits: 2
Hands-on diagnostic laboratory, including sample- handling, parasitology, microbiology, urinalysis, and serologic testing. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 649 - Large Animal Medicine I Credits: 2
Multisystemic infectious diseases and hematological and immunological disorders of large animal species. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 650 - Professional Development III Credits: 1
Problem-oriented medical records, clinical decision-making, clinical communications, and medical professionalism. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 660 - Small Animal Medicine II Credits: 5
Common disorders of the gastrointestinal, endocrine, urinary, and dental systems in small animal species. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 661 - Small Animal Surgery I Credits: 3
Orthopedic disorders, lameness, and abdominal surgery in small animals. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 662 - Large Animal Surgery I Credits: 3
Orthopedic disorders, lameness, hoof and foot disorders, and abdominal surgery in large animals. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 663 - Veterinary Imaging I Credits: 4
General principles of interpretation of diagnostic radiographs and musculoskeletal and abdominal radiography in large and small animals. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 664 - Pharmacology II Credits: 2
Pharmacology of drugs affecting the urinary and digestive systems and pharmacological alleviation of inflammation and pain in animal patients. Prerequisites: VET 641 and enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 665 - Clinical Skills IV Credits: 2
Advanced clinical skills in large and small animals and experiential learning at the CVM and external sites. Prerequisites: VET 644 and enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 666 - Clinical Pathology II Credits: 2
Serum chemistry analysis and integration of diagnostic plan, generation of clinical pathology data, statistical concepts, and interpretation of results to guide patient management. Prerequisites: VET 643 and enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 667 - Avian Core Credits: 2
Avian nutrition, physiology, anatomy, and disease.

VET 668 - Large Animal Medicine II Credits: 3
Common disorders of the gastrointestinal, endocrine, and urinary systems in large animal species. Prerequisites: VET 649 and enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 669 - Dermatology Credits: 2
Case-based discussion of common dermatological conditions that affect animals. Prerequisites: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 670 - Clinical Correlations II Credits: 1
Integrative problem-based discussion of animal species to prepare students for clinical decision making and diagnostics. Prerequisites: VET 629 and enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 671 - Thrive Through Life Credits: 5
Key concepts of optimal animal care from birth to geriatric stage of life are explored in an integrative approach to develop comprehensive health care plans for the animal's life cycle. Prerequisites: Enrollment in Year Two of the Professional Program in Veterinary Medicine or instructor consent.

VET 788 - Master's Research Problems Credits: 1-3

VET 791 - Independent Study Credits: 1-4

VET 792 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student-teacher involvement.

VET 793 - Workshop Credits: 1-4
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

WL (Wildlife and Fisheries Sciences)

WL 515 - Upland Game Ecology and Management Credits: 3
Upland game birds and mammals as components of ecosystems. Effects of farming; industry; social change; technology; and federal, state, and private programs on game and non-game species. Techniques for individual species management. Corequisites: WL 515L.

WL 515L - Upland Game Ecology and Management Laboratory Credits: 0

WL 517 - Large Mammal Ecology and Management Credits: 3
Large mammal life histories and distributions. Relationships of nutrition, reproduction, interspecific competition, and predation to management of big game habitat and harvest. Techniques for research and management of large mammals. Corequisites: WL 517L.

WL 517L - Large Mammal Ecology and Management Laboratory Credits: 0

WL 518 - Ecology of Aquatic Invertebrates Credits: 3
The identification of and ecological relationships associated with aquatic invertebrates; aquatic ecosystems of the north-central states are emphasized. Corequisites: WL 518L.

WL 518L - Ecology of Aquatic Invertebrates Laboratory Credits: 0
Corequisites: WL 518.

WL 519 - Waterfowl Ecology and Management Credits: 3
Analysis of ecological and socio-economic factors affecting waterfowl habitat and waterfowl populations. State and federal programs affecting wetland drainage and preservation. Field inspection of waterfowl habitat in the north-central states. Corequisites: WL 519L.

