

South Dakota State University

Graduate Programs

2008-2009

A Land-Grant University established in 1881.

South Dakota State University Bulletin Quarterly

UNIVERSITY CALENDAR

2008 FALL TERM

September 1, MondayLabor Day Holiday
 September 2-4, Tuesday-ThursdayTuition and Fee Payment Days
 September 2, TuesdayOrientation/Start Date
 September 2, Tuesday, 4:00 p.m.Instruction begins
 September 11, ThursdayLast day to drop or add and adjust final fees
 September 12, Friday“W” grade begins
 September 19, FridayLast day to submit a graduation application
 for Fall 2008
 October 4, SaturdayHobo Day
 October 13, MondayNative American Day Holiday
 October 24, FridayFirst half Fall Term ends
 October 31, FridayDeficiency reports due
 on WebAdvisor by midnight
 November 11, TuesdayVeterans’ Day Holiday
 November 17, MondayLast day to drop a course
 November 27-28, Thursday-FridayThanksgiving Recess
 December 12, FridayLast day of classes, Fall 2008
 December 13, SaturdayGraduation Ceremony, 10:00 a.m.
 December 15-19*, Monday-FridayFinal exams
 December 24, WednesdayGrades due on
 WebAdvisor by midnight

* December 19 – official graduation date noted on transcript

2009 SPRING TERM

January 14-16, Wednesday-FridayTuition and Fee Payment Days
 January 14, WednesdayOrientation/Start Date
 January 14, Wednesday, 4:00 P.M.Instruction begins
 January 19, MondayMartin Luther King Day Holiday
 January 23, FridayLast day to drop or add and adjust final fees
 January 24, Saturday“W” grade begins
 February 6, FridayLast day to submit a graduation application
 for Spring 2009
 February 16, MondayPresidents’ Day Holiday
 March 9-13, Monday-FridaySpring Break
 March 16, MondayFirst half Spring Term ends
 March 19, ThursdayDeficiency reports due
 on WebAdvisor by midnight
 April 6, MondayLast day to drop a course
 April 10-13, Friday-MondayEaster Recess
 May 1, FridayLast day of classes, Spring 2009
 May 4-8*, Monday-FridayFinal exams
 May 9, Saturday123rd Annual Commencement Ceremony, 10:00 a.m.
 May 13, WednesdayGrades due on
 WebAdvisor by midnight

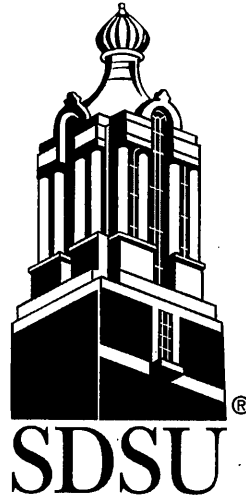
* May 8 – official graduation date noted on transcript

2009 SUMMER TERM

May 11 (Monday) - May 29 (Friday).....May Interim
 May 25, MondayMemorial Day Holiday
 June 1 (Monday) - August 7 (Friday) 10-week Academic Summer Session
 July 3, FridayIndependence Day Holiday observed
 August 10 (Monday) - August 28 (Friday)August Interim
 May 11 (Monday) - August 28 (Friday)Summer Administrative Term



SOUTH DAKOTA STATE UNIVERSITY



GRADUATE CATALOG 2008-2009

WWW3.SDSTATE.EDU/ACADEMICS/GRADUATESCHOOL

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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 printed. It is ultimately the student's responsibility to stay abreast of current regulations, curricula, and the status of specific programs being offered. Furthermore, the University reserves the right,

as approved by the Board of Regents, to modify requirements, curricular 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.

Address from the Dean

Welcome to South Dakota State University and thank you for considering the Graduate Programs in the SDSU Graduate School. Attending graduate school at SDSU is a wise choice. As South Dakota's Land-Grant University, you will be provided with opportunities in 30 Graduate Programs that encompass areas such as agriculture, engineering, social sciences, health sciences, education, biological sciences, nursing, computation, and geospatial sciences.

Graduate-level courses and exciting research programs abound at SDSU. The Carnegie Foundation for the Advancement of Teaching recently classified SDSU as the state's only Research University with *high research activity*. Graduate education and research programs provided by seven academic colleges provide outstanding opportunities for advanced education and respected credentials.

South Dakota State University offers MS, MA, MEd and PhD programs, as well as a Doctorate of Pharmacy degree. Many of the Master's-level programs offer a choice of thesis, design paper, or course-based pedagogies. Each graduate student works closely with a faculty committee to develop a research program and plan of study to match the student's interests.

Research opportunities are expanding at SDSU. Of course, research is a core part of SDSU's land-grant mission. SDSU is a Space Grant as well as a Sun Grant university with programs in remote sensing, geospatial sciences and engineering, and renewable energy. Our involvement in numerous EPSCoR programs provides linkages to several federal research programs. Lately, the South Dakota Governor, state legislature and Board of Regents have enhanced research through the South Dakota 2010 Initiatives.

This Graduate Catalog is a valuable resource to learn about SDSU's graduate education programs. SDSU's web page (<http://www3.sdstate.edu>) is also an important resource to learn about individual departments and faculty. Information specific to this semester's graduate students is available at <http://www3.sdstate.edu/Academics/GraduateSchool>.

If you have any questions about the Graduate School at SDSU, please feel free to call 605/688-4181, stop by to visit the campus, or send an e-mail to sdstate.gradschool@sdstate.edu. We look forward to assisting you.

Kevin D. Kephart
Vice President for Research
Dean, Graduate School

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SOUTH DAKOTA STATE UNIVERSITY NON-DISCRIMINATION POLICY

It is the policy of South Dakota State University (SDSU) to **not** discriminate on the basis of race, color, creed, religion, national origin, ancestry, citizenship, age, gender, sexual orientation, disability, or Vietnam Era Veteran status in the offering of all benefits, services, and education and employment opportunities.

Discrimination complaints on the basis of gender, including sexual harassment complaints, should be directed to the Equal Opportunity Office in Human Resources, SAD 324, Phone: 605/688-4128.

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General Information

An act of the Territorial Legislature approved in 1881 provided for the establishment of what is now South Dakota State University. 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 nine elected members from the Graduate Faculty assists the Graduate Dean. The council includes the Graduate Dean (chair); Associate Dean, one member each from Animal Sciences, Biological Sciences, Education and Counseling, Engineering Sciences, Health Sciences, Physical Sciences, Plant Sciences, Social Sciences and Humanities. The Dean of the Library serves as an ex-officio non-voting member.

The Graduate Faculty is composed of the University President, Provost and Vice President for Academic Affairs, Vice President for Administrative Affairs, college deans, heads of departments in which graduate courses are given, and other faculty, chosen on the basis of their training and experience, in accordance with the policies of the Graduate School. All matters of policy and standards are acted on by the Graduate Faculty. In addition, Graduate Faculty are authorized to serve as advisors to graduate students or on their examining committee and to teach courses for graduate credit.

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. It also promotes scholarly pursuits and scientific research for the advancement of knowledge within a climate of freedom of inquiry. This Catalog deals only with the Graduate Programs of the institution. For material on Undergraduate Programs and for general information concerning South Dakota State University, refer to the General Catalog (Undergraduate Catalog), available in the Admissions Office, Administration Building (SAD 200), or at www3.sdstate.edu.

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. 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 into the 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.

South Dakota State University is a Land-Grant University and as such subscribes to the land-grant 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.

Listed below are the specific accreditation boards and memberships involving SDSU Graduate Programs:

Council for the Accreditation of Counseling and Related Educational Programs -
Counseling and Human Resource Development (MS)

Accreditation Council for Pharmacy Education -
Pharmacy (PharmD)

American Association of Veterinary Lab Diagnosticians-
Animal Disease Research and Diagnostic Lab

Commission on Accreditation of Athletic Training Ed. -
Athletic Training (MS)

Commission on Collegiate Nursing Education -
Nursing (MS)

National Council for Accreditation of Teacher Education -
College of Education & Counseling

North Central Association Higher Learning Commission

South Dakota Department of Education -
Counseling & Human Resource Development (MS), Curriculum & Instruction (MEd), Educational Administration (MEd), and Reading Specialist (MEd)

Admission Information

Admission to Graduate School

Students must be admitted to the Graduate School before enrolling in any graduate course, whether or not they are pursuing an advanced degree. A completed application must be filed with the Graduate School sufficiently early to meet any deadlines prior to the first term of graduate work. Students applying for Special Student (non-degree) status must also complete an application and be admitted to the Graduate School. **NOTE:** Being admitted to the Graduate School does not admit a student to a degree program.

Admission Requirements

Baccalaureate Degree — Admission to the Graduate School requires that the applicant have a baccalaureate degree from an institution of higher learning. The institution must be one of recognized standing (regional accreditation) whose requirements are substantially the same as those of the South Dakota State University program(s) in which the advanced degree will be taken.

Graduate Record Examination (GRE) — Submission of the results of a Graduate Record Examination is not a Graduate School requirement; however, the following programs require that scores be submitted: Biology, English, Electrical Engineering, Microbiology, Pharmacy, and Wildlife & Fisheries. Chemistry and Plant Science recommend the GRE, but do not require it. For information about the GRE test, contact the program concerned or the Academic Evaluation and Assessment Office, Foundation Building (north entrance).

Program Requirements — Individual programs may have additional admission requirements. Applicants should inquire about such requirements from the program of interest. For more information see our Web page at <http://www3.sdstate.edu/academics/graduateschool/studentfaqs>.

Application Procedure

Application Form — A completed form supplied by the Graduate School must be submitted and accompanied by a non-refundable application fee of \$35 if degree-seeking. An application form can be found at the end of this Catalog or may be downloaded from the Graduate School “Forms and Documents” web page at <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>.

Official Transcripts — For degree seeking students, official transcripts of all undergraduate and graduate course work are needed. The Graduate School will access all South Dakota regental transcripts, but the student must furnish all those from non-regental institutions. International students must have completed 4 years of post-secondary education and must hold a Bachelor’s degree before applications will be reviewed by the Graduate School and the program.

Application Procedure for Domestic Students

If the application is submitted before the Bachelor’s degree is complete, an incomplete transcript must be filed. When the Bachelor’s degree is awarded, a final transcript must then be sent. This final transcript must be filed during the first semester of graduate work.

Immunization Requirements — Due to regulations mandated by the South Dakota Board of Regents, medically signed proof of TWO properly administered measles, mumps, rubella (MMR) immunizations OR immune titers for measles (rubeola), mumps and rubella are now required for all new, readmitted and transferred students at all state institutions. History of these diseases is accepted with health provider verification. (Students born before January 01, 1957 are exempt from this requirement.) The completed form must be received in order to register and attend classes. For more information or a copy of the immunization form, go to <http://studentaffairs.sdstate.edu/HealthandCounseling/information/requiredimmu.html> or

contact Student Health and Counseling Services at 605/688-4157 for further information.

Letters of Recommendation — Typically two letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant should be sent directly to the Graduate School. Three letters of recommendation are required for Nursing, Family Financial Planning, and Merchandising. Forms may be downloaded from the Graduate School “Forms and Documents” web page at <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>. This requirement may be waived by the Dean of the Graduate School on recommendation of the program. The references submitted as part of the CHRD packet will be accepted for the purposes of Graduate School requirements.

Application Procedure for International Students

In addition to the above procedures, International Students must also submit the following:

TOEFL Score — A score of 525 paper-based, 197 computer-based, or 71 Internet-based or higher is required by the Graduate School for the Test of English as a Foreign Language (TOEFL). Equivalent International English Language Testing System (IELTS) scores are also accepted. Program requirements are listed within each departmental section in this Catalog. Programs may require additional testing upon arrival.

Financial Support — Evidence of available financial support for at least two years for Master’s degrees or four years for Doctor of Philosophy degrees must be submitted to the International Student Affairs (ISA) Office at SSU 065. For any financial assistance from this institution, the applicant should correspond with the Head of the major program.

Medical Record — In addition to the immunizations required for domestic students, a tuberculosis (TB) test is required for students from certain countries of origin and must be performed upon arriving on campus; TB tests done outside of the United States will not be accepted. For more information, go to <http://studentaffairs.sdstate.edu/HealthandCounseling/information/requiredimmu.html> or contact Student Health and Counseling Services at 605/688-4157.

Transcripts — International students who cannot provide original transcripts may submit notarized or certified copies at the time of application. A provisional degree will be accepted.

Documentation — Documents for entry into the U.S. will be issued by the International Student Affairs Office after academic admission and financial certification are complete.

Application Processing

After an application for admission and all supporting documents are received and evaluated by the Graduate School, they are sent for review to the program concerned. Using the recommendations made by the program, the Dean/Associate Dean of the Graduate School acts on the application and notifies the applicant, program, and/or committee concerned.

Admission Status

Admission

An applicant may be admitted without condition if a Bachelor’s degree has been earned, all undergraduate prerequisites for major and minor (if required) fields of study have been satisfactorily completed, and the applicant had an average of 3.0 or higher on a 4-point grading system (A = 4, B = 3, C = 2, D = 1) or maintained a 3.0 during the last two academic years of undergraduate work.

Applicants with a grade point average between 3.0 and 2.75 may also be considered for admission if other aspects of their academic and/or professional record indicate superior performance and potential.

Admission to all degree programs is competitive and limited by the availability of personnel, facilities, and funding necessary to provide quality graduate education within each program.

Conditional Admission

Conditional admission may be granted for students enrolled in an accredited U.S. college or university, if the applicant:

- 1 meets the requirements for admission for the last three semesters 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 and these courses cannot be used on the graduate plan of study, **OR**
- 3 has a grade point average between 2.5 and 3.0 for the junior and senior years.

Students admitted conditionally with a cumulative or junior/senior grade point average of less than 2.75 must complete a minimum of 9 graduate credits with a cumulative grade point average of 3.00 or higher before becoming eligible for a graduate assistantship. A student admitted conditionally must satisfy any conditions before receiving unconditional status. Programs will assign advisors to such students. Failure of a student to fulfill the above conditions or to do satisfactory graduate work at any point in his/her program is sufficient grounds for dismissal or reclassification as a Special Student (non-degree). Students with a junior-senior grade point average above 2.75 and who have pass-fail (or equivalent) grades shall have instructors for such courses furnish letter grades or shall furnish satisfactory Graduate Record Examination (GRE) scores.

Special Student (non-degree)

Students not meeting the above admission requirements, or those not working toward a degree, may be granted admission and take courses as Special Students. Special Students may not receive graduate assistantships, financial aid, or enroll for thesis/dissertation credits. The Graduate Dean/Associate Dean will act as advisor for these students unless they are assigned to a program advisor. No more than ten credits under Special Student status may be applied toward a degree.

Special Students must meet all requirements regarding immunizations listed under the "Application Procedure for Domestic Students" section above although some allowances are made when taking only online courses. Please contact Student Health and Counseling Services at 605/688-4157 for further information regarding immunization regulations.

Change of Admission Status

Students with Special Student status may request a change in status to work toward a degree, provided they meet admission requirements or nine credits of graduate work have been completed with a cumulative GPA of 3.0 or better. The request must include complete official transcripts and application fee if these have not been supplied previously. This request must be submitted to the Graduate School by the student, after which it will be submitted to the appropriate program for a recommendation and be processed as other applications.

Readmission

Students formerly enrolled as graduate students at South Dakota State University (who interrupt continuous registration) should apply for readmission at least one month prior to registration. Forms for this purpose can be obtained from the Graduate School. Official transcripts for graduate work taken at other institutions since last enrollment at South Dakota State University must be furnished.

Graduate School rules and regulations in effect at the time of readmission apply to students who are readmitted. The Graduate School requires applicants for readmission to update their application file including current references if required by the program. Students who are readmitted may be required to change their Advisory Committee and file a new plan of study.

A personal interview with the head of the major department or the graduate coordinator of the program should be arranged prior to registration as a readmitted student.

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. It is the student's responsibility to make certain that he/she has fulfilled all graduation requirements.

Graduate Academic Standards

Graduate students are expected to maintain at least a 3.0 ("B") cumulative grade point average for all courses in the graduate plan of study. Students who encounter academic difficulty will be informed by the Graduate School and may be discontinued in their degree program or from the University when academic standards are not maintained. Students in the Doctor of Pharmacy program must maintain academic standards of progression as determined by the College of Pharmacy.

Converted Credits

Courses numbered 300-499 are considered to be advanced undergraduate credits. These credits may be used in Graduate Programs with the following provisions:

- A. When applied to a Graduate Program, total credit for these courses will be valued at 80 percent, discarding all fractions.

After such conversion, these credits are defined as "converted credits," which may be used as graduate credit in meeting the requirements for the various degrees, provided a grade of at least "B" is obtained in each course in this series. For example, if eight credits are earned in this series, they would be equivalent to six graduate credits.

- B. Courses used for converted credit must be SDSU credits taken during the period the student is enrolled as a graduate (not undergraduate) student at this institution. These must be entered on the graduate transcript to be eligible for converted credit.
- C. For Master's degree programs, a maximum of seven converted credits may be applied to the plan of study. They may be applied in the major, minor, or supporting course areas.
- D. For Doctor of Philosophy degrees, a maximum of ten converted credits may be applied to the plan of study. They may be applied in the major, minor, or supporting course areas, if applicable.

Converted credits may be applied to a plan of study only with the permission of the major advisor or Advisory Committee and the Dean/Associate Dean of the Graduate School.

300-499 series — Advanced undergraduate courses which may be used in meeting part of the requirements for graduate degrees in accordance with the policy on converted credit.

These courses are not listed in this catalog, but are listed in the General Catalog (Undergraduate Catalog).

NOTE: When credits in the 300-499 series are applied to a Graduate Program, they are entered on the transcript without notation. It is doubtful, therefore, that they could be transferred as graduate credit to another institution.

500-599 series— Entry level graduate courses (may be dual listed with a 400 level undergraduate course and may include limited enrollment by undergraduates). See below.

600-699 series— Graduate level courses.

These courses are open to SDSU senior students for graduate credit if they meet the following requirements. Students must:

1. Be within 15 credits of completing a Bachelor's degree;
2. Have an overall grade point average of 2.5 or higher, or a Junior-Senior grade point average of 3.0 or higher; and,
3. Enroll for no more than 18 credits, undergraduate and graduate credits combined (9 credits during Summer Term).

The course(s) cannot be required, or included, for the Bachelor's degree and a signed permit is required.

These courses are approved as graduate credit and undergraduate students must meet the same level of performance as graduate students.

700-799 series— Graduate level courses open only to graduate students.

800-899 series— Doctoral and post-doctoral level courses open only to doctoral students or those holding an earned doctoral degree.

Experimental Courses— Courses at the 500-800 levels ending in 98 or 99 are experimental and may be active for two years from the date of the first offering, at which time they end or must become permanent courses.

Course Restrictions for Master's and Doctoral Plans of Study

Problems Courses — A maximum of four credits in problems courses (Special Problems, independent study, etc.) may be counted toward the Master of Arts, Master of Science, or Master of Education degree. Only six credits of problems courses may be counted toward the Doctor of Philosophy degree without approval of the Graduate Dean.

Transfer of Credits — 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), and if they are approved by the advisor or Advisory Committee and the Dean of the Graduate School. 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 (generally) not transferrable 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 filed with the Graduate School. A minimum of 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.

Transfer credit is not permitted for courses taken by correspondence. Independent Study, Readings, or Problems courses, Continuing Education, Outreach Programs, or Extension courses may be approved for transfer if they are regularly listed in the graduate catalog of an accredited institution, were taught by members of the Graduate Faculty of such institution, and if they carry a grade of "B" or higher. Subtitles or explanatory information will be required for approval of Independent Study and Readings courses.

Workshops — While any number of credits may be earned in workshops, a maximum of two such credits may be applied toward an advanced degree. Workshop notation on transcripts will be used for application of this limitation.

Internet Courses — SDSU will evaluate the transfer of graduate credit for graduate courses delivered and taken over the Internet on the same basis as other transfer courses. The course must be from an accredited institution as recognized by the Board of Regents policy. If credits are to be applied to an accredited SDSU program, the program in which the course was taken at another institution must also be accredited.

Credit Load

Credits Needed for Full-Time/Part-Time Student Status, (does not apply to Graduate Assistants)

	<i>Minimum Credits</i>	<i>Maximum credits without overload</i>
Full-time status	9	12
Three-fourths (3/4) time status	7	12
One-half (1/2) time status	5	
Full-time status, Summer Term, 4-week session	4	12
Full-time status, Summer Term, 8-week session	6	9

Maximum credits **graduate assistants** may carry:

	<i>Academic Year</i>	<i>Summer Term</i>
One-fourth (1/4) time assistant	30	5
One-half (1/2) time assistant	22	3
Three-fourths (3/4) time assistant	15	3

In calculating credit loads, audit courses and undergraduate courses are included at full value for student status but are not allowable for loan deferral, full- and part-time certification, or financial aids disbursement. Graduate assistants must be registered for at least one credit each semester during the academic year to hold a graduate assistantship. For financial aid requirements of a full load, contact the Financial Aid Office.

Cancellation of Courses

In general, graduate courses will not be offered to fewer than seven 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.

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, or below 3.0 (B) in 300 or 400 level courses. Grades for transfer courses are not used in calculating these grade point averages. The grade earned the last time the course was taken will be used to determine the grade point average for the plan of study.

Dissertation/Thesis/Research or Design Paper Credits — Graduate students usually register for dissertation/thesis/research or design paper credit during several semesters. A “normal progress” (NP) grade is usually given until satisfactory completion of the dissertation/thesis/research or design paper and final oral examination. The advisor, upon satisfactory completion of these credits and final oral, will then assign a satisfactory grade (S) for each semester’s registration for dissertation/thesis/research or design paper and sustaining credit by notifying the Registrar through the “Change of Grade” form. If not satisfactory, a grade of unsatisfactory (U) is given.

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. A copy of this information must be filed with the Graduate School. 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.

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. This policy applies to both undergraduate and graduate coursework. Students should notify the Registrar’s Office, when a course, whether failed or passed, is repeated.

Academic Performance — Graduate students whose plan of study cumulative grade point average drops to less than 3.0 are automatically placed on Academic Warning, and will receive a letter from the Graduate School. (If a plan of study is not in place, all courses will be counted, and the cumulative GPA will be used.) Should a student on Academic Warning fail to achieve a GPA of at least 3.0 in his/her plan of study the following semester, the student 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 letter to the Dean/Associate Dean of the Graduate School indicating how the GPA will be brought up to 3.0 or better. The student must then meet with the Dean to review this work improvement plan. In the semester following the hold, the student must have a GPA of 3.0 or better to be retained in the program.

Graduate Credit for Seniors

Seniors within 15 credits of completing a Bachelor's degree at South Dakota State University may request permission from the Dean/Associate Dean of the Graduate School to take up to 6 credits of 500 or 600 level courses for graduate credit. Permission requires the student to have a grade point average of at least 2.5, or a junior-senior grade point average of 3.0 or higher, and to enroll for not more than 18 credits, undergraduate and graduate credits combined (9 credits during Summer Term). Forms for requesting permission to take courses for graduate credit (Senior Permits) may be obtained from the Graduate School. The student must be admitted as a Special Student and must register for the course at the graduate level.

Graduate Study by University Staff

Faculty members with the rank of Assistant Professor or above may not work toward an advanced degree at South Dakota State University for promotion and tenure purposes. Faculty who already hold a terminal degree required for promotion and tenure may work on an additional degree at South Dakota State University, by special approval of the Vice President for Academic Affairs. All faculty may take graduate courses for credit with the required approvals and authorization. A Graduate application should be completed. An "Authorization For Educational Benefits" form, obtained from the Human Resources Department, should be completed and returned to Human Resources before registration. Staff members below the rank of Assistant Professor who intend to work toward a degree at this institution must follow the regular process for admission to the Graduate School.

Full-time members of the research, instructional, or extension staffs may enroll for a maximum of 12 credits during the calendar year, with a maximum of seven in any one semester and two during the Summer Session. Staff must pay the application fee.

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, may pursue study upon approval of the Department Head, Dean and/or Director concerned.

Graduation

Graduation Application — The student must file a graduation application with the Graduate School by the date specified in the University calendar for the term in which completion of the advanced degree is expected. Failure to file this application will result in a delay in graduation.

Commencement Attendance — All students are urged to participate in the Commencement exercises at which their degrees are to be granted. However, attendance is optional. In order to attend, students must have successfully completed their final oral examination. Students must notify the Registrar of their intent to attend or not attend on a card mailed to them shortly before Commencement. Diplomas will be mailed approximately three months after Commencement. Attendance at Commencement or inclusion in the Commencement Program does not in itself complete the degree requirements since all work on the plan of study must be successfully completed for the degree to be awarded.

Cap, Gown and Hood — Caps, gowns and hoods for Commencement may be rented or purchased from the University Bookstore.

Continual Registration for Dissertation/Thesis/ Research or Design Paper

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

- A. Students who have completed the required number of dissertation/thesis/research or 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.
- B. Students who miss the deadline for graduation in a given semester, but successfully complete their final orals and all other requirements except minor edits of their thesis or dissertation prior to the start of the next semester do not have to enroll for continuing credit.

Registration is the student's responsibility and must be completed and payment made prior to the 10th class day of the semester. Failure to register may delay award of the degree and thereby require additional registrations.

Professional Conduct

Professional Conduct

South Dakota State University has taken a strong and clear stand regarding academic dishonesty. The consequence of academic dishonesty ranges from disciplinary probation to expulsion. For more information contact the Dean of the Graduate School, SAD 130, 605/688-4181.

Academic Performance Not Directly Related to Course Work

Pending review of the Graduate Council, the Graduate Dean may dismiss students for violations of professional integrity, upon recommendation by the department/program. Departments may have policies accepted in their disciplines that determine continuation in programs on factors other than grades. These include any violation of ethical standards such as plagiarism or professional standards as determined by the department. The department or Graduate Program may request the Graduate School to remove the student.

Appeals

South Dakota State University's academic appeal process can be found at http://www.sdbor.edu/policy/2-Academic_Affairs/documents/2-9.pdf.

Building Abbreviations

<i>SAD</i>	<i>Administration</i>
<i>SAE</i>	<i>Agricultural Engineering</i>
<i>SAG</i>	<i>Agricultural Hall</i>
<i>SAR</i>	<i>Animal Disease Research Lab</i>
<i>SAA</i>	<i>Animal Science Arena</i>
<i>SAS</i>	<i>Animal Science Complex</i>
<i>SBX</i>	<i>Biology Annex</i>
<i>SBL</i>	<i>Briggs Library</i>
<i>SCEH</i>	<i>Crothers Engineering Hall</i>
<i>SDM</i>	<i>Dairy Microbiology Building</i>
<i>SDP</i>	<i>Depuy Military Hall</i>
<i>SGH</i>	<i>Grove Hall</i>
<i>SHN</i>	<i>Hansen Hall</i>
<i>SHH</i>	<i>Harding Hall</i>
<i>SHUB</i>	<i>Horse Barn</i>
<i>SHF</i>	<i>Horticulture- Forestry</i>
<i>SPE</i>	<i>HPER Center</i>
<i>SIA</i>	<i>Industrial Arts Building</i>
<i>SIM</i>	<i>Intramural Building</i>
<i>SLC</i>	<i>Larson Commons</i>
<i>SLM</i>	<i>Lincoln Music Hall</i>
<i>SMC</i>	<i>Medary Commons</i>
<i>SNP</i>	<i>Northern Plains Biostress Lab</i>
<i>SNF</i>	<i>Nursing-Family and Consumer Sciences</i>
<i>SPAC</i>	<i>Performing Arts Center</i>
<i>SPH</i>	<i>Pharmacy Addition</i>
<i>SPL</i>	<i>Physiology Laboratories</i>
<i>SPC</i>	<i>Pugsley Continuing Education Center</i>
<i>SRO</i>	<i>Rotunda For Arts & Science</i>
<i>SSB</i>	<i>Scobey Hall</i>
<i>SSH</i>	<i>Shepard Hall</i>
<i>SSO</i>	<i>Solberg Hall</i>
<i>SSOR</i>	<i>Sorensen Center (formerly Family Resources & Management Center)</i>
<i>SMU</i>	<i>South Dakota Art Museum</i>
<i>SUM</i>	<i>United Ministries Center</i>
<i>SSU</i>	<i>University Student Union</i>
<i>SWC</i>	<i>Wecota Hall</i>
<i>SWE</i>	<i>Wenona Hall</i>
<i>SYE</i>	<i>Yeager Hall</i>

x9x Common Course Descriptions

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 courses specific to your degree.

x90	Seminar
x91	Independent Study
x92	Topics
x93	Workshop
x94	Internship
x95	Practicum
x96	Field Experience
x97	Cooperative Education

In addition, the following 700 and 800 level course numbers are used in common:

788	Master's Research Problems/Projects
798/898S/898D*	Thesis/Dissertation

* As appropriate, an S or D should be appended to a course number to distinguish between courses for specialist and doctoral degree seekers.

Definitions

x90 Seminar is 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.

x91 Independent Study includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized study plans 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 arrangements depend upon the requirements of the topic.

x92 Topics include Current Topics, Advanced Topics and Special Topics. Topics is a course devoted to a particular issue in a specified field. The 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.

x93 Workshop is special, intense sessions in specific topic areas. Approximately 45 hours of work are 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.

x94 Internship is an applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience by following a negotiated and/or directed study plan. A higher level of supervision is provided by the instructor in these courses than is the case with Field Experience courses.

x95 Practicum is an applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience by following a negotiated and/or directed study plan. A higher level of supervision is provided by the instructor in these courses than is the case with Field Experience courses.

x96 Field Experience is an applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience by following a negotiated and/or directed study plan established among 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 with an Internship or Practicum course.

x97 Cooperative Education is an applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience by following a negotiated and/or directed study plan established among 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 with an Internship or Practicum course.

788 Master's Research Problems/Projects are independent research problems/projects that lead to a research or design paper but not to a thesis. The study plan is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. The course does not include research courses which are theoretical.

798/898S/898D Thesis/Dissertation is 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.



Master's Degree Requirements

DEGREES OFFERED

PROGRAM

- *Specialization*
- * *Emphasis*

Master of Arts

ENGLISH

- * *Literature*
- * *Language and Rhetoric*

Master of Education

CURRICULUM AND INSTRUCTION

- *Adult and Higher Education*
- *Career and Technical Education*
 - * *Agricultural Education*
 - * *Instructional Technology*
- *Elementary or Secondary Education*
 - * *Biology*
 - * *Chemistry*
 - * *Computer Education*
 - * *English as a Second Language*
 - * *Mathematics*
 - * *Middle School*
 - * *Physics*
 - * *Reading*

EDUCATIONAL ADMINISTRATION

- *Adult and Higher Education*
- *Career and Technical Education*
- *Elementary Administration*
- *Secondary Administration*

COUNSELING AND HUMAN RESOURCE DEVELOPMENT

- *Administration of Student Affairs Programs*

Master of Science

ANIMAL SCIENCE

- *Genetics and Reproduction*
- *Meats, Muscle Biology & Growth*
- *Nutrition*
- *Production and Processing Systems*
- *Range Science*
- *Veterinary Science*

BIOLOGICAL SCIENCES

- *Biology*
- *Dairy Science*
- *Food and Biomaterial Processing*
- *Horticultural Science*
- *Human Nutrition and Food Science*
- *Microbiology*
- *Pharmaceutical Sciences*
- *Veterinary Microbiology*
- *Veterinary Pathobiology*

Admission Requirements

The application file must be complete with the application form, application fee, transcripts, letters of recommendation, and other materials as required by the Graduate School before processing of the application will begin. Applicants for the Master's degrees must have earned an approved Bachelor's degree from an accredited institution (except in approved/accelerated programs). Applications for domestic, international and non-degree seeking students are found at <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>

Advisory Committee

After consultation with the student, the head of the major department will designate a major advisor. As soon as possible, but no later than the completion of 50 percent of the credits toward graduation, the major advisor will recommend to the Dean of the Graduate School members of an Advisory Committee as follows:

- Major Advisor— acts as chairperson of the committee, must have Graduate Faculty status.
- Major Department Representative— an additional member of the major department.
- An additional member of the major department or a related department, or a professional with an outstanding academic record and/or knowledge in the field from outside the University.
- Graduate Faculty Representative — selected by the Graduate Dean, from a department not closely related to the major/minor/supporting areas. This member ensures that rules and regulations are followed and acts as the student's advocate, if necessary.
- Thesis Advisor— if different from major advisor.

The above four or five members shall be members of the Graduate Faculty except when an outside representative is used in "C" above. Additional members of the committee may be requested by the student or the major advisor and assigned to the committee by the Dean of the Graduate School.

The Advisory Committee is responsible for assisting the student in developing a suitable Graduate Program, providing continuing guidance and counsel, and certifying the completion of the degree requirements to the Dean/Associate Dean of the Graduate School. The Major Advisor approves the plan of study and any revisions of it, approves the thesis proposal (if applicable), conducts the examinations appropriate to each option, supervises the validation of courses, and ensures that professional standards have been met in completing the degree requirements.

Plan of Study Information

Guidelines — During the first semester of graduate work and no later than the end of the first year or completion of 50 percent of the credits needed for graduation, the plan of study should be prepared on the appropriate form and approved by the major advisor. The plan of study will then be submitted to the Dean of the Graduate School for approval. Courses for the major must be taken in the major department or in related fields. At least 50 percent of the credits on a plan of study must be in courses open only to graduate students (600-series or above). Failure to submit a plan of study may result in disapproval of courses taken prior to approval and/or registration restrictions. After approval, changes in the plan of study must be requested on a form furnished by the Graduate School and approved by the major advisor and the Dean of the Graduate School. The "plan of study" form is available at <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>. While devising a plan of study, refer to the "Academic Information" section in this catalog in addition to the following information.

Options:	Minimum Credit Hours*
A Thesis	30
B Research Paper/Design Paper	32
C Coursework	35

* Requirements may vary by Graduate Program.

Minor/Supporting Area Requirement — Most Masters' programs do not require a minor or supporting area of coursework. If required, it is indicated in the listing of degrees and in the department/program section of this catalog. Whether required or not, consideration should be given to both depth and breadth of courses on the plan of study.

Language Requirement — There is no general language requirement for the Master's degree. However, individual departments may require a speaking or reading knowledge of a modern language other than English.

Examinations

Comprehensive — In those majors and specializations requiring a comprehensive written examination, the examination will be given by the Advisory Committee at least two weeks prior to the final oral examination, filed in the major department for review, and be available at the final oral examination. A comprehensive written examination is required of all students in non-thesis, Option C, programs. The comprehensive written examination may take different formats according to program requirements.

Final — A final oral examination must be administered by the Advisory Committee covering the student's plan of study and research if appropriate. This examination must be comprehensive, testing the student's ability to analyze, integrate, and apply knowledge from the discipline. The "Final Oral Exam" form must be submitted to the Graduate School ten working days before the exam. The examination must occur at least ten working days before Commencement. The Graduate Faculty Representative and all but one of the graduate committee must pass the student.

Research Paper or Design Paper

Students following Option B must complete at least two credits for a Research Problem (or Design Paper in Engineering) in the major field and present a written report. The content, style, and format of the report must meet the requirements of the major department. The Research Report or Design Paper must be approved by the Advisory Committee and filed in the major department. A copy of the written report must be provided to each committee member, including the Graduate Faculty Representative, and be available at the final oral examination.

Grading — For more information regarding grading policies for Research Paper and Design Paper, go to <http://www3.sdstate.edu/Academics/GraduateSchool/StudentFAQs/GradingPolicies/>.

Thesis

A thesis must meet the requirements of the major department and the Graduate School and must be submitted by each student completing a Master's degree in Option A. The thesis must represent a scholarly contribution to research knowledge in the major field.

Credits — 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 5 to 10 semester hours in the major.

Degrees Offered

PROGRAM

- *Specialization*
- * *Emphasis*

CHEMISTRY

- *Chemistry Education*

COMMUNICATIONS STUDIES AND JOURNALISM

- *Communication Studies*
- *Journalism*

COUNSELING AND HUMAN RESOURCE DEVELOPMENT

- *Counseling in an Agency Setting*
- *Counseling in a Rehabilitation and Mental Health Setting*
- *Counseling in a School Setting*
- *Counseling in a Student Affairs Setting*

ECONOMICS

- * *Agricultural Business*
- * *Agricultural Economics*
- * *Business Economics*
- * *General Economics*

ENGINEERING

- * *Agricultural and Biosystems Engineering*
- * *Civil and Environmental Engineering*
- * *Computer Science*
- * *Electrical Engineering*
- * *Mechanical Engineering*
- * *Physics*

FAMILY AND CONSUMER SCIENCES

- *Child and Family Studies*
- *Family Financial Planning*
- *Merchandising*
- *Nutrition and Food Science*

GEOGRAPHY

HEALTH, PHYSICAL EDUCATION AND RECREATION

- *Athletic Training*
- * *Sports Pedagogy*
- * *Sports Science*

INDUSTRIAL MANAGEMENT

MATHEMATICS

- *Statistics*

NURSING

- *Administrator*
- *Clinical Nurse Leader*
- *Educator*
- *Family Nurse Practitioner*
- *Neonatal Nurse Practitioner*
- *Psychiatric Nurse Practitioner*

Degrees Offered

PROGRAM

- Specialization
- * Emphasis

PLANT SCIENCE

- Agroecology
- Agronomy
- Crop Science
- Entomology
- Horticultural Crop Management
- Machinery Systems and Water Management
- Plant Pathology
- Soil Science
- Weed Science

RURAL SOCIOLOGY

- Applied Research
- Community Development
- Criminal Justice
- Demography
- Family Studies

STATISTICS

WILDLIFE AND FISHERIES SCIENCES

- Fisheries
- Wildlife

Guidelines — The thesis may be prepared with a view to publication and conform to the style of one of the journals in the major field as required by the major department. It must be prepared in the format required by the Graduate School as shown in “Instructions for Thesis” available from the Graduate School. The thesis should be a single document rather than a compilation of individual manuscripts. For more information, go to <http://www3.sdstate.edu/Academics/GraduateSchool/ThesisDissertationSubmittal/>.