WL 519L - Waterfowl Ecology and Management Laboratory Credits: 0

WL 521 - Grassland Fire Ecology Credits: 3
The course describes the ecological effects of fire on grassland ecosystem components, from soil and vegetation to wildlife and beef cattle. It also provides insight into the history of fires, the people who use them and why, the parts of a fire, how fires behave in relation to fuel and weather, and the conducting and safety of prescribed burns. Cross-Listed: RANG 521.

WL 525 - Wildlife Nutrition and Disease Credits: 3
Emphasis is placed on nutrient requirements and acquisition, conditions and characteristics of important diseases, and their management implications. Focal areas include the biochemical, physiological, and ecological bases for studying nutrition and disease; nutrition and disease relationships to wildlife and habitat; protein, energy, vitamin, and mineral requirements and their relationships to diseases; and strategies for satisfying nutritional requirements. Corequisites: WL 525L.

WL 525L - Wildlife Nutrition and Disease Laboratory Credits: 0

WL 527 - Limnology Credits: 4
Physical, chemical, and biological characteristics of lentic freshwater ecosystems. Analysis of and methods for quantifying processes that function in lentic freshwater ecosystems. Corequisites: WL 527L.

WL 527L - Limnology Lab Credits: 0
Laboratory to accompany WL 527. Corequisites: WL 527.

WL 529 - Ecology of Fishes and Habitat Credits: 3
Study of fish as an organism and the interrelations of fish with other organisms and with their habitat. Corequisites: WL 529L.

WL 529L - Ecology of Fishes and Habitat Lab Credits: 0
Laboratory to accompany WL 529. Corequisites: WL 529.

WL 531 - Advanced Fisheries Management Credits: 3
Advanced management and ecology of public and private water bodies through manipulation of habitat, organisms, and human users. The course will address water body design and construction, limnology, hydrology, channel morphology, water quality, biological production, fish management, troubleshooting, and pond and stream opportunities. Corequisites: WL 531L. Prerequisites: WL 412.

WL 531L - Advanced Fisheries Management Lab Credits: 0
Laboratory to accompany WL 531. Corequisites: WL 531. Prerequisites: WL 412L.

WL 592 - Topics (COM) Credits: 1-3
Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

WL 592L - Topics Lab (COM) Credits: 0
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually 10 or fewer students with significant one-on-one student-teacher involvement. Corequisites: WL 592.

WL 712 - Wetlands Ecology and Management Credits: 3
Botanical, zoological, hydrological, pedological, and biogeochemical components of wetland systems are studied. Course includes the management of wetlands for various functional values, government jurisdiction in wetland regulation, and wetland classification. North American wetland systems are discussed with emphasis on northern glaciated prairie wetlands. Corequisites: WL 712L.

WL 712L - Wetlands Ecology and Management Laboratory Credits: 0

WL 713 - Animal Population Dynamics Credits: 3
Methods of analysis and interpretation of vital statistics of animal populations. Current theories on natural regulation of animal populations. Particular emphasis on vertebrate species of economic and/or recreational importance. Comparison of environmental controls on of various animal groups. Corequisites: WL 713L.

WL 713L - Animal Population Dynamics Laboratory Credits: 0

WL 715 - Wildlife Research Design Credits: 3
Use of the scientific method for designing wildlife research and developing proposals. Familiarization with field and laboratory methods. Practical experience with statistical data analysis. Corequisites: WL 715L.

WL 715L - Wildlife Research Design Laboratory Credits: 0

WL 717 - Aquatic Trophic Ecology Credits: 3
Analysis of selected biological processes influencing the organization of aquatic communities. Complex trophic interactions and their effects on the life histories and bioenergetics of aquatic organisms are examined. Corequisites: WL 717L.

WL 717L - Aquatic Trophic Ecology Laboratory Credits: 0

WL 720 - Quantitative Fisheries Science Credits: 3
An advanced analytical fisheries course that focuses on quantitative techniques. Emphasis is placed on populations (e.g., recruitment, growth, mortality), and quantitative assessment of communities (e.g., predatory-prey interactions) and ecosystems (e.g., biostressors). Suggested background courses include population dynamics, experimental design, and graduate statistics and/or biometry. Corequisites: WL 720L.

WL 720L - Quantitative Fisheries Science Laboratory Credits: 0

WL 723 - Fisheries Ecology & Management Credits: 3
Principles and techniques of selected practices for reservoir, lake, pond and lotic fisheries management. Corequisites: WL 723L.

WL 723L - Fisheries Ecology & Management Laboratory Credits: 0
Laboratory to accompany WL 723. Corequisites: WL 723.

WL 724 - Advanced Human Dimensions in Natural Resource Management Credits: 3
This course is designed to provide students aspiring to work in fisheries and wildlife or other natural resource management fields, whether at the federal, state, or local level of government or non-government agency, with a basic level of understanding of the social aspects of management and some practical applied human dimensions skills. Students will explore the human dimensions' literature and discuss practical applications of findings to current management issues.

WL 791 - Independent Study Credits: 1-3
Includes directed study, problems, readings, directed readings, special problems and special projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meetings depending upon the requirements of the topic.

WL 792 - Topics (COM) Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually limited with significant one-on-one student-teacher involvement.

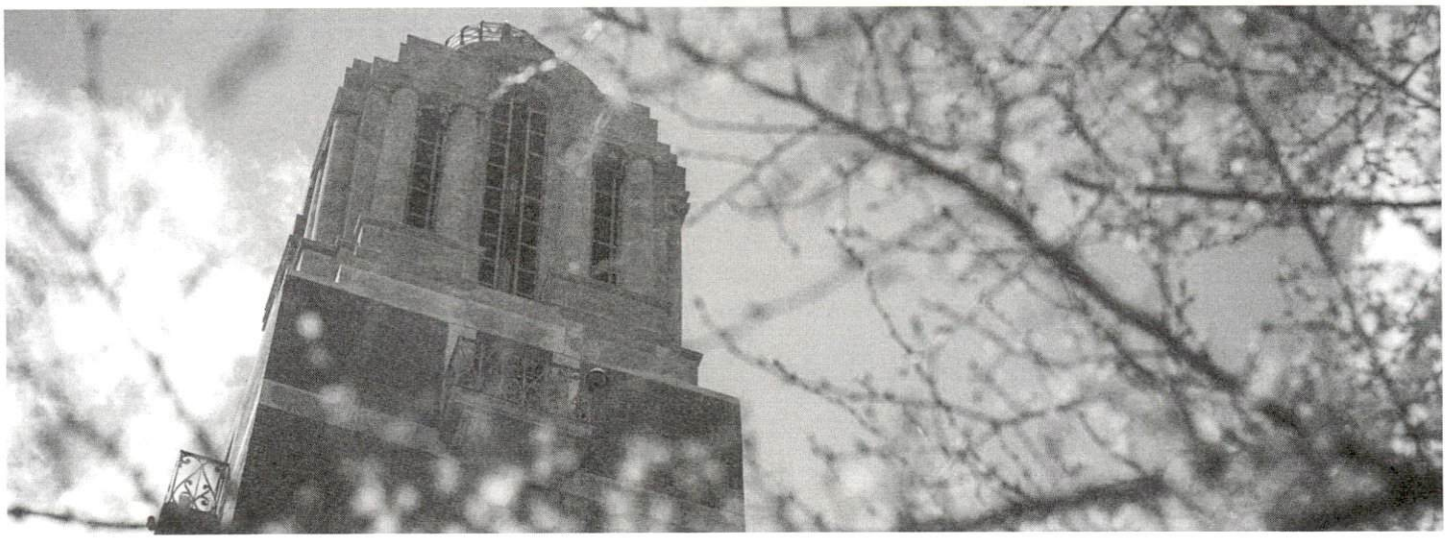
WL 798 - Thesis Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

WL 898D - Dissertation - PhD (COM) Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between the candidate and other members of the committee.