Use of Human Subjects or Vertebrate Animals in Research, if applicable – After receiving approval to proceed with a thesis, students must also seek approval for the use of human subjects or vertebrate animals in research from the appropriate committee. These approvals must be secured before beginning the study. For more information, visit the Research Compliance Web site at <http://www3.sdstate.edu/UniversityResearch/ResearchCompliance/> or contact the SDSU Research Compliance Coordinator in the Office of Research & Sponsored Programs, SAD 124, 605/688-6975.

Review — A copy of the thesis must be filed with the Graduate School for review at least ten working days before the oral examination. Failure to do so may cause a delay in completing the degree. It is the responsibility of the student to schedule the oral examination and distribute a copy of the thesis to each member of the graduate committee including the graduate representative ten working days in advance of the oral examination.

Binding — At least five working days prior to Commencement, two copies, one on at least 50 percent rag content paper (cotton bond), corrected in accordance with suggestions by the Advisory Committee and the Graduate School, must be submitted to the Graduate School with a receipt from the Library showing the fee paid for the binding of four copies.

Electronic Thesis Submission — All Master’s candidates are required to submit their thesis in the appropriate format for electronic publication. Students should contact the Graduate School for appropriate guidelines or go to <http://www3.sdstate.edu/Academics/GraduateSchool/StudentFAQs/ThesisDissertationInformation/>.

Multiple Master’s Degrees or Majors

Graduate students may pursue a second or additional Master’s degree in areas other than their first Master’s degree, providing the degree designation is different.

Time Limitation

Obsolete Program — If the requirements for the Master’s degree are not completed within six years from the time of admission to work toward the degree, a reconsideration of the student’s program will be required and the rules of the Graduate School in effect at the beginning of the seventh year will apply.

Obsolete Coursework — Courses completed more than six 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 department with approval of the Graduate School. Validation of obsolete coursework cannot exceed 50 percent of the total coursework listed on the plan of study and must be certified by the department on a form prescribed by the Graduate School.

Master's Degrees and Options

Graduate Programs	Degree	Options		
Animal Science ¹	MS	A		
Biological Sciences	MS	A	B ²	
Chemistry	MS	A		
Communication Studies and Journalism	MS	A		
Counseling and Human Resource Development	MS	A	B	C
Curriculum and Instruction	MEd		B	C
Economics	MS	A	B	
Educational Administration	MEd		B	C
Engineering	MS	A	B	C ³
English	MA	A		C
Family and Consumer Sciences	MS	A	B	C
Geography	MS	A	B	
Health, Physical Education and Recreation	MS	A	B	
Industrial Management	MS	A	B	C
Mathematics	MS	A	B	C
Nursing	MS	A	B	C
Plant Science	MS	A	B	
Rural Sociology	MS	A	B	C
Statistics	MS	A	B	C
Wildlife and Fisheries Sciences	MS	A		

¹ Department requires a minor/supporting area.

² Biology Specialization only

³ Dependent on Emphases

Minimum Credit Hour Requirements for Master's Degrees, per Option

	Options		
	A	B	C
Minimum total	30	32	35
Minimum major including thesis or research problem (if minor or supporting area required)*	19	19	19
Thesis	5-10	0	0
Research Problem	0	2-3	0
Minimum minor or supporting courses (from two or more disciplines, if minor or supporting area required)**	8	8	8

*Consult major department for requirements.

**Courses in the major department may be used as supporting courses, providing they are considered sufficiently diverse by the major department.

NOTE:

Some degree programs require additional credits; see program listings.

Options:

- A Thesis
- B Research Paper/Design Paper
- C Coursework

Master's Degree Checklist

<i>Requirements</i>	<i>When Due</i>
1. Application for Admission to Graduate School	One month before initial registration
2. Designation of Major Advisor	Prior to registration for first semester, or as soon as practical after beginning program
3. Designation of Advisory Committee	During first semester or as soon as practical after beginning program
4. Approval of Plan of Study by Major Advisor submitted to Graduate School	During first semester or upon completion of 50 percent of credits toward graduation
5. Comprehensive Written Examination (if required by the program)	During the last semester of course work, at least two weeks before final oral examination
6. Filing of Graduation Application*	By Graduate School deadline in the semester,
7. Thesis/Research-Design Paper submitted to Advisory Committee	During last semester of course work, at least two weeks before final oral examination
8. Thesis submitted to Graduate School	During last semester of course work, at least two weeks before final oral examination
9. Request for Scheduling Oral Examination	At least ten working days before final oral examination
10. Final Oral Examination	At least ten working days before commencement date
11. Corrected copies of Thesis submitted to Graduate School, both paper copy and electronic copy, and Library	At least ten working days before commencement date
12. Research Paper filed in major department	By the end of final's week
13. Research or Design Paper grade submitted (S, U)	By deadline for final grades at the end of the semester

* Graduate School forms are available at the Graduate School (SAD 130) or online. Go to <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>.

Doctor of Philosophy Degree Requirements

Admission Requirements

The application file must be complete with the application form, application fee, transcripts, letters of recommendation, and other materials as required by specific graduate programs before processing of the application will begin. Applicants for the Doctor of Philosophy degree, 60-credit plan, will 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. Applications for domestic, international or non-degree seeking students are found at <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>.

Advisory Committee

After consultation with the student and advisor, the head of the major department will designate a major advisor. As soon as possible, but no later than the completion of 50 percent of the credits toward graduation, the major advisor will recommend to the Dean/Associate Dean of the Graduate School members of an Advisory Committee as follows:

- A. The major advisor who acts as chairperson of the committee.
- B. The head or representative of the major department or of a department in the area of the major.
- C. An additional member of the major department or a related department, or a professional with an outstanding academic record and/or knowledge in the field from outside the University.
- D. The minor advisor or a representative from an area where the supporting courses will be taken if a minor or supporting area is required. If a minor or supporting area is not required, an additional member should be recommended from the major department or a related area.
- E. The Graduate School Dean will select a fifth member from a department representing an area not closely related to the major or minor department or supporting area. This member represents the Graduate Faculty, ensuring that its rules and regulations are followed by the Committee and acting as the student's advocate, if necessary.

The above five members shall be members of the Graduate Faculty except when an outside representative is used in "C" above. Additional members of the committee may be requested by the student or the major advisor and assigned to the committee by the Dean of the Graduate School.

The Advisory Committee is responsible for assisting the student in a timely fashion to develop a suitable graduate program, provide guidance and counsel, evaluate student progress, and certify the completion of the degree requirements to the Dean of the Graduate School. The Advisory Committee approves the plan of study and any revision(s) of it, approves the dissertation proposal, reviews the dissertation, evaluates the student's progress, conducts the comprehensive examinations and the final examination, supervises the validation of courses, and ensures that professional standards have been met in completing the degree requirements. The "Guidelines for Preparation of Doctorate Plan of Study" and the "Graduate School Plan of Study Doctor of Philosophy Degree" are both available at <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>.

Plan of Study Information

After the Advisory Committee is formed, the major advisor will schedule a meeting with the student to develop a plan of study and to consider a research area for the dissertation. The plan of study must be prepared using the form provided by the Graduate School and

Degrees Offered

PROGRAM

- Specialization
- * Emphasis

Doctor of Pharmacy

Doctor of Philosophy

AGRONOMY

ANIMAL SCIENCE

BIOLOGICAL SCIENCES

- *Agricultural and Biosystems Engineering*
- *Animal and Range Sciences*
- *Biology*
- *Dairy Science*
- *Human Nutrition and Food Science*
- *Microbiology*
- *Molecular Biology*
- *Plant Molecular Biology*
- *Plant Science*
- *Veterinary Microbiology*
- *Veterinary Pathobiology*

Offered in cooperation with the University of South Dakota (USD)

CHEMISTRY

COMPUTATIONAL SCIENCE & STATISTICS

ELECTRICAL ENGINEERING

GEOSPATIAL SCIENCE & ENGINEERING

- *Remote Sensing Engineering*
- *Remote Sensing Geography*

NURSING

PHARMACEUTICAL SCIENCES

SOCIOLOGY

- *Cultural Ecology*
- *Demography*
- *Family Studies*
- *Race, Class, Gender Intersections*
- *Social Deviance*
- *Social Organization*

WILDLIFE AND FISHERIES SCIENCES

approved by the Advisory Committee and the Dean/Associate 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. The 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 form provided by the Graduate School, and must be approved by the Advisory Committee and the Dean/Associate Dean of the Graduate School. While devising the plan of study, refer to the "Academic Information" section in this catalog in addition to the following information.

Plan of Study Credit Requirements

Total Credits Required — A minimum of three academic years of full-time work beyond the Bachelor's degree (minimum of 90 semester credits, 90-credit plan) or a minimum of two academic years of full time work beyond the Master's degree (minimum of 60 semester credits, 60-credit plan) 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 major, minor 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 than the minimum listed above if it believes the extra requirements are in the best interest of the student.

Major Courses — At least 60 credits of the 90-credit plan or 40 credits of the 60-credit plan required for the degree must be earned in the major. Dissertation and transfer credits may apply. Not all courses need to be in a single department or area, but all courses applying to the major should be closely related to the major area.

Minor or Supporting Courses, if required — At least 15 credits of the 90-credit plan or 10 credits of the 60-credit plan required for the degree must be earned in a minor or in supporting courses (coursework chosen from two or more fields). Transfer credits may apply. All courses applying in the minor or supporting fields must be taken outside the major department or area, unless courses in the major department are considered sufficiently diverse by the Advisory Committee. If the degree program does not require a minor or supporting area, additional coursework from the major or related areas must be substituted for the 15 credits (90-credit plan) or 10 credits (60-credit plan).

Graduate Credit Requirement — At least 50 percent of the credits on a plan of study must be in courses open only to graduate students (600-series or above).

Additional Requirements — The Advisory Committee may require more credits than the minimum indicated above if it feels it is in the best interest of the student.

Dissertation

Proposal — The student in consultation with the major advisor or dissertation advisor shall prepare a written dissertation proposal for approval by the Advisory Committee.

Requirements — The dissertation should represent at least one academic year of full-time research (18-30 credits). Most programs require 30 dissertation credits or more. Of no specific length, the dissertation should advance or modify knowledge in the major discipline and demonstrate the candidate's mastery of the subject. The dissertation should meet discipline standards as required by the Major Department and be in the format required by the Graduate School as specified in "Instructions for Dissertation." When submitted, it must include an abstract of no more than 350 words.

The dissertation should be an integrated document reporting philosophic inquiry. The students are encouraged to develop one or more journal articles from their dissertation. Some departments may require that the journal articles be a part of the dissertation; however, the dissertation should be a single document rather than a compilation of individual manuscripts. For more information, go to <http://www3.sdstate.edu/Academics/GraduateSchool/ThesisDissertationSubmittal/>.

Use of Human Subjects or Vertebrate Animals in Research — After receiving approval to proceed with a dissertation, students must also seek approval for the use of human subjects or vertebrate animals in research, if applicable, from the appropriate committee. These approvals must be secured before beginning the study. For more information, visit the Research Compliance Web site at <http://www3.sdstate.edu/UniversityResearch/ResearchCompliance/> or contact the SDSU Research Compliance Coordinator in the Office of Research & Sponsored Programs, SAD 124, 605/688-6975.

Binding — When the final approved copy of the dissertation is completed, four copies must be submitted to the Library for binding. The cost for binding these copies is the responsibility of the student. Two copies, one on at least 50 percent rag content paper (cotton bond), and an additional abstract, printed on at least 50 percent rag content paper (cotton bond) must be returned to the Graduate School with a receipt from the Library showing the binding costs paid at least five working days prior to Commencement.

Electronic Dissertation Submission — All doctoral candidates are required to submit their dissertations in the appropriate format for electronic publication. Students should contact the Graduate School for appropriate guidelines or go to <http://www3.sdstate.edu/Academics/GraduateSchool/ThesisDissertationSubmittal/>.

Continuing Dissertation Enrollment

Failure to maintain registration or enrollment will move the student to inactive status. Reinstatement requires re-application to the Graduate School and approval by the Advisory Committee.

Examinations

Interim Evaluation — Upon completion of approximately 50 percent of the coursework on the plan of study, the Advisory Committee will meet to evaluate the progress of the student, provide advice and counsel, and recommend continuance or termination of the program. Because the Doctor of Philosophy is a terminal academic degree, student performance includes an evaluation of progress in the program and academic performance. The Advisory Committee may recommend in writing to the student and Dean of the Graduate School termination of the student in the program.

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

The student must arrange with his/her committee the time and location for the comprehensive written and oral examinations. The student must submit the "Comprehensive Written Exam" form to the Graduate School at least ten working days prior to the examination date. The submission of this form initiates the necessary paperwork to be provided by the Graduate School to the student and committee members. Copies of the written examinations must be kept on file in the major department for a period of five years. Upon successful completion of the comprehensive written examination, the student shall arrange with his/her advisor and committee members to take the comprehensive oral examination and shall submit the "Comprehensive Oral Exam" form to the Graduate School at least ten working days prior to the exam which 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 two months before the Final Oral Examination. Upon satisfactory completion of the comprehensive examinations, the student will be formally admitted to candidacy for the PhD degree. If the student does not receive the PhD degree within three years after becoming a candidate, comprehensive examinations must be repeated. For comprehensive examinations forms, go to <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>.

Final Examination — The final examination is conducted by the Advisory Committee after notifying the Graduate School through submission of the “Doctor of Philosophy – Final Oral Exam” form ten working days prior to the examination. 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 final oral examination cannot be taken earlier than two months following successful completion of the comprehensive examinations and must be completed ten working days prior to Commencement.

In both examinations, the Graduate Faculty Representative and all but one of the graduate committee must pass the student.

Time Limitation

Obsolete Program — If the Doctor of Philosophy degree is not completed within eight years from the time of admission to work toward the degree, a reconsideration of the student’s program will be required. In such cases, the rules of the Graduate School in effect at the beginning of the ninth year will become effective for the student.

Obsolete Coursework — Courses completed more than eight years before completion of the doctorate are regarded as obsolete coursework. Such 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. Validated obsolete coursework cannot exceed 50 percent of the coursework (excluding dissertation credits) listed on the plan of study and must be certified by the Advisory Committee on a form provided by the Graduate School.

Doctor of Philosophy Degree Checklist

<i>Requirements</i>	<i>When Due</i>
1. Application for Admission to Graduate School approved	One month before initial registration
2. Designation of Major Advisor	Prior to registration for first semester.
3. Designation of Advisory Committee*	Within first semester of graduate work or prior to 12 semester hours of graduate work
4. Approval of plan of study* by Advisory Committee; submit to Graduate School	Within the first semester of graduate work or prior to completion of 50 percent of credits toward graduation
5. Approval of Dissertation Proposal by Advisory Committee	Before beginning research
6. Interim Evaluation by the Advisory Committee	Not later than halfway through the coursework on the plan of study
7. Forms for Comprehensive Examinations* submitted to Graduate School, Candidacy for PhD Degree	Near completion of coursework and at least two months prior to final oral examination
8. Filing of Graduation Application	By Graduate School deadline in the semester, student anticipates completing all work and taking oral examination
9. Form submitted from student to Graduate School requesting Final Oral Examination	At least ten working days prior to final oral examinations
10. Dissertation due to Graduate School and Advisory Committee	At least ten working days prior to final oral examinations
11. Final Oral Examination	Both paper and electronic versions due at least ten working days prior to commencement
12. Corrected Copies of Dissertation due to Graduate School	At least five days prior to commencement
13. Arrangements for microfilming and binding of Dissertation	At least five days prior to commencement

* Graduate School forms are available at the Graduate School (SAD 130) or online. Go to <http://www3.sdstate.edu/Academics/GraduateSchool/FormsandDocuments/>

Financial Information and Student Services

Activity Fee —

A fee charged per semester to cover health, Student Union and other University services, such as: admission to plays, athletic events, athletic facilities, and partially funded judging, music and forensic programs.

University Support Fee—

A fee assessed per credit to replace expendable supplies, to defray the cost of equipment (maintenance, repair and replacement), and to allow for testing and other instruction-related costs. This fee also assists in providing services that benefit students which are not funded from other sources.

Late Charge —

A fee 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.

Tuition and Fees*

Tuition, per credit hour	Cost
Graduate Resident	\$133.70
Graduate Non-Resident	394.25
Graduate Assistant, graduate course	44.55

Fees, per credit hour	Cost
University Support Fee, Activity Fee.....	\$ 105.40

* Rates are based on the 2008-2009 school year. Tuition and fees are subject to change each semester. For any question regarding fees and/or tuition, go to <http://www3.sdstate.edu/Academics/GraduateSchool/FinancialInfo/tuitiontable/> or refer to the Course Schedule book for each semester's fee schedule. Other tuition & fees may apply for off-campus delivery.

Payment Process

By the third day of classes, each student must make a full payment of charges based on the number of credits registered, residency status, and campus housing. Late fees will be assessed starting on the fourth day of classes. Students are encouraged to mail payment before registration day.

Payment of tuition and fees can be made directly to the University by cash, check or electronic bank transfer.

Payment of tuition and fees using a debit or credit card can only be made through SDePay, electronic billing and payment system. American Express, MasterCard and Discover cards are accepted by SDePay. Visa Card is not accepted. A 2.75 percent service fee is assessed by and payable to infiNET, host provider of SDePay. For more information or to make a payment, go to <http://www3.sdstate.edu/Administration/FinanceandBusiness/Cashiers/>.

Electronic Billing and Electronic Payment of Tuition and Fees

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 a secured Web site via the Internet. Payment of the student account can also be made electronically (ePayment) through the secure Web site. Students can authorize parents, spouse and other individuals to view the eBill and make ePayment on their student account. For additional information on eBilling and ePayment, go to

<http://www3.sdstate.edu/Administration/FinanceandBusiness/Cashiers/>.

E-mail messages sent by SDSU to students through University-assigned, jacks e-mail addresses will constitute an official means of communication. It is the student's responsibility and obligation to access official University e-mail messages in a timely manner. As other email accounts may be blocked by the SDSU firewall, SDSU is only able to monitor student e-mails coming from University-assigned e-mail accounts.

Campus Card Debit System - Hobo Dough

The student identification card is used as a debit card to access prepaid accounts. In addition to its extensive use in the food service system, the ID card accesses prepaid accounts, called HOB0 DOUGH, for bookstore, campus vending, laundry, photocopying and printing, and selected off-campus businesses. Upon graduation or leaving the University, these funds will be returned in full upon request. No service charges are assessed for active accounts. However, accounts inactive for six months or more are

assessed a monthly service charge. If the service charge exceeds the account balance, the account is automatically closed.

Fees for Auditing Courses

Regular tuition and fees, per credit, will be charged for auditing a course. Registration as an auditor is by add slip after registration day. 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 and Dissertation Fees

Students are responsible for paying all binding and electronic submission fees associated with their thesis or dissertation. Contact the Graduate School for acceptable payment forms and deadlines.

Fellowships and Assistantships

Application — Fellowships and assistantships for administration, research, and teaching are available to qualified graduate students admitted to degree programs. Recommendations for granting these are handled by the departments. Students interested in obtaining such financial assistance should write directly to the department in which they expect to do their major work. A minimum undergraduate grade point average of 2.75 or completion of at least 10 graduate credits with a cumulative grade point average of 3.0 is required for appointment as a graduate assistant.

Obligation — The Graduate School of South Dakota State University, as a member of the Council of Graduate Schools, subscribes and adheres to the following resolution regarding scholars, fellows, trainees, and graduate assistants. In every case in which a graduate scholarship, fellowship, traineeship, or graduate assistantship for the next academic year is offered to an actual prospective graduate student, the student, having indicated acceptance before April 15, will have complete freedom through April 15 to submit in writing a resignation of the appointment in order to accept another scholarship, fellowship, traineeship, or graduate assistantship. However, an acceptance given or left in force after April 15 commits the student not to accept another appointment without first obtaining formal release for the purpose. Students working on degree programs, including those on assistantships, are considered to have assumed an obligation to complete their Graduate Program before transferring to any other post-baccalaureate or professional degree program.

Financial Aid

Student financial assistance programs are administered through the student Financial Aid Office in SAD 106. They may be contacted at 605/688-4695 or go to <http://www3.sdstate.edu/Admissions/FinancialAid/> for more information. Graduate assistantships, fellowships, and traineeships are administered by the department or program involved.

Student Services

Detailed information on Student Life and Services is found in the General Catalog (Undergraduate Catalog) and online at <http://www3.sdstate.edu/StudentLife>.

Academic Evaluation and Assessment Office— Students needing testing information (GRE, TOEFL, etc.) should contact this office located in the Foundation Building, (920 9th Street, north entrance), telephone 605/688-4217.

Bookstore — The University Bookstore is located in the University Student Union and sells textbooks and other supplies.

Disability Services — Assistance is available for students with disabilities. Information is available by calling 605/688-4504, TTD 688-4394.

Health and Counseling Services — Student Health and Counseling Services provide outpatient services and is located on the second floor of West Hall. Call 605/688-4157 for more information or to schedule an appointment.

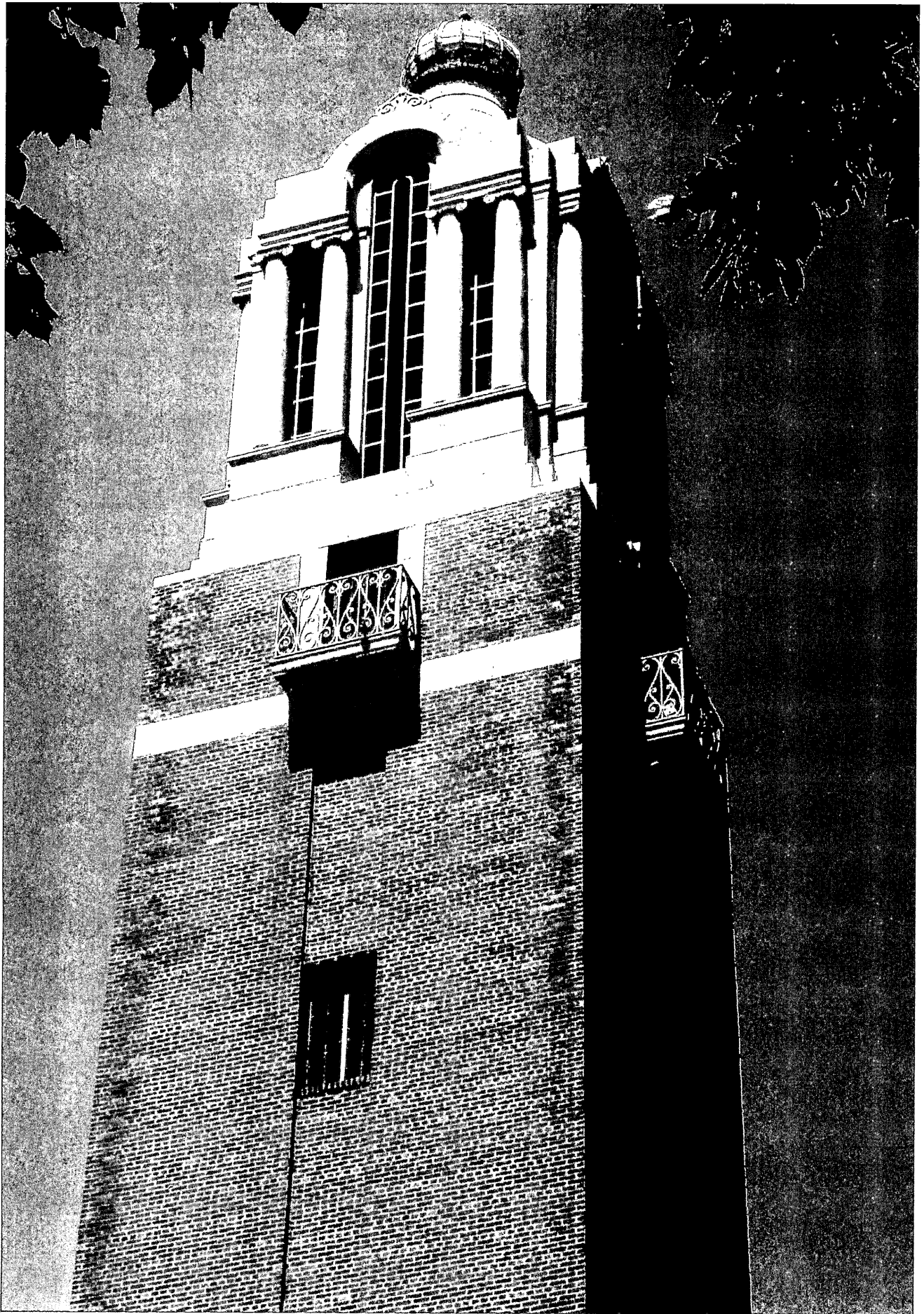
Housing and Food Service — Prospective graduate students should inquire about rooms or apartments from the Director of Residential Life, well in advance of registration. The Residential Life Office is located in Caldwell Hall 167, telephone 605/688-5148. Information concerning off-campus housing is available from the Off-Campus Housing Assistance Office, University Student Union 062, telephone 605/688-5916.

International Student Affairs — International students should consult with the International Student Affairs Office concerning special requirements and additional expenses, University Student Union 065, telephone 605/688-4122.

Library, Hilton M. Briggs — In addition to its vast and varied collections, library services include computer workstations, study/conference rooms for student use, individual study rooms for faculty and graduate students, a resource room for the visually impaired, and computer laboratories. A founding member of the South Dakota Library Network, Briggs Library can search approximately 4.3 million titles for interlibrary loan from other member institutions. In addition, interlibrary loan services are available from thousands of other libraries worldwide.

Native American Student Advising — The Native American Student Advisor is available to aid Native American students and is located in the University Student Union 065, telephone 605/688-6653.





DEPARTMENTS OF INSTRUCTION

Agricultural and Biosystems Engineering

Degrees Offered:

PhD Biological Sciences

- *Agricultural and Biosystems Engineering specialization*

MS Engineering

- * *Agricultural and Biosystems Engineering emphasis*

MS Biological Sciences

- *Food and Biomaterial Processing specialization*

Graduate Faculty

Michael F. Adelaine,
Professor,
PhD, University of Nebraska-
Lincoln, 1989
Adult Education, Community
Development

Gary A. Anderson,
Professor,
PhD, Iowa State University of
Science and Technology, 1987
Environment, Structures

Mylo A. Hellickson,
Professor,
PhD, West Virginia University,
1969
Energy Systems, Structures

Daniel S. Humburg,
Professor,
PhD, University of Illinois, 1991
Machine Design, Machine Vision

James L. Julson,
Professor,
PhD, University of Nebraska -
Lincoln, 1998
Biological Materials, Value
Added

Van C. Kelley,
Associate Professor,
PhD, University of Illinois-
Urbana, 1999
Structural Analysis, Light Frame
Structures

Kasiviswanathan
Muthukumarappan,
Professor,
PhD, University of Wisconsin,
1993
Food and Biomaterials
Processing

Department Head: Associate Professor Van C. Kelley

Graduate Coordinator: Professor Kasiviswanathan Muthukumarappan

For additional information contact:

Mailing address: SDSU Box 2120

Agricultural Engineering — SAE

WWW: <http://abe.sdstate.edu>

E-mail: muthukum@sdstate.edu

Phone: 605/688-5141

Fax: 605/688-6764

Program Description

Graduate work in the Department of Agricultural and Biosystems Engineering leads to Master of Science and Doctor of Philosophy degrees. Depending on the educational background of the individual, a MS in Engineering with specialization in Agricultural and Biosystems Engineering or MS in Biological Sciences with specialization in Food and Biomaterial Processing may be earned. The PhD in Biological Sciences with a specialization in Agricultural and Biosystems Engineering shares a common core with several other departments. The core is defined in this Catalog on pages 43-44. 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, 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 machine vision, food and biomaterial processing, physical properties of biological materials, natural resource engineering, structures, indoor environment, waste management and machine design.

Financial assistance in the form of research assistantships and project assistantships is available on a highly competitive basis.

Available Options for Graduate Degrees

—Master of Science:	Option A
	Option B
Doctor of Philosophy:	60-Credit Plan
	90-Credit Plan

Core Requirements

For details, see specific programs: PhD in Biological Sciences; MS in Biological Sciences; or MS in Engineering.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based

General requirements begin on page 16 (Master's) and page 21 (PhD).

Agricultural and Biosystems Engineering (ABE) Course Offerings

ABE 503 Energy and Environment	3
Discussion of conventional energy sources, their historic and projected use patterns, predicted resources and energy conservation. Evaluation of alternate energy sources such as solar, wind, biomass, tidal, geothermal, ocean thermal, oil shale and nuclear. Energy and the environment and energy and the agricultural industry.	
ABE 512 Advanced Agricultural Tractors and Machines	2
Units of instruction will be selected from the following areas: tractor chassis mechanics and dynamics, transmissions, hydraulics, human factors considerations for agricultural machine operators, soil dynamics in tillage and machine-plant concepts. P, MATH 321 or equivalent.	
ABE 522 Bio-Environmental Engineering	2
Analysis of farm animals and their environment employing engineering principles combined with biological principles. Homeothermic mechanisms of animals and the influence of thermal environment upon growth and production. P, ABE 324 or consent of instructor.	
ABE 533 Advanced Irrigation Engineering	3
Basic soil-water-crop relationships. Theory and design of pumping plants, surface, sprinkler, and drip irrigation systems. P, ABE 434 or consent of instructor.	
ABE 533L Advanced Irrigation Engineering Laboratory	0
ABE 544 Unit Operations of Biological Materials Processing	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, reverse osmosis), mechanical separation processes, extrusion. Corequisite course: ABE 544L. P, senior standing or consent or consent of instructor.	
ABE 544L Unit Operations of Biological Materials Processing Laboratory	0
ABE 732 Advanced Hydrology in Agriculture	2
Small watershed hydrology principles. Unit hydrograph theory. Infiltration and evapotranspiration processes. Small watershed surface runoff simulation. Soil erosion principles. P, consent of instructor.	
ABE 733 Ground Water Engineering in Agriculture	3
Saturated and unsaturated ground water flow theory. Steady and transient well hydraulics. Aquifer groundwater flow simulation. Infiltration models. Vadose zone simulation. Groundwater recharge. P, consent of instructor.	
ABE 752 Theoretical Micro-Climatology	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. P, Calculus, Physics, ABE 353 or consent of instructor.	
ABE 754 Advanced Unit Operations of Food/Biomaterials Processing	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. P, senior standing or consent of instructor.	
ABE 754L Advanced Unit Operations of Food/Biomaterials Processing Laboratory	0

*Richard E. Nicolai,
Associate Professor,
PhD, University of Minnesota,
2002
Farm Machinery & Safety*

*Kurt A. Rosentrater,
Adjunct Assistant Professor,
PhD, Iowa State University, 2001
Food Processing Engineering*

*Boris Shmagin,
Research Associate Professor,
PhD, Moscow State University,
Russia, 1979
Geology and Hydrogeology*

*Dennis P. Today,
Assistant Professor,
PhD, Iowa State University, 1988
State Climatologist*

*Todd P. Trooien,
Professor,
PhD, Colorado State University,
1988
Soil and Water Engineering*

ABE 763 Instrumentation	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. Corequisite course: ABE 763L. P, PHYS 213, MATH 225.	
ABE 763L Instrumentation Laboratory	0
ABE 771 Graduate Seminar	1
Discussion and reports of current topics and investigations in Agricultural and Biosystems Engineering. (Limit of 2 credits)	
ABE 772 Similitude	2
A systematic approach to the principles and theory of dimensional analysis, problems of model design and test. The use of true, distorted and dissimilar models as they pertain to engineering design and research. Corequisite course: ABE 772L	
ABE 772L Similitude Laboratory	0
ABE 773 Programming Agricultural Systems	3
The use of programs and computers in advanced engineering for the solution of problems occurring in Agricultural and Biosystems Engineering studies. Gathering, processing, evaluating mass engineering and scientific data. Corequisite course: ABE 773L. P, BASIC or FORTRAN.	
ABE 773L Programming Agricultural Systems Laboratory	0
ABE 787 Research	(1-9)
ABE 788 Research Report/Design Paper	(1-2)
ABE 791 Independent Study	(1-3)
ABE 792 Topics	(1-3)
ABE 792L Special Topics Laboratory	0
ABE 798 Thesis	(1-7)
ABE 898D Dissertation - PhD	(1-12)

Agricultural Systems Technology (AST) Course Offerings

AST 512 Hydraulic and Pneumatic Systems and Controls	0
Principles of fluid power, hydraulic and pneumatic components and system function. Component selection and off-the-shelf system design. Manual, microprocessor and electronic control of systems. MNET 350 Fluid Power Technology. Corequisite course: AST 512L.	
AST 512L Hydraulic and Pneumatic Systems and Controls Laboratory	0
AST 522 Environmental Control in Structures	2
Study of heat and moisture balance, gases, dust, and odors. Selection and design of fans, ducts, diffusers and efficient ventilation patterns. Corequisite course: AST 522L.	
AST 522L Environmental Control in Structures Laboratory	0
AST 562 Advanced Topics in Natural Resource Technology	2
Examination of topics related to the natural resources management technologies. Potential topics include irrigation systems and water management, livestock waste facilities, soil erosion control, drainage systems and economics, wetlands, water supply and quality, watershed hydrology, water measurement and data acquisition equipment (May be repeated when topic is different.)	
AST 582 Advanced Farm Engines	2
Operation, selection, care, adjustment, and new development of internal combustion engines as applied to farm power units. Corequisite course: AST 582L.	
AST 582L Advanced Farm Engines Laboratory	0
AST 791 Independent Study 1	3
AST 792 Topics	(1-4)

Agriculture and Biological Sciences

Coursework Only

Agriculture and Biological Sciences (ABS) Course Offerings

ABS 582 International Experience(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.

ABS 592 Topics.....(1-4)

ABS 701 Animal Systems.....(1-10)

Advanced study in animal systems. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: ruminant nutrition, advanced physiology of reproduction, vitamins and minerals, protein and energy nutrition, monogastric nutrition, animal growth and development, meat science, cellular signal transduction, biology of aging, physiology of lactation, laboratory techniques in dairy science, systemic physiology, molecular aspects of immunology, behavioral management of insects, biological control of arthropods, nematology, immature insects, insect taxonomy, insect anatomy and physiology, and other topics as needed. P, consent of module instructor.

ABS 702 Genetics(1-10)

Advanced study in genetics. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. P, consent of module instructor. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: molecular evolution, genetics of development, cytogenetics, population genetics, animal breeding, plant breeding, advanced genetics, quantitative genetics, and other topics as needed. P, consent of module instructor.

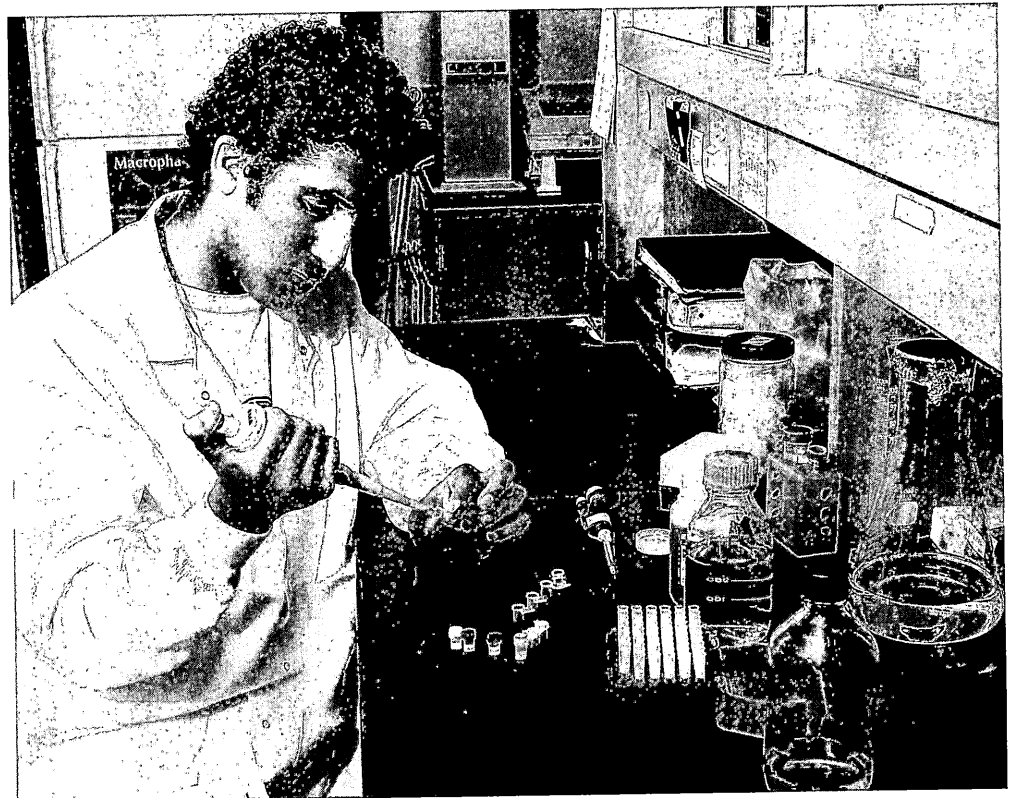
ABS 703 Microbial Systems(1-10)

Advanced study in microbial systems. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. P, consent of module instructor. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: bacterial molecular, virology, prokaryotic evolution and phylogeny, metabolism of microbes, bacterial systematics, industrial microbiology, ruminology, dairy microbiology, viral infections, bacterial infections, viral and bacterial disease of plants, mycology, and other topics as needed. P, consent of module instructor.

ABS 704 Plant Systems(1-10)

Advanced study in plant systems. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential topic could include: advanced weed science, crop-water relationships, environmental and physiological aspects of crop production, environmental stress physiology, field studies in plant disease diagnosis, host-plant pathogen interactions and genetics of plant disease resistance, metabolism during stress, physiology of plants, plant growth and development, plant molecular biology, and other topics as needed. P, consent of module instructor.

ABS 705 Research Methodology	(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. P, consent of module instructor.	
ABS 706 Natural Resources Management	(1-10)
Advanced study in natural resource management. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential modules include: advanced ecology, advanced plant ecology, advanced soil genesis, agristology, agroecology, algae, applied insect ecology, aquatic plants, chemical properties of soils, disturbance ecology, ecological monitoring, ecotoxicology, environmental biology, environmental soil chemistry, field studies in pedology, grown water protection, landscape ecology, physical properties of soils, precision farming, soil and plant analysis; soil microbiology; soil N, P, and K; soil/plant secondary macro/micronutrients; water quality in agriculture; and other topics as needed. Corequisite course: ABS 706L. P, consent of module instructor.	
ABS 706L Natural Resources Management Lab	0
ABS 792 Topics	(1-6)



Animal and Range Sciences

Degrees Offered:

PhD Animal Science

PhD Biological Sciences

- *Animal and Range Sciences specialization*

MS Animal Science

- *Genetics and Reproduction specialization*
- *Meats, Muscle Biology and Growth specialization*
- *Nutrition specialization*
- *Production and Processing Systems specialization*
- *Range Science specialization*
- *Veterinary Science specialization*

Interim Department Head: Professor Douglas C. McFarland

Graduate Coordinator: Professor Douglas C. McFarland

For additional information contact:

Mailing address: SDSU Box 2170

Animal Science Complex – SAS 101

WWW: <http://ars.sdstate.edu>

E-mail: Douglas.McFarland@sdstate.edu

Phone: 605/688-5166

Fax: 605/688-6170

Program Description

This is a collaborative program among the Departments of Animal and Range Sciences, Dairy Science, Veterinary Science, and Agricultural and Biosystems Engineering. Successful completion of requirements leads to a Master of Science in Animal Sciences with specialization in Nutrition; Genetics and Reproduction; Meats, Muscle Biology and Growth; Range Science; Production and Processing Systems; or Veterinary Science.

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.

Available Options for Graduate Degrees

Master of Science: Option A

Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

Graduate Faculty

Kelly W. Bruns,
Associate Professor,
PhD, South Dakota State
University, 2001
Ruminant Nutrition

Jeffrey A. Clapper,
Associate Professor,
PhD, Purdue University, 1992
Reproductive Physiology

Roger Gates,
Associate Professor,
PhD, University of Nebraska-
Lincoln, 1985
Agronomy and Range
Management

Patricia S. Johnson,
Professor,
PhD, Utah State University, 1987
Range Science

Donald Marshall,
Professor,
PhD, Oklahoma State University,
1984
Animal Science

Douglas C. McFarland,
Distinguished Professor;
PhD, Washington State
University, 1984
Muscle Biology

George Perry,
Assistant Professor,
PhD, University of Missouri, 2003
Reproductive Physiology

Robbi H. Pritchard,
Distinguished Professor,
PhD, Washington State
University, 1983
Ruminant Nutrition

Richard J. Pruitt,
Professor, PhD, Kansas State
University, 1983
Cow-Calf Management

Alexander J. "Sandy" Smart,
Associate Professor,
PhD, University of Nebraska,
2001
Range Science

Robert C. Thaler,
Professor,
PhD, Kansas State University,
1988
Swine Nutrition

Aimee Wertz-Lutz,
Assistant Professor,
PhD, University of Illinois, 2001
Animal Science

Cody Wright,
Associate Professor,
PhD, North Carolina State
University, 2000
Ruminant Nutrition

Duane M. Wulf,
Professor,
PhD, Colorado State University,
1996
Meat Science

Adjunct/Courtesy/Joint Faculty

Darwin G. Britzman,
Adjunct Professor,
PhD, South Dakota State
University, 1964,
Poultry Science

Gary E. Larson,
Adjunct Professor,
PhD, North Dakota State
University, 1980,
Botany

Bruce K. Wylie,
Assistant Professor,
PhD, New Mexico State
University, 1991,
Range Science

Core Requirements for Master of Science

1. Students are required to take AS 798, Thesis for 5-7 credits and AS 790, Seminar for 1-2 credits. This is a common experience seminar for all enrolled students.
2. At least three courses (8-9 credits) from the following courses are also required. Additional courses from this list may be taken toward the discipline course requirement. The courses will be determined by the student and their Advisory Committee and identified on the student's plan of study no later than the end of the first year of study.

ABE 544	Unit Operations of Biological Materials Processing	4 credits
ABS 705	Research Methodology	3 credits
ABS 706	Natural Resources Management	3 credits
AS 640	Metabolism	3 credits
AS 731	Experimental Procedures	2 credits
AS 750	Animal Growth and Development.....	3 credits
BOT 727	Advanced Plant Physiology	4 credits
CHEM 662	Principles of Biochemistry	3 credits
DS/AS 711	Ruminology.....	3 credits
DS 731	Laboratory Techniques in Dairy Science	2 credits
STAT 541	Statistical Methods II.....	5 credits

3. A total of 30 credits which include 12-14 credits of discipline specific courses are required. The student, major advisor and Advisory Committee will select the discipline specific courses. The discipline courses prepare students in a specific emphasis area. In addition, a declared minor or a minimum of 8 credits in supporting courses is required. The courses will be identified on the student's Plan of study no later than the end of the first year of study.

Core Requirements for Doctor of Philosophy

Students are required to take a 2-credit Graduate Seminar and must present a seminar on their dissertation.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based
Letter of interest and intent
Minor or supporting courses (8 credits minimum)

General requirements begin on page 16 (Master's) and page 21 (PhD).

Animal Science (AS) Course Offerings

AS 541	Advanced Meat Science.....	3
	In- depth study of muscle anatomy and physiology, postmortem metabolism, rigor mortis, meat proteins, meat quality, and meat tenderness.	
AS 591	Independent Study	(1-3)
AS 592	Topics	(1-6)
AS 640	Metabolism.....	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.	
AS 711	Ruminology.....	3
	Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. P, CHEM 361 and VET 223 or consent of instructor.	

AS 712 Ruminant Nutrition	3
Principles of nutrition for ruminants in relation to growth, reproduction and lactation. P, AS 233, AS 323, CHEM 361, VET 223 or ZOOL 325.	
AS 723 Population Genetics	3
Genetic structure of populations and forces affecting this structure. Theories of biological variation, race and species formation. P, BIOL 371 or equivalent. STAT 541 or equivalent highly recommended.	
AS 730 Endocrinology.....	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.	
AS 731 Experimental Procedures	2
Research methods and planning of experimental work, necessary records, interpretation of results and presentation of material. Introduction to research application of linear programming. P, STAT 541 or equivalent.	
AS 732 Advanced Physiology of Reproduction	3
Anatomical and physiological process of reproduction in domestic animals with special emphasis on research techniques and the findings of recent research. P, AS 433.	
AS 733 Vitamins and Minerals	3
Relationships between nutrients in metabolism. Comparing metabolic significance of required nutrients for different animal species and as applied to human nutrition. P, AS 233, AS 323, CHEM 361, VET 223 or ZOOL 325.	
AS 734 Protein and Energy Nutrition.....	3
Principles of protein and energy metabolism and the partitioning of these nutrients for maintenance, growth and production in domestic farm animals. P, AS 233, AS 323, CHEM 361, VET 223 or ZOOL 325.	
AS 736 Monogastric Nutrition	3
Nutrition principles for nonruminants related to reproduction, lactation and growth. P, AS 233, AS 323, CHEM 361, VET 223 or ZOOL 325.	
AS 750 Animal Growth and Development.....	3
Growth of animals at the cellular level, including hormones, growth factors, receptors and signaling and growth at the whole animal level. It is recommended that students have completed undergraduate biochemistry (or AS 640) and physiology courses.	
AS 753 Research Topics in Meat Science	3
Current research issues in meat science. Interpreting meat science research results. Experience in scientific writing for proposals and journal articles. P, AS 241.	
AS 790 Seminar	1
AS 798 Thesis.....	(1-7)
AS 898D Dissertation - PhD.....	(1-12)

Range Science (RANG) Course Offerings

- RANG 521 Grassland Fire Ecology.....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. Crosslisted with WL 421/521. Equivalent to WL 521. Corequisite course: RANG 521L. P, consent of instructor.
- RANG 591 Independent Study(1-3)**
- RANG 592 Topics.....(1-3)**

Biological Sciences (BIOS) Course Offerings

- BIOS 662 Advanced Molecular and Cellular Biology6**
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular biology and pave a solid foundation for graduate students as they develop and conduct thesis and dissertation research. It will give students a perspective both on what is known and unknown about cellular structures, organization and their functions, cell chemistry and biosynthesis, genetic mechanisms, and cells in their social context. Undergraduate courses in genetics and cell biology are recommended.
- BIOS 663 Advanced Concepts in Infectious Disease6**
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. P, BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.
- BIOS 788 Master's Research Problems(2-3)**
- BIOS 790 Seminar1**
- BIOS 792 Topics(1-6)**
- BIOS 798 Thesis(1-7)**
- BIOS 890 Seminar1**
- BIOS 898D Dissertation.....(1-7)**

Biological Sciences

Degrees Offered:

PhD Biological Sciences

- *Agricultural and Biosystems Engineering specialization*
- *Animal and Range Sciences specialization*
- *Biology specialization*
- *Dairy Science specialization*
- *Human Nutrition and Food Science specialization*
- *Microbiology specialization*
- *Molecular Biology specialization*
- *Plant Molecular Biology specialization*
- *Plant Science specialization*
- *Veterinary Microbiology specialization*
- *Veterinary Pathobiology specialization*

MS Biological Sciences

- *Biology specialization*
- *Dairy Science specialization*
- *Food and Biomaterial Processing specialization*
- *Horticultural Science specialization*
- *Human Nutrition and Food Science specialization*
- *Microbiology specialization*
- *Pharmaceutical Sciences specialization*
- *Veterinary Microbiology specialization*
- *Veterinary Pathology specialization*

MS Graduate Coordinator: Professor Donald M. Marshall

For additional information contact:

Mailing address: SDSU Box 2207

Academic Programs Office, SAG 156

College of Agriculture and Biological Sciences

E-mail: donald.marshall@sdstate.edu

Phone: 605/688-5133

Fax: 605/688-5582

PhD Coordinator: Professor John J. Ruffolo

For additional information contact:

Mailing address: SDSU Box 2201

Administration Building — SAD 124

WWW: <http://www3.sdstate.edu/Academics/GraduateSchool/GraduateDegreesOffered>

E-mail: john.ruffolo@sdstate.edu

Phone: 605/688-6696

Fax: 605/688-6167

Program Description (Master of Science)

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 and Biosystems Engineering; Biology and Microbiology; Dairy Science; Horticulture, Forestry, Landscape and Parks; Nutrition, Food Science and Hospitality; Pharmaceutical Sciences; and Veterinary Science.

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. Each student's plan will be developed in consultation with the student's major advisor and graduate Advisory Committee. The Option A plan of study, including a common core of 5-7 credits of thesis, 2 credits of seminar and 6 additional course credits, will 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, cross-discipline training is available and encouraged. Generally, identification of a major professor with resources to support the student's thesis project is required for unconditional acceptance into the program.

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.

Program Description (Doctor of Philosophy)

This is a cooperative program leading to the Doctor of Philosophy degree in Biological Sciences. Departments that cooperate in the program are Agricultural and Biosystems Engineering, Biology and Microbiology, Dairy Science, Nutrition and Food Sciences, Plant Science, Veterinary Science, at South Dakota State University, and the Department of Biology at the University of South Dakota.

This program allows for considerable latitude in the education and training of students. The plan of study, including a range of 30-40 hours of dissertation credit, 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.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
Doctor of Philosophy: 60-Credit Plan
 90-Credit Plan

Core Requirements for Master of Science

Option A students are required to take BIOS 798 Thesis for 5-10 credits and BIOS 790 Seminar for 2 credits (two semesters of credit each). Option B students are required to take BIOS 790, Seminar for 2 credits and either BIOL788, BIOS 788, or VET 788 for a minimum of 2-3 credits.

At least 6 credits from the following courses are required; additional courses from this list may be taken toward discipline course requirement; the courses will be identified on the student's plan of study no later than the end of the first year of study:

ABE 544	Unit Operations of Biological Materials Processing.....4 credits
ABE 792	Topics Food and Bioprocessing.....(1-3) credits
ABS 703	Microbial Systems.....(1-10) credits
ABS 705	Research Methodology(1-10) credits
BOT 705	Aquatic Plants3 credits
CHEM 662	Principles of Biochemistry.....3 credits
DS 731	Laboratory Techniques in Dairy Science2 credits

HO 580	Environmental Stress Physiology	3 credits
NFS 725	Nutrition and Human Performance.....	3 credits
PHA 740	Advanced Pharmacology	3 credits
STAT 541	Statistical Methods II	3 credits
MICR/VET 524	Medical and Vet Virology	3 credits

At least 12-14 credits of discipline specific courses are required of Option A students. Option B students are required to take 18 discipline specific courses. Option A requirement is 30 total credits and Option B requirement is 32 total credits

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.

The listing of courses is available within the departments participating in graduate education in the sciences at SDSU. The departments that courses are expected to be routinely selected from include Agricultural and Biosystems Engineering; Animal and Range Sciences; Biology and Microbiology; Chemistry and Biochemistry; Dairy Science; Horticulture, Landscape and Parks; Nutrition, Food Science and Hospitality; Pharmaceutical Sciences; Plant Science; and Veterinary Science.

Core Requirements for Doctor of Philosophy

The Biological Sciences PhD program has three specific course requirements:

- BIOS 890 Seminar 1 credit
- GSR 601 Research regulations Compliance 1 credit
- STAT 541 Statistical methods II 3 credits

All other courses submitted in the doctoral candidate's plan of study are approved by the student's Advisory Committee.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements Begin on page 17 (Master's) and page 22 (PhD).

Biological Sciences (BIOS) Course Offerings
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BIOS 662 Advanced Molecular and Cellular Biology	6
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular biology and pave a solid foundation for graduate students as they develop and conduct thesis and dissertation research. It will give students a perspective both on what is known and unknown about cellular structures, organization and their functions, cell chemistry and biosynthesis, genetic mechanisms, and cells in their social context. Undergraduate courses in genetics and cell biology are recommended.	
BIOS 663 Advanced Concepts in Infectious Disease	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. P, BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.	
BIOS 788 Master's Research Problems	(2-3)
BIOS 790 Seminar	1
BIOS 792 Topics	(1-6)
BIOS 798 Thesis	(1-7)
BIOS 890 Seminar	1
BIOS 898D Dissertation	(1-7)

Biology and Microbiology

Degrees Offered:

PhD Biological Sciences

- *Biology specialization*
- *Microbiology specialization*
- *Molecular Biology specialization*

MS Biological Sciences

- *Biology specialization*
- *Microbiology specialization*

Graduate Faculty

Donald Auger,
Assistant Professor,
PhD, University of North Dakota,
1995
Plant Genetics

Bruce Bleakley,
Professor,
PhD, University of Florida, 1986
Soil Microbiology

Volker Brozel,
Associate Professor,
PhD, University of Pretoria, S.A.,
1993
Microbiology

Thomas M. Cheesbrough,
Professor,
PhD, Purdue University, 1982
Plant Molecular Biology

Mark Cochrane,
Professor, PhD, Pennsylvania
State University, 1998
Ecology

Charles D. Dieter,
Professor,
PhD, South Dakota State
University, 1993
Wildlife Ecologist

William Ray Gibbons,
Professor,
PhD, South Dakota State
University, 1987
Industrial Microbiology

Susan A. Gibson,
Associate Professor,
PhD, University of Oklahoma,
1989
Environmental Microbiology

Tagir G. Gilmanov,
Associate Professor,
PhD, Moscow State University,
1976
Ecological Modeling

Department Head: Professor Thomas Cheesbrough

Graduate Coordinator: Professor Gary Larson

For additional information contact:

Mailing address: SDSU Box 2207B

Agricultural Hall — SAG 304

WWW: <http://www3.sdstate.edu/Academics/CollegeofAgricultureAndBiologicalSciences/BiologyandMicrobiology>

E-mail: biomicro@abs.sdstate.edu

Phone: 605/688-6141

Fax: 605/688-6677

Program Description

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. Alumni rate the learning environment, scholarly excellence and quality of teaching as areas of strength in the department's Graduate Program.

Available Options for Graduate Degrees

<i>Master of Science:</i>	Option A
	Option B
<i>Doctor of Philosophy:</i>	60-Credit Plan
	90-Credit Plan

Core Requirements

For details see specific programs: MS in Biological Sciences; or PhD in Biological Sciences.

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL: Score of 600 paper-based, 250 computer-based, 100 Internet-based

Retention in the program is dependent on formation of a committee and completion of the review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review annually.

General requirements begin on page 16 (Master's) and page 21 (PhD).

Biology (BIOL) Course Offerings

BIOL 515 Mycology	(2-3)
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs.	
BIOL 515L Mycology Laboratory	(0-1)
Laboratory experience that accompanies BIOL 515.	
BIOL 539 Biology of Aging	3
Physical, sensory, and physiological changes with age, aging of cells and tissues. Cellular, developmental, endocrine and other theories of aging. Pathologies of aging. P, physiology course, ZOO 325.	
BIOL 553 Advanced Genetics	3
Procedures in genetic studies as they relate to molecular and classical genetic applications. Crosslisted with PS 453/553.	
BIOL 557 Ecological Modeling	3
An introduction to ecological modeling. Topics will include modeling methodology, auto-ecological models, population models, biotic communities, ecosystem level models, global modeling. P, MATH 557.	
BIOL 558 Mathematical Models in Microbiology	3
Mathematical models from microbiology, cellular biology, and physiology will be developed and analyzed. Topics will include enzyme kinetics, cell membrane function, cell cycle regulation, intercellular communication, and molecular motors. P, MATH 558.	
BIOL 559 Bioinformatics	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. P, MATH 559.	
BIOL 560 Landscape Ecology	4
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. Crosslisted with BIOL 560.	
BIOL 560L Landscape Ecology Laboratory	0
Laboratory to accompany BIOL 560.	
BIOL 566 Environmental Toxicology and Contaminants	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.	
BIOL 567 Parasitology	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. Crosslisted with ZOO 567/567L. Corequisite course: BIOL 567L.	
BIOL 567L Parasitology Laboratory	0
Laboratory experience that accompanies BIOL 567.	
BIOL 580 Environmental Stress Physiology	3
Physiological and cellular response of plants to environmental stresses. Crosslisted with HO 480/580 and PS 480/580.	
BIOL 592 Topics	(1-5)
BIOL 592L Topics Laboratory	0
BIOL 645 Microimaging Techniques	3
Preparation and observation of animal and plant tissues for microscopic and photomicroscopic study. Emphasis will be given to various techniques used in current research areas.	
BIOL 645L Microimaging Techniques Laboratory	0

*Nels H. Granholm,
Distinguished Professor,
PhD, Iowa State University of
Science and Technology, 1968
Developmental Genetics*

*Philip Hardwidge,
Assistant Professor,
PhD, Mayo Clinic
Graduate School, 2002*

*Geoffrey Henebry,
Professor,
Ph.D, University of Texas-
Dallas, 1989
Environmental Sciences*

*Michael Hildreth,
Professor,
PhD, Tulane University, 1983
Parasitology*

*Carol A. Johnston,
Professor,
PhD, University of Wisconsin,
1982
Wetlands Ecology*

*Radhey Kaushik,
Assistant Professor,
PhD, University of Saskatchewan,
1998
Immunology*

*Henry Kayongo-Male,
Professor,
PhD, Michigan State University,
1974
Mineral Metabolism*

*Jerome A. Krueger,
Associate Professor,
PhD, University of Minnesota,
2002
Forest Ecology*

*Gary E. Larson,
Professor,
PhD, North Dakota State
University, 1979
Plant Systematics and Ecology*

*Feng Li,
Associate Professor,
PhD, University of Melbourne,
Australia, 1997,
Virology*

*Scott Pedersen,
Associate Professor,
PhD, University of Nebraska,
1993
Craniofacio Morphogenesis in
Bats*

*R. Neil Reese,
Professor,
PhD, University of Idaho, 1984
Plant Physiology*

John J. Ruffolo,
Professor,
PhD, University of Iowa, 1969
Developmental and Cellular
Biology

Nels Troelstrup,
Professor,
PhD, University of Minnesota-
Minneapolis/St. Paul, 1992
Aquatic Ecology

Alan J. Young,
Associate Professor,
PhD, University of Toronto, 1994
Immunology

Carol Wake,
Associate Professor,
PhD, South Dakota State
University, 1997,
Plant Physiology

Xiuqing Wang,
Associate Professor,
PhD, University of Connecticut,
2000
Virology

Thomas P. West,
Professor,
PhD, Texas A&M University,
1980
Microbial Biochemistry

Lan Xu,
Assistant Professor,
PhD, North Dakota
State University, 1998
Plant Ecology and Range Science

Yang Yen,
Professor,
PhD, University of Missouri-
Columbia, 1989
Biology/Microbiology

Adjunct/Courtesy/
Joint Faculty

Jack L. Butler,
Associate Professor,
PhD, Texas A&M University,
1986
Forest Ecology

Christopher Chase,
Professor of Veterinary Science,
PhD, University of Wisconsin-
Madison, 1990
Virology/Immunology

Alan K. Erickson,
Professor of Veterinary Science,
PhD, North Dakota State
University, 1989
Microbial Attachment

BIOL 762 Eukaryotic Molecular Biology Laboratory	1
BIOL 767 Fire and Ecosystems.....	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. Crosslisted with GSE/GEOG/WL 767.	
BIOL 773 Cytogenetics	3
To study the nature and behavior of chromosomes in relation to heredity. Crosslisted with PS 773.	
BIOL 773L Cytogenetics Laboratory.....	0
BIOL 788 Master's Research Problems/Project.....	(1-3)
BIOL 790 Seminar
BIOL 791 Independent Study	(1-4)
BIOL 792 Topics.....	(1-6)

Biological Sciences (BIOS) Course Offerings

BIOS 662 Advanced Molecular and Cellular Biology	6
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular biology and pave a solid foundation for graduate students as they develop and conduct thesis and dissertation research. It will give students a perspective both on what is known and unknown about cellular structures, organization and their functions, cell chemistry and biosynthesis, genetic mechanisms, and cells in their social context. Undergraduate courses in genetics and cell biology are recommended.	
BIOS 663 Advanced Concepts in Infectious Disease	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. P, BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.	
BIOS 788 Master's Research Problems	(2-3)
BIOS 790 Seminar.....	1
BIOS 792 Topics	(1-6)
BIOS 798 Thesis	(1-7)
BIOS 890 Seminar	1
BIOS 898D Dissertation.....	(1-7)

Biology Teaching (BIST) Course Offerings

BIST 692 Topics	1-12
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Botany (BOT) Course Offerings

BOT 505 Grasses and Grasslike Plants	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.	
BOT 505L Grasses and Grasslike Plants Laboratory	0
BOT 512 Morphology of Non-Vascular Plants	(1-3)
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. Corequisite course: BOT 512L. P, BOT 301 or consent of instructor.	
BOT 512L Morphology of Non-Vascular Plants Laboratory	0
BOT 513 Morphology of Vascular Plants	3
BOT 513L Morphology of Vascular Plants Laboratory	0
Morphology has been defined as philosophical anatomy. This course addresses comparative structure and evolutionary patterns existing in the diverse vascular plant groups including club mosses, ferns, gymnosperms and angiosperms. The student will gain insight into unity from homeostasis and diversity through evolution of this group of plants. Corequisite course: BOT 513.	
BOT 592 Topics	(1-5)
BOT 705 Aquatic Plants	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. Corequisite course: BOT 705L. P, BOT 301, or consent of instructor.	
BOT 705L Aquatic Plants Laboratory	0
BOT 715 Advanced Plant Ecology	4
Analysis of the energy relationships of communities with emphasis on productivity. Literature readings. Laboratory work in techniques of community analysis. Corequisite course: BOT 715L. P, consent of instructor.	
BOT 715L Advanced Plant Ecology Laboratory	0
BOT 730 Plant Molecular Biology	3
Molecular mechanisms involved in regulation of subcellular assemblies and metabolism in higher plants. P, BIOL 343 and CHEM 361 or MICR 436.	
BOT 781 Plant Biotechnology	3
Comparative studies in in vivo and in vitro cellular differentiation, organ formation, and plant development. Corequisite course: BOT 781L. P, BOT 421 or BIOL 371 or BOT 327.	
BOT 781L Plant Tissue Culture Laboratory	0
BOT 788 Master's Research Problems	(1-3)
BOT 791 Independent Study	(1-4)
BOT 792 Topics	(1-5)

Environmental Management (ENVM) Course Offerings

ENVM 525 Disturbance Ecology	4
Introduction to basic concepts of disturbance ecology. Demonstration and discussion of linkages between basic biology and management of natural resources. Introduction to field and laboratory techniques for monitoring and assessment of ecological responses to pollution and other forms of disturbance. Corequisite course: ENVM 525L. P, BIOL 153, BIOL 311.	
ENVM 525L Disturbance Ecology Laboratory	0
ENVM 592 Topics	(1-7)
ENVM 692 Topics	(1-7)

Anne Fennell,
Professor of Horticulture,
Forestry, Landscape and Parks,
PhD, University of Minnesota-
Minneapolis/St. Paul, 1985
Plant Stress Physiology

David H. Francis,
Professor of Veterinary Science,
PhD, University of Missouri-
Columbia, 1978
Pathogenic Microbiology

Paul Johnson,
Professor of Plant Science,
PhD, University of Wisconsin-
Madison, 1992
Insect Systematics

Douglas C. McFarland,
Professor of Animal and
Range Sciences,
PhD, Washington State
University, 1984
Muscle Biology

Walter E. Riedell,
Assistant Professor of Plant
Science,
PhD, Southern Illinois University,
1984
Plant Physiology

Carolyn Hull Sieg,
Professor of Biology and
Microbiology,
PhD, Texas Tech University,
1991
Fire Ecology

Bonny L. Specker,
Professor of Nutrition and, Food
Sciences
PhD, University of Cincinnati
Medical Center, 1983
Epidemiology and Human
Nutrition

Fedora Sutton,
Professor of Plant Science,
PhD, Howard University, 1985
Plant Molecular Biology

Microbiology (MICR) Course Offerings

MICR 514 Anaerobic Microbiology	3
Anaerobic metabolism and ecology of bacteria, culturing techniques for anaerobic microorganisms. P, MICR 231.	
MICR 514L Anaerobic Microbiology Studio	0
MICR 521 Soil Microbiology	3
Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these microorganisms. Crosslisted with PS 521. Equivalent to PS 521. Corequisite course: MICR 421L. P, 231-231A or consent of instructor. Prerequisites: take 1 group (take BIOL 151, BIOL 152, BIOL 154/take BIOL 201, BOT 202).	
MICR 521L Soil Microbiology Laboratory	0
MICR 522 Introductory Immunology Lecture	3
An introduction to basic aspects of host defense, including principles of immunity, cells and organs of the immune system, biochemical nature of immune proteins, and cellular interactions of the immune response. Specific diseases of the immune system and the response of the immune system to infectious disease will be covered, with a focus on basic mechanisms of immunity that may be applied to specific conditions and diseases. As a component of the course, all students will be required to read a basic paper in the scientific literature and summarize the important components and impact in essay format. The 500-level course will involve tutorials, during which recent papers in the basic scientific literature will be discussed. Graduate students will be expected to participate in the learning process by giving an oral presentation of a current problem in immunology, and delivering a written analysis of a current paper (within the previous year) on a basic question in Immunology. P, MICR 231.	
MICR 523 Introductory Immunology Laboratory	1
An introduction to important laboratory techniques in immunology, including principles of immunoassays, immunofluorescence, ELISA, Western Blotting, and functional assays of immune function. Through the use of experimental procedures, will illustrate basic concepts of immunology. A major proportion of the laboratory time will be taken to focus on practical aspects of currently used immunological assays (focusing on the use of antibodies in the diagnostic laboratory).	
MICR 524 Medical and Vet Virology	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. Crosslisted with VET 524. Equivalent to VET 524. Corequisite course: MICR 524L. P, MICR 422.	
MICR 533 Medical Microbiology	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 537 Systematic Bacteriology	4
Techniques for isolation, identification, classification, and preservation of bacterial cultures are presented. Current topic areas and theory in taxonomy and nomenclature are discussed in detail. Corequisite course: MICR 537L. P, MICR 231 (or equivalent).	
MICR 537L Systematic Bacteriology Laboratory	0
MICR 592 Topics	(1-4)
MICR 592L Topics Laboratory	(1-4)
Laboratory experience that accompanies MICR 592.	
MICR 713 Industrial Microbiology	4
A course detailing the use of microorganisms by people. Topics include the production of food and beverages, agricultural and industrial chemicals, pharmaceuticals, and alternate fuels. Legal and ethical ramifications are presented. Corequisite course: MICR 713L. P, MICR 332 (or equivalent) and consent. CHEM 361 or equivalent is recommended.	
MICR 713L Industrial Microbiology Laboratory	0
MICR 722 Molecular and Cell Biology of the Immune Response	3
An in depth examination of the molecular and cellular basis of immune function and regulation.	
MICR 726 Cell Physiology of Signal Transduction	3
A basic review of cellular physiology, membrane biology and cell signaling mechanisms in leukocyte	

models will be provided. The course will then examine recent primary literature to survey developments in this area.

MICR 738 Microbial Metabolism	4
A course dealing with microbial respiration of organic and inorganic compounds, anaerobic respiration, the various fermentations, photosynthesis, nitrogen fixation, and the biosynthesis of certain organic intermediates. The lab introduces the student to the usage of various research equipment. Corequisite course: MICR 738L. Elementary biochemistry recommended.	
MICR 738L Microbial Metabolism Laboratory	0
MICR 788 Master's Research Problems/Project	(1-3)
MICR 790 Seminar	1
MICR 791 Independent Study	(1-4)
MICR 792 Topics	(1-4)
MICR 798 Thesis	(1-7)

Zoology (ZOOL) Course Offerings
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ZOOL 523 Advanced Mammalian Physiology	5
This course is an advanced study of the cellular and molecular mechanisms used by mammals to acquire energy for their cells, to regulate body functions using the nervous and endocrine systems, to integrate the functions of the organs systems in order to maintain homeostasis and health of the animal, and to produce new members of its species.	
ZOOL 567 Parasitology	3
The broad field of animal parasitology, including protozoa, helminths, and arthropods. Emphasis on identification, life histories, control, and economic and medical importance. Laboratory includes morphology and identification of representative groups of parasites, as well as techniques of diagnosis of parasitic diseases.	
ZOOL 567L Parasitology Laboratory	0
Laboratory experience that accompanies ZOOL 567.	
ZOOL 592 Topics	(1-5)
ZOOL 761 Taxonomy of Insects	3
ZOOL 761L Taxonomy of Insects Laboratory	1
ZOOL 788 Master's Research Problems/Projects	(1-3)
ZOOL 791 Independent Study	(1-4)
ZOOL 792 Topics	(1-5)

Chemistry and Biochemistry

Degrees Offered:
PhD Chemistry

MS Chemistry
• *Chemical Education specialization*

Graduate Faculty

David Cartrette,
Assistant Professor,
PhD, Purdue University, 2003
Chemical Education/Organic

Jihong Cole-Dai,
Associate Professor,
PhD, University of Maryland,
1988
Analytical/Environmental
Chemistry

Fathi Halaweish,
Professor PhD, University of
Wales, 1987
Natural Products/Organic
Chemistry

Brian Logue,
Assistant Research Professor,
PhD, Oregon State University,
2000
Analytical/Environmental
Chemistry

Matt Miller,
Associate Professor,
PhD, Purdue University, 2001
Chemical Education/Analytical
Chemistry

Doug Raynie,
Associate Research Professor,
PhD, Brigham Young University,
1990
Analytical/Environmental
Chemistry

James A. Rice,
Professor,
PhD, Colorado School of Mines,
1987
Environmental
Geochemistry/Analytical
Chemistry

Jay S. Shore,
Associate Professor,
PhD, University of Illinois at
Champaign-Urbana, 1992
Physical Chemistry/Solid-state
NMR

Department Head: Professor James A. Rice
Graduate Coordinator: Professor James A. Rice

For additional information contact:

Mailing address: SDSU Box 2202
Shepard Hall — SSH 121
<http://ChemBiochem.sdstate.edu>
E-mail: gradchem@sdstate.edu

Phone: 605/688-5154
Fax: 605/688-6364

Program Description

The department's research emphases fall into the general areas of bio-organic chemistry, environmental chemistry, and chemical education. A MS in chemistry with a specialization in chemical education emphasizes content knowledge and is offered to high school teachers predominantly via the internet. Within these focus areas, programs in the Department cover the traditional areas of chemistry; analytical, biochemistry, inorganic, organic and physical. Currently active research projects in the Department focus on various aspects of analytical chemistry, organic synthesis, materials science, the chemistry and biochemistry of cell membranes, environmental and green chemistry, natural products chemistry, sensor development, bioinorganic chemistry, computational chemistry, and solidstate NMR. The Department is equipped with modern instrumentation to support research in these areas. This equipment is readily available to graduate students for "hands-on" experience after successfully completing a short training course. This includes, a NMR facility consisting of 400, 300 and 200 MHz solution FT-NMR spectrometers; 400, 300, 200, 100 MHz wide-bore solid-state NMR spectrometers; powder x-ray diffractometer; a core mass spectrometry facility consisting of a 7T ESI FTMS, a high-resolution magnetic sector mass spectrometer with EI and CI sources and GC, HPLC, pyrolysis and fast-atom bombardment capabilities, and a MALDI-TOF mass spectrometer; FT-IR spectrometer with far-IR capabilities; time-resolved spectrofluorometer; atomic absorption and diode-array UV-Vis spectrophotometers. In addition to these departmental resources, individual research groups also maintain their own instrumentation. Campus super computer facilities and online computer access to Chemical Abstracts Services and "Web of Science" are readily available. Individual groups maintain their own computer systems for molecular modeling or dedicated data manipulation.

Available Options for Graduate Degrees

Master of Science: Option A
Option B
Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

Core Requirements for Master of Science (Option A)

(CHEM 516 and
4 of the 5
courses listed)

CHEM 516 Chemical Communication Skills	2 credits
CHEM 622 Advanced Organic Chemistry I.....	3 credits
CHEM 632 Advanced Analytical Chemistry.....	3 credits
CHEM 642 Advanced Physical Chemistry.....	3 credits
CHEM 654 Advanced Inorganic Chemistry.....	3 credits
CHEM 662 Principles of Biochemistry	3 credits

Core Requirements for Master of Science (Option B)

CHEM 610 Atomic Theory and Bonding.....	3 credits
CHEM 611 Intermolecular Interactions and Phases of Matter.....	3 credits
CHEM 612 Thermodynamics	3 credits
CHEM 613 Equilibria and Acid-Base Chemistry	3 credits
CHEM 614 Kinetics, Nuclear, and Electrochemistry.....	3 credits
CHEM 615 Organic and Biochemistry	3 credits
CHEM 616 Laboratory Development.....	6 credits
CHEM 617 Action Research in the Secondary Classroom.....	2 credits
CHEM 618 Chemistry Teaching Strategies.....	3 credits
CHEM 788 Research Paper.....	3 credits

Ronald E. Utecht,
Professor, PhD, Iowa State
University of Science and
Technology, 1986
Bioinorganic Chemistry

Yougjae You,
Assistant Professor,
PhD, Chungnam National
University, 2001,
Bioorganic/Organic Synthesis

Core Requirements for Doctor of Philosophy

(CHEM 516 and 4 of the 5 courses listed)	CHEM 516 Chemical Communication Skills.....	2 credits
	CHEM 622 Advanced Organic Chemistry I.....	3 credits
	CHEM 632 Advanced Analytical Chemistry	3 credits
	CHEM 642 Advanced Physical Chemistry.....	3 credits
	CHEM 654 Advanced Inorganic Chemistry	3 credits
	CHEM 662 Principles of Biochemistry	3 credits

Additional Admission Requirements

GRE: General and subject score are recommended but not required.

TOEFL: Score of 580 paper-based, 237 computer-based, 92-93
Internet-based

*The TSE score is recommended for international students seeking an assistantship.

General requirements begin on page 16 (Master's) and page 21 (PhD).

Chemistry (CHEM) Course Offerings

CHEM 516 Chemical Communication Skills	2
Searching chemical literature by traditional and computer assisted methods; techniques of written and oral communication of chemical information.	
CHEM 610 Atomic Theory & Bonding	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. P, consent of instructor.	
CHEM 611 Intermolecular Interactions & Phases of Matter	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. P, consent of instructor.	
CHEM 612 Thermodynamics	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. P, consent of instructor.	

CHEM 613 Equilibria & Acid-Base Chemistry	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 be used to study the impact of 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. P, consent of instructor.	
CHEM 614 Kinetics, Nuclear, & Electrochemistry	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. P, consent of instructor.	
CHEM 615 Organic & Biochemistry	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. P, consent of instructor.	
CHEM 616 Laboratory Development	2
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. P, consent of instructor.	
CHEM 617 Action Research in the Secondary Classroom	3
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. P, consent of instructor.	
CHEM 618 Chemistry Teaching Strategies.....	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. P, consent of instructor.	
CHEM 622 Advanced Organic Chemistry I	3
Review and discussion of nomenclature, stereochemistry, resonance theory, equilibria, elementary kinetics, intermediate and mechanisms. Chemistry of polymers, heterocyclics, and natural products. P, CHEM 328, CHEM 344.	
CHEM 632 Advanced Analytical Chemistry.....	3
Theoretical treatment of principles involved in noninstrumental analytical chemistry including sampling and statistics. P, CHEM 344.	
CHEM 642 Advanced Physical Chemistry	3
A review of the principles and applications of physical chemistry. Topics such as thermochemistry, quantum mechanics, spectroscopy, kinetics, and electrochemistry considered. P, CHEM 344.	
CHEM 654 Advanced Inorganic Chemistry	3
Inorganic systems including theoretical, representative group and transition metal topics. P, CHEM 344 or CHEM 352.	
CHEM 662 Principles of Biochemistry.....	-5
Chemistry of biological processes occurring in plants and animals. P, CHEM 361.	

CHEM 691 Independent Study	(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 710 Philosophy of Science	2
In this course, differing viewpoints about the enterprise of science, research, and teaching will be explored, including Kuhnian, Popperian, Vygotskian, and Feyerabendian traditions. A portion of the course will also focus on the social aspects in the learning and teaching of science. Students will be expected to develop a personal teaching philosophy built upon their beliefs of how science works. P, consent of instructor.	
CHEM 711 Chemical Education Research	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. P, consent of instructor.	
CHEM 713 Qualitative Research Methods	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. P, consent of instructor.	
CHEM 714 Quantitative Research Methods	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. P, consent of instructor.	
CHEM 715 Chemistry Instruction in Higher Education	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. P, consent of instructor.	
CHEM 722 Synthesis of Natural Products	3
Synthetic strategies and pathways for the formation of natural products. P, CHEM 328.	
CHEM 724 Structural Determination of Organic Compounds	3
Determination of the structure of organic compounds primarily by spectroscopic techniques. P, CHEM 328. Corequisite course 724L.	
CHEM 724L Structural Determination of Organic Compounds Lab	0
CHEM 725 Polymer Chemistry	4
The chemistry of high molecular-weight polymeric molecules will be discussed. The laboratory will consist of the preparation, reactions, and properties of select polymers. Corequisite course: CHEM 725L. P, CHEM 328.	
CHEM 725L Polymer Chemistry Lab	0
CHEM 726 Advanced Organic Chemistry II	3
Physical organic, reaction mechanisms, M.O. calculations, orbital symmetry, and E.S.R. spectroscopy. P, CHEM 328 and CHEM 344.	
CHEM 728 Bioorganic Chemistry	3
Interpretation and categorization of biochemical reactions in terms of principles of organic chemistry. Synthesis of biologically active macromolecules and models for enzyme catalysis. P, CHEM 328, CHEM 662.	
CHEM 731 Advanced Environmental Chemistry	3
In-depth treatment of the principles of the environmental chemistry and geochemistry of the atmospheric, aquatic and lithospheric environments. P, CHEM 342, consent of instructor	
CHEM 732 Aquatic Chemistry	3
Principles of acid-base, redox and complexation, and photo-chemistry of the aquatic environment.	
CHEM 733 Atmospheric Chemistry	3
Structure and functions of the atmosphere; principles of atmospheric chemical processes; chemical reactions and fate of pollutants in the atmospheric environment. P, CHEM 342, consent of instructor.	
CHEM 734 Environmental Surface Chemistry	3
Chemical and physical processes at environmental interfaces. P, CHEM 342, consent of instructor.	

CHEM 735 Analytical Spectroscopy	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. P, CHEM 434.	
CHEM 736 Chromatography and Separation	3
Theory and practice of solvent extraction and paper, thin layer, gas and liquid chromatographic techniques. P, CHEM 232.	
CHEM 738 Electroanalytical Chemistry	3
The principles of electrochemistry as applied to analytical methods will be presented in this course. Topics covered will include polarography, potentiometry, conductance, coulometry, and related topics. P, CHEM 434.	
CHEM 741 Quantum Chemistry I	3
The application of wave mechanics to simple atomic and molecular systems, properties of wave functions, and approximate methods. P, CHEM 642, MATH 321.	
CHEM 742 Quantum Chemistry II.....	3
Continuation of CHEM 741. P, CHEM 741.	
CHEM 744 Chemical Thermodynamics	3
Discussion of the laws and theories of classical and statistical thermodynamics as related to macroscopic chemical systems. P, CHEM 344.	
CHEM 745 Statistical Thermodynamics	3
Fundamental principles of statistical thermodynamics with applications to chemical systems. P, CHEM 642, CHEM 744.	
CHEM 748 Chemical Kinetics	3
Experimental methods and theoretical approaches to the study of reaction rates. P, CHEM 328, CHEM 344.	
CHEM 752 Descriptive Inorganic Chemistry	3
Discussion centered on periodic relationships of the elements. The laboratory work includes preparation and purification of typical inorganic compounds. P, CHEM 120 (4 credits), CHEM 232, CHEM 352. Concurrent registration in CHEM 752L.	
CHEM 752L Descriptive Inorganic Chemistry Lab.....	0
CHEM 753 Organometallic Chemistry.....	3
The study of metal compounds containing organic moieties and related inorganic compounds. Major emphasis will be focused on transition metal-carbon compounds such as the carbonyls, aromatic hydrocarbons and nonaromatic olefin and acetylene complexes. Homogenous catalysts will be discussed. P, CHEM 352.	
CHEM 764 Biochemistry I.....	3
Study of metabolism of carbohydrates and lipids. Includes aspects on enzyme kinetics and regulation as well as principles and characteristics of ATP-synthesizing complexes. P, CHEM 622 and 662.	
CHEM 766 Biochemistry II.....	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. P, CHEM 662.	
CHEM 767 Biophysical Chemistry.....	3
Discussion of the theoretical and practical aspects of biophysical methods. These will include an examination of electrophoresis, centrifugation, light scattering, optical rotary dispersion, X-ray diffraction, viscosity/diffusion, and spectroscopy. P, CHEM 340, CHEM 662.	
CHEM 768 Plant Biochemistry.....	3
Chemistry of structural and functional elements of plants with special emphasis on bioenergetics, photosynthesis, nitrogen fixation, sulfur metabolism, carbohydrate interconversion, secondary plant products, seed development and fruit ripening, and genome expression. P, CHEM 662.	
CHEM 772 Seminar Preparation	1
Required of all graduate majors in chemistry.	
CHEM 781 Bioinorganic Chemistry	3
A study of biological systems stressing the role of metals ions, primarily the transition metals. Model systems included in the discussion. P, CHEM 120 (4 credits), CHEM 352 or consent of instructor.	
CHEM 788 Research Problems in the Chemistry Classroom.....	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. P, Consent of instructor and CHEM 616.	

CHEM 790 Seminar	1
CHEM 792 Topics	(1-6)
CHEM 798 Thesis.....	(1-7)
CHEM 898D Dissertation	(1-12)

Chemistry Teaching (CHST) Course Offerings

CHST 601 Chemistry Topics for Educators.....	(1-12)
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This course is the hub course for the Masters of Education; Curriculum and Instruction; Chemistry Content Area, degree. It is a course with credit value depending upon the number of chemistry topic areas in which a student enrolls, and can be repeated as many times as desired depending upon remaining chemistry topic areas. CHST 601, the hub section, will meet regularly in a seminar format to enable the discussion of chemistry topics not included in the current specific areas of the course, as well as a forum for allowing the students to discuss and learn the interrelationship between the various topic areas. All students registered for one or more chemistry topic areas are required to participate in all of the hub sessions.

Physics (PHYS) Course Offerings

PHYS 743 Statistical Mechanics	3
PHYS 775 Tensors and General Relativity	3
PHYS 779 Group Theory in Quantum Mechanics	3



Civil and Environmental Engineering

Degree Offered:

MS Engineering

* Civil Engineering emphasis

Graduate Faculty

*Suzette Burckhard,
Associate Professor,
PhD, Kansas State University,
1997
Environmental Engineering and
Water Resources Engineering*

*Delvin DeBoer,
Professor,
PhD, Iowa State University, 1990
Environmental Engineering*

*Allen Jones,
Associate Professor,
PhD, University of Washington,
2003
Geotechnical Engineering*

*Hesham Mahgoub,
Assistant Professor,
PhD, Cairo University (Egypt),
1994
Transportation Engineering*

*Richard A. Reid,
Professor, PhD, Georgia Institute
of Technology, 1995
Geotechnical/Transportation
Engineering*

*Christopher G. Schmit,
Associate Professor,
PhD, Iowa State University, 1997
Environmental Engineering*

*Ali A. Selim,
Professor,
PhD, University of Missouri-
Rolla, 1976
Transportation Engineering*

*Arden B. Sigl,
Professor,
PhD, Northwestern University,
1977
Structural Engineering*

*Francis C.K. Ting,
Professor,
PhD, California Institute of
Technology, 1989
Fluid Mechanics/Hydraulic
Engineering*

*Nadim Wehbe,
Associate Professor,
PhD, University of Nevada, Reno,
1997
Structural Engineering*

Interim Department Head: Professor Richard Reid

Graduate Coordinator: Associate Professor Suzette Burckhard

For additional information contact:

Mailing address: SDSU Box 2219

Crothers Engineering Hall — SCEH 212

WWW: <http://www.engineering.sdstate.edu>

E-mail: suzette.burckhard@sdstate.edu

Phone: 605/688-5427

Fax: 605/688-6476

Program Description

At least 2 credits of CEE 702 Advanced CEE – Colloquium (1 cr.) must be included on the student's plan of study. Core courses in Civil and Environmental Engineering and supporting courses for the student's program of study must be approved by the student's major advisor. Refer to the College of Engineering Section, for specific details of additional engineering college requirements.

Available Options for the Graduate Degree

Master of Science: Option A,
 Option B
 Option C

Additional Admission Requirements

GRE: Not required

TOEFL: Score of of 525 paper-based, 197
 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's).

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

Civil and Environmental Engineering (CEE) Course Offerings

CEE 511 Bituminous Materials	3
Properties of bituminous materials including their compatibility with various types of aggregates. Asphalt mixes are designed and tested. Standards tests are performed on bituminous materials with emphasis on test results. Asphalt surface evaluation techniques. Corequisite course: CEE 511L. P, CEE 216.	
CEE 511L Bituminous Materials Laboratory.....	0
CEE 522 Environmental Engineering Instrumentation.....	3
Analysis of water and waste water samples, using environmental laboratory instrumentation. Design of treatment facility process instrumentation and controls. Corequisite course: CEE 522L. P, CEE 323 or consent of instructor.	
CEE 522L Environmental Engineering Instrumentation Laboratory	0
CEE 523 Municipal Water Distribution and Collection System Design	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	3
Characteristics and composition of industrial wastes, sampling and methods of analysis of these wastes and remedial measures for treatment and disposal.	
CEE 529 Solid Waste Engineering and Management	3
Solid waste regulation and characterization. Design of disposal facilities, management of collection, transport, transfer, storage and disposal systems. Corequisite course: CEE 529L. P, CEE 336. Field trips to various disposal facilities required.	
CEE 529L Solid Waste Engineering and Management Laboratory	0
CEE 535 Water Resources Engineering	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. CEE 225.	
CEE 543 Matrix Analysis of Structures.....	3
Theory and application of matrix methods in structural analysis. P, CEE 353.	
CEE 544 Precast Concrete Structures	3
Advantages of precast concrete. Structural and architectural precast elements. Building systems. Design concepts and structural design. Connections, specifications, and detailing. P, CEE 456.	
CEE 546 Advanced Geotechnical Engineering	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. Students enrolling in CEE 546 will be held to a higher standard than those enrolling in CEE 446. P, CEE 346.	
CEE 547 Foundation Engineering.....	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. Students enrolling in CEE 547 will be held to a higher standard than those enrolling in CEE 447,P, CEE 346.	
CEE 552 Prestressed Concrete	3
Theory and design of prestressed concrete including pre-tensioning and post-tensioning. P, CEE 456.	
CEE 558 Design of Timber Structures.....	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 559 Advanced Structural Mechanics	3
Review of principal moments of inertia; relationship of plain stresses and strains; use of rosettes; shear center; unsymmetrical bending; theories of failure; curved beams and closed rings; thick-walled cylinders; beams on continuous elastic support, miscellaneous topics in structural analysis. Corequisite course: CEE 559L. P, CEE 353.	
CEE 559L Advanced Structural Mechanics Laboratory	0

CEE 572 Geosynthetics	3
Detailed study of the types of geosynthetic materials used in environmental, geotechnical, and transportation engineering as well as how they are used and manufactured. Particular emphasis will be placed on erosion control, landfill, transportation, drainage, tiltration and reinforcement applications. Students enrolling in CEE 572 will be held to a higher standard than those enrolling in CEE 472. P, CEE 346.	
CEE 592 Topics	(1-3)
CEE 592L Special Topics Laboratory	0
CEE 620 Water Treatment Plant Design	3
Water supply sources, design of treatment plants, cost estimates of water supply systems. Corequisite course: CEE 620L. P, CEE 323 or consent of instructor.	
CEE 620L Water Treatment Plant Design Laboratory	0
CEE 623 Advanced Sanitary Engineering	3
Advanced engineering topics related to sanitary engineering and public health, including housing, air conditioning and ventilation, air pollution, hospital and institutional sanitation, stream sanitation, waste disposal, radiological health and industrial hygiene.	
CEE 624 Biological Principles of Environmental Engineering	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. P, CEE 323 or consent of instructor.	
CEE 625 Environmental Engineering Planning	3
Analysis and review of basic concepts and procedures involved in environmental aspects of planning. Consideration given to local effects of projects as well as effects on the area and the state or region. P, Graduate standing or consent of instructor.	
CEE 626 Physical and Chemical Principles of Environmental Engineering	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. Corequisite course: CEE 626L. P, CEE 323 or consent of instructor.	
CEE 626L Physical and Chemical Principles of Environmental Engineering Laboratory	0
CEE 629 Wastewater Treatment Plant Design	3
Design of waste collection and disposal facilities, waste treatment plants, cost estimates of waste disposal and treatment systems. Corequisite course: CEE 629L. P, CEE 323; graduate standing.	
CEE 629L Wastewater Treatment Plant Lab	0
CEE 632 Advanced Foundation Engineering	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. P, CEE 346.	
CEE 633 Open Channel Hydraulics	3
Energy and momentum principles in open channel flow, flow resistance, flow in uniform and nonuniform channels, flood routing. P, CEE 432.	
CEE 634 Fluvial Hydraulics	3
Erosion, transportation and deposition of sediments by flowing water, bed load and suspended load movement, river behavior and control. P, CEE 432.	
CEE 639 Geotechnical Testing	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. Corequisite course: CEE 639L. P, CEE 346.	
CEE 654 Advanced Design of Steel Structures	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. P, CEE 455.	
CEE 656 Advanced Reinforced Concrete Design	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. P, CEE 456.	

CEE 664 Highway Capacity Analysis	3
Sizing road segments and intersections in terms of number of lanes based on traffic volume and level of service. Eliminating traffic conflict on road sections and intersections. Vehicle and pedestrian analysis. P, CEE 363	
CEE 690 Seminar	0
CEE 692 Topics	(1-3)
CEE 702 Advanced Civil and Environmental Engineering.....	(1-13)
Graduate study in Civil/Environmental Engineering. Registration in one or more modules requires concurrent registration in the 1-credit colloquium, which includes reports and discussions of current advanced topics related to the module content. Credit earned will depend on modules taken. Modules may include engineering analysis and design in the topic areas of civil engineering, environmental engineering, geotechnical engineering, hydraulic engineering and hydrology, structural engineering, transportation engineering and water resources engineering. Course may be repeated but individual modules may not be repeated.	
CEE 702L Advanced Civil and Environmental Engineering.....	0
Graduate study in Civil/Environmental Engineering. Registration in one or more modules requires concurrent registration in the 1-credit colloquium, which includes reports and discussions of current advanced topics related to the module content. Credit earned will depend on modules taken. Modules may include engineering analysis and design in the topic areas of civil engineering, environmental engineering, geotechnical engineering, hydraulic engineering and hydrology, structural engineering, transportation engineering and water resources engineering. Course may be repeated but individual modules may not be repeated.	
CEE 721 Environmental Engineering.....	3
The relationship of man's environment to health and control of this environment from an engineering standpoint. P, consent of instructor.	
CEE 722 Hazardous and Toxic Waste Disposal	3
Legislation, regulation, business aspects and technology related to the management and disposal of hazardous and toxic wastes. Corequisite course: CEE 722L. P, consent.	
CEE 722L Hazardous and Toxic Waste Disposal Laboratory	0
CEE 724 Land Treatment of Wastes	3
State-of-the-art planning and process design of land treatment systems for the disposal of municipal, industrial, and agricultural wastes. Physical, chemical and biological limiting factors with emphasis on site selection and process feasibility. Land disposal of sludges. Corequisite course: CEE 724L.	
CEE 724L Land Treatment of Wastes Laboratory	0
CEE 733 Water Resources Engineering	3
Advanced 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. CEE 535.	
CEE 734 Surface Water Quality Model.....	3
Modeling advective and dispersive mass transport in surface and engineered water systems. Analysis of reactions affecting the fate of dissolved oxygen, nutrients, toxic compounds and pathogens. Analytical and numerical solutions to deterministic modeling equations. P, CEE 423, MATH 321. Application and use of the QUALI-IE and EPANET models.	
CEE 737 Hydraulic Design.....	3
Hydraulic design as applied to hydroelectric power development and turbine design, flood routing in reservoirs and natural channels, design of drainage structures, and energy dissipator. P, CEE 433.	
CEE 738 Advanced Hydraulics.....	3
Introduction to topics related to water resources engineering including: dimensional analysis, similitude, mechanics of sediment transport, river engineering, coastal hydraulics and stream channel mechanics. Corequisite course: CEE 738L. P, CEE 432; graduate standing.	
CEE 738L Advanced Hydraulics Laboratory	0
CEE 749 Structural Dynamics.....	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. P, CEE 353, CEE 456.	
CEE 756 Reinforced Masonry Design.....	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. P, CEE 456.

CEE 762 Pavement Management and Rehabilitation3
 Assessment of road networks to determine maintenance and rehabilitation needs. Rehabilitation strategies for various types of pavements. Prioritization schemes for road section repair. Corequisite course: CEE 762L. P, CEE 363, CEE 765, or concurrent.

CEE 762L Pavement Management and Rehabilitation Lab0

CEE 765 Pavement Design3
 Stresses in and design of flexible and rigid pavements including subgrades, bases and sub-bases. P, CEE 363.

CEE 769 Design Steel and Concrete Bridges3
 Determination of bridge loadings and bearings. Design of concrete and steel bridge systems. Specifications and detailing related to bridge. P, CEE 455, CEE 456.

CEE 787 Research.....(1-9)

CEE 788 Engineering Research or Design Paper(1-2)
 Conduct a research or design project and write a report on the work done using thesis format.

CEE 790 Seminar1

CEE 791 Independent Study.....(1-3)

CEE 792 Topics(1-3)

CEE 792L Special Topics Lab0

CEE 798 Thesis.....(1-7)



Communication Studies and Theatre

Degree Offered:

MS Communication Studies and Journalism

- *Communication Studies specialization*
- *Journalism specialization* (see also Journalism Program)

Department Head: Professor Laurie L. Haleta

Graduate Coordinator: Associate Professor Elizabeth Tolman

For additional information contact:

Mailing address: SDSU Box 2218

Pugsley Center — SPC 115

WWW: [http://www3.sdstate.edu/Academics/CollegeOfArtsAndScience/](http://www3.sdstate.edu/Academics/CollegeOfArtsAndScience/CommunicationStudiesandTheatre/)

CommunicationStudiesandTheatre/

E-mail: elizabeth.tolman@sdstate.edu

Phone: 605/688-6131

Fax: 605/688-6551

Program Description

The Master of Science program in Communication Studies and Theatre is designed to provide advanced studies in the area of communication theory, research methodology, instructional methodology and public address. It provides further professional preparation and competencies in the area of communication.

The Communication Studies specialization is designed to provide a broad-based, graduate degree for students with undergraduate degrees in communication studies and related areas. Student will be exposed to areas of concentration, including organizational, interpersonal, instructional communication as well as rhetorical and communication theory, drama, literature and theatre history. This option provides further professional preparation and competencies in the area of communication.

The Journalism Specialization is designed to provide for professional journalists who wish to broaden their education in communication and social sciences; and for individuals with undergraduate degrees in non-journalism specialties who wish to develop their knowledge in mass communication.

Available Options for Graduate Degrees

Master of Science: Option A

Core Requirements for Master of Science

MEPR 787	Research Methods in Communication (taken by second semester)
SPCM 605	Current Approaches to Communication
SPCM 700	Instructional Methods in Communications (for Graduate Teaching Assistants)

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 600 paper-based, 250 computer-based, 100 Internet-based

Prerequisite of a minimum of 20 semester hours of undergraduate credit in Speech, Theatre, Journalism, or Communication. Other Undergraduate Programs may qualify.

General requirements begin on page 16 (Master's).

Graduate Faculty

*J.D. Ackman,
Professor,
M.F.A., University of Montana,
1984
Theatre Performance Studies*

*Laurie L. Haleta,
Professor,
PhD, University of Nebraska,
1994
Instructional Communication*

*Jerry Jorgensen,
Professor,
PhD, University of Nebraska,
1990
Media Studies, Organizational
Communication*

*Elizabeth Tolman,
Associate Professor,
PhD, Southern Illinois University,
1999
Speech Communication*

Media Production (MEPR) Course Offerings

MEPR 537 Educational and Corporate Television.....	3
Educational broadcasting with practical work in preparation and presentation of educational and instructional materials for radio, TV, and film and their use in the classroom. Crosslisted with MCOM 437/537. Equivalent to MCOM 537.	
MEPR 564 Film Studies.....	3
Film art forms, artists and critics. Viewing and making films. Emphasis on major film theories.	
MEPR 787 Research Methods Communication.....	3
Research Methods in Communication under Department of Journalism and Mass Communication.	
MEPR 791 Independent Study	(1-2)

Theatre (THEA) Course Offerings

THEA 510 Dramatic Literature	3
Analysis of important drama through present day.	
THEA 560 History of Theatre.....	3
Periods, theatres, and representative dramatic literature from the classical to the present day.	
THEA 592 Topics	(1-3)
THEA 594 Internship	16
THEA 791 Independent Study.....	(1-2)

Speech Communication (SPCM) Course Offerings

SPCM 510 Organizational Communication	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 516 Rhetorical Criticism	3
Critical evaluation of American speakers from Colonial to contemporary. P, consent of instructor.	
SPCM 552 General Semantics	3
Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistic assumptions; and the objective systematization of language . Crosslisted with LING 452-552. Equivalent to LING 552.	
SPCM 582 Travel Studies.....	(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 592 Topics	(1-5)
SPCM 605 Current Approaches to Communication	3
SPCM 700 Instructional Methods in Communication	3
Problems and issues in teaching the basic communication course, development of communication courses, and issues relevant to communication education.	
SPCM 707 Speech/English/Drama for Teachers.....	(1-3)
Designed to help teachers develop curriculum materials and curricular/co-curricular instruction of literature and drama.	
SPCM 766 Rhetorical Theory	3
Historical development of rhetorical theory from classical to modern times.	
SPCM 791 Independent Study.....	(1-2)
SPCM 792 Topics	(1-3)
SPCM 798 Thesis.....	(1-7)

Computer Science

Degree Offered:

MS Engineering

* Computer Science emphasis

Department Head: Professor Dennis Helder

Graduate Coordinator: Professor Sung Shin

For additional information contact:

Mailing address: SDSU Box 2201

Administration — SAD 144

WWW: <http://www.engineering.sdstate.edu/~compsci/>

E-mail: sung.shin@sdstate.edu

Phone: 605/688-5719

Fax: 605/688-4532

Program Description

The Computer Science program offers coursework supportive of the Master of Science in Engineering. The purpose of this coursework is to support the MS in Engineering and provide opportunities for those students who wish to pursue further education and career opportunities with strong backgrounds in software, hardware, and related management areas in the computer industry. Students should clearly understand that the degree pursued is a Master of Science in Engineering and not a Master of Science in Computer Science. Courses offered in computer science support the Master of Science in Engineering.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B

Core Requirements for Master of Science

- CSC 705 Design and Analysis of Computer Algorithms3 credits
- CSC 710 Structure and Design of Programming Languages ...3 credits
- CSC 720 Theory of Computation3 credits
- CSC 770 Software Engineering Management3 credits

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's)

Computer Science (CSC) Course Offerings

- CSC 522 GUI Programming3**
This course is event-driven graphical user interface (GUI) programming and will cover topics such as C++ programming for Windows.
- CSC 533 Computer Graphics3**
Principles of computer graphics. A study of the algorithms used to generate raster and vector graphics. P, CSC 285, MATH 215 and 125.
- CSC 547 Artificial Intelligence3**
Introduction to ideas, issues and applications of Artificial Intelligence. Knowledge representation, problem solving, search, inference techniques, theorem proving. Expert systems. Artificial intelligence programming languages. P, CSC 290.

Graduate Faculty

George Hamer,
Associate Professor,
PhD, North Dakota State
University, 2006,
Computer Networks, Network
Security and Data Warehousing

Sunho Lim,
Assistant Professor,
PhD, Pennsylvania State
University, 2005
Mobile Computing, Data
Management, Software and
Systems; Wireless Networks

Yi Liu,
Assistant Professor,
PhD, University of Mississippi,
2005
Software Development and
Product Lines, Frameworks and
Patterns

Manki Min,
Assistant Professor,
PhD, University of Minnesota,
2004,
Theory of Computation,
Optimization, Algorithm Design
and Analysis

Ali Salehnia,
Professor,
PhD, University of Missouri-
Columbia, 1989
Information Systems, Database

Sung Y. Shin,
Professor,
PhD, University of Wyoming,
1991
Software Engineering

CSC 550 Game Programming.....	3
This course teaches the fundamental concepts of computer game programming using Windows and C/C++. The C/C++ languages are used for this course because they are the standard used for most commercial games. In this course, students will learn how to design 2D games for Windows, creating a simple game as part of the course.	
CSC 574 Computer Networks.....	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. P, CSC 300.	
CSC 592 Topics.....	(1-3)
CSC 630 Principles Data Base System Design	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. P, CSC 484.	
CSC 643 Systems Analysis and Design	3
Advanced theory and practice of systems analysis. Life cycle concept of information system development. Covers HIPO charts, dataflow analysis, Nasis-Schneiderman charts, decision tables, structured walkthroughs, PERT and CPM, computer selection and evaluation. Modular design and the use of a computer aided software engineering (CASE) tools in the completion of an analysis and design project are also emphasized. P, CSC 325, or consent of instructor.	
CSC 705 Design and Analysis of Computer Algorithms.....	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. P, CSC 300.	
CSC 710 Structure and Design of Programming Languages	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. P, CSC 300.	
CSC 720 Theory of Computation	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. P, CSC 445.	
CSC 740 Management Information Systems.....	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. P, CSC 325.	
CSC 750 Recent Advances in Parallel Process.....	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. P, CSC 705.	
CSC 770 Software Engineering Management.....	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. P, CSC 470, or consent of instructor.	
CSC 787 Research	(1-9)
Individualized research. Repeatable P/F. Credits cannot be used on plan of study.	

CSC 788 Research Report/Design Paper(1-2)
Conduct an approved research or design project and complete an approved research report or design paper in Computer Science.

CSC 790 Seminar1

CSC 791 Independent Study(1-3)

CSC 792 Topics.....(1-3)

CSC 798 Thesis.....(1-7)



Counseling and Human Resource Development

Degrees Offered:

MS Counseling and Human Resource Development

- *Counseling in a Rehabilitation and Mental Health Setting specialization*
- *Counseling in an Agency Setting specialization*
- *Counseling in a School Setting specialization*
- *Counseling in a Student Affairs Setting specialization*

MEd Counseling and Human Resource Development

- *Administration of Student Affairs Programs specialization*

Graduate Faculty

Hande Briddick,
Assistant Professor,
PhD, Kent State University, 2004,
School Counseling

William Briddick,
Assistant Professor,
PhD, Kent State University, 2005,
Community Counseling

Mark Britzman,
Professor,
Ed.D., University of South
Dakota, 1987
Community Counseling

Alan Davis,
Professor,
PhD, Oregon State University,
1984,
Rehabilitation Counseling

Michael J. Fellner,
Assistant Professor,
PhD, University of Texas, 1973
Community Counseling

Ruth Harper,
Professor,
PhD, Kansas State University,
1987
Student Affairs

Marla Muxen,
Professor,
PhD, University of Minnesota-
Minneapolis/ St. Paul, 1990
Community Counseling

Marysz Rames,
Vice President for Student Affairs,
Ed.D., University of South
Dakota, 1997
Student Affairs

Department Head: Associate Professor Jay Trenhaile

Graduate Coordinator: Associate Professor Jay Trenhaile

For additional information contact:

Mailing address: SDSU Box 507

Wenona Hall — SWE 312

WWW: <http://www3.sdsu.edu/Academics/CollegeOfEducationAndCounseling/CounselingandHumanResourceDevelopment/>

E-mail: jay.trenhaile@sdsu.edu

Phone: 605/688-4190

Fax: 605/688-5929

Higher Education Center – West River information contact:

E-mail: michael.fellner@sdsu.edu

Program Description

The Counseling and Human Resource Development program is designed to assist the student in developing professional skills and competencies expected of qualified counselors in school, agency, rehabilitation or higher education settings. These include but are not limited to: 1) intervention and assessment strategies appropriate for Master's-level counselors, 2) individual and group counseling competencies, 3) professional responsibility, and 4) self-knowledge and self-development. The school, agency (community), and student affairs 48-hour tracks are accredited by CACREP (Council for the Accreditation of Counseling and Related Educational Programs). An administrative track in college student personnel is also offered through CHRD. This 36-hour program meets CAS (Council for the Advancement of Standards for Student Services/Development Programs) guidelines.

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Option C

Master of Education: 36 credits

Core Requirements for Master's

CHRD 601	Introduction to Professional Issues and Ethics	3 credits
CHRD 602	Research and Evaluation in Counseling	3 credits
CHRD 610	Developmental Issues in Counseling	3 credits
CHRD 661	Theories of Counseling	3 credits
CHRD 701	Professional Issues and Ethics II	1 credit
CHRD 731	Multicultural Counseling and Human Relations	3 credits
CHRD 736	Appraisal of the Individual	3 credits
CHRD 742	Career Counseling and Planning	3 credits
CHRD 766	Group Counseling	3 credits
CHRD 785	Pre-Practicum	3 credits
CHRD 786	Counseling Practicum	3 credits
CHRD 794	Internship	6 credits

Additional Requirements

The following courses are required for the respective areas of specializations:

Counseling in an Agency Setting

CHRD 713	Administration and Management of Mental Health Organizations	3 credits
CHRD 723	Counseling the Family	3 credits
CHRD 755	Clinical Diagnosis and Treatment Planning	4 credits
CHRD 794	Internship	6 credits

Counseling in a School Setting

CHRD 721	School Counseling	3 credits
CHRD 722	Administration and Management of School Counseling Programs	3 credits
CHRD 794	Internship	6 credits
OR		
CHRD 723	Counseling the Family	3 credits
CHRD 755	Clinical Diagnosis and Treatment Planning	6 credits

Rehabilitation and Mental Health Counseling

CHRD 751	Overview of Rehabilitation and Mental Health Counseling	3 credits
CHRD 752	Medical and Psychological Aspects of Disability	3 credits
CHRD 753	Case Management Principles and Plan Development	3 credits
CHRD 794	Internship	6 credits

Counseling in a Student Affairs Setting

CHRD 770	Student Development: Theory and Practice	3 credits
CHRD 771	Student Personnel Services	3 credits
CHRD 772	Administration and Leadership in Student Affairs	3 credits
CHRD 794	Internship	6 credits

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

Admission to the Counseling and Human Resource Development Department has the following additional requirements.

- A. Prospective students need to make formal application to the CHRD Department. To be considered for formal admission, a file containing the following items must be submitted to the CHRD office by **April 1** for Fall, and **October 1** for Spring. Other arrangements may be made by contacting the Department Chair
 - 1) A one page goal statement including **one or more** of the following:
 - a. Aspirations related to the field of counseling;
 - b. One significant life event that contributed to the development of these aspirations;
 - c. The single greatest personal asset that will serve you in realizing your aspirations;
 - d. The one personal characteristic or quality that you most need to modify, improve, or change in order to realize your aspirations.

Goal statements that exceed one page will not be considered.

- 2) A current resume that includes all previous work experience, volunteer service, and education that you feel have contributed to your desire to enter the counseling profession.
- 3) Two completed CHRD Reference Evaluation Forms, which are available from the department. **These Evaluation Forms are in lieu of the Graduate School Personal Reference Form.**

Howard Smith,
Professor,
Ed.D., University of South
Dakota, 1980
Agency Counseling

Jay Trenhaile,
Associate Professor,
Ed.D., University of South
Dakota, 1996
School Counseling

Adjunct/Courtesy/
Joint Faculty

Robert Holmes,
Instructor,
MSW, State University of New
York-Albany, 1987,
Community Counseling

Bonnie Hood Weaver,
Assistant Professor,
Ed.D., University of
Massachusetts-Amherst, 1986
Agency Counseling

Requirements for 36-hour program in Student Personnel:

CHRD 601
Introduction to Professional Issues and Ethics1

CHRD 602
Research and Evaluation in Counseling3

CHRD 742
Career Counseling and Planning.....3

CHRD 770
Student Development: Theory and Practice3

CHRD 771
Student Personnel Services.....3

CHRD 772
Administration and Leadership in Student Affairs3

CHRD 794
Internship3-6

EDFN 727
Group Processes.....3

Electives 11 hours
(see advisor for suggestions)

B. Applicants are **required** to attend an orientation and group interview held usually within one month after the October and April deadlines. Students whose applications are complete by the deadline will be notified by the departmental secretary regarding the specific date and place of the interview.

Soon after the orientation and interview, each applicant will receive a letter granting or denying admission.

If granted admission students have **one calender year from the time of acceptance to begin taking courses**. Otherwise, a formal reapplication to CHRD is required.

General requirements begin on page 16 (Master’s).

Counseling and Human Resource Development (CHRD) Course Offerings

CHRD 530 Gender Issues in Counseling3

CHRD 571 Gerontology Issues in Counseling.....3

CHRD 601 Introduction to Professional Issues and Ethics1
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 Counseling3
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.

CHRD 610 Developmental Issues in Counseling.....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 651 Mental Health and Personality Development.....3
The nature of personality and developmental theory, mental health issues of children, adolescents and adults with emphasis on programs/strategies for positive mental health. Various personality assessment methods are used. On demand.

CHRD 661 Theories of Counseling.....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: Current Issues in Student Affairs.....3

CHRD 691 Independent Study(1-3)

CHRD 692 Topics(1-3)

CHRD 693 Workshop(1-3)

CHRD 700 Public School Administration3

CHRD 701 Professional Issues and Ethics II1
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.

CHRD 713 Administration and Management of Mental Health Organizations3
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 Industry3
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.....	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.....	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	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 731 Multicultural Counseling and Human Relations	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	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.....	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	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	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	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	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	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 Advanced Testing: Intellectual Assessment.....	3
Examines the role, function, and use of intellectual assessment instruments. Emphasis is placed on administration and interpretation of the assessment instruments.	
CHRD 759 Advanced Testing: Personality Assessment.....	3
Examines the role, function, and use of personality assessment instruments. Emphasis will be placed on the administration and interpretation of personality assessment instruments.	

CHRD 766 Group Counseling.....	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. P, CHRD 601, 602, 610, 661 and written permission from instructor.	
CHRD 770 Student Development: Theory and Practice.....	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.....	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.....	3
Legal cases and precedents having a major impact in student affairs administration are covered in this course. In addition, leadership skills are developed. The differences between public and private institutions as well as among various constituent groups in higher education are included. Equivalent to AHED 772.	
CHRD 785 Pre-Practicum.....	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. P, CHRD 601, 602, 610, 661.	
CHRD 786 Counseling Practicum.....	(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.	
CHRD 787 Group Counseling Practicum.....	3
Supervised practicum in conducting small group counseling sessions.	
CHRD 788 Research Problems in Counseling and Guidance.....	(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.....	(1-3)
CHRD 794 Internship.....	(2-6)
CHRD 798 Thesis.....	(1-6)

Dairy Science

Degrees Offered:

- PhD Animal Science
- PhD Biological Sciences
 - *Dairy Science specialization*

- MS Animal Science
 - *Nutrition specialization*

- MS Biological Sciences
 - *Dairy Science specialization*

Department Head: Professor Vikram Mistry
Graduate Coordinator: Professor Vikram Mistry

For additional information contact:

Mailing address: SDSU Box 2104
Dairy Microbiology — SDM 109A
WWW: <http://dairysci.sdstate.edu>
E-mail: vikram.mistry@sdstate.edu

Phone: 605/688-4116
Fax: 605/688-6276

Program Description

The Dairy Science Department provides research opportunities leading to MS and PhD degrees in both Animal Science and Biological Sciences. Contact the department for specific research areas.

Available Options for Graduate Degrees

Master of Science: Option A
Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

Core Requirements

For details see specific programs: MS In Biological Sciences; MS in Animal Science; PhD in Biological Sciences.; and PhD in Animal Science.

Additional Admission Requirements

GRE: Not required
TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based

General requirements begin on page 16 (Master's) and page 21 (PhD).

Dairy Science (DS) Course Offerings

- DS 513 Physiology of Lactation**3
Anatomy, physiology, and biochemistry of mammary glands. Factors affecting quality and quantity of milk. P, VET 223 or equivalent.
- DS 542 Dairy Product and Process Development**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.

Graduate Faculty

Sanjeev Anand,
Assistant Professor,
PhD, National Dairy Research
Inst., 1986,
Dairy Microbiology and Food
Safety

Robert J. Baer,
Professor,
PhD, University of Georgia, 1983
Sensory Evaluation of Dairy
Products, Dairy Chemistry

Ashraf Hassan,
Associate Professor,
PhD, University of Georgia, 2003
Cheese Technology, Fermented
Milks, Electron Microscopy

Arnold Hippen,
Professor,
PhD, Iowa State University, 1997
Dairy Cattle Nutrition and Feed
Management

Kenneth F. Kalscheur,
Associate Professor,
PhD, University of Maryland,
2002
Nutrient Metabolism and
Utilization in Dairy Cattle

Lloyd Metzger,
Associate Professor, Alfred Chair
in Dairy Education,
PhD, Cornell University, 1999,
Dairy Product Processing and
Chemistry

Vikram Mistry,
Professor,
PhD, Cornell University, 1986
Membrane Processing, Cheese
Technology, Dairy Chemistry

David J. Schingoethe,
 Distinguished Professor, PhD,
 Michigan State University, 1968
 Protein/Energy Nutrition,
 Metabolism/Whey Utilization by
 Dairy Cattle

DS 555 Environmental Management of Dairy Systems	3
Discussion of environmental issues concerning dairy farms and dairy manufacturing plants with a focus on nutrient balances, by-product usage, odors, social consequences, and government policies which affect the dairy industry. P, Junior standing or consent of instructor.	
DS 711 Ruminology	3
Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. P, CHEM 361 and VET 223 or consent of instructor.	
DS 722 Advanced Dairy Microbiology	3
Role of microorganisms in manufacture and spoilage of dairy products. Emphasis on starter culture technology. Corequisite course: DS 722L. P, DS 301 or MICR 311.	
DS 722L Advanced Dairy Microbiology Laboratory	0
DS 731 Laboratory Techniques in Dairy Science	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.	
DS 791 Independent Study	(1-4)
DS 792 Topics	(1-4)
DS 798 Thesis	(1-7)
DS 898D Dissertation - PhD	(1-12)

Biological Sciences (BIOS) Course Offerings
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BIOS 662 Advanced Molecular and Cellular Biology	6
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular biology and pave a solid foundation for graduate students as they develop and conduct thesis and dissertation research. It will give students a perspective both on what is known and unknown about cellular structures, organization and their functions, cell chemistry and biosynthesis, genetic mechanisms, and cells in their social context. Undergraduate courses in genetics and cell biology are recommended.	
BIOS 663 Advanced Concepts in Infectious Disease	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. P, BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.	
BIOS 788 Master's Research Problems	(2-3)
BIOS 790 Seminar	1
BIOS 792 Topics	(1-6)
BIOS 798 Thesis	(1-7)
BIOS 890 Seminar	1
BIOS 898D Dissertation	(1-7)

Design, Merchandising, and Consumer Sciences

Degree Offered:

MS Family and Consumer Sciences

- *Merchandising specialization*

Department Head: Professor Jane E. Hegland

Graduate Coordinator: Professor Jane E. Hegland

For additional information contact:

Mailing address: SDSU/AMID

SNF 229/Box 2275A

Brookings, SD 57007-0295

WWW: <http://ww3.sdstate.edu/Academics/CollegeofFamilyAndConsumerSciences/>

E-Mail: jane.hegland@sdstate.edu

Phone: 605/688-5196

Fax: 605/688-5578

Program Description

Masters students learn to use data for insight, improvement, and innovation. Their preparation makes them more aware, flexible, and proactive toward rapidly changing consumer profiles so that they will deliver an improved customer experience.

Courses offered in Merchandising support the Master of Science in Family and Consumer Sciences degree program at South Dakota State University. Students enrolled in the degree program will develop an enhanced understanding of the global retail environment and their own leadership potential. The Merchandising specialization has been developed by faculty from the Great Plains Interactive Distance Education Alliance (Great Plains IDEA).

Courses are entirely Internet-based and are taught by faculty within the Alliance (Colorado State University, Kansas State University, North Dakota State University, Oklahoma State University, and South Dakota State University).

Courses offered in Interior Design support the Master of Science in Family and Consumer Sciences degree program at South Dakota State University. Students may select courses in Interior Design to support their Graduate Program. These courses are not currently scheduled, as the Graduate Program in Interior Design is currently inactive. Refer to College of Family and Consumer Sciences section for specific details.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

Certificate

Students can also earn a certificate in Merchandising by completing 12 credit hours as follows: MRCH 510; MRCH 520; MRCH 530 **OR** 540; and MRCH 550. For current information on both options, refer to the Great Plains IDEA Merchandising Master's at <http://gpidea.sdstate.edu/GPIdeaMer.htm>.

Graduate Faculty

*Jane E. Hegland,
Professor,
PhD, University of Minnesota,
1995
Clothings & Textiles*

*Nancy N. Lyons,
Associate Professor,
Ed.D., University of South
Dakota, 2001
Educational Administration*

*Linda L. Nussbaumer, Professor,
PhD, University of Minnesota,
1998
Interior Design*

*Susan C. Strickler,
Associate Professor,
Ed.D., University of South
Dakota, 1996
Adult and Higher Education*

Core Requirements for Master of Science

Students are required to complete 36 credit hours including:

MRCH 510 Consumer Behavior In Merchandising	3 credits
MRCH 520 Professional Advancement in Merchandising	3 credits
MRCH 530 Product Design, Development, and Evaluation	3 credits
MRCH 540 Promotion Strategies in Merchandising	3 credits
MRCH 550 Retail Theory and Current Practice	3 credits
MRCH 610 History and Contemporary Issues In Trade	3 credits
MRCH 620 International Merchandise Management.....	3 credits
MRCH 630 Research Methods In Merchandising.....	3 credits
MRCH 640 Financial Merchandising Implications.....	3 credits
MRCH 650 Strategic Planning in Merchandising	3 credits
MRCH 695 Practicum.....	(1-6) credits
MRCH 788 Research Report	(1-3) credits
MRCH 798 Thesis	(1-6) credits

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based

The Department requires all applicants to submit a current resume and short (2-3 pages) essay indicating professional goals and how completion of a Master's degree will assist in meeting these goals. This statement will be used for two purposes: first, to assess the fit between the student's educational/career goals and the academic program; and second, to assess the student's written communication skills. Refer to College of Family and Consumer Sciences section for specific details.

General requirements begin on page 16 (Master's).

Merchandising (MRCH) Course Offerings

MRCH 510 Consumer Behavior in Merchandising	3
Evaluation of psychological, sociological, and cultural theories of consumers' behavior through the examination of factors influencing consumers' decision-making process.	
MRCH 520 Professional Advancement in Merchandising	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.	
MRCH 530 Product Design, Development, and Evaluation	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.	
MRCH 540 Promotional Strategies in Merchandising.....	3
Examination of integrated marketing communications (i.e. promotional strategies and techniques) while fostering cultural and global awareness, social responsibility and ethical decision-making in the field of promotion.	
MRCH 550 Retail Theory and Current Practice.....	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 trend sin order to forecast probable future patterns.	
MRCH 580 Travel Studies	(1-5)
Study of businesses, museums, and other relevant places through site tours and presentations in selected locations. Includes pre-travel orientation and post-travel written report. P, consent of department.	
MRCH 591 Independent Study.....	(1-3)
MRCH 592 Topics.....	(1-3)

MRCH 610 History and Contemporary Issues in Trade.....	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.	
MRCH 620 International Merchandise Management.....	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.	
MRCH 630 Research Methods in Merchandising	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.	
MRCH 640 Financial Merchandising Implications.....	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.	
MRCH 650 Strategic Planning in Merchandising	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.	
MRCH 690 Seminar.....	(1-2)
MRCH 695 Practicum	(1-6)
MRCH 788 Master's Research Problems/Projects.....	(1-3)
MRCH 798 Thesis	(1-6)

Interior Design (ID) Course Offerings
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ID 580 Travel Studies.....	(1-5)
Study of businesses, museums and other relevant places through site tours and presentations in selected locations. P, consent of department.	
ID 590 Seminar	(1-3)
ID 591 Independent Study.....	(1-3)
ID 592 Topics	(1-3)

Economics

Degree Offered:

MS Economics

- * Agricultural Business emphasis
- * Agricultural Economics emphasis
- * Business Economics emphasis
- * General Economics emphasis

Graduate Faculty

Dwight Adamson,
Associate Professor,
PhD, Washington State
University, 1988
Macroeconomics; Statistics

Martin K. Beutler,
Professor,
PhD, Purdue University, 1986
Agricultural Impacts and
Coordinated Resource
Management

Carol Cumber,
Professor,
PhD, South Dakota State
University, 1994
Management; Business Policy

David E. Davis,
Assistant Professor,
PhD, University of Oregon, 1998
Industrial Organization; Labor
Economics; Econometrics

Matthew A. Diersen,
Associate Professor,
PhD, University of Illinois, 1999
Risk and Business Management

Ding Du,
Assistant Professor,
PhD, West Virginia University,
2003
Financial Economics

Scott Fausti,
Professor,
PhD, University of Illinois, 1991
Macroeconomics; Mathematical
Economics

Larry Janssen,
Professor,
PhD, University of Nebraska-
Lincoln, 1978
Agricultural Finance;
Agricultural Policy

Nicole Klein,
Professor,
PhD, Kansas State University,
1996
Management; Marketing

Interim Department Head: Professor Evert Van der Sluis

Graduate Coordinator: Professors Joseph Santos and Jason Zimmerman

For additional information contact:

Mailing address: SDSU Box 504
Scobey Hall — SSB 138

<http://econ.sdstate.edu/Academic/grad.htm>

E-mail: joseph.santos@sdstate.edu; jasonzimmerman@sdstate.edu

Phone: 605/688-4141

Fax: 605/688-6386

Program Description

The graduate curriculum in economics prepares students for professions in business and government as well as for further graduate study. The program is built on a core curriculum of economic theory, which consists of courses in advanced microeconomics, advanced macroeconomics, and econometrics, and allows students to design individualized programs in one of the following four areas of emphases:

- Business Economics
- Agricultural Business
- General Economics
- Agricultural and Resource Economics

The program also offers an accelerated Master's program that enables exceptional students to begin their graduate studies while they complete their undergraduate degree. Students enrolled in this accelerated program can complete both a Bachelor's and Master's degree in five years.

A limited number of research and teaching assistantships and scholarships may be available to qualified students.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Accelerated

Core Requirements for Master of Science

ECON 703	Advanced Macroeconomics.....	3 credits
ECON 704	Advanced Microeconomics.....	3 credits
ECON 705	Econometrics.....	3 credits
ECON 707	Research Methodology in Applied Economics	2 credits

No converted graduate credit will be granted for the following 300-499 advanced undergraduate courses: ECON 301 Intermediate Microeconomics, ECON 302 Intermediate Macroeconomics.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based

Prerequisites for unconditional admission into the program are completion of ECON 301, ECON 302, Statistics and Calculus.

General requirements begin on page 16 (Master's).

Accounting (ACCT) Course Offerings

ACCT 506 Accounting for Entrepreneurs.....	3
ACCT 592 Topics	(1-4)

Agricultural Economics (AGEC) Course Offerings

AGEC 521 Farming and Food Systems Economics.....	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. P, senior standing, AGECE 271 or ECON 201.	
AGEC 571 Advanced Farm and Ranch Management	3
Leasing arrangements, capital investment, computerized accounting and budgeting. Linear programming as a tool for planning and organizing the farm business. P, senior standing, AGECE 271, ECON 301, or consent of instructor.	
AGEC 591 Independent Study.....	(1-3)
AGEC 592 Topics	(1-4)
AGEC 593 Workshop	(1-3)
AGEC 621 Advanced Production Economics	3
Economic theory and quantitative techniques used in the analysis of agricultural production decisions; estimation of production functions; determination of optimal input and output combinations; and the impacts of risk on production decisions. P, AGECE 271 or ECON 201.	
AGEC 630 Advanced Agricultural Marketing and Prices	3
Economic theory and quantitative techniques used in analysis of agricultural market problems, construction of economic models, statistical estimates of supply and demand, and price forecasting. P, AGECE 354, ECON 301, ECON 423, or consent of instructor.	
AGEC 691 Independent Study.....	(1-3)

Business Administration (BADM) Course Offerings

BADM 506 Accounting for Entrepreneurs.....	3
Accounting concepts and practices for entrepreneurs/small business owners. Emphasis given to the use of accounting tools to solve small business problems.	
BADM 538 Entrepreneurship II.....	3
This course focuses on the process of screening an opportunity, drafting a personal entrepreneurial strategy, and understanding the business plan writing process. Building the entrepreneurial team and the acquisition and management of financial resources are emphasized along with venture growth, harvest strategies, and valuation.	
BADM 576 Marketing Research.....	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.	
BADM 592 Topics	(1-4)
BADM 593 Workshop.....	(1-3)

George Langelett,
Associate Professor,
PhD, University of Nebraska,
2000
Economic Theory; Marketing

Burton Pflueger,
Professor,
PhD, University of Illinois, 1985
Farm Business Management

Bashir Qasmi,
Associate Professor,
PhD, Iowa State University, 1986
Agricultural Marketing

Joseph M. Santos,
Professor,
PhD, Rutgers University, 1996
Macroeconomics; Monetary and
Financial Theory; Applied
Time-Series Econometrics

John Sondey,
Professor,
PhD, Washington State
University, 1989
Public Finance; Labor
Economics

Gary Taylor,
Associate Professor,
PhD, Oklahoma State University,
1995
Agricultural Economics and
Business; Agricultural Policy

Evert Van der Sluis,
Professor,
PhD, University of
Minnesota, 1993
International Economics;
Agricultural Economics

Jason Zimmerman,
Associate Professor,
PhD Purdue University, 1998
Microeconomic Theory

Economics (ECON) Course Offerings

ECON 503 History of Economic Thought	3
History of economic thought surveys the historical development of economic theory from ancient to modern times. The writings of Aristotle, Adam Smith, Marx, and Marshall provide part of the diverse menu of economic thought.	
ECON 520 Economics of the Public Sector	3
Governmental operations, policies, and revenues as related to employment, productivity and economic welfare. Alternatives that would affect social services, education, commerce and trade, fiscal policies, and quality of life. P, ECON 201 or consent of instructor.	
ECON 531 Managerial Economics	3
Applications of microeconomic theory, statistics and other quantitative methods to analysis and solution of decision making problems confronted by managers of agribusiness, commercial and manufacturing enterprises. Topics include economic analysis of demand, production, cost, market structure, government regulation, risk, and capital budgeting. P, ECON 301, STAT 281, or equivalent.	
ECON 540 Economics of the International Sector	3
International flow of trade and balance of payments. Monetary and fiscal policies. Trade controls and their effect upon the agricultural and domestic economies. Significant current developments in trade and finance. P, ECON 201, 202, 330 or consent of instructor.	
ECON 550 Industrial Organization	3
Industrial organization studies how different industry structures influence firm performance and business practices, and how government policies affect competitiveness and the economy.	
ECON 560 Economic Development	3
Developing and developed national economies. Factors impacting economic development. Role of public policies in development. Agricultural and rural development issues emphasized. P, ECON 201, 202, or consent of instructor.	
ECON 572 Resource and Environmental Economics.....	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.	
ECON 576 Marketing Research	3
Marketing problems confronting agribusinesses and businesses. Descriptive and analytical techniques in a research methods approach. Marketing research techniques. (Offered on demand)	
ECON 591 Independent Study.....	(1-3)
ECON 593 Workshop	(1-3)
ECON 601 Economic Study in Industrial Management	3
Intensive study of economic choice and value theory, financial statement structure and analysis, and financial management. Not open to economics majors.	
ECON 610 Financial Management.....	3
Advanced techniques for managing working capital, capital budgeting, analysis of financial structure and cost of capital, valuation, financial planning and control. P, BADM 310, STAT 281, or consent of instructor.	
ECON 624 Advanced Mathematical Economics.....	3
Integral calculus, differential and difference equations, optimal control and other methods used to analyze economic dynamics, investment, growth and other advanced topics in economics. P, ECON 428.	
ECON 653 Advanced Market Research	3
Strategic marketing and decision making with emphasis on utilizing both qualitative and quantitative techniques as well as marketing models. P, ECON 370, STAT 281.	
ECON 660 Operations Management.....	3
Product planning, demand forecasting and management, capacity planning, scheduling, inventory planning and timing, materials management, quality, work standards and measurement. P, BADM 360, ECON 301, STAT 281.	
ECON 691 Independent Study.....	(1-3)
ECON 692 Topics	(1-4)

ECON 703 Advanced Macroeconomics	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. P, ECON 428 or consent of instructor.	
ECON 704 Advanced Microeconomics	3
Rigorous analysis of topics in microeconomics including: methodology of economic science, economic choice, production, resource allocation, distribution, welfare economics, and general equilibrium. P, ECON 428 or consent of instructor.	
ECON 705 Econometrics	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. P, ECON 423, ECON 428.	
ECON 707 Research Methodology in Applied Economics	2
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 782 Personnel and Labor Relations	3
Labor relations, negotiation and arbitration; pay and benefits; hiring, promotion and termination policies; use of testing in the workplace. P, BADM 360 or consent of instructor.	
ECON 788 Research Paper	(1-2)
ECON 792 Topics	(1-4)
ECON 798 Thesis	(1-7)



Educational Leadership

Degrees Offered:

MEd Curriculum and Instruction

- *Adult and Higher Education specialization*
- *Career and Technical Education specialization*
 - * Agricultural emphasis
 - * Instructional Technology emphasis
- *Elementary or Secondary specialization*
 - * Computer Education emphasis
 - * Biology emphasis
 - * Chemistry emphasis
 - * Mathematics emphasis

- * Physics emphasis
- * English as a second language emphasis
- * Middle School emphasis
- * Reading emphasis

MEd Educational Administration

- *Adult and Higher Education specialization*
- *Career and Technical Education specialization*
- *Elementary Administration specialization*
- *Secondary Administration specialization*

Graduate Faculty

Tim Andera,
Professor,
Ed.D., Illinois State University,
1994
Career and Technical Education

R. L. Erion,
Professor,
PhD, Texas A & M University,
1985
Research, Computers, Assessment

Lonell Moeller,
Professor,
PhD, Iowa State University of
Science & Technology, 1981
*Agricultural Education, CTE,
Computers*

Kathryn Penrod,
Professor,
PhD, Cornell University, 1984
*Adolescence, Teaching,
Curriculum*

Denise M. Peterson,
Associate Professor,
Ed.D., University of South
Dakota, 1998
Distance Education

Kenneth S. Rasmussen,
Associate Professor,
PhD, University of Nebraska,
1979
Educational Administration

Department Head: Associate Professor Kenneth S. Rasmussen

Graduate Coordinator: Associate Professor Kenneth S. Rasmussen

For additional information contact:

Mailing address: SDSU Box 507

Wenona Hall — SWE 217

WWW: <http://learn.sdstate.edu/edgrad>

E-mail: ken.rasmussen@sdstate.edu/edgrad

For West River Graduate Center information contact:

E-mail: augustine.scully@sdstate.edu

Phone: 605/688-6365

Fax: 605/688-5784

Program Description

Curriculum and Instruction

This major is appropriate for K-12 classroom teachers, recreation program staff, adult and community educators, Cooperative Extension Service educators and junior/community college instructors. Within this major, the programs above are available.

Educational Administration

This major is designed to provide the basic 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 South Dakota State Board of Education requires four years of teaching experience for administrator certification. The emphases above are presently available.

Available Options for Graduate Degrees

Master of Education: Option B

Option C

Core Requirements

For details see appropriate sidebars: Educational Administration; and Curriculum and Instruction.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based

Applicants must provide a resumé, goal statement, and two letters of professional reference to the Graduate School. 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 begin on page 16 (Master's).

Agricultural Education (AGED) Course Offerings

AGED 591 Independent Study	(1-3)
AGED 690 Seminar	(1-2)
AGED 706 Adult Education in Agriculture	2
Selected areas of Agricultural Education including special investigation, reports, and discussion.	
AGED 707 Supervised Occupational Experiences and Student Groups	2
Emphasizes relationships of occupational experience and vocational student organization in agriculture to instructional programs; needs, scope, techniques and materials in developing and improving these programs.	
AGED 776 Curriculum in Agricultural Education	2
For teachers, administrators and supervisors of vocational agriculture/agribusiness programs at secondary, post-secondary and adult levels; principles and procedures in course building, courses of study, and curriculum. P, graduate student in Agricultural Education. Equivalent to CTE 776.	
AGED 788 Research Problems in Agricultural Education	(1-2)
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. Course is repeatable for additional credit.	

Adult Higher Education (AHED) Course Offerings

AHED 600 Special Problems in Extension	(2-6)
Individually assigned investigative problems in Extension. Individual conference with laboratory and/or field work. Arrangements with Extension staff must be made prior to registration.	
AHED 691 Independent Study	(1-3)
AHED 693 Workshop	(1-3)
AHED 711 Assessment and Program Design	3
Organization and implementation of adult education programs. Particular emphasis on curriculum development, financing, staffing, marketing, and evaluation of adult programs.	
AHED 720 Principles of Postsecondary Education	3
Adult learning theory and instructional methods. Principles of adult curriculum design. Social and cultural factors and their effects on the learning process.	
AHED 755 Principles of College Teaching	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 772 Administration and Leadership in Student Affairs	3
Provides an overview of administrative and leadership practice in Student Affairs work. The course focuses on the theoretical foundations of Student Affairs administration and the utilization of those foundations in the daily management of Student Affairs unit. Student will gain both knowledge and experience in applying theory to the administration of Student Affairs operations. Equivalent to CHR 772.	
AHED 788 Research Problems in Adult Education	1-2
A problem is selected, analyzed, and reported in form approved by the research advisor. Required of all graduated students in education qualifying for the degree under Option B. Can be elected under Option C if desired. Course is repeatable for additional credit.	
AHED 790 Seminar	(1-3)
AHED 794 Internship	(1-6)

Career and Technical Education (CTE) Course Offerings

CTE 519 Methods of Teaching	3
This course will feature lesson presentation and methods of delivering instruction in vocational technical education. The course is designed for individuals who are presently teaching in the vocational technical education field. Content builds upon existing knowledge of the program participants in order to increase comprehension of the field of vocational technical education. Instructional techniques appropriate for vocational technical education are developed based on the models identified in competency-based or performance-based philosophy. Participants are actively involved in current teaching assignments which creates an enormous opportunity for reflection and debate.	

*Lawrence Rogers,
Professor,
PhD, University of Nebraska,
1975
Foundations, Curriculum, Social
Studies*

*Loye Romereim-Holmes,
Professor,
Ed.D., University of South
Dakota, 1987
Special Needs, Reading*

*Howard Smith,
Professor,
Ed.D., University of South
Dakota, 1980
Educational Leadership*

*P. Allen Whittlatch,
Assistant Professor,
Ed.D., Drake University, 1997
Educational Administration*

*Adjunct/Courtesy/
Joint Faculty*

*Mark A. Baron,
Associate Professor,
PhD, University of Alabama,
1991
Strategic Planning*

*Floyd Boschee,
Professor,
Ed.D., University of Montana,
1972
School Administration & School
Law*

*Karen A. Card,
Assistant Professor,
PhD, Ohio State University, 1991
Public Policy & Higher
Education*

*Tim Creal,
Assistant Professor,
Ed.D., University of South
Dakota, 1996
School Administration*

*Jay A. Heath, Professor, Ed.D.,
University of South Dakota, 1977
School Improvement Process*

*Michael P. Reger,
Assistant Professor,
PhD, Ohio State University, 1983
Leadership, Student Affairs,
Administration*

*Augustine Scully,
Assistant Professor,
Ed.D., University of South
Dakota, 1996
Technology in Education,*

Informational Literacy
Educational Administration with Specialization in Elementary or Secondary Education*

EDAD 700
Introduction to School Administration3

EDAD 707
Principalship.....2

EDAD 708
Elementary Principalship Practicum.....1

OR

EDAD 709
Secondary Principalship Practicum.....1

EDAD 715
Supervision3

EDAD 730
School Finance2

EDAD 735
School Law3

EDAD 741
Community and Public Relations

EDAD 794
Internship.....2

EDER 761
Informational Literacy.....3

EDFN 730
Current Issues in Education.....3

EDFN 745
Effective Teaching: Theory Into Practice.....3

EDFN 747
Curriculum: Theory Into Practice.....2

EDFN 790
Seminar1

OR

EDFN 700
Exceptional Learners.....1

EDFN 725
Education in a Pluralistic Society.....3

EDFN 750
Educational Technology.....3

ELED 748
Elementary Curriculum Practicum.....1

SEED 748
Secondary Curriculum Practicum.....1

* Meets requirements for a principalship endorsement on a South Dakota Teaching Certificate. Three years of verified experience on a valid certificate in an accredited K-12 school, one year of which includes classroom teaching experience or direct services to students.

CTE 520 Entrepreneurship in Career Education.....3
 This course is designed to help educators in all areas of vocational education to incorporate basic concepts of entrepreneurship into the curriculum. Topics include: small business plans, government regulations, site locations, record keeping, financing, legal consideration, business promotions, managing human resources, small business contributions to the economy and economic development, educational resources for entrepreneurship, placement of the entrepreneurship concept in vocational education programs and review of basic concepts related to entrepreneurship such as business ownership options and entrepreneur characteristics.

CTE 525 Development of Career and Technical Education Thought and Practice3
 Philosophy, origins, and development of vocational, technical and practical arts, education programs at adult, post-secondary, secondary, and pre-vocational levels. Current and emerging principles, practices, and issues are stressed.

CTE 530 Cooperative Education Coordination Techniques3
 This course emphasizes the organization and coordination of cooperative work experience in vocational education programs: agriculture, marketing education, health occupations, family consumer sciences education, business education, and trade and industrial. Emphasizes strategies and techniques for coordinating classroom instruction with on-the-job work experience. Topics include: program organization, coordinator responsibilities, student selection, placement, advisory councils, public relations, training stations, training plans, legal aspects, and program and student evaluation.

CTE 540 Curriculum Design in Career Education3
 This course addresses principles in developing vocational education curriculum research, development, implementation, and evaluation at the secondary, post-secondary and adult levels. Concepts include: coordination and organization of vocational education curriculum, curriculum design models (including competency-based education and applied academics); trends in state and national programs; long-range planning; articulation between secondary, post-secondary and 4-year programs.

CTE 563 Technical and Industrial Experiences(1-4)
 This course is designed for Career and Technical Educators. The purpose of this course is to aid the educator in staying current with new technologies and methodologies occurring in business and industry. Approval is required from the Coordinator of Career and Technical Education (CTE) at least two weeks prior to the educational experience. To receive graduate credit a student will need to complete a paper reviewing the educational experience. Complete details on receiving undergraduate and graduate credit for the Technical and Industrial Experiences course are included in the application materials. (Appropriate forms and related paperwork can be acquired from the Coordinator of CTE).

CTE 591 Independent Study.....(1-4)

CTE 592 Topics(1-3)

CTE 700 Technology in Career Education.....3
 Presents technology-based alternatives to traditional standard delivery group instruction practices. Emphasizes computer-assisted and computer-managed instructional concepts, interactive video, interactive telecommunications, and other distance learning methods. Also addresses individualized learning approaches to education. P, Baccalaureate degree or consent. Computer background.

CTE 720 Entrepreneurship Career Education3

CTE 731 Administration and Supervision of Career Education3
 Organization, administration of career and technical education and the practical arts at all levels. Local state- federal relationships in administration and supervision. State plan development, reimbursement plans and procedures, projected activities, and program standards. Principles of effective supervision and evaluation applicable to vocational-technical education. P, consent of instructor.

CTE 751 Curriculum in Home Economics Education2

CTE 761 Evaluation in Home Economics.....2

CTE 776 Curriculum in Agricultural Education.....2
 For teachers, administrators and supervisors of career and technical agriculture/programs at secondary, post secondary and adult levels; principles and procedures in course building, courses of study, and curriculum. Crosslisted with AGED 776.

CTE 788 Research Problems.....(1-2)
 Significant action research in an area related to the student's technical specialty. A problem is selected, analyzed and reported in a form approved by the research advisor. Required of all graduate students in education qualifying for the Master's of Education degree under the Research Option.

Course is repeatable for additional credit.

CTE 790 Seminar	(1-3)
CTE 791 Independent Study	(1-3)
CTE 792 Topics	(1-3)
CTE 794 Internship.....	(1-3)
CTE 798 Thesis in CTE	5

Educational Administration (EDAD) Course Offerings

EDAD 700 Introduction to School Administration.....	2
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. Corequisite course: EDAD 695.	
EDAD 707 The Principalship.....	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. Corequisite courses: EDAD 709 and 709.	
EDAD 708 Elementary Principalship Practices.....	1
Field-based problem-centered experience. Corequisite course: EDAD 707.	
EDAD 709 Secondary Principalship Practices.....	1
Field-based problem-centered experience. Corequisite course: EDAD 707.	
EDAD 710 Elementary School Administration.....	3
EDAD 711 Secondary School Administration.....	3
EDAD 715 Supervision	3
A study of leadership styles and the effects different styles have on motivating people. Emphasis on utilizing and developing human potential.	
EDAD 730 School Finance.....	2
Develop an understanding and working knowledge of school finance theory and practice. Emphasis will be placed on the school finance reform movement in recent years.	
EDAD 732 School Buildings and Grounds	2
Management, care and operation of school plant. Needs and evaluation of existing facilities, new buildings and remodeling. Emphasis on facility planning at school system and building levels. Not a technical course in design and materials.	
EDAD 735 School Law.....	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	2
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 corequisite for EDAD 794, Internship.	
EDAD 788 Research Problems in Educational Administration.....	(1-2)
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. Course is repeatable for additional credit.	
EDAD 790 Seminar	(1-3)
EDAD 791 Independent Study.....	(1-3)
EDAD 792 Topics	(1-3)
EDAD 793 Workshop.....	(1-3)
EDAD 794 Internship.....	(1-6)

Educational Administration with Specialization in Career and Technical Education

EDAD 700	
<i>Introduction to School Administration</i>	<i>3</i>
EDAD 715	
<i>Supervision</i>	<i>3</i>
EDER 761	
<i>Informational Literacy</i>	<i>3</i>

Educational Administration with Specialization in Adult and Higher Education

CHRD 770	
<i>Student Development: Theory and Practice</i>	<i>3</i>
CHRD 771	
<i>Student Personnel Services</i>	<i>3</i>
EDAD 715	
<i>Supervision</i>	<i>3</i>
EDAD 730	
<i>School Finance</i>	<i>2</i>
<i>OR</i>	
EDAD 735	
<i>School Law</i>	<i>3</i>
EDFN 790	
<i>Seminar</i>	<i>1</i>
<i>OR</i>	
HDFS 614	
<i>Adult Development</i>	<i>3</i>

Curriculum and Instruction with Specialization in Elementary or Secondary Education

EDER 711	
<i>Educational Assessment</i>	<i>3</i>
EDER 761	
<i>Informational Literacy</i>	<i>3</i>
EDFN 730	
<i>Current Issues in Education</i>	<i>3</i>
EDFN 745	
<i>Effective Teaching: Theory Into Practice</i>	<i>3</i>
EDFN 747	
<i>Curriculum: Theory Into Practice</i>	<i>3</i>
EDFN 750	
<i>Educational Technology</i>	<i>3</i>
EDFN 790	
<i>Seminar</i>	<i>1</i>
EPSY 740	
<i>Advanced Educational Psychology</i>	<i>3</i>
<i>OR</i>	
EDFN 700	
<i>Exceptional Learners</i>	<i>3</i>
EDFN 725	
<i>Education in a Pluralistic Society</i>	<i>3</i>
ELED 748	
<i>Elementary Curriculum Practicum</i>	<i>1</i>
SEED 748	
<i>Secondary Curriculum Practicum</i>	<i>1</i>

Curriculum and Instruction with Specialization in Career and Technical Education
<http://learn.sdstate.edu/cte>

EDER 761
Informational Literacy3
 OR
 EPSY 740
Advanced Educational Psychology3
 OR
 HDFS 614
Adult Development3

Curriculum and Instruction with Specialization in Mathematics and Science Education

SCST 782
Capstone Seminar2
 EDER 761
Informational Literacy3
 SCST 601
Science in Our World7
 SCST 602
Modeling and Mathematics2

Students are required to take 12 credits from one of the discipline course areas. This requirement will be fulfilled by taking multiple sections of: BIST 601 Biology Topics for Teachers, CHST 601 Chemistry Topics for Teachers, PHST 601 Physics Topics for Teachers, or MAST 601 Mathematics Topics for Teachers. Other master's level courses may be used for this requirement with approval from the Advisor.

Education Foundations (EDFN) Course Offerings

EDFN 527 Middle School: Philosophy and Application2
 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. P, admitted to teacher education program, junior standing, an adolescent psychology/development course of 3 credits.

EDFN 528 Middle School Curriculum and Instruction3
 The essential methods and materials of judging high/middle school instruction. Methods and topics included are the middle school concept, team teaching, mastery learning, exploratories, classroom management, and grouping strategies. Representative curriculum materials, appropriate to the transcendent learner, are examined and utilized in multi-disciplinary team planning projects. P, admitted to teacher education program, junior standing, adolescent developmental/psychology course of 3 credits.

EDFN 551 Curriculum and Instruction in Gifted Education.....3

EDFN 552 Foundations of Reading.....3
 Description of normal process of development in reading skills and techniques which may be used in remedying deviations which hinder readers in speed or comprehension. Recommended for graduate students in Language Skills and Communications programs.

EDFN 558 Literacy Assessment and Remediation3
 General nature of causes of reading disability; principles of diagnosis and use of instruments; basic principles of individual remediation; case studies; evaluation of progress of the disabled reader; adaptation of techniques to classroom. P, EPSY 302.

EDFN 560 Applied Linguistics for Teaching English as a Second Language3
 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. P, LING 203. Crosslisted with LING 460/560. Equivalent to LING 560.

EDFN 561 Cultural and Psychological Perspectives in the Acquisition of English as a Second Language.....3
 Addresses the social and cognitive processes involved in the acquisition of a second language including developmental influences. P, EDFN 460 or 560.

EDFN 562 Teaching Language Arts for English as a Second Language Across the Curriculum3
 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. P, EDFN 460 or 560.

EDFN 563 Methods of Teaching English as a Second Language.....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. P, EDFN 460 or 560.

EDFN 566 Literacy in Primary Grades.....3
 This course is designed for individuals interested in teaching literacy in the primary grades. It follows the International Reading Association's (IRA) professional standards and includes scientifically-based reading research regarding instruction and assessment. Corequisite course: EDFN 566L

EDFN 566L Literacy in Primary Grades Laboratory0
 Lab to teach reading methods in local elementary primary classrooms. This will be an application of material learned in EDFN 466. Corequisite course: EDFN 566

EDFN 590 Seminar.....(1-3)

EDFN 592 Topics.....(1-3)

EDFN 605 Computers in the Classroom.....2
 Examines the relationship between teaching methods, learning theory and the place of the computer in the classroom; covers such topics as the data processing cycle, an overview of computer hardware and software, computer vocabulary, career opportunities, and some programming. P, EPSY 302 or consent of instructor.

EDFN 648 Learning Styles3
 Learning styles deals with research findings about learning styles and teaching styles. It examines learning style inventories, and explores how teachers can adapt instruction to promote student interest

and success, based on the students varying approaches to learning. The course is appropriate for all educated personnel. Alternate years.

EDFN 691 Independent Study	(1-3)
EDFN 700 Exceptional Learners	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.	
EDFN 725 Education in a Pluralistic Society	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.	
EDFN 727 Group Processes	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.....	3
Analysis of current trends and issues in education. Focus on the change process in educational and social settings.	
EDFN 745 Effective Teaching: Theory Into Practice.....	3
Approaches instruction from the perspective of Effective Teaching Research integrated with a focus on thinking skills. Students study various instructional models, focus on selection and implementation of appropriate strategies and consider other classroom issues related to effective teaching.	
EDFN 747 Curriculum: Theory Into Practice	2
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. Corequisite courses: EDEL 748, SEED 748.	
EDFN 750 Educational Technology	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.....	3
Examines the latest research on how readers comprehend and learn from written texts, 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.	
EDFN 754 Clinical Practice in Reading.....	(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.....	1
EDFN 792 Topics.....	(1-3)
EDFN 794 Internship.....	(1-6)

Elementary Education (ELED) Course Offerings

ELED 593 Workshop	(1-3)
ELED 748 Elementary Curriculum Practicum.....	1
Field-based problem-centered experience. Corequisite course: EDFN 747, SEED 748.	
ELED 773 Elementary School Curriculum.....	3
A study of the nature and principles on curriculum development in the elementary schools. Processes of curriculum change, development and evaluation will be examined. Roles of teachers, administrators, students and the public in curriculum change will be studied.	

Curriculum and Instruction with Specialization in Elementary or Secondary Education

EDER 711
Educational Assessment.....3
 EDER 761
Informational Literacy.....3
 EDFN 725
Education in a Pluralistic Society.....3
 EDFN 730
Current Issues in Education.....3
 EDFN 745
Effective Teaching.....3
 EDFN 747
Curriculum: Theory into Practice.....3
 SEED 748
Secondary Curriculum Practicum.....1
OR
 ELED 748
Elementary Curriculum Practicum.....1
 EDFN 750
Educational Technology...3
 EDFN 782
Capstone Seminar.....1
 EPSY 740
Advanced Educational Psychology.....3

Curriculum and Instruction with Specialization in Adult and Higher Education

AHED 711
Assessment and Program Design.....3
 AHED 720
Principles of Postsecondary Education.....3
 AHED 755
Principles of College Teaching.....3
 AHED 794
Internship.....2-6
 EDER 761
Informational Literacy.....3
 EDER 711
Educational Assessment...3
 EDFN 725
Education in a Pluralistic Society.....3
 EDFN 727
Group Processes.....3
 EDFN 782
Seminar: Capstone.....1
 HDFS 614
Adult Development Theory.....3

Educational Psychology (EPSY) Course Offerings

EPSY 526 Psychology of Early Adolescent Learner.....3
 To guide students in the personal construction and application of an early adolescent development knowledge base. The learning environment of the early adolescent/middle school student will be the context of study in this course. A theoretical base related to intellectual development, identity development, and social development will be used as a basis for exploring the benefits and needed changes in current educational settings of the 10- to 15-year-old. Students will study the impact of various influences on the healthy and positive development of the learner. Students will apply the knowledge base to evaluate and critique personal experiences, issues, and programs designed for early adolescent learners. P, admitted to education program. Junior standing or graduate student.

EPSY 542 Serving Students with Learning Disabilities.....3
 Examines the identification and assessment of learning disabilities in students. Provides a variety of teaching and learning strategies. Includes both federal and state laws, rules, and guidelines.

EPSY 550 Gifted and Talented.....3
 Overview of the Gifted and Talented field; explores the development of gifted/talented children as well issues surrounding the parents and families of gifted and talented as well as program development and evaluation.

EPSY 552 Enhancing Creativity.....3
 Explores the various dimensions of creativity, including what it is, how it develops, how to teach creative students, and how to evaluate creative works. Emphasis will be on how to work with students who already exhibit significant creative abilities as well as how to foster creativity with all students.

EPSY 723 Adolescent Psychology.....3

EPSY 740 Advanced Educational Psychology.....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.

EPSY 761 Testing Practices: Intellectual Assessment.....2
 A psychological testing practicum that focuses on intellectual assessment. The student learns to select, administer, score, and interpret the Wechsler scales as well as write a psychological report. P, CHR 736, CHR 755, and consent of instructor.

EPSY 762 Testing Practices: Personality Assessment.....3
 A psychological testing practicum that focuses on objective personality assessment. The student learns to select, administer, score, and interpret the MMPI and PIC as well as write a psychological report. P, CHR 736, CHR 755, and consent of instructor.

EPSY 763 Testing Practices: Projective Techniques.....2
 A psychological testing practicum that focuses on projective techniques. The student learns to select, administer, score, and interpret the TAT, H-T-P and various other projective techniques as well as write a psychological report. P, CHR 736, CHR 755, and consent of instructor.

Indian Education (INED) Course Offerings

INED 511 South Dakota Indian Studies.....3
 Provides prospective teachers and those interested in Indian people with a basic knowledge of Indian heritage and culture. Emphasis on the Dakota Indians. Crosslisted with AIS 421. (Fulfills Teacher Education requirement.)

Lofti (LFT) Course Offerings

LFT 592 Topics.....(1-3)

Science Teaching (SCST) Course Offerings

SCST 601 Science in Our World.....(1-7)
 This is an interdisciplinary course designed for the students to learn how to address scientific issues from the perspective of a biologist, chemist, physicist, mathematician, and educator. Issues of worldwide scientific importance are affected by many variables and changing one variable related to one of the above disciplines can impact one or several of the other disciplines. The course will be taught in a seminar format with discussion and debate as a primary strategy. Examples of the content to be covered will include but not be limited to modern measurement, and atoms to ecosystems.

SCST 602 Modeling and Mathematics.....2
 An introduction to mathematical models used to investigate scientific issues such as exponential growth and decay, ground-water contamination, air pollution, and hazardous material emergencies. Models will involve algebraic equations, systems of equations, calculus, probability, inferential statistics and computer simulations. The emphasis will be on fundamental principles and concepts of mathematical models and their incorporation into the secondary curriculum.

Secondary Education (SEED) Course Offerings

SEED 592 Topics(1-5)
SEED 593 Workshop(1-3)
SEED 672 Motivation and Discipline.....3
 Theories of motivation and discipline and their application in the classroom. Stresses techniques for preventing discipline problems, with emphasis upon ways to provide success experiences and positive reinforcement for students. Emphasizes effective procedures of group management as applied to the classroom situation. The course is appropriate for teachers, counselors, and administrative personnel.
SEED 690 Seminar(1-3)
SEED 740 Secondary School Curriculum.....3
 A study of the nature and principles of curriculum development in the secondary 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.
SEED 748 Secondary Curriculum Practicum.....1
 Field-based problem-centered secondary curriculum development experience. Corequisite course: EDFN 747.

Education Evaluation and Research (EDER) Course Offerings

EDER 592 Topics1-3
EDER 691 Independent Study(1-3) F/S/Su
EDER 711 Educational Assessment3 S/Su
 Examines the theory and principles of educational assessment.
EDER 761 Informational Literacy3 F/Su
 This course helps students become critical consumers of professional information by addressing the location, evaluation, use, and communication of information. Particular emphasis is placed on the knowledge needed to be an informed and effective consumer of research.
EDER 763 Educational Inquiry.....3 S
 Research design and methods for education professionals. Emphasis on the implementation of research concepts for action research and program evaluation.
EDER 788 Research Problems in Education.....(1-2) F/S/Su

Technology for Teaching and Learning (TTL) Course Offerings

TTL 500 Technology for Teaching and Learning3 Su
 This course covers the fundamental concepts of computer and telecommunication uses in education. Extensive hands-on technology training provide the basis upon which participants reconstruct curriculum and instructional techniques to support the learning needs of student.
TTL 501 Technology for Teaching and Learning Follow Up2 F
TTL 502 Differentiating Instruction2 F
 The followup for the TTL Academy is a learning opportunity using both WebCT and ASCD online environments. TTL 2001 participants will apply these characteristics to their Unit of Practice designed in the summer Academy. This course is designed to make teachers cognizant of the numerous strategies and tools to differentiate instruction to support the learning needs of students.
TTL 503 Technology for Teaching and Learning Follow Up1 F/S
 This course will address technology innovations that are demanding reforms in teaching and learning approaches. These reforms have a significant impact on technology use expectations. Participants will analyze the impact of technology on student learning specific to their teaching and learning situation. In addition, participants will reflect on their own professional development, as a result of the TTL experience, in applying the appropriate uses of technology to increase student learning and achievement.
TTL 510 Distance Technology3 Su

Electrical Engineering

Degrees Offered:

- PhD Electrical Engineering
 - * Energy Systems emphasis
- PhD Geospatial Science and Engineering
 - *Remote Sensing Engineering specialization*
- MS Engineering
 - * Electrical Engineering emphasis

Graduate Faculty

Alfred S. Andrawis,
Professor,
PhD, Virginia Polytechnic
Institute and State University,
1991
Communications, Fiber Optics,
Microprocessors

Madeleine Y. Andrawis,
Professor,
PhD, Virginia Polytechnic
Institute and State University,
1991
Electromagnetics, VLSI

Mahdi Farrokh Baroughi,
Assistant Professor,
PhD, University of Waterloo,
2006,
Photovoltaic Devices

Venkat Rao Bommisetty,
Research Assistant Professor,
PhD, Toyama University, 2001,
Nanosensors, Photovoltaic
Devices

Lewis F. Brown,
Professor,
PhD, Iowa State University, 1988
Electronic Materials, Biomedical
Engineering

David W. Galipeau,
Professor, PhD, University of
Maine, 1992
Micro-nanosensors, Electronic
Devices and Materials

Dennis Helder,
Professor,
PhD, North Dakota State
University, 1991
Image and Signal Processing

Steven Hietpas,
Professor,
PhD, Montana State University,
1994
Controls, Power
Electronics/Systems

Department Head: Professor Dennis Helder
Graduate Coordinator: Professor David Galipeau

For additional information contact:

Mailing address: SDSU Box 2220
Harding Hall — SHH 201
WWW: <http://www.engineering.sdstate.edu/~eeweb/>
E-mail: david.galipeau@sdstate.edu

Phone: 605/688-4526
Fax: 605/688-5880

Program Description

The program offers a variety of courses that encompass a broad range of Electrical Engineering areas including: alternative energy; biomedical engineering; communications and fiber optics; micro and nano-electronic materials, devices and sensors; power engineering; and signal and image processing. The department's graduate faculty conducts active research in these areas using modern facilities and equipment, and offer advising in these areas.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
Doctor of Philosophy: 60-credit plan

Core Requirements for Master of Science

For details see specific programs: Electrical Engineering.

Core Requirements for Doctor of Philosophy

EE 636	Photovoltaics	3 credits
EE 760	Advanced Electronic Materials	3 credits
EE 890	PhD Dissertation	36 credits
Supporting Courses.....		15 credits
	EE at the 600/700 level.....	6 credits
	Other graduate level.....	9 credits

For details see specific programs: Geospatial Science and Engineering; Electrical Engineering.

Additional Admission Requirements

GRE: General scores required
TOEFL: Score of 575 paper-based, 233 computer-based, 90-91 Internet-based

General requirements begin on page 16 (Master's) and page 21 (PhD).

Electrical Engineering (EE) Course Offerings

EE 516 Passive and Active Filters	3
The analysis and design of passive and active filters for electrical signals. Topics include Butterworth, Chebyshev, Bessel-Thompson response characteristics, biquad and Sallen-Key circuits, frequency and impedance transformations, sensitivity, gyrators, negative impedance elements, leap-frog filters and switched capacitor filters.	
EE 520 Electronics III	3
Selected topics in the design of analog and digital electronics. Provides increased understanding of theory, simulation, and application of semiconductor devices.	
EE 520L Electronics Laboratory III	1
Experimental design and analysis of analog and digital electronic circuits.	
EE 524 RF Electronics	2
Performance analysis and design methods for the functional blocks of radio frequency systems operating below the microwave bands.	
EE 524L RF Electronics	1
Lab to accompany EE 524.	
EE 533 Computer Analysis in Power Systems	3
Concepts used in formulating load flow and fault study problems and stability analysis of power systems using computer solutions.	
EE 536 Applied Photovoltaics	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.	
EE 536L Applied Photovoltaics Laboratory	1
This lab provides practical experience in the design of hybrid photovoltaic power systems. P, EE 536.	
EE 540 VLSI Design	3
Provides an introduction to the technology and design of VLSI integrated circuits. Topics include MOS transistors, switch and gate logic, scalable design rules, speed and power considerations, floor planning layout techniques, and design tools. (Design content — two credits)	
EE 540L VLSI Design Laboratory	0
Accompanies EE 540.	
EE 550 Biomedical Signal Processing	3
Methods and techniques for the analysis and processing of physiological signals. Off-line and real-time digital signal processing using time and frequency domain techniques. Emphasis on signal processing of electrocardiographic signals.	
EE 554 Biomedical Instrumentation and Electrical Safety	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.	
EE 560 Sensor Theory and Design	3
Introduction to the operation, design, testing and applications of modern sensors in use and under development. Signal conditioning and system integration are also reviewed. Corequisite course: EE 560L.	
EE 560L Sensor Theory and Design Laboratory	0
Corequisite course: EE 560. P, EE 360.	
EE 570 Digital Communication Systems	3
Random signals, base-band transmissions, band-pass transmission, multiplexing, filtering, optimum detection, and information theory.	
EE 571 Fiber Optics Communications	3
Theory and application of optical fibers and communication systems. Topics include fundamentals of optical fiber waveguides, electroluminescent sources, single-mode and multimode, propagation, coupling consideration, photo-detectors, signal degradation, fabrication and cabling, and transmission linked analysis.	

*Michael E. Ropp,
Associate Professor,
PhD, Georgia Institute of
Technology, 1998
Power Electronics, Electronic
Devices, Energy Conversion &
Control*

*Songxin Tan,
Assistant Professor,
PhD, University of Nebraska-
Lincoln, 2003
Lidar system design, lidar remote
sensing, machine vision and
image analysis*

*Xingzhong Yan,
Research Assistant Professor,
PhD, Sun Yat-sen University,
1994,
Organic Photovoltaic and Opto-
electronic Devices*

**Curriculum and Instruction
with Specialization in Career
and Technical Education**

http://learn.sdstate.edu/cte

EDER 761
Informational
Literacy.....3

EDFN 725
Education in a Pluralistic
Society.....3

EPSY 740
Advanced Educational
Psychology.....3

OR

HDFS 614
Adult Development
Theory.....3

CTE 525
Development of CTE
Thought and Practice.....3

CTE 530
Cooperative Education
Coordination Techniques...3

CTE 540
Curriculum Design in
CTE.....3

CTE 782
Seminar in CTE.....1

**Curriculum and Instruction
with Specialization in
Mathematics and Science
Education**

EDER 761
Informational Literacy.....3

EDFN 725
Education in a Pluralistic
Society.....3

SCST 601
Science in Our World.....7

SCST 602
Modeling and
Mathematics.....2

SCST 782
Capstone Seminar.....2

Students are required to take 12 credits from one of the discipline course areas. This requirement will be fulfilled by taking multiple sections of: BIST 601 Biology Topics for Teachers, CHST 601 Chemistry Topics for Teachers, PHST 601 Physics Topics for Teachers, or MAST 601 Mathematics Topics for Teachers. Other master's level courses may be used for this requirement with approval from the Advisor.

EE 571L Fiber Optics Communications Laboratory1
This laboratory reinforces the theoretical concepts presented in the lecture course, EE 471/571. Topics include basic knowledge and skills needed for handling and testing optical fibers, characteristics of optical components, fiber optic communication systems and fiber optic sensing systems. Corequisite course: EE 571. Concurrent with EE 471-571.

EE 575 Digital Image Processing3
Introductions to the fundamentals of digital image processing. Topics include image formation, transforms, enhancement, restoration, compression, and analysis.

EE 592 Topics(1-3)

EE 592L Special Topics- Laboratory Experience.....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 615 Linear Systems Theory.....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. P, consent of instructor.

EE 620 Advanced Digital Hardware3
Topics may include a deeper examination of fundamentals of combinational and sequential circuits, design for testability, advanced function implementation, design with current programmable technologies.

EE 636 Photovoltaics.....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. P, EE 660, consent of instructor.

EE 660 Electric Properties of Materials3
Topics covered include electromigration, diffusion, theory of rate processes, relaxation, effects, phase transformations, physics of failure in electrical circuit applications. P, MATH 331, PHYS 331, EE 360 or consent of instructor.

EE 670 Information and Signal Processing3
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. P, EE 310, EE 316, or consent of instructor.

EE 685 Microwave Theory3
Transmission lines, resonant cavities, waveguide junctions, and components. Active devices, lasers, masers. P, EE 385.

EE 691 Independent Study(1-3)

EE 692 Topics(1-3)

EE 736 Advanced Photovoltaics3
This course builds on the foundations established in EE 636. It 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 on a current PV topic. P, EE 636.

EE 760 Advanced Electronic Materials3
This course will focus on the theory of state-of-the-art micro and nano materials and fabrication techniques. Emphasis will be on the selection of appropriate electronic and optical materials as well as the processes that control form and structure which can be designed to yield desired physical properties. Specific materials and processes to be studied will be decided by the course instructor.

EE 788 Engineering Research or Design Paper(1-2)

EE 790 Seminar1

EE 791 Independent Study(1-9)

EE 792 Topics(1-3)

EE 798 Thesis.....(1-7)

EE 898D Dissertation(1-6)

Software Engineering (SE) Course Offerings

SE 591 Independent Study	(1-3)
SE 592 Topics.....	(1-5)
SE 791 Independent Study	(1-3)
SE 792 Topics.....	(1-3)
SE 794 Internship.....	(1-3)



Engineering

Degrees Offered:

PhD Electrical Engineering

PhD Computational Science and Statistics

PhD Geospatial Science and Engineering

- *Remote Sensing Engineering specialization*

MS Engineering

* Agricultural and Biosystems Engineering emphasis

* Civil and Environmental Engineering emphasis

* Computer Science emphasis

* Electrical Engineering emphasis

* Mechanical Engineering emphasis

* Physics emphasis

MS Industrial Management

MS Statistics

Dean: Dr. Lewis F. Brown

Assistant Dean: Dr. Richard A. Reid

For additional information contact:

Mailing address: SDSU Box 2219

Crothers Engineering Hall — SCEH 201

WWW: <http://www.engineering.sdstate.edu>

E-mail: lewis.brown@sdstate.edu

Phone: 605/688-4161

Fax: 605/688-5878

Program Description

The purpose of the Graduate Program in engineering is to provide the opportunity for an interdisciplinary education for engineers and scientists who will become leaders and experts in:

- application of engineering principles to technological problems;
- development and control of land, water and energy resources;
- development and promotion of industrialization;
- control of pollution and preservation of the environment.

Available Options for Graduate Degrees

Master of Science:* Option A

Option B

Option C

Doctor of Philosophy:* 60-Credit Plan

90-Credit Plan

* Dependent on Specialization and Emphases, see specific program requirements.

Core Requirements for Master of Science

The formal course offerings for Master of Science in Engineering are divided into three groups:

- Core courses in major field or program area
- Courses in supporting areas
- Thesis or design/research paper

The core courses in major area should be taken from those listed on the department page. These courses shall be taken to provide disciplinary strength and enable the student to pursue thesis research or advanced design projects. See individual department sections for specific core course requirements.

The supporting courses are chosen from electives in the major program area and supporting subject areas such as: mathematics, physics, chemistry, biology, and computer science. These courses shall be chosen after consultation with the departmental Advisory Committee.

For details see specific programs: Engineering; Industrial Management; and Statistics.

Core Requirements for Doctor of Philosophy

For details see specific programs: Electrical Engineering; Computational Science and Statistics; and Geospatial Science and Engineering.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's) and page 21 (PhD).

<h3>Engineering Mechanics (EM) Course Offerings</h3>
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EM 521 Introduction to Mechanics of Controls Medium	3
General theory of a continuous medium. Kinematics of deformation and flow; stress tensors; conservation of mass, momentum and energy; invariance requirements; constitutive equations for solids and fluids; applications for special problems. P, 331, MATH 331.	
EM 522 Theory of Elasticity	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. P, EM 321, MATH 331 or equivalent.	
EM 523 Theory of Plasticity	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. P, EM422/522 or consent of instructor.	
EM 624 Theory of Plates and Shells	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. P, EM 432, MATH 321, MATH 331, or consent of instructor.	
EM 631 Advanced Fluid Mechanics	3
Basic conservation laws. Flow kinematics. Two- and three-dimensional potential flows. Vicious flows of incompressible fluids. Surface waves. P, EM 331, MATH 331 or consent of instructor.	
EM 641 Finite Element Analysis	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 nonlinearities. Introduction to both heat and fluid flow problems. P, MATH 321 and consent of instructor.	

English

Degree Offered:

MA English

* Literature emphasis

* Language and Rhetoric emphasis

Graduate Faculty

Bruce Brandt,
Professor,
PhD, Harvard University, 1977
English Renaissance Literature

Kathleen Danker,
Professor,
PhD, University of Nebraska-
Lincoln, 1985
American, Native American
Literature

Kathleen Donovan,
Professor,
PhD, University of Arizona, 1994
Minority and Women's Literature

M.L. Flynn,
Professor,
PhD, University of Missouri-
Columbia, 1985
English Romantic Literature

Michael Keller,
Professor,
PhD, University of Illinois-
Chicago, 1993
Rhetoric

Jason McIntee,
Assistant Professor,
PhD, University of Kentucky,
2004
Professional Writing and Film

Michael Nagy,
Associate Professor,
PhD, St. Louis University, 2001
Medieval English and
Scandinavian Literature

Mary O'Connor,
Professor,
PhD, University of California-Los
Angeles, 1992
English Contemporary Literature

John Taylor,
Professor,
PhD, Indiana University-
Bloomington, 1973
Linguistics

Department Head: Professor Kathleen Donovan

Graduate Coordinator: Professor Mary O'Connor

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 014

WWW: <http://www3.sdstate.edu/Academics/CollegeOfArtsAndScience/English/Index.cfm>

E-mail: kathleen.donovan@sdstate.edu

mary.oconnor@sdstate.edu

Phone: 605/688-5191

Fax: 605/688-5192

Program Description

To be admitted into the MA 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. Admission to the English Department's Graduate Program must include a minimum GPA in English of 3.25. A full-time student can complete the course requirements in one academic year. Graduate assistants should be able to complete these requirements in four semesters.

Under Option A (thesis), the candidate is required to present a minimum of 30 hours of graduate work in one of the emphases listed, including 6 hours of thesis (ENGL 798); at least 20 hours must be taken in residence. The candidate will present a thesis which reports the results of research directed by a member of the faculty in English. In an oral examination the candidate will be required to defend the thesis and to demonstrate knowledge relative to coursework in the chosen emphasis.

Available Options for Graduate Degrees

Master of Arts: Option A
Option C

Core Requirements for Master of Arts

The two emphases of study for the MA degree in English are:

Studies in Literature: 24 semester credits mostly in literature with at least two courses in English literature and two in American literature, plus six hours of thesis. This emphasis is well suited to those who plan to continue toward the PhD degree in literature or to enter college or community college teaching.

Studies in Language and Rhetoric: 24 semester credits mostly in composition, rhetoric, criticism, and linguistics, plus six hours of thesis. This emphasis is well suited to those who plan to teach in a community college or to pursue a PhD degree in rhetoric or linguistics.

Either the literature emphasis or the language/rhetoric emphasis would offer appropriate advanced work for continuing secondary school teachers.

Under Option C, the candidate is required to complete **36 hours** of coursework in English followed by successful completion of written examinations under the direction of the Graduate Coordinator.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 600 paper-based, 250 computer-based, 100 Internet-based

Minimum GPA of 3.25 in English courses

General requirements begin on page 16 (Master's).

English (ENGL) Course Offerings

ENGL 522 Chaucer	3
Major works of Chaucer, with some attention to his sources and his language.	
ENGL 523 Old and Middle English Literature	3
Emphasizing pre-Norman heroic and Christian literature, the work of Chaucer and his contemporaries, and folk literature such as the ballads.	
ENGL 527 Advanced Shakespeare	3
Selected plays of Shakespeare and significant Shakespearean criticism.	
ENGL 528 English Renaissance Literature	3
Major writers of the 16th and early 17th centuries excluding Shakespeare.	
ENGL 534 English 18th Century Literature	3
Literature of the later 17th and 18th centuries (1660-1800), including major works and developments in literature and thought.	
ENGL 537 English Romantic Literature	3
English literature of the romantic movement (1789-1832).	
ENGL 538 English Victorian Literature	3
English literature of the Victorian Period (1840-1900).	
ENGL 539 Modern English Literature to WW II	3
English literature from 1900 to WWII.	
ENGL 540 Contemporary English Literature	3
English literature since WWII.	
ENGL 553 American Renaissance Literature	3
American literature of the mid nineteenth-century, including the Transcendentalists and Romantics.	
ENGL 554 American Realist and Naturalist Literature	3
American literature of the realist and naturalist movements of the late 19th and early 20th centuries.	
ENGL 559 American Literature Between the Wars	3
American literature of the modernist movement from 1917 to 1945.	
ENGL 560 Contemporary American Literature	3
American literature since WWII.	
ENGL 563 Methods Teaching English as a Second Language	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. Crosslisted with EDFN 563. Equivalent to EDFN 563. P, EDFN 560 or LING 560.	
ENGL 581 Travel Studies	(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	3
A course allowing students with experience in creative writing to specialize in a particular genre (poetry, fiction, etc.). P, ENGL 383 or consent of instructor.	
ENGL 591 Independent Study	(1-4)
ENGL 592 Topics	(1-3)
ENGL 704 Introduction to Graduate Studies	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 MA degree in English.	

*Charles Woodard,
Distinguished Professor,
PhD, University of Oklahoma-
Norman, 1975
American, Native American
Literature*

*Karen Zagrodnik,
Associate Professor,
PhD, Auburn University, 1998
18th Century English Literature*

ENGL 705 Seminar in Teaching Composition	3
Study of the methods, theories, and history of writing instruction. A course for English GTAs and required of them.	
ENGL 710 Seminar in Rhetoric.....	3
Intensive study of selected periods or topics in rhetoric, with special emphasis on their relation to issues in criticism and composition.	
ENGL 724 Seminar in English Literature To 1660	3
Intensive study of a selected type, theme, author, or period of English Literature from the beginning to 1660.	
ENGL 725 Seminar in English Literature Since 1660	3
Intensive study of a selected type, theme, author, or period of English literature since 1660.	
ENGL 742 Seminar in American Indian Literature	3
Intensive study of American Indian literature of the past or present with concentration on the Plains Indians.	
ENGL 755 Seminar in Minority Literature	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 791 Independent Study	(1-3)
ENGL 792 Topics	(1-4)
ENGL 798 Thesis.....	(1-7)

Linguistics (LING) Course Offerings
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LING 520 The New English	3
Diverse new theories and applications in English linguistics: lexicography, pragmatics, stylistics, sociosemantics, semiotics, and discourse theory.	
LING 525 The Structure of English	3
Use of traditional, structural, and transformational grammars for describing the English language. Practical application in teaching. Strongly recommended for majors planning to teach.	
LING 543 Development of the English Language	3
Historical survey of phonology, grammar, syntax, and lexicon of English leading to an understanding of the present state of the language and future developments.	
LING 552 General Semantics	3
Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistics assumptions; and the objective systematization of language. Crosslisted with SPCM 552. Equivalent to SPCM 552.	
LING 560 Applied Linguistics for Teaching English as a Second Language	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 U.S. culture such as the rhetoric of public and school interactions. Crosslisted with EDFN 560. Equivalent to EDFN 560. P, LING 203 or equivalent or consent of instructor.	

Family and Consumer Sciences

Degrees Offered:

PhD Biological Sciences

- *Human Nutrition and Food Science specialization*

MS Family and Consumer Sciences

- *Child and Family Studies specialization*
- *Family Financial Planning specialization*
- *Merchandising specialization*
- *Nutrition and Food Science specialization*

MS Biological Sciences

- *Human Nutrition and Food Science specialization*

Dean: Professor Laurie Stenberg Nichols

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — SNF

WWW: <http://fcs.sdstate.edu/GradProg.htm>

E-mail: laurie.nichols@sdstate.edu

Phone: 605/688-6181

Fax: 605/688-4439

Program Description

The mission of the Graduate Program in Family and Consumer Sciences is to provide an in-depth, specialized program of study in Child and Family Studies, Family Financial Planning, Nutrition and Food Science or Merchandising. The specializations in Family Financial Planning and Merchandising are offered through GPIdea, a consortium of eleven land grant institutions located in the Midwest. Students take coursework from most or all institutions including: North Dakota State University, South Dakota State University, Montana State University, Iowa State University, University of Nebraska, Kansas State University, Oklahoma State University, Texas Tech, Michigan State University, University of Missouri, and Colorado State University. All courses are delivered via distance education. The degree granted is the Master of Science in Family and Consumer Sciences. An understanding of the research process is developed throughout graduate courses and other research requirements.

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Option C

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

Option C requires a written examination prior to oral examination. Other options may require written examination. Please discuss with your major advisor.

Core Requirements for Master of Science

For details see specific programs: Biological Sciences; and Family and Consumer Sciences

Core Requirements for Doctor of Philosophy

For details see specific programs: Biological Sciences.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's) and page 21 (PhD).

Family and Consumer Sciences Education (FCSE) Course Offerings

FCSE 591 Independent Study	(1-3)
FCSE 592 Topics	(1-3)
FCSE 595 Practicum	(1-3)
FCSE 611 History and Philosophy of Family and Consumer Sciences	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.	
FCSE 673 Supervised Student Teaching in Family and Consumer Sciences Education	(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.	
FCSE 741 Supervision of Family/Consumer Sciences Education	2
FCSE 751 Curriculum of Family/Consumer Sciences Education	2
FCSE 761 Advanced Methods and Assessment in Family & Consumer Sciences Education	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.	
FCSE 788 Master's Research Project	(1-3)
FCSE 791 Independent Study	(1-3)
FCSE 792 Topics	(1-3)

Family and Consumer Sciences (FCS) Course Offerings

FCS 580 International Experience	(1-4)
This will be a team-mentored class. Students will participate in one-to-four week travel/study abroad experience to another nation(s) to experience and evaluate diverse systems related to the College of Family & Consumer Sciences. Students will work one-on-one or in small groups with professors who have knowledge of the region/culture visited and/or content focus. For the Bachelor's degree, a maximum of 9 credits is allowed.	
FCS 591 Independent Study	(1-3)
FCS 592 Topics	(1-3)

Geography

Degrees Offered:

- PhD Geospatial Science and Engineering
 - *Remote Sensing Geography specialization*

MS Geography

Graduate minors in Geographic Information Sciences and in Planning are offered in the Department.

Department Head: Professor Roger K. Sandness

Graduate Coordinator: Distinguished Professor Charles F. Gritzner

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 232

WWW: <http://www3.sdstate.edu/Academics/CollegeOfArtsAndSciences/Geography>

E-mail: roger.sandness@sdstate.edu

charles.gritzner@sdstate.edu

Phone: 605/688-4511

Fax: 605/688-4030

Program Description

The Department of Geography offers graduate students the opportunity to earn a Doctor of Philosophy or 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 degrees 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.

Internships generally are available with planning districts, governmental agencies, business, and industry. A limited number of Graduate Teaching Assistantships are available within the department.

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

Core Requirements for Master of Science

Students are expected to take the following courses:

GEOG 710 Evolution of Geographic Thought....3 credits

GEOG 714 Research and Writing.....3 credits

Core Requirements for Doctor of Philosophy

For details see specific program: Geospatial Science and Engineering.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's) and page 21 (PhD).

Graduate Faculty

*Donald J. Berg,
Professor,
PhD, University of California,
Berkeley, 1976
Physical and Human Geography*

*Charles F. Gritzner,
Distinguished Professor,
PhD, Louisiana State University,
1969
Cultural Geography and
Geography Education*

*Janet H. Gritzner,
Professor,
PhD, Louisiana State University,
1978
Geographic Information Systems*

*Matthew C. Hansen,
Professor,
PhD, University of Maryland,
2002
Co-Director of Geographic
Information Science Center of
Excellence Remote Sensing*

*Thomas Loveland,
Professor,
PhD, University of California-
Santa Barbara, 1998
EROS Data Center Co-Director
of Geographic Information
Science Center of Excellence
Remote Sensing*

*Darrell E. Napton,
Professor,
PhD, University of Minnesota,
1987
Environmental Geography*

*Roger K. Sandness,
Professor,
PhD, University of Iowa, 1986
Quantitative and Physical
Geography*

*Robert Watrel,
Associate Professor,
PhD, University of Nebraska -
Lincoln, 2001
Political*

**Adjunct/Courtesy/
Joint Faculty**

*Mark Cochrane,
Professor,
PhD, Pennsylvania State
University, 1998
Geographic Information Science
Center of Excellence Scientist
Ecology*

*Geoffrey Henebry,
Professor,
PhD, University of Texas -Dallas
Geographic Information Science
Center of Excellence Scientist
Environmental Sciences*

*David Roy,
Professor,
PhD, University of Cambridge,
U.K., 1993
Geographic Information Science
Center of Excellence Scientist
Geography*

Geography (GEOG) Course Offerings

- GEOG 515 Environmental Geography**.....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 581 Field Geography**3
All geographical data are field based. This field-oriented course typically will focus upon various aspects of the physical, historical, and cultural aspects of eastern South Dakota. Emphasis will be on the observation, collection, organization, analysis, and interpretation field-derived data to answer geographic questions.
- GEOG 582 Travel Studies**(1-4)
This travel study course is designed to provide extra-mural education 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. Includes pre-travel orientation, post-travel self-evaluation, and a written report.
- GEOG 588 Geographic Information Systems II**.....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 registration. It gives a conceptual base to many methods and techniques associated with vector and raster-based spatial analysis. It provides an in-depth examination of the functions and capabilities of Arc View Desktop GIS, its extensions and ARC/INFO GIS software. It introduces basic concepts and practical applications of global positioning systems (GPS) technology in GIS especially in creating GIS software. It introduces basic concepts and practical applications of global positioning systems (GPS) technology in GIS especially in creating GIS-compatible data sets. This course gives hands-on experience with PC and UNIX workstations, tablet digitizers, scanners, printers and plotters. GPS equipment, digital camera systems and all supporting software. Students work with real applications and are expected to complete an individual/small group project during the course.
- GEOG 589 Geographic Information Systems III**3
This course introduces many of the basic concepts of raster modeling in geographic information systems (GIS) with special emphasis on construction and use of digital elevation models (DEMs) in GIS. It provides an in-depth examination of the functions and capabilities of ArcView Desktop GIS extensions (Spatial Analyst and 3D Analyst) and ARC/INFO GRID GIS software. Building on the skills and techniques learned in GIS I and GIS II courses, it gives a conceptual base to many of the quantitative methods associated with raster-based GIS spatial analysis. Topics include raster data formats and sources, data conversion, merging and projecting raster data sets, DEM displays including image drapes and other visualizations, overlay functions, hydrologic modeling tools and applications, visual analyses, friction and dispersion models and change detection studies. Students are expected to complete an individual/small group project in ArcView or ARC/INFO with a raster data component during the course.
- GEOG 590 Seminar**(1-4)
- GEOG 620 Advanced Regional Studies in Geography**(1-4)
Selected topics in the regional geography of continents, nations, or states. May be repeated for credit. Specific topic to be studied will change each semester.
- GEOG 692 Topics**.....(1-4)
- GEOG 710 Evolution of Geographic Thought**.....3
The history and development of geography and its theories, schools of thought, and current ideas.
- GEOG 714 Research and Writing**.....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 732 Geomorphology**3
Basic concepts of origin and development of land forms. Basic principles underlying the study of land processes operating at the earth's surface and land form resulting from these processes. forms; emphasis on processes shaping the natural landscape. Study of erosional and depositional processes operating at the earth's surface and land form resulting from these processes.

GEOG 734 Climatology	3
Consideration of the exchange of energy and moisture and significance in human's utilization of the earth's surface. Climactic history of the earth. Hypotheses on climactic change. Inadvertent modification of climate.	
GEOG 741 Quantitative Remote Sensory Terrestrial Monitoring	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. P, GSE 741, graduate level standing and consent of instructor.	
GEOG 742 Cultural Geography	3
Consideration of culture in a geographic context including such concepts as cultural origins and diffusion, ecology, landscapes, and regions.	
GEOG 743 Geospatial Analysis	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. P, one graduate-level course in statistics (e.g. STAT 541 or equivalent).	
GEOG 752 Urban Geography	3
Theoretical explanations of urban spatial patterns. Examination and application of contemporary theories, concepts, and methods to study urban geography problems. Theoretical explanations of urban spatial structure and spatial organization.	
GEOG 760 Advanced Methods in Geospatial Modeling: Topical	3
Selected topics in advanced methods in geospatial modeling. May be repeated for credit. Specific topics covered will change each semester. Crosslisted with GSE 760. P, Graduate standing in a degree program. Specific prerequisites dependent on topic.	
GEOG 765 Advanced Studies in Land Utilization	(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.	
GEOG 766 Advanced Remote Sensing Application	3
Selected topics in advanced applications in remote sensing. May be repeated for credit. Specific topics covered will change each semester. Crosslisted with GSE 766. P, Graduate standing in a degree program. Specific prerequisites dependent on topic.	
GEOG 767 Fire and Ecosystems	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. Crosslisted with GSE/WL/BIOL 767.	
GEOG 770 Advanced Geographic Techniques	(1-4)
Selected geographic techniques such as cartography, aerial photograph interpretation, remote sensing, information systems and map interpretation.	
GEOG 785 Quantitative Methods in Geography	3
Descriptive and Inferential Statistics will be studied in this course. The traditional regression and correlation routines will be addressed as well as probabilities. Statistical routines on the mainframe computer will be utilized in problem solving involving real-world geographic-sociological situations.	
GEOG 786 Geographic Information Systems	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	(1-3)
GEOG 790 Seminar	(1-4)
GEOG 791 Independent Study	(1-4)
GEOG 794 Internship	(1-3)
GEOG 798 Thesis	(1-7)

Planning (PLAN) Course Offerings

PLAN 571 Principles of State, Regional and Community Planning.....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. P, enrollment within a minor in planning at the Master's level or consent of instructor.

PLAN 572 Techniques of State, Regional and Community Planning3
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. P, PLAN 571.



Geospatial Science and Engineering

Degree Offered

PhD Geospatial Science and Engineering

- *Remote Sensing Engineering specialization*
- *Remote Sensing Geography specialization*

Center Co-Directors: Dr. Matthew Hansen and Dr. Thomas Loveland

Graduate Coordinator: Dr. Geoffrey Henebry

For additional information contact:

Mailing address: SDSU Box 506B

Wecota Hall – SWC 115

WWW: <http://globalmonitoring.sdstate.edu/>

Phone: 605/688-6591

Fax: 605/688-5227

Program Description

The study of land surface and its modifications over time is a major component of global change research. Land cover dynamics impacts climate, biogeochemical cycles, ecosystem function, and the state of human welfare. To study large area land cover dynamics, satellite-based earth observations are required. Both the Geographic Information Science Center of Excellence (GIScCE) and the Image Processing Laboratory in the Department of Electrical Engineering and Computer Science collaborate closely with the US Geological Survey Center for Earth Resources Observation and Science (USGS/EROS) with a focus on the science of earth observation and monitoring. EROS is the world's largest repository of remotely sensed data sets of the land surface and renowned center of applied earth science studies. As an interdisciplinary center for basic and applied research, the GIScCE utilizes engineering principles to process efficiently and accurately earth observation data, geographic principles to create meaningful depictions of land condition, and specific applications that focus on the effects of change and variability on the planetary surface. Through the combined resources of multiple disciplines, the GIScCE investigates important questions regarding earth system dynamics, including the role of human activity in shaping the environment.

The Geospatial Science and Engineering PhD is a novel interdisciplinary program that integrates advanced coursework in the sciences and engineering with and cutting-edge research to advance the emerging field of Geographic Information Services (GISc). The focus of GISc is understanding geospatial data and through its acquisition, processing, characterization, analysis, and modeling to transform the data into relevant information. Core faculty of the GSE doctoral program consists of the senior scientists at the Geographic Information Science Center of Excellence (see <http://globalmonitoring.sdstate.edu>), and members of the departments of Electrical Engineering & Computer Science, Geography, Civil & Environmental Engineering, Biology & Microbiology, Wildlife & Fisheries Sciences, and Physics.

There are three degree plan choices. The student may declare either one of two specializations: (1) Remote Sensing Geography or (2) Remote Sensing Engineering. Alternatively, the student may elect to pursue a degree without a declared specialization. This latter choice can provide a significant range of flexibility to customize an interdisciplinary course of study.

Available Options for Graduate Degrees

Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

Graduate Faculty

Kwabena Asante,
Adjunct Professor,
PhD, University of Texas-
Austin, 2000
Geography

Mark Cochrane,
Professor,
PhD, Pennsylvania State
University, 1998
Ecology

Kevin Gallo,
Adjunct Professor,
PhD, Purdue University, 1984
Agricultural
Climatology/Remote Sensing

Matthew Hansen,
Professor,
PhD, University of Maryland,
2002
Geography

Geoffrey Henebry,
Professor,
PhD, University of Texas -
Dallas, 1989
Environmental Sciences

Shuguang (Leo) Liu,
Adjunct Professor,
PhD, University of Florida,
1996
Forestry

Thomas Loveland,
Adjunct Professor,
PhD, University of California-
Santa Barbara, 1997
Geography

David Roy,
Professor,
PhD, University of Cambridge,
U.K., 1994
Geography

Gabriel Senay,
Adjunct Professor,
PhD, Ohio State University,
1996
Agricultural Engineering

Jim Vogelmann,
Adjunct Professor,
PhD, Indiana University, 1983
Plant Sciences
Michael C. Wimberly,
Associate Professor,
PhD, Oregon State University,
1999
Landscape Ecology

Chunsun Zhang,
Associate Professor,
PhD, Swiss Federal Institute of
Technology, 2002
Photogrammetry & Remote
Sensing

Core Requirements for Doctor of Philosophy

For details see specific programs.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's) and page 21 (PhD).

Geospatial Science and Engineering (GSE) Course Offerings

GSE 740 Introduction to Geospatial Science and Engineering	3
This 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 data analysis approaches, and professional practices, including research information resources, graphical and oral presentation, proposal writing, publishing, reviewing, and research ethics. Admission to the GSE PhD program.	
GSE 741 Quantitative Remote Sensing for Terrestrial Monitoring	3
Environmental satellite remote sensing systems have evolved significantly over the last two decades fuelled by pressing needs to monitor human impacts on the Earth system and to develop a comprehensive understanding of Earth system functioning. Space agency satellite remote sensing systems are in orbit and planned for launch with associated computing systems to derive biophysical and geophysical data products on a global, systematic basis. Environmental prediction is a primary goal, requiring physical dynamic models of land surface processes with variables estimated quantitatively from remotely sensed observations. 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. Crosslisted with GEOG 741. P, graduate level standing and consent of instructor.	
GSE 743 Geospatial Analysis	3
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 address scientific research questions using appropriate spatial datasets and statistical techniques. Topics include exploratory data analysis, methods for quantifying spatial pattern, development of explanatory models to test hypotheses, and development of predictive models for spatial interpolation. Crosslisted with GEOG/WL 743. P, one graduate-level course in statistics (e.g., STAT 541 or equivalent).	
GSE 760 Advanced Methods in Geospatial Modeling: Topical	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. Crosslisted with GEOG 760 Graduate standing in a degree program. Specific prerequisites dependent on topic.	
GSE 766 Advanced Remote Sensing Applications: Topical	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. Crosslisted with GEOG 766 Graduate standing in a degree program. Specific prerequisites dependent on topic.	
GSE 767 Fire and Ecosystems.....	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. Crosslisted with GEOG/WL/BIOL 767.	
GSE 790 Seminar in Geospatial Science and Engineering	1
GSE 791 Independent Study	(1-3)
GSE 792 Topics.....	(1-3)
GSE 898 Dissertation	(1-12)

Gerontology

Minor Only

Dean of Family and Consumer Sciences: Professor Laurie Stenberg Nichols

Coordinator: Associate Professor Renee Oscarson

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — SNF 249

E-mail: renee.oscarson@sdsu.edu

Phone: 605/688-6418

Fax: 605/688-4888

Program Description

An interdisciplinary gerontology minor is available which requires a total of 10 credit hours. The 10 credits include 6 credits selected from the gerontology core listing plus 4 additional credits selected from courses having content related to elderly persons or the study of human beings. The plan of study for the gerontology minor must be approved by the gerontology coordinator. Seminars, current topics or special problems topics and credits vary by semester and must be approved by the Gerontology Committee.

Core Requirements

AHED 710	Adult Curriculum and Instruction	3 credits
BIOL 539	Biology of Aging.....	3 credits
CHRD 571	Gerontology Issues in Counseling.....	3 credits
GERO 591	Independent Study	(1-3) credits
GERO 592	Topics	1-3 credits
HDFS 614	Adult Development	3 credits
NFS 761	Nutrition of the Aged	3 credits

Gerontology (GERO) Course Offerings
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GERO 591 Independent Study(1-3)

GERO 592 Topics.....(1-3)

Graduate School

Graduate Faculty

Kevin D. Kephart,
Vice President for Research and
Dean of the Graduate School,
PhD, Iowa State University, 1986
Crop Production and Physiology

Diane H. Rickerl,
Associate Dean of the Graduate
School,
PhD, Auburn University, 1986
Soil Science

John J. Ruffolo,
Associate Vice President of
Research,
PhD, University of Iowa, 1972
Zoology

Dean: Kevin D. Kephart, PhD
Associate Dean: Diane H. Rickerl, PhD

For additional information contact:

Mailing address: SDSU Box 2201
Administration Building — SAD 130
WWW: <http://www3.sdstate.edu/academics/graduateschool/>
E-mail: gradschool@sdstate.edu

Phone: 605/688-4181
Fax: 605/688-6167

Entrepreneurial Studies (ENTR) Course Offerings

- ENTR 506 Accounting for Entrepreneurs.....3**
Accounting concepts and practices for entrepreneurs/small business owners. Emphasis given to the use of accounting tools to solve small business problems.
- ENTR 538 Entrepreneurship II.....3**
This course focuses on the processing of screening an opportunity, drafting a personal entrepreneurial strategy, and understanding the business plan writing process. Building the entrepreneurial team and the acquisition and management of financial resources are emphasized along with venture growth, harvest strategies, and valuation.

General Studies (GS) Course Offerings

- GS 586 Service Learning.....(1-12)**

Graduate School/Research (GSR) Course Offerings

- GSR 600 Graduate School Tracking.....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.
- GSR 601 Research Regulations Compliance.....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.

Women's Studies (WMST) Course Offerings

- WMST 519 Women in Media.....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. Crosslisted with WMST 418.

Health, Physical Education and Recreation

Degree Offered:

MS Health, Physical Education and Recreation

• *Athletic Training specialization*

* Sport Pedagogy emphasis (administration/management or teaching/coaching)

* Sports Science emphasis

Department Head: Fred Oien, EdD

Graduate Coordinator: Matthew Vukovich, PhD

For additional information contact:

Mailing address: SDSU Box 2820

HPER Center — SPE 253

WWW: [http://www3.sdstate.edu/Academics/CollegeofArtsandScience/](http://www3.sdstate.edu/Academics/CollegeofArtsandScience/HealthPhysicalEducationandRecreation/GraduateProgram/)

[HealthPhysicalEducationandRecreation/GraduateProgram/](http://www3.sdstate.edu/Academics/CollegeofArtsandScience/HealthPhysicalEducationandRecreation/GraduateProgram/)

E-mail: matt.vukovich@sdstate.edu

Phone: 605/688-4668

Fax: 605/688-6446

Program Description - Athletic Training Specialization

The Athletic Training Education Program (ATEP) at South Dakota State University has developed a 44 credit entry-level graduate program in Athletic Training. The fundamental philosophy of this program is to allow students to complete the coursework and clinical experience necessary for both BOC certification eligibility and initial entry into the profession of Athletic Training. The program achieved initial accreditation through the Commission on Accreditation of Athletic Training Education (CAATE) in the fall of 2007.

This program is not designed for individuals who already have a degree in Athletic Training and/or are eligible for certification in Athletic Training.

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Core Requirements for Master of Science

AT 541	Athletic Training Techniques I	3 credits
AT 542	Athletic Training Techniques II.....	3 credits
AT 543	Athletic Training Techniques III.....	3 credits
AT 544	Athletic Training Techniques IV	3 credits
AT 554	Athletic Injuries Assessment – Lower Extremity ..	2 credits
AT 556	Athletic Injuries Assessment – Upper Extremity ..	2 credits
AT 564	Therapeutic Modalities in Athletic Training.....	2 credits
AT 574	Rehabilitation of Athletic Injuries.....	2 credits
HPER 690	Seminar.....	2 credits
HPER 780	Introduction to Graduate Study and Research	1 credits
HPER 783	Research Methods in HPER.....	3 credits
HPER 795	Lower Extremity Assessment Lab	1 credit
HPER 795	Upper Extremity Assessment Lab.....	1 credit
HPER 795	Modalities Lab	1 credit
HPER 795	Rehabilitation Lab	1 credit
HPER 795	Fall Clinical Experience.....	1 credit
PE 750	Advanced Exercise Physiology.....	3 credits
PE 751	Laboratory Techniques in Exercise Physiology	2 credits
PE 755	Applied Exercise Physiology	3 credits
HPER 788 or 798	5 credits

Graduate Faculty

James Booher,

Professor,

PhD, University of Utah, 1976

Athletic Training, Sports

Medicine

Andrew Creer,

Assistant Professor,

PhD, Ball State, 2004

Bioenergetics

Paul Fokken,

Assistant Professor,

PhD, Indiana University, 2004

Recreation Administration

Patty Hacker,

Professor,

PhD, University of Wyoming,

1988

Teacher Education, Coaching

Fred Oien,

Professor,

Ed.D., University of

Massachusetts-Amherst, 1979

Athletic Administration

Matthew Vukovich,

Associate Professor,

PhD, Ball State University, 1993

Exercise Physiology

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's).

Athletic Training (AT) Course Offerings

- AT 541 Athletic Training Techniques I**3
This course is the first of the intermediate athletic training courses designed to meet all of the guidelines and competencies required by the National Athletic Trainers' Association. These courses should be taken in sequence. AT 541 includes: concepts and techniques relative to injury assessment and management, pathology of tissue injury and repair, mechanisms of injury, management of blood borne pathogens/soft tissue injuries/fractures, athletic injuries related to environmental stress and on/off field injuries/management related to the spine (including a posture and neurological assessment). P, formally admitted to athletic training program; consent of instructor.
- AT 542 Athletic Training Techniques II**3
This course is the second of the intermediate athletic training courses designed to meet all of the guidelines and competencies required by the National Athletic Trainers' Association. These courses should be taken in sequence. AT 542 includes techniques related to the prevention, recognition, and management of athletic injuries to the upper and lower extremities. Related topics include preseason screening, preparticipation physicals, and appropriate weight training techniques.
- AT 543 Athletic Training Techniques III**3
This course is the third of the intermediate athletic training courses designed to meet all of the guidelines and competencies required by the National Athletic Trainers' Association. These courses should be taken in sequence. AT 543 includes a combination of material. One section of the class is devoted to the prevention, recognition, and management of athletic injuries relative to head, face, throat, abdomen, and thorax. The remainder of the class includes material in regards to evaluation and care of general illnesses and dermatological disorders common to athletics, understanding the role of pharmaceuticals in athletics, both legal and banned substances, drug testing procedures, special issues related to women in athletics, and the athletic trainer's role in counseling athletes.
- AT 544 Athletic Training Techniques IV**3
This course is designed to cover the athletic training competencies in organization and administration. It will cover knowledge, skills and values that an athletic trainer must possess to develop, administer, and manage a health care facility and associated venues that provide health care to athletes and others involved in physical activity. P, consent of instructor.
- AT 554 Athletic Injuries Assessment – Lower Extremity**2
This course is designed to have the student athletic trainers develop a sound understanding of the assessment of athletic related injuries and conditions occurring to the lower extremities. The course will incorporate anatomy of the lower extremity, the athletic related injuries or conditions which may occur, and evaluation techniques used to assess this area of the body.
- AT 556 Athletic Injuries Assessment – Upper Extremity**2
This course is designed to have the student athletic trainers develop a sound understanding of the assessment of athletic related injuries and conditions occurring to the upper extremities. The course will incorporate anatomy of the upper extremity, the athletic related injuries or conditions which may occur, and evaluation techniques used to assess this area of the body.
- AT 564 Therapeutic Modalities in Athletic Training**2
This course is designed to have the student develop a sound understanding of the use of modalities in the treatment of the injured athlete. The class will be taught through lectures and demonstrations and provide for practical experience.
- AT 574 Rehabilitation of Athletic Injuries**2
This course is designed to have the student develop a sound understanding of the use of exercise in the rehabilitation of the injured athlete. The class will be taught through lectures and demonstrations and provide for practical experience.

Health, Physical Education and Recreation (HPER) Course Offerings

HPER 690 Seminar	2
HPER 742 Psychological Aspects of Sport and Exercise	3
Psychological theories and principles applied to physical education, sport, and exercise. Interpretation and analysis of human behavior. P, consent. Topics include personality, arousal and anxiety, motivation, self efficacy and self-esteem, attentional focus, audience effects, aggression, leadership, as well as intervention strategies.	
HPER 745 Sports Medicine	2
A review of the basic fundamentals of athletic training and exposure to recent developments in the sports medicine field. P, undergraduate Prevention and Care of Athletic Injuries or consent of instructor.	
HPER 760 Motor Learning and Development	3
The study of human behavior as it relates to the learning and performance of motor skills. The understanding of motor learning as an essential foundation underlying the development of successful instruction and training strategies critical for skill acquisition. Laboratory work. P, consent of instructor.	
HPER 780 Introduction to Graduate Study and Research	1
HPER 783 Research Methods in HPER	3
By studying prevalent quantitative and qualitative research techniques, students will become critical consumers and potential producers of research relevant to Health, Physical Education and Recreation. Computer work, development of problems and hypotheses, writing for professional papers. P, STAT 281 or equivalent, or consent of instructor.	
HPER 788 Individual Research and Study in HPER	(1-3)
Directed independent research. May be taken for up to 3 credits. P/F grading, for Plan B students.	
HPER 791 Independent Study	(1-3)
HPER 795 Practicum	(1-9)
HPER 796 Field Experience	9
HPER 798 Thesis	(1-5)

Physical Education (PE) Course Offerings

PE 550 Clinical Exercise Physiology	3
This course is designed to provide the clinical exercise physiology student with assessment and prescription techniques appropriate to special populations. P, consent of instructor.	
PE 555 ECG and Clinical Stress Testing	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. P, PE 350 and PE 400.	
PE 585 Travel Studies	(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 593 Workshop	(1-3)
PE 71 Current Trends in HPER and Athletics	3
The study of trends in athletics that affect the performance, safety, and attitude of athletes; administrative practices; and public perception and support of athletics.	
PE 730 Physical Education Teacher Education	3
Readings, lectures, and discussions designed to analyze the process of preparing physical educators for the teaching profession. Includes discussion of external influences, problems and possible	

solutions, socialization and effective teaching in the field. P, consent of instructor.

PE 732 Analyses and Strategies of Teaching and Supervision of PE and Sports3

Study and application of theoretical and practical knowledge of effective teaching/coaching, designed to improve teaching and coaching in physical education, including techniques of analysis and supervision. P, consent of instructor.

PE 750 Advanced Exercise Physiology.....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. P, undergraduate Exercise Physiology.

PE 751 Laboratory Techniques in Exercise Physiology.....2

PE 751L Laboratory Techniques in Exercise Physiology Laboratory0

PE 755 Applied Exercise Physiology3

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. P, PE 350 and PE 750.

PE 770 Advanced Administration of Interscholastic Athletics2

Budgets, public relations problems, subsidization, objectives of athletics, staff organization, control of athletics, both interscholastic and intercollegiate, and general policies of athletics. P, consent of instructor.

PE 772 Financial Aspects of Sport Management.....3

A course that gives the student interested in sports administration an opportunity to take an in-depth look into various areas of financial management. Examples of some of these areas but not a complete list are: fund raising, guarantees, budgeting, scholarship programs, TV and Radio, receipts, and marketing.



History

Coursework Only

Department Head, Dept. of History and Political Science: Professor April Brooks
Program Coordinator, History and Political Science: Professor April Brooks

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 322

E-mail: april.brooks@sdstate.edu

Phone: 605/688-4311

Fax: 605/688-5977

Graduate Faculty

*April Brooks,
Professor,
PhD, Tulane University, New Orleans, 1974
British History, Early Modern Europe*

*Michael Function,
Professor,
PhD, Loyola University-Chicago, 1973
U.S. Immigration and Ethnic, Britain and Ireland*

History (HIST) Course Offerings

HIST 582 Travel Studies(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.

HIST 591 Independent Study(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.

HIST 592 Topics(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.

Horticulture, Forestry, Landscape & Parks

Degree Offered:

MS Biological Sciences

- *Horticultural Science specialization*

MS Plant Science

- *Horticultural Crop Management specialization*

Graduate Faculty

Rhoda L. Burrows,
Associate Professor of
Horticulture, Forestry,
Landscape and Parks,
PhD, University of Minnesota,
2001
Plant Pathology

Anne Fennell,
Professor of Horticulture,
Forestry, Landscape and Parks,
PhD, University of Minnesota-
Minneapolis/ St. Paul, 1985
Molecular Biology, Stress
Physiology, Fruit Crop Research

David F. Graper,
Professor and Head of
Horticulture, Forestry,
Landscape and Parks,
PhD, University of Maryland,
1990
Horticulture

W. Carter Johnson,
Professor of Horticulture,
Forestry, Landscape and Parks,
PhD, North Dakota State
University, 1971
General Ecology with
specialization in Forest and
Wetlands

Leo C. Schleicher,
Professor of Horticulture,
Forestry, Landscape and Parks,
PhD, Purdue University, 1997
Agronomy with specialization in
Turfgrass Science

Russell L. Stubbles,
Professor of Horticulture,
Forestry, Landscape and Parks,
PhD, Texas A & M University,
1979
Forest Recreating Planning

Department Head: Professor Peter R. Schaefer

Graduate Coordinator: Professor Peter R. Schaefer

For additional information contact:

Mailing address: SDSU Box 2140A
Northern Plains Biostress Laboratory — SNP 201
WWW: <http://www.hflp.sdstate.edu>
E-mail: peter.schaefer@sdstate.edu

Phone: 605/688-5136

Fax: 605/688-4713

Program Description

Graduate programs offered in Horticultural Science or Horticultural Crop Management specializations are available through the MS in Biological Sciences and Plant Science respectively. Potential areas of research include landscape, forest and wetland ecology; environmental stress physiology; forest recreation; forest genetics, fruit crops; molecular biology; plant pathology; and turfgrass science.

Horticulture (HO) Course Offerings

- HO 580 Environmental Stress Physiology**3
Physiological and cellular response of plants to environmental stresses. P, BOT 327. Crosslisted with BIOL 580 and PS 580. Equivalent to BIOL 580, PS 580.
- HO 592 Topics**1-3 F/S
- HO 746 Plant Breeding**3 S
Plant breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects. Crosslisted with PS 746. P, PS 103, BIOL 371, or consent.

Landscape Architecture (LA) Course Offerings

- LA 560 Landscape Ecology**4 S
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. Crosslisted with BIOL 560.
- LA 560L Landscape Ecology Lab**.....0 S

Human Development, Consumer and Family Sciences

Degree Offered:

MS Family and Consumer Sciences

- *Child and Family Studies specialization*
- *Family Financial Planning specialization*

Department Head: Professor Andrew Stremmel

Graduate Coordinator: Professor Ann Wilson

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — SNF 369

WWW: <http://www3.sdstate.edu/Academics/CollegeofFamilyandConsumerSciences>

E-mail: andrew.stremmel@sdstate.edu

Phone: 605/688-6418

Fax: 605/688-4888

Program Description

Courses offered in Human Development, Consumer and Family Sciences support the Master of Science in Family and Consumer Sciences degree program. Two specializations are available in Child and Family Studies and Family Financial Planning. Students within the Child and Family Studies specializations may choose either Early Childhood Education or Human Development and Family Studies as their area of emphasis or a general departmental emphasis.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

Core Requirements for Master of Science

For details see specific programs.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

The Department requires all applicants to submit a current resume, three letters of recommendation, and short (2-3 pages) essay indicating professional goals and how completion of a Master's degree will assist in meeting these goals. This statement will be used for two purposes: first, to assess the fit between the student's educational/career goals and the academic program; and second, to assess the student's written communication skills. Refer to College of Family and Consumer Sciences section for specific details.

General requirements begin on page 16 (Master's).

Graduate Faculty

*Cindi Penor Ceglian,
Associate Professor,
PhD, South Dakota State
University, 1975
Remarriage and Step-Families*

*Kay Cutler,
Associate Professor,
PhD University of Texas, 1995
Early Childhood Education EC
Special Education*

*Ann Michelle Daniels,
Associate Professor,
PhD, Kansas State University,
1999
Child Development*

*Debra DeBates,
Associate Professor,
PhD, Iowa State University, 1999
Human Development and Family
Studies - Life Span*

*Bernadine Enevoldsen,
Professor,
PhD, University of Minnesota,
1993
Consumer Affairs, Family
Financial Planning*

*DeAnna Gilkerson,
Professor,
PhD, Iowa State University, 1993
Early Childhood Education*

*Laurie Stenberg Nichols,
Professor,
PhD, The Ohio State University,
1988
Family and Consumer Sciences
Education, Family Studies*

*Renee Oscarson,
Associate Professor,
PhD, Purdue University, 1994
Gerontology, Family Studies,
Human Development*

*Andrew Stremmel,
Professor,
PhD, Purdue University, 1989
Early Childhood Education*

Ann Wilson,
 Professor,
 PhD, Michigan State University,
 1975
 Family Ecology and Child
 Development

Rui Yao,
 Assistant Professor,
 PhD, Ohio State University, 2003
 Family Resource Management

Consumer Affairs (CA) Course Offerings

CA 592 Topics	(1-3)
CA 595 Practicum	(3-6)
CA 604 Family Systems	3
Research and theory relative to family functioning throughout the life cycle will be studied, especially financial decision making during crisis and conflict. Emphasis will be given to factors that shape family values, attitudes, and behaviors from a multi-cultural perspective. New and emerging issues critical to family functioning will be addressed.	
CA 612 Financial Counseling	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.	
CA 620 Family Economics	3
CA 640 Fundamentals of Family Financial Planning	3
The nature and functioning of financial systems, including currencies, markets, monetary and fiscal policy, and supply/demand for land, labor, and capital. Focus will be on the impact of global financial interdependence on individuals and families in the U.S. current and emerging issues, as well as current research and theory relative to financial systems will be discussed.	
CA 660 Investing for Family's Future	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.	
CA 680 Insurance Planning for Families	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.	
CA 704 Estate Planning for Families	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.	
CA 715 Housing and Real Estate in FFP	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.	
CA 725 Family, Employment Benefits and Retirement Planning	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.	
CA 735 Personal Income Taxation	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 administrative 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.	
CA 745 Professional Practices in Financial Planning	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.	

CA 755 Financial Planning Case Study	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.	
CA 791 Independent Study	(1-3)
CA 792 Topics.....	(1-3)

Early Childhood Education (ECE) Course Offerings

ECE 543 Child Inquiry	2
Students will gain an understanding of inquiry based learning and of model programs such as those found at Reggio Emilia, Italy. Students will critically review, reflect upon, and evaluate theory, literature, and current research related to Developmentally Appropriate Early Childhood Education that supports child inquiry. Students will learn to draw on quality assessment, observation, and documentation for curriculum development, including collaborative long-term inquiry based investigations with children, and for conducting action research.	
ECE 591 Independent Study	(1-3)
ECE 592 Topics	(1-3)
ECE 601 Orientation in Graduate Study.....	1
An orientation to graduate studies in HDCF including exposure to graduate procedures and policies as well as writing skills. Required of graduate students in their first semester. Internet course. Equivalent to HDFS 601.	
ECE 645 Contemporary Perspectives in Early Childhood Education	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 665 Parent Education: Theory and Issues.....	3
ECE 676 Early Childhood Educational Administration and Practices.....	(1-4)
ECE 700 Research Methods	4
ECE 700L Research Methods Studio	0
ECE 711 Child Development Theory and Application	3
ECE 788 Individual Research and Study	(1-7)
ECE 790 Seminar	(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.	
ECE 791 Independent Study	(1-3)
ECE 792 Topics	(1-3)
ECE 794 Internship.....	(1-7)
ECE 798 Thesis.....	(1-7)

Human Development, Child and Family Studies (HDFS) Course Offerings

HDFS 591 Independent Study	(1-3)
HDFS 592 Topics	(1-3)
HDFS 601 Orientation in Graduate Study	1
An orientation to graduate studies in HDCF including exposure to graduate procedures and policies as well as writing skills. Required of graduate students in their first semester. Internet course. Equivalent to ECE 601.	
HDFS 614 Adult Development	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 665 Parent Education: Theory and Issues	3
Study of various approaches in parent education to become acquainted with programs and resources available, and to apply the knowledge in working with parents. Will involve the analysis of goals, trends, methods, and models of parent involvement and parent education.	
HDFS 700 Research Methods	4
HDFS 700L Research Methods Studio	0
HDFS 711 Child Development Theory and Application	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. Equivalent to ECE 711.	
HDFS 742 Family Theory and Research	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 753 Family Public Policy	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 777 Child and Family Counseling	3
Theory and philosophy of counseling and therapy with children and families using a family systems approach. P, consent of instructor.	
HDFS 788 Individual Research and Study	(1-7)
HDFS 790 Seminar	(1-3)
HDFS 791 Independent Study	(1-3)
HDFS 792 Topics	(1-3)
HDFS 794 Internship	(1-7)
HDFS 798 Thesis	(1-7)

Industrial Management

Degree Offered:
MS Industrial Management

Department Head: Professor Teresa Hall
Graduate Coordinator: Professor Huitian Lu

For additional information contact:

Mailing address: SDSU Box 2223

Solberg Hall SSO 116

WWW: <http://www3.sdstate.edu/academics/CollegeofEngineering/EngineeringTechnologyManagement>

E-mail: huitian.lu@sdstate.edu

Phone: 605/688-6417

Fax: 605/688-5041

Program Description

The Master of Science degree in Industrial Management (MSIM), offered through the 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. The program of study offers the student development in core areas that span financial, human resources, information systems, leadership and motivation, and systems management as a way to provide the necessary skills and knowledge tools needed to succeed in today's business environment. Individuals from a variety of disciplines can benefit from the MSIM degree as it has been constructed as a multidisciplinary program with few prerequisites for the courses that have been identified to develop core competence in technical and business systems management.

There are three methods of progress toward the MSIM degree. Students may elect to pursue the traditional thesis route: 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: 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 is a non-thesis program with additional coursework culminating in a Comprehensive Exam. Regardless of the option selected, the student works closely 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 industrial management concepts through the Final Oral Exam.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

Option C requires successful completion of the written comprehensive exam followed by the oral exam which covers program of study coursework. Options A and B require a successful oral defense of the written component (thesis or research project) and program of study coursework.

Graduate Faculty

*Teresa Hall,
Professor,
PhD, Iowa State University, 1997
Industrial Education and
Technology*

*Ross Kindermann,
Professor,
PhD, University of Illinois, 1978
Mathematics and Statistics*

*Huitian Lu,
Professor,
PhD, Texas Tech University,
1998
Industrial Engineering*

*Li Qian,
Assistant Professor,
PhD, Kansas State University,
2001
Industrial Engineering*

Core Requirements for Master of Science

Required Courses

GE 569	Project Management	2-3 credits
GE 660	Operations Management	3 credits
GE 670	Research Methods in Management.....	3 credits
GE 690	Industrial Management Seminar	minimum 1 credit

Supporting Courses

Select one (1) course from each topic area:

Finance

ECON 531	Managerial Economics.....	3 credits
ECON 610	Financial Management.....	3 credits

Human Resources

CHRD 716	Human Resources Management in Business and Industry	3 credits
ECON 782	Personnel and Labor Relations	3 credits
GE 510	Human Factors in Design	3 credits

Information Systems

CSC 630	Principles of Data Base System Design	3 credits
CSC 740	Management Information Systems	3 credits

Manufacturing

GE 650	Manufacturing Systems Management.....	3 credits
ME 662	Quality Control	3 credits

Analysis

ME 661	Operations Research	3 credits
STAT 541	Statistical Methods II (with permission).....	3 credits
STAT 582	Statistics for Physical Science	3 credits

Additional Admission Requirements

GRE: Not required (recommended)

TOEFL: Score of 575 paper-based, 233 computer-based, 90-91 Internet-based

A statement of major development plan (less than 1000 words).

Refer to College of Engineering information for specific details

General requirements begin on page 16 (Master's).

General Engineering (GE) Course Offerings

GE 510 Human Factors in Design3
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. P, MATH 102.

GE 525 Occupational Health and Safety3
Industrial accidents are caused by error-making human beings. Safety results achieved only through safety engineering and OSHA compliance are limited. Optimum levels of accident prevention can only be achieved through a coordinated program of both safety engineering and safety management. The focus on modern safety management includes: management's direction of safety, measuring safety performance, behavior modifications, motivating safety performance, profiling, program organization, products safety, and safety in the adjunct fleet.

GE 569 Project Management(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.

GE 591 Independent Study	(1-3)
GE 592 Topics.....	(1-3)
GE 593 Workshop	(0-3)
GE 601 Technical Studies in Industrial Management.....	3
An overview of the technical aspects of Industrial Management. Limits and derivatives of algebraic functions, definite integrals. Statistical methods and probability relating to engineering applications. Spread sheets and data base management systems as applied to the technical operating aspects in an industrial setting. P, consent of instructor.	
GE 603 Designing the Work Place for Production	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.	
GE 620 Industrial Safety	3
Safety requirements and standards common to all industries and processes are reviewed. Attention is focused on legal safety requirements, particularly the Occupational Safety and Health Administration (OSHA) Standards. Emphasis is placed on how to recognize, evaluate, and control safety hazards associated with common industrial methods and technologies.	
GE 650 Manufacturing Systems Management.....	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. P, STAT 541 or 582.	
GE 660 Operations Management	3
Product planning, demand forecasting and management, capacity planning, scheduling, inventory planning and timing, materials management, quality, work standards and measurement.	
GE 670 Research Methods in Management	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.	
GE 690 Seminar.....	(1-3)
GE 691 Independent Study	(1-3)
GE 692 Topics.....	(1-3)
GE 693 Workshop	(0-3)
GE 696 Field Experience	(1-6)
GE 788 Research Problems/Projects.....	(1-2)
GE 791 Independent Study	(1-9)
GE 792 Topics.....	(1-3)
GE 798 Thesis	(1-3)

Journalism and Mass Communication

Degree Offered:

MS Communication Studies and Journalism

- *Journalism specialization* (see also Communication Studies and Theatre)

Graduate Faculty

Mary Arnold,
Professor,
PhD, University of Iowa, 1994
Mass Communications

Matthew Cecil,
Associate Professor,
PhD, University of Iowa, 2000
Journalism History, Cultural
Studies and News Media

John E. Getz,
Professor,
Ed.D., University of South
Dakota, 2001
Journalism Education and
Newspaper Journalism

E. Dennis Hinde,
Associate Professor,
PhD, University of Southern
Mississippi, 1999
Advertising

Lyle D. Olson,
Professor,
Ed.D., Oklahoma State
University, 1988
Scholastic Press, Technical
Writing, Graphics and Design

Department Head: Associate Professor Mary Arnold

Graduate Coordinator: Professor Lyle D. Olson

For additional information contact:

Mailing address: SDSU Box 2235

Yeager Hall — SYE 211

WWW: [http://www3.sdstate.edu/Academics/CollegeOfArtsAndSciences/
JournalismandMassCommunication/](http://www3.sdstate.edu/Academics/CollegeOfArtsAndSciences/JournalismandMassCommunication/)

E-mail: mary.arnold@sdstate.edu

lyle.olson@sdstate.edu

Phone: 605/688-4171

Fax: 605/688-5034

Program Description

The graduate major in journalism is designed to provide for 1) professional journalists who wish to broaden their education in communications and social sciences; 2) for individuals with undergraduate degrees in non-journalism specialties who wish to develop their knowledge in mass communication.

Available Options for Graduate Degrees

Master of Science: Option A: Communication Studies

OR

Journalism

Option B

Option Descriptions

Communication Studies: Designed to provide advanced studies in the areas of public address, rhetorical theory, radio/television studies, and theatre arts. This option provides further professional preparation and competencies in the area of communication.

Journalism: Designed to provide for professional journalists who wish to broaden their education in communications and social sciences; and for individuals with undergraduate degrees in non-journalism specialties who wish to develop their knowledge in mass communication.

Core Requirements

MCOM 787 Research Methods in Communication

SPCM 700 Instructional Methods in Communication for teaching assistants

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based

General requirements begin on page 17 (Master's Degree).

Journalism and Mass Communication (MCOM) Course Offerings

MCOM 505 Theories of Communications	3
Major theories of communication, including media and interpersonal communication.	
MCOM 506 Public Opinion and Propaganda	3
Formation and measurement of public opinion; role of the media; propaganda techniques, agencies, theories. P, senior standing, consent of instructor.	
MCOM 513 International Media	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 515 Opinion Writing	2
Opinion function of periodicals; great editorials and editorial writers; writing editorials; shaping policy.	
MCOM 516 Mass Media in Society	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	3
Development, impact and importance of individual journalists and media in U.S.	
MCOM 519 Women in Media	3
This course examines contributions of women to the mass media from colonial era to present. It also Crosslisted with WMST 418. 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.	
MCOM 530 Media Law	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 537 Educational and Corporate TV	3
Preparation, presentation of educational and instructional materials for radio, TV, and film and classroom use. Crosslisted with RTVF 437/537.	
MCOM 553 Mass Communication Teaching Methods	(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. Mass Communication teacher education candidates are required to earn at least 3. Dual listed with MCOM 453.	
MCOM 574 Media Administration and Management	3
Business practices, newspaper, magazine, and broadcast management.	
MCOM 575 Public Relations	3
Interpreting institutional and industrial policies and programs to the public.	
MCOM 576 International and Ethnic Advertising	3
This course develops an understanding of international and ethnic advertising and marketing. Students gain experience in marketing decisions that reflect an understanding of intercultural and international markets and explore the social and ethical issues in such marketing.	
MCOM 582 Travel Studies	(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.	
MCOM 592 Topics	(1-5)
MCOM 693 Workshop	(1-4)
MCOM 762 Special Problems in Radio, TV or Film	(1-2)
MCOM 787 Research Methods in Communication	3
Application of social science research methods and techniques to the study of interpersonal and mass communication. Elementary statistical procedures.	
MCOM 788 Master's Research Problems/Projects	(1-6)
MCOM 791 Independent Study	(1-3)
MCOM 798 Thesis	(1-3)

Speech Communication (SPCM) Course Offerings

SPCM 510 Organizational Communication	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 516 Rhetorical Criticism	3
Critical evaluation of American speakers from Colonial to contemporary. P, consent of instructor.	
SPCM 552 General Semantics	3
Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistic assumptions; and the objective systematization of language .Crosslisted with LING 452-552.Equivalent to LING 552.	
SPCM 582 Travel Studies	(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 592 Topics	(1-5)
SPCM 605 Current Approaches to Communication	3
SPCM 700 Instructional Methods in Communication	3
Problems and issues in teaching the basic communication course, development of communication courses, and issues relevant to communication education.	
SPCM 707 Speech/English/Drama for Teachers	(1-3)
Designed to help teachers develop curriculum materials and curricular/co-curricular instruction of literature and drama.	
SPCM 766 Rhetorical Theory	3
Historical development of rhetorical theory from classical to modern times.	
SPCM 791 Independent Study	(1-2)
SPCM 792 Topics	(1-3)
SPCM 798 Thesis	(1-7)



Mathematics and Statistics

Degrees Offered:

PhD Computational Science and Statistics

MS Statistics

MS Mathematics

- *Statistics specialization*

A graduate minor in Statistics is offered in the department for both MS and PhD candidates.

Department Head: Professor Kurt D. Cogswell

Graduate Coordinator: Professor Daniel J. Schaal

For additional information contact:

Mailing address: SDSU Box 2220

Harding Hall — SHH 100

WWW: <http://mathstat.sdsu.edu>

E-mail: Kurt.Cogswell@sdsu.edu

Phone: 605/688-6196

Fax: 605/688-6814

Program Description

The Computational Science and Statistics PhD program provides intensive preparation for careers in research, industry, or academia. The Master of Science in Mathematics prepares graduates for positions in industry, teaching, or doctoral programs. A Specialization in Statistics is offered within the MS in Mathematics program. Also available to students in all Graduate Programs on campus are Graduate Minors in Statistics for both Master's Degree and PhD candidates. Please contact the department for details related to Graduate Minors.

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Option C

Doctor of Philosophy: 60-Credit Plan

Core Requirements for the Master of Science in Mathematics

All MS Mathematics students not pursuing a Specialization in Statistics must complete at least one of the following sequences:

MATH 623 Advanced Calculus I3 credits

MATH 726 Real Variables I.....3 credits

OR

MATH 716 Theory of Algebraic Structures I3 credits

MATH 717 Theory of Algebraic Structures II.....3 credits

and one additional sequence chosen from the following list:

MATH 623 Advanced Calculus I3 credits

MATH 726 Real Variables I.....3 credits

OR

MATH 716 Theory of Algebraic Structures I3 credits

MATH 717 Theory of Algebraic Structures II.....3 credits

OR

MATH 571 Numerical Analysis I3 credits

MATH 671 Numerical Analysis II3 credits

OR

MATH 531 Partial Differential Equations.....3 credits

MATH 631 Ordinary Differential Equations3 credits

Graduate Faculty

Ross P. Abraham,
Professor,
PhD, University of Houston, 1997
Group Theory

Matthew Biesecker,
Assistant Professor,
PhD, Utah State, 2004,
Mathematical Biology

Ding-Geng Chen,
Associate Professor,
PhD, University of Guelph, 1995,
Biostatistics, Ecological
Informatics

Kurt D. Cogswell,
Professor, PhD, Northwestern
University, 1996
Dynamical Systems

Dwight H. Galster,
Associate Professor,
PhD, North Dakota State
University, 2001
Statistics

Weiming Ke,
Assistant Professor,
PhD, University of Memphis,
2005,
Biostatistics

Ross Kindermann,
Professor,
PhD, University of Illinois-
Urbana, 1978,
Probability, Stochastic Processes

Daniel J. Schaal,
Professor,
PhD, University of Idaho, 1994
Ramsey Theory, Combinatorics

Robert C. Schmidt,
Professor,
PhD, Iowa State University, 1987
Numerical Analysis, Numerical
Linear Algebra

All MS Mathematics students pursuing a Specialization in Statistics must take:

STAT 510	Programming Using SAS.....	2 credits
STAT 661	Design of Experiments I.....	3 credits
STAT 685	Statistical Inference I.....	3 credits
STAT 687	Regression Analysis I.....	3 credits
STAT 785	Statistical Inference II.....	3 credits

and complete at least one of the following two sequences:

Experimental Design

STAT 661	Design of Experiments I.....	3 credits
STAT 761	Design of Experiments II.....	3 credits

Regression

STAT 687	Regression Analysis I.....	3 credits
STAT 787	Regression Analysis II.....	3 credits

Core Requirements for the Master of Science in Statistics

All MS students pursuing a degree in Statistics must take:

STAT 510	Programming Using SAS.....	2 credits
STAT 661	Design of Experiments I.....	3 credits
STAT 685	Statistical Inference I.....	3 credits
STAT 687	Regression Analysis I.....	3 credits
STAT 785	Statistical Inference II.....	3 credits

and complete at least one of the following sequences

STAT 661	Design of Experiments I.....	3 credits
STAT 761	Design of Experiments II.....	3 credits

OR

STAT 687	Regression Analysis I.....	3 credits
STAT 787	Regression Analysis II.....	3 credits

Core Requirements for the Doctor of Philosophy

CSS 701	Methods of Applied Mathematics.....	3 credits
CSS 702	Elements of Computational Science.....	3 credits
CSS 703	Statistical Modeling and Computing.....	3 credits
CSS 704	Computing Paradigms.....	3 credits
CSS 890	Seminar in Computational Science and Statistics.....	1,1,1 credits

Additional Admission Requirements

GRE: Not required

TOEFL: Scores of 550 paper-based, 213 computer-based, 79-80 Internet-based

General requirements begin on page 16 (Master's) and Page 21 (PhD).

Mathematics (MATH) Course Offerings

MATH 530 Fractals and Chaos	3
An introduction to techniques of analysis of chaotic systems. Topics include fundamental concepts of dynamical systems and fractals, examples of chaotic systems, phase space reconstruction, Lyapunov exponents, fractal dimensions, and control of chaotic system. P, MATH 225.	
MATH 531 Partial Differential Equations	3
Series, solutions, total differential equations, simultaneous equations, approximate solutions, partial differential equations of first and second orders, application. P, MATH 225 and 321.	
MATH 535 Complex Variables I	3
Algebra of complex numbers, classifications of functions, differentiation, integration, mapping, transformations, infinite series. P, MATH 225.	
MATH 540 Mathematics of Finance	3
An introduction to the fundamental concepts of financial mathematics. Topics include simple and compound interest, annuities, amortization, sinking funds, bonds, stocks, rates of return, term structure of interest rates, cash-flow duration and immunization. P, STAT 381.	
MATH 541 Applied Probability Theory	3
Topics in probability including an introduction to the axiomatic development of probability, random variable and distributions with emphasis on the exponential, binomial and Poisson distributions. Applications to discrete stochastic processes such as Markov chains and queuing theory are covered in some detail. P, MATH 381 or consent, or STAT 381.	
MATH 557 Ecological Modeling	3
An introduction to ecological modeling. Topics will include modeling methodology, auto-ecological models, population models, biotic communities, ecosystem level models, global modeling. P, MATH 121 or MATH 123.	
MATH 558 Mathematical Models in Microbiology	3
Mathematical models from microbiology, cellular biology, and physiology will be developed and analyzed. Topics will include enzyme kinetics, cell membrane function, cell cycle regulation, intercellular communication, and molecular motors. P, MATH 125.	
MATH 559 Bioinformatics	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. P, STAT 281 or 381.	
MATH 561 Introduction to Topology	3
A first course in point-set topology, covering the elementary concepts of metric and general topological spaces; closure, interior, boundary, connectedness, compactness, and separation. Special attention is given to continuity of functions.	
MATH 571 Numerical Analysis I	3
Analysis of rounding errors, numerical solutions of nonlinear equations, numerical differentiation, numerical integration, interpolation and approximation, numerical methods for solving linear systems. P, MATH 225.	
MATH 590 Seminar	(1-2)
MATH 591 Independent Study	(1-3)
MATH 592 Topics Course	(0-3)
MATH 623 Advanced Calculus I	3
Topics will include set theory; point set topology in R^n and in metric spaces; limits and continuity; infinite series; sequences of functions. P, MATH 425.	
MATH 624 Advanced Calculus II	3
Topics will include differentiation and integration in R and R^n ; improper integrals; calculus of transformations from R^m to R^n . P, MATH 623.	
MATH 631 Ordinary Differential Equations	3
Existence theorems for solutions of ordinary differential equations, theory of linear differential equations and systems of linear differential equations oscillation theory. P, MATH 321 and 623.	
MATH 635 Complex Variables II	3
Continuation of MATH 535, Laurent series, calculus of residues, conformal mapping, analytic continuation, Riemann surfaces, infinite products, special functions. P, MATH 535.	

MATH 671 Numerical Analysis II	3
Continuation of MATH 571 including approximation theory, matrix iterative methods and boundary value problems for ordinary and partial differential equations. P, MATH 571.	
MATH 672 Numerical Linear Algebra	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. P, MATH 315 and 571.	
MATH 673 Numerical Differential Equations	3
This course is a survey of numerical solution techniques for ordinary and partial differential equations. P, MATH 321 and 571.	
MATH 716 Theory of Algebraic Structures I	3
Abelian Groups, homomorphisms, permutation groups, Sylow theorems, group representations and characters. P, MATH 413.	
MATH 717 Theory of Algebraic Structures II	3
Rings, Modules, Fields, Galois theory, solvable groups, commutative rings and modules. P, MATH 716.	
MATH 726 Real Variables I	3
Set Theory, The Real Number System, Theory of Functions of a Real Variable, Lebesgue Measure, the Lebesgue Integral, Differentiation and Integration, Metric Spaces, Topological Spaces, Compact Spaces, Banach Spaces, Measure and Integration, The Daniell Integral, Topology, and Mappings of Measure Spaces. P, MATH 623.	
MATH 727 Real Variables II	3
A continuation of MATH 726. P, MATH 726.	
MATH 788 Research Paper	(1-2)
MATH 790 Seminar	1
MATH 791 Independent Study	(1-3)
MATH 792 Topics	(1-3)
MATH 798 Thesis	(1-7)

Statistics (STAT) Course Offerings

STAT 510 Programming Using SAS	2
The Base SAS programming language for data reading and manipulation, data display, summarization, and graphing. Introduction to statistical procedures, high resolution graphics, the Output Delivery System, and some menu-driven interfaces (information and presentation graphics).	
STAT 512 Programming Using SAS II	2
A continuation of STAT 510, including SAS/STAT, SAS Macro, IML, and projects in data simulation. P, STAT 410 or 510.	
STAT 540 Basic Research Statistics	3
An introductory/Review course in probability and statistics for graduate students or students preparing for graduate school. Includes topics such as discrete probability, discrete and continuous random variables, sampling, confidence intervals and hypothesis tests, including Chi-Square and F tests.	
STAT 541 Statistical Methods II	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. P, STAT 281, MATH 381, or STAT 381, STAT 210 or STAT 410. Credit not given for both STAT 541 and STAT 581.	
STAT 545 Nonparametric Statistics	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. P, STAT 281, MATH 381 or STAT 381.	
STAT 555 Matrix Algebra for Statistics	3
Matrix/Linear Algebra concepts especially useful in statistics, focusing on those not covered in a typical undergraduate linear algebra course, such as quadratic forms, idempotent, positive definite, generalized inverse, matrix decomposition, and matrix calculus.	

STAT 556 Survey of Analysis	3
Multivariate differentiation and integration, convergence of sequences and series of real numbers and functions, transformations, exponential forms of complex numbers, introduction to measure theory and numerical methods. Incorporate experience in proof analysis and proof writing.	
STAT 560 Time Series Analysis.....	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. P, STAT 281 or STAT 381 or MATH 381.	
STAT 582 Statistics for Physical Science.....	3
Introduction to statistical design, one-way completely randomized design, testing contrasts and multiple comparison procedures, simple and multiple linear regression, factorial designs, fractional factorial designs and mixed models. SAS software is used extensively. P, MATH/STAT 381. Credit will not be given for both STAT 482 and STAT 441.	
STAT 586 Design of Surveys.....	3
Construction and analyzing designs for survey investigations; simple random, stratified, cluster multistage, and multiphase designs; and methods of estimation. Techniques and methods of obtaining and reporting survey information. P, STAT 381 Introduction of Statistics, or consent of instructor.	
STAT 590 Seminar	(1-2)
STAT 591 Independent Study.....	(1-3)
STAT 592 Topics	(1-3)
STAT 615 Multivariate Analysis I.....	3
Multiple, partial, canonical correlation test of hypothesis on means; multivariate analysis of variance; principal components; factor analysis; and discriminant analysis. P, STAT 441/541 or STAT 482/582.	
STAT 661 Design of Experiments I.....	3
Analysis of variance, block designs, fixed and random effects, split plots and other experimental designs. Includes use of SAD Processing GLM, Mixed, etc.	
STAT 662 Quality Control.....	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. Crosslisted with ME 662. P, STAT 281, MATH 381 or STAT 381.	
STAT 685 Statistical Inference I.....	3
A theoretical study of the foundations of statistics, including probability, random variables, expectations, moment generating functions, sample theory, and limiting distributions.	
STAT 687 Regression Analysis I.....	3
Methodology of regression analysis, including matrix formulation, inferences on parameters, multiple regression, outlier detection, diagnostics, and multicollinearity. P, STAT 441, STAT 541, STAT 482, or STAT 582.	
STAT 720 Bayesian Statistics.....	3
Bayes theorem, priors, asymptotic properties, Bayesian computation, hierarchical Bayes models, statistical decision, Bayesian hypothesis testing, predictive inference, application. P, STAT 785.	
STAT 730 Bioassay	3
Various types of assays, including direct, parallel line, slope ratio, multiple, and quantal. Modeling, estimation, and testing. Probit and logit analysis. P, STAT 441, STAT 541, STAT 482, or STAT 582.	
STAT 735 Introduction to Clinical Trials	3
Introduction to the design, conduct, and analysis of clinical trials. The course focuses mostly on the comparative, also called Phase III, randomized clinical trial (RCT). P, STAT 441, STAT 541, STAT 482, or STAT 582.	
STAT 740 Survival Analysis and Reliability	3
Introduction to statistical models and methods for survival time, recurrent event data analysis and reliability, including non-parametric and parametric models for lifetime, failure time data, regression models, parametric, semi-parametric and non-parametric inference, and system reliability.	
STAT 742 Spatial Statistics	3
Geostatistical data analysis with variogram, covariogram and correlogram modeling. Spatial prediction and kriging, spatial models for lattices, spatial patterns. P, STAT 687.	
STAT 746 Linear Models I.....	3
Distribution of Quadratic forms in normal random variables, general linear hypothesis, estimability	

and testability criteria, analysis of variance and the analysis of various design models, variance component analysis. P, STAT 661 and (MATH 315 or STAT 455 or STAT 555).

STAT 761 Design of Experiments II	3
Continuation of STAT 661. One-way classification models with heterogeneous errors, two-way classification analysis in the unbalanced case, analysis in the unbalanced case, analysis of mixed models, repeated measures.	
STAT 785 Statistical Inference II	3
A theoretical study of the foundations of statistics, including most powerful tests, maximum likelihood tests, complete and sufficient statistics, etc.	
STAT 787 Regression Analysis II	3
Advanced regression methodology, including nonlinear regression, logistic regression, poisson regression, and correlation analysis.	
STAT 791 Independent Study.....	(1-3)
STAT 792 Topics	(1-3)

Computational Science (CSS) Course Offerings

CSS 701 Methods of Applied Mathematics	3
This course provides an accelerated review of mathematical tools for scientific applications and analysis. Topics covered in the course include vectors and matrices; differential and difference equations; linear systems; Fourier, Laplace, and Z-transforms; linearity and nonlinearity; stability; dimensionless parameters, dimensional analysis, perturbation analysis. Examples from population growth and chemical kinetics, diffusion, transport, and shocks will be considered.	
CSS 702 Elements of Computational Science.....	3
This course focuses on translating mathematical models to computer software. Topics covered will include different computer architectures, data structures, advanced numerical algorithms, and languages used for scientific software development. Examples from bioinformatics, computational biology, computational physics, and global climate change will be studied.	
CSS 703 Statistical Modeling and Computing	3
This course covers computationally intensive statistical methods that would not be feasible without modern computational resources. Topics may include: nonparametric density estimation including kernel methods, orthogonal series methods and multivariate methods; recursive methods; cross validation; nonparametric regression; penalized smoothing splines; jackknife and bootstrapping techniques; computational aspects of exploratory methods including the grand tour, projection pursuit, alternating conditional expectations, and inverse regression methods; random variables and distributions, characteristic functions, and stochastic convergence; optimal estimation, maximum likelihood estimation, asymptotic theory, Bayesian methods, likelihood-ratio tests, statistical decision theory, and sequential methods.	
CSS 704 Computing Paradigms.....	3
This course will provide an overview of the different computing paradigms that have evolved over time. Topics covered will include parallel and high-performance computing, quantum computing, ubiquitous computing, DNA computing, and GRID computing.	
CSS 890 Seminar in Computational Science and Statistics	1
CSS 891 Independent Study.....	(1-3)
CSS 892 Topics	(1-3)
CSS 898 Thesis/Dissertation.....	(1-36)
CSS 899 Thesis Sustaining Dissertation.....	0
This is a zero credit hour schedule 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 schedule type to remain active degree candidates.	

Mechanical Engineering

Degree Offered:

MS Engineering

* Mechanical Engineering emphasis

Department Head: Interim Department Head Kurt Bassett

Graduate Coordinator: Professor Alex Moutsoglou

For additional information contact:

Mailing address: SDSU Box 2219

Crothers Engineering Hall — SCEH 216

WWW: <http://www.engineering.sdstate.edu/~moutsoga/gradprog/>

E-mail: alex.moutsoglou@sdstate.edu

Phone: 605/688-5426

Fax: 605/688-5878

Program Description

The Mechanical Engineering Department offers courses for the degree Master of Science in Engineering. Also, course offerings can be used in co-major or minor programs for students of other departments. The Graduate Program in engineering with an emphasis of M.E. 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.

Available Options for the Graduate Degree

Master of Science: Option A
 Option B
 Option C

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 525 paper based, 197 computer-based, 71 Internet-based

Core Requirements for Master of Science

See the formal course offerings for Master of Science in Engineering.

General requirements begin on page 16 (Master's).

Mechanical Engineering (ME) Course Offerings

ME 514 Air Pollution Control.....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. P, ME 311 or consent of instructor.

ME 527 Gas Dynamics I.....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. P, EM 331, MATH 331.

Graduate Faculty

*Kurt Bassett,
Professor,
PhD, North Dakota State
University, 1995
Mechanical Systems, Energy
Analysis*

*Fereidoon Delfanian,
Professor,
PhD, North Dakota State
University, 1995
Computational Fluid Dynamics,
Mechanical Systems*

*Shanzhong Duan,
Assistant Professor,
PhD, Rensselaer Polytechnic
Institute, 1999
Vibrations, Advanced Mechanics*

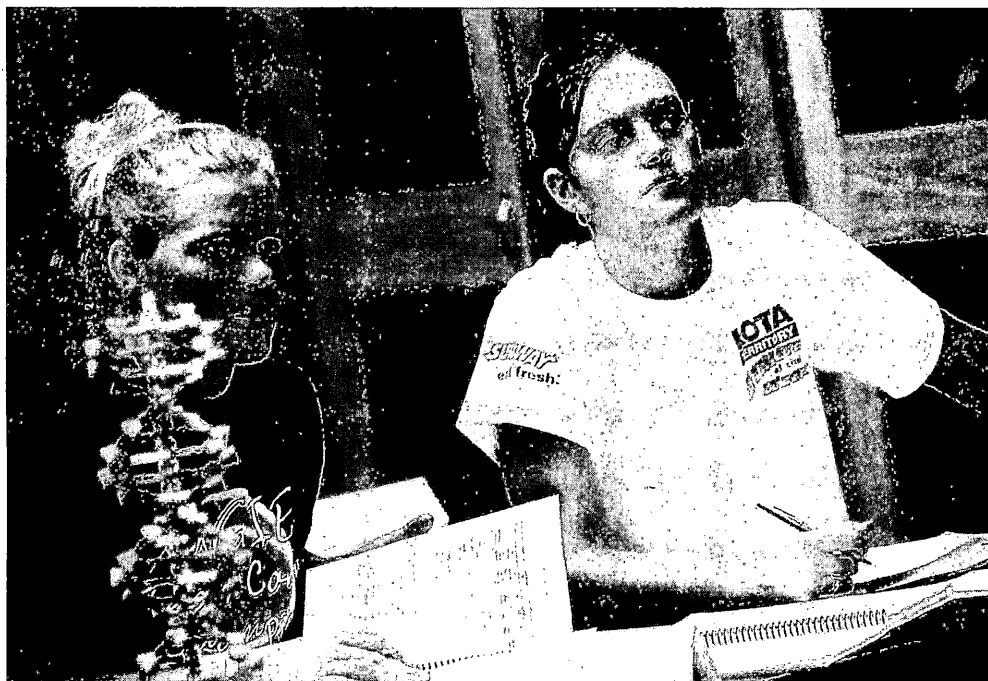
*Zhong Hu,
Associate Professor,
PhD, Tsinghua University, 1988
Solid Mechanics, Materials,
Computer Simulation*

*Alex Moutsoglou,
Professor,
PhD, University of Missouri-
Rolla,
1977 Thermofluid Energy
Systems, Heat Transfer*

*Charles Remund,
Professor,
PhD, University of Nebraska-
Lincoln, 1988
Thermofluids, Systems*

ME 540 Computer-Aided Design	3
Fundamentals: elemental and integrated techniques of finite element analysis; one-, two-, three-dimensional analysis; application problems involving solid mechanics, heat transfer and fluid mechanics; applications using ANSYS as in design/modeling tool intelligently and effectively. P, consent of instructor.	
ME 590 Seminar	0-2
ME 592 Topics	(1-5)
ME 603 Thermo-Fluid Energy Systems	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 biomass, wind, solar, geothermal, etc.	
ME 606 Statistical Thermodynamics	3
Review of classical thermodynamics. Principles of kinetic theory and classical statistical mechanics. Principles of quantum mechanics, quantum statistics, partition functions, and thermodynamic properties.	
ME 611 Advanced Heat Transfer I	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 612 Convection Heat Transfer	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 621 Viscous Flow I	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. Logarithmic law of the wall. Mixing length model.	
ME 628 Gas Dynamics II	3
Flow with mass addition. Combustion Waves. Generalized one-dimensional flow. Flow with small perturbations. Multidimensional flow. Methods of characteristics applied to steady and unsteady flows.	
ME 631 Advanced Analytical Methods	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 635 Modeling and Simulation	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. Corequisite course: ME 635L.	
ME 635L Modeling and Simulation Laboratory	0
ME 639 Advanced Metallurgy	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 641 Advanced Stress Analysis in Mechanical Design	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 method.	
ME 645 Advanced Machine Design	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 661 Operations Research	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 662 Quality Control	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. Crosslisted with STAT 662. P, STAT 281, STAT 381, or MATH 381.	
ME 663 Topics in Reliability Engineering	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 665 Systems Analysis	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 667 Decision Theory	3
Examination and evaluation of modern techniques of decision making. Mathematical models and measurement theory. Certainty, risk, and uncertainty.	
ME 690 Seminar	0
ME 691 Independent Study	(1-5)
ME 692 Topics	(1-3)
ME 787 Research	9
ME 788 Master's Research Problems/Projects	(1-9)
ME 790 Seminar	1
ME 791 Independent Study	(1-3)
ME 792 Topics	(1-3)
ME 798 Thesis	(1-7)



Modern Languages

Coursework Only

Graduate Faculty

Maria Ramos,
Associate Professor of Modern
Languages,
PhD, Washington University,
1997
Spanish Language, Literature and
Film

Department Head: Associate Professor Maria Ramos

For additional information contact:

Mailing address: SDSU Box 2275

Nursing/Family/A&S — SNF 121

WWW: <http://www3.sdsu.edu/academics/collegeofartsandscience/modernlanguages>

E-mail: maria.ramos@sdsu.edu

Phone: 605/688-5101

Fax: 605/688-6699

Modern Languages (MFL) Course Offerings

MFL 560 Topics: French, German, and Spanish Literature.....(1-4)

An intensive examination of a significant writer(s), period or theme in French, German, or Spanish literature. This course may be repeated for credit if topic is different.

MFL 591 Independent Study(1-3)

MFL 592 Topics.....(1-4)

MFL 595 Practicum(1-6)

MFL 596 Field Experience(3-12)

French (FREN) Course Offerings

FREN 591 Independent Study(1-3)

German (GER) Course Offerings

GER 591 Independent Study.....(1-3)

Music

Coursework Only

Department Head: Professor David Reynolds
Graduate Coordinator: Professor David Reynolds

For additional information contact:

Mailing address: SDSU Box 2212

Lincoln Music Hall — SLM 205

WWW: <http://www3.sdstate.edu/academics/collegeofartsandscience/music>

E-mail: paul.reynolds@sdstate.edu

E-mail: maria.ramos@sdstate.edu

Phone: 605/688-5188

Fax: 605/688-4307

Graduate Faculty

*David Reynolds,
Professor,
D.M.A., University of Maryland-
College Park, 1994*

Music (MUS) Course Offerings

MUS 591 Independent Study(1-3)

MUS 592 Topics.....(1-5)



Nursing

Degrees Offered:
PhD Nursing

MS Nursing

- *Administrator specialization*
- *Clinical Nurse Leader specialization*
- *Educator specialization*
- *Family Nurse Practitioner specialization*
- *Neonatal Nurse Practitioner specialization*
- *Psychiatric Nurse Practitioner specialization*

Graduate Faculty

Sandra J. Bunkers,
Professor,
PhD, Loyola University -
Chicago, 1996

Paula P. Carson,
Associate Professor,
PhD, University of Arizona, 1992

Gloria P. Craig,
Associate Professor,
Ed.D., Drake University, 1997

Carla Dieter,
Associate Professor,
Ed.D., University of South
Dakota, 2001

Nancy Fahrenwald,
Associate Professor,
PhD, University of Nebraska
Medical Center, Omaha, 2002

Kay Foland,
Associate Professor,
PhD, University of Texas-Austin,
1989

Margaret Hegge,
Distinguished Professor,
Ed.D., University of South
Dakota, 1983

Lori D. Hendrickx,
Associate Professor,
Ed.D., University of Montana,
1998

Barbara Hobbs,
Associate Professor,
PhD, University of Nebraska
Medical Center, 2004

Amy Jones,
Assistant Professor,
Ed.D., University of South
Dakota, 2005

Dean: Professor Roberta K. Olson

Graduate Nursing Department Head: Professor Sandra J. Bunkers

For additional information contact:

Mailing address: SDSU Box 2275

Nursing/Family/A&S — SNF 217

WWW: <http://www3.sdstate.edu/Academics/CollegeofNursing/GraduateNursing/>

E-mail: lori.maher@sdstate.edu

Phone: 605/688-4114

Fax: 605/688-5827

Program Description

The purpose of graduate education at the PhD level is to prepare 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 purpose of graduate education at the Master's level in nursing is to prepare professional leaders with specialized knowledge and skills to meet the nation's needs in clinical practice, nursing administration, and nursing education. The aim of the program is to prepare nurses to practice at an advanced level in nursing as a nurse educator, administrator, or clinician which includes clinical nurse leader, neonatal nurse practitioner, family nurse practitioner, or psychiatric nurse practitioner. Achievement of this aim includes study in related fields and the use of research in the examination of nursing problems.

Note: The College of Nursing has agreements with the University of Missouri-Kansas City for Neonatal Nurse Practitioner courses and the University of Missouri-Columbia for Psychiatric Nurse Practitioner courses. Students in these specializations receive their degree from SDSU.

Student Outcomes

The graduate of the Master of Science in Nursing program will:

- Incorporate knowledge and theories from nursing and other supportive disciplines into advanced nursing practice.
- Display competence within the legal scope of practice for the chosen specialization.
- Evaluate and utilize research within advanced practice nursing.
- Use leadership, administration, and teaching strategies to improve nursing practice and health care delivery.
- Assume accountability to influence health policy, improve health care delivery, address the diversity of health care needs, and advance the nursing profession.

The PhD program will educate nurse scientists in academic, research, practice, and policy issues in urban, rural, frontier, and reservation areas. At completion of the program the graduate will demonstrate the following competencies:

Discover and disseminate knowledge relevant to the discipline of nursing with a focus on health promotion and disease prevention in underserved and rural populations.

Provide leadership for increasingly complex roles in nursing research, practice and education and/or health care organizations.

Develop theoretical frameworks of phenomena related to nursing science.

Provide leadership for the analysis and resolution of ethical health care issues in an interdisciplinary context.

Available Options for Graduate Degrees

<i>Master of Science:</i>	Option A (40-54 hours)
	Option B (34-51 hours)
	Option C (NP specializations only 38-54 hours)
<i>Doctor of Philosophy</i>	60 Credit Plan

Post Master's Certificates

Nurse Educator

NURS 631	Advanced Assessment Across the Lifespan.....	4 credits
NURS 710	Curriculum Development in Nursing.....	3 credits
NURS 720	Technology-Based Instruction for Nurse Educators.....	3 credits
NURS 778	Nurse Education – Practicum.....	6 credits

Family Nurse Practitioner

NURS 623	Pathophysiology Applied to Advanced Practice Nursing ...	4 credits
NURS 631	Advanced Assessment Across the Lifespan.....	4 credits
NURS 765	Family Nurse Practitioner Practicum I.....	5 credits
NURS 771	Family Nurse Practitioner Practicum II	7 credits
NURS 776	Family Nurse Practitioner III - Small Group Instruction ...	3 credits
NURS 777	Family Nurse Practitioner III – Internship	3 credits
PHA 645	Pharmacotherapeutics: Application to Advanced Practice	4 credits

Core Requirements

See sidebar for required core courses for all students.

Additional Admission Requirements for Master's Program

GRE: Not required

TOEFL: Score of 600 paper-based, 220 computer-based, 83 Internet-based

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

Bachelor's degree in nursing from an accredited program with an upper division major in nursing with a "B" average (3.0 or higher on a 4.0 point grading system).

Current licensure as an RN or eligibility for licensure.

Professional nursing liability insurance.

1500 hours of nursing practice experience.

Students wishing admission to the Master's in Nursing at SDSU in the Family Nurse Practitioner Specialization, or wishing to change to that specialization, must have had 4000 hours (two years FTE) of direct patient care practice within the past four years, with preferably at least one of those years in a broad-based clinical setting such as a medical, surgical, or critical care unit. These hours must be completed prior to taking NURS 760.

Required Core Courses for All Master's Students

NURS 615	Advanced Nursing Practice -- Introduction to Roles and Issues
NURS 626	Research Methods for Advanced Practice Nursing
NURS 670	Health Policy, Legislation, Economics and Ethics

Functional Role Courses

NURS 765	Family Nurse Practitioner Practicum I
NURS 770	Clinical Nurse Specialist – Practicum
NURS 771	Family Nurse Practitioner Practicum II
NURS 774	Nurse Administrator – Practicum
NURS 776	Family Nurse Practitioner III - Small Group Instruction
NURS 777	Family Nurse Practitioner III – Internship
NURS 778	Nurse Education – Practicum

Electives

NURS 625	Human Sexuality in Health Care
NURS 635	Dying, Death and Bereavement
NURS 650	Management of Acute and Chronic Pain
NURS 675	Cultural Competence in Health Care
NURS 691	Independent Study
NURS 692	Topics
NURS 750	Transformational Leadership in Nursing

Cristina Lammers,
Associate Professor,
MD, 1984, University of Uruguay
MPH, 1997, University of
Minnesota

Janet Lord,
Professor,
PhD, University of Texas, Austin,
1982

Marylou Mylant,
Professor,
PhD, University of Texas- Austin,
1988

Roberta K. Olson,
Professor,
PhD, St. Louis University, 1984

Carol J. Peterson,
Professor,
PhD, University of Minnesota-
Minneapolis/St. Paul, 1969

Haiifa Samra,
Assistant Professor,
PhD, South Dakota State
University, 2007

Patricia Shaver,
Assistant Professor,
PhD, University of Minnesota,
2004

Thomas Stenvig,
Associate Professor,
PhD, University of Wisconsin,
Madison, 2001

Lois Tschetter,
Associate Professor,
Ed.D., University of South
Dakota, 2001

Lyn E. Vargo,
Assistant Professor,
PhD, University of Missouri - St.
Louis, 2002

Jo Voss,
Associate Professor,
PhD, University of Nebraska
Medical Center, 2004

Howard E. Wey,
Associate Professor,
PhD, University of Cincinnati
College of Medicine, 1980

An approved course in statistics.

An additional application to the Graduate Nursing program and the Immunization and Physical Examination Form. These documents may be requested from the College of Nursing, SDSU, Box 2275, Brookings, SD 57007. Telephone: 605/688- 4114.

FBI background check. Drug screening.

Basic Life Support for Healthcare Providers.

Total enrollment in the Master of Science in Nursing program may vary depending upon available clinical facilities and qualified faculty. Applicants are selected competitively from those qualified for the Master's program. Applicants should check with the Graduate Nursing office for application deadlines.

Additional Admission Requirements for PhD Program

GRE: Not required

TOEFL: Score of 600 paper-based, 220 computer-based, 79-80 Internet-based

Licensure as a registered nurse in the US or Territories, Master's degree in nursing from an accredited program, minimum GPA of 3.3 in Master's coursework, TOEFL of 600 or 220 computer-based for applicants with English as a second language, completed application to both SDSU Graduate School and College of Nursing, example of scholarly written work, and interview with graduate faculty.

General requirements begin on page 16 (Master's) and Page 21 (PhD).

Health Science (HSC) Course Offerings

HSC 782 Epidemiology3

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.

Nursing (NURS) Course Offerings

NURS 615 Advanced Nursing Practice — Introduction to Roles and Issues3

Includes analysis of differentiated advanced practice nursing roles, critique and application of various theories from nursing and other disciplines including change theory, leadership and collaboration skills, culturally sensitive care, rural health care delivery, evidence based practice and teaching/learning process.

NURS 623 Pathophysiology Applied to Advanced Practice Nursing4

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. P, Or concurrent NURS 615.

NURS 625 Human Sexuality in Health Care.....3

Provides the opportunity to identify, study and discuss those areas in human sexuality which concern human interaction and in particular the work with clients and their families in health care. P, graduate student in nursing; graduate student in other disciplines with consent of instructor.

NURS 626 Research Methods for Advanced Practice Nursing3

Advanced nursing concepts, knowledge, and skills to analyze, utilize, and design research, including the evaluation of research, problem identification within an area of specialization, awareness of practice outcomes, and the application of research findings to clinical practices or specialty area. P, or concurrent NURS 615, Statistics.

NURS 631 Advanced Assessment Across the Lifespan(3-4)

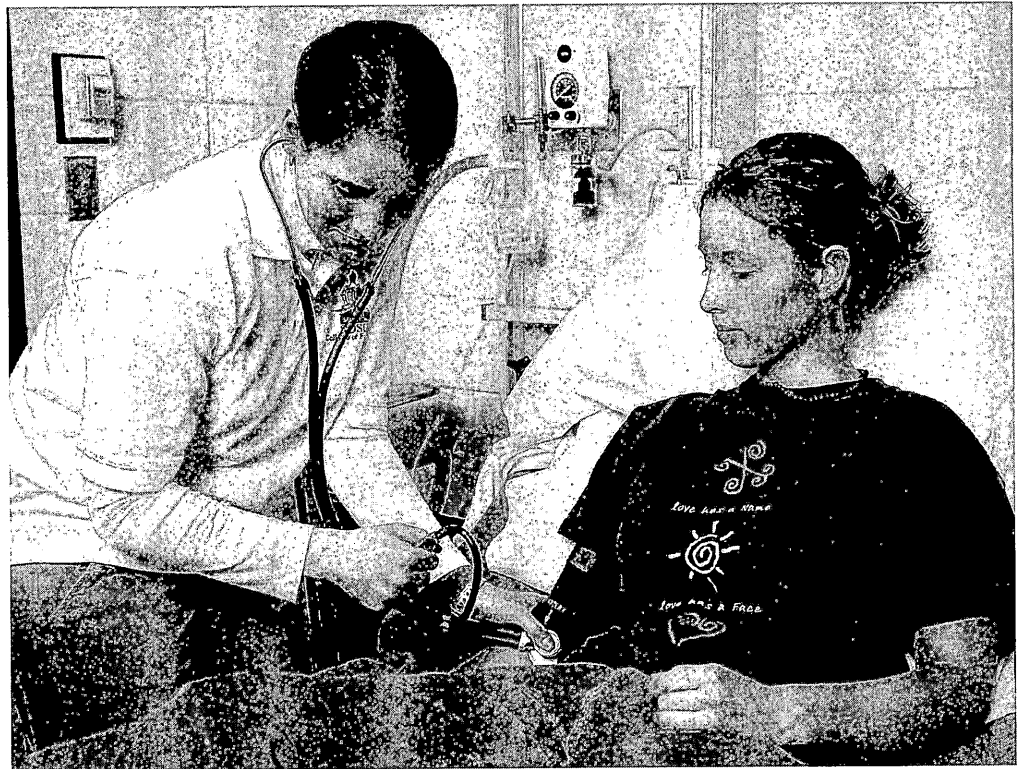
This course builds on basic skills of individual health assessment. It includes assessment of physiological and psychosocial processes relevant to the health of all age groups, and the assessment of selected human pathologies. Advanced assessment skills and tools necessary to identify health care needs and apply health maintenance protocols are included. P, NURS 615 or concurrent.

NURS 631L Advanced Assessment - Lifespan Clinical Laboratory	0
NURS 635 Dying, Death and Bereavement	(2-3)
Provides an overview of dying death, and bereavement. Self-examination of these issues will be encouraged. An understanding of the specific needs of both dying and bereaved children and adults and appropriate interventions will be covered. This course will also provide students with an overview of some of the most current research and literature in the areas of dying, death, and bereavement. P, graduate students in nursing, other graduate students with consent of instructor.	
NURS 640 Legal and Ethical Accountability in Health Care	2
Study of the ethical positions and legal factors influencing behavior and decision making in health care. Emphasis on developing a justifiable ethical framework with consequent rights, responsibilities and conflicts. P, graduate students in nursing and other health professionals with consent of instructor.	
NURS 641 Application of Leadership Principles in Clinical Settings	3
Leadership concepts of change and program planning will be studied. This is a practicum course for the Clinical Nurse Leader. Nursing, leadership, and change theories will be applied to program planning in an advanced population-focused nursing practicum. Leadership experiences will be arranged in an appropriate clinical setting. Pre or Corequisites: NURS 615, NURS 670; NURS 626; and NURS 760 NURS 615, NURS 670; NURS 626; and NURS 760.	
NURS 642 Application of Advanced Concepts	3
Demographic data and health statistics will be used as tools to respond to current and changing health care priorities. Advanced concepts of epidemiology, environmental variances, and cultural influence will be applied to aggregate client populations. Interrelationships of health, culture, environment, social systems, and values of client populations will be analyzed. This clinical practicum will be arranged in an appropriate setting for the Clinical Nurse Leader student. See Prerequisites above. P, NURS 615; NURS 670; NURS 626; NURS 760.	
NURS 643 Clinical Nurse Leader I	3
The Clinical Nurse Leader student will focus on nursing practice within the complex health care system. Disparities in health care access will be studied for clients who experience marginalization, economic impoverishment, care management, resource limits, and global interconnectedness. Analysis of population-focused policy and programs will be discussed. P, NURS 615, 641, and 642.	
NURS 644 Clinical Nurse Leader II	3
The Clinical Nurse Leader student will focus on the business of health care. The student will experience various aspects of the cost, quality, and access issues to health care. This is a preceptored practicum where the student is matched with one or more perceptor managers involved in health policy development, fiscal management, cost-benefit analyses, and program and model evaluation. The student will complete a final project under NURS 788 along with this practicum. Corequisite course: NURS 788. P, NURS 634.	
NURS 650 Management of Acute and Chronic Pain	3
Provides opportunity to identify and discuss