WMST (Women's Studies)

WMST 519 - Women in Media Credits: 3
This course examines contributions of women to the mass media from colonial era to present. It also studies the portrayal of women by the news media and by advertising, and it studies the roles currently played by women in the media and in supporting areas of advertising and public relations. Cross-Listed: MCOM 519.

WMST 592 - Topics (COM) Credits: 1-3
Includes Current Topics, Advanced Topics, and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of ten or fewer students with significant one-on-one student-teacher involvement.



University Organization, Administration, & Faculty

Control of the educational institutions of the state is vested in the SD Board of Regents. The Faculty consists of the President, the Vice Presidents, the Deans and other administrative officers, teachers and researchers with rank of instructor or above. The faculty is responsible in general for academic standards and procedures and programs, including recommending to the Regents the candidates for degrees. Faculty business is conducted by the Faculty Senate, an elected body through which faculty express concerns for the welfare of the University and the university community, develop and disseminate communications, contribute to formation of general university policy, and perform those duties and functions allocated to or assumed by the faculty.

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The Board of Regents is the constitutional governing board for South Dakota's six state universities, Black Hills State University, Dakota State University, Northern State University, South Dakota School of Mines and Technology, South Dakota State University, and the University of South Dakota, and two special schools; the South Dakota School for the Blind and Visually Impaired and the South Dakota School for the Deaf.

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Suite 200
Pierre, SD 57501

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Daniel Hansen, Pharm.D., Interim Dean
Teresa Seefeldt, Pharm.D., Ph.D., Associate Dean
Xiangming Guan, Ph.D., Associate Dean

H. M. Briggs Library

Kristi Tornquist, Ph.D., Chief University Librarian

Jerome J. Lohr College of Engineering

Bruce Berdanier, Ph.D., Dean
Rajesh Kavasseri, Ph.D., Associate Dean

Van D. & Barbara B. Fishback Honors College

Rebecca Bott-Knutson, Ph.D., Dean

Directors & Department Heads (by College)

College of Agriculture, Food & Environmental Sciences

Department of Agricultural and Biosystems Engineering	Van C. Kelley, Ph.D.
Department of Agronomy, Horticulture, and Plant Science	David Wright, Ph.D.
Department of Animal Science	Joseph Cassady, Ph.D.
Department of Dairy and Food Science	Joseph Cassady, Ph.D., Interim
Department of Natural Resource Management	Michele Dudash, Ph.D.
Department of Veterinary and Biomedical Sciences	Jane Christopher-Hennings, DVM
Ness School of Management and Economics	Eluned Jones, Ph.D.

College of Arts, Humanities & Social Sciences

Department of Aerospace Studies	Jason Haufschild, M.S.
Department of Architecture	Brian T. Rex, M.S.
Department of English	Jason McEntee, Ph.D.
Department of Military Science	Stephen E Sewell III, M.S.
Department of Psychology	Rebecca Martin, Ph.D., Interim
Department of Sociology and Rural Studies	Mary Emery, Ph.D.
Ness School of Management and Economics	Eluned Jones, Ph.D.
School of American and Global Studies	Christi Garst-Santos, Ph.D.
School of Communication and Journalism	Lyle Olson, Ed.D.
School of Design	Pat Crawford, Ph.D.
School of Performing Arts	Paul D. Reynolds, D.M.A.

College of Education & Human Sciences

Department of Consumer Sciences	Kendra Kattelmann, Ph.D
Department of Counseling and Human Development	Jay Trenhaile, Ed.D.
Department of Health and Nutritional Sciences	Kendra Kattelmann, Ph.D.
Department of Teaching, Learning and Leadership	Jay Trenhaile, Ed.D.

College of Natural Sciences

Department of Biology and Microbiology	Heike Bücking, Ph.D.
Department of Chemistry and Biochemistry	Douglas Raynie, Ph.D.
Department of Geography and Geospatial Sciences	Bob Watrel, Ph.D.
Department of Physics	Douglas Raynie, Ph.D.

College of Nursing

Department of Graduate Nursing	Melinda Tinkle, Ph.D.
Department of Undergraduate Nursing	Melinda Tinkle, Ph.D.

College of Pharmacy & Allied Health Professions

Department of Allied and Population Health	Sharrel Pinto, Ph.D.
Department of Pharmacy Practice	James Clem, Pharm.D.
Department of Pharmaceutical Sciences	Omathanu Perumal, Ph.D.

Jerome J. Lohr College of Engineering

Department of Agricultural and Biosystems Engineering	Van C. Kelley, Ph.D.
Department of Civil and Environmental Engineering	Nadim I. Wehbe, Ph.D.
Department of Electrical Engineering and Computer Science	Siddharth Suryanarayanan, Ph.D.
Department of Construction and Operations Management	Teresa Keys Hall, Ph.D.
Department of Mathematics and Statistics	Kurt Cogswell, Ph.D.
Department of Mechanical Engineering	Kurt Bassett, Ph.D.

South Dakota State University Foundation

Steve Erpenbach, President and CEO
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Brookings, SD 57007
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E-mail: info@sdstatefoundation.org
www.sdstatefoundation.org

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Andi Fouberg, President and CEO
South Dakota State University Alumni Association
815 Medary Ave, Box 515
Brookings, SD 57007-0299
888-735-2257 or 605-697-5198
Email: alumni@statealum.com
www.statealum.com

The SDSU Alumni Association is an independent, not-for-profit organization, non dues association that welcomes all graduates, former students, faculty, staff and friends of South Dakota State, as well as students, to the growing alumni family. We strive to connect these groups to SDSU and each other, through the promotion of the University and by providing valuable benefits, services and resources to members. The SDSU Alumni Association has been proud to serve nearly 95,000 alumni since 1889. Jackrabbits are a highly diverse and global family who are an influential force in both keeping traditions alive and advancing South Dakota State University.

University Administration & Faculty Listing

Administration

Dunn, Barry, President, Professor of Animal Science, Graduate Faculty; B.S., South Dakota State University, 1975; M.S., 1977; Ph.D., 2000.

Hedge, Dennis, Provost and Vice President for Academic Affairs, Professor of Pharmacy Practice, Graduate Faculty; Pharm.D., University of Kansas, 1991.

Holbeck, Michael, Interim Vice President for Budget and Finance; B.S., South Dakota State University, 2008; M.S., 2008; Ph.D., 2017.

Overby, David, Vice President for Technology and Safety; B.B.A., University of North Dakota, 1998; MMgt, University of Mary, 2002.

Scholl, Daniel, Vice President for Research and Economic Development, Professor, Graduate Faculty; B.S., University of California, 1985; D.V.M., University of California, 1987; M.P.V.M., University of California, 1988; Ph.D., State University of Utrecht (the Netherlands), 1992.

Willis, Michaela, Vice President for Student Affairs and Enrollment Management; B.A., Doane College, 2000; M.A.M., 2004; Ph.D., University of Nebraska – Lincoln, 2014.

Marshall, Donald M., Vice Provost for Undergraduate Education, Professor of Animal Science, Graduate Faculty; B.S., University of Missouri, 1979; M.S., Oklahoma State University, 1981; Ph.D., 1984.

Doolittle, James J., Associate Vice President for Research Assurance and Sponsored Programs, Professor of Agronomy, Horticulture, and Plant Science, Graduate Faculty; B.S., Purdue University, 1982; M.S., Texas A&M University, 1986; Ph.D., 1991.

Wermedal, Douglas, Associate Vice President for Student Affairs; B.S., South Dakota State University, 1985; M.S.Ed., Eastern Illinois University, 1987; Ph.D., South Dakota State University, 2008.

Mielke, Barry A., Interim Assistant Vice President for Facilities and Services; B.S., South Dakota State University, 2002; M.S., 2018.

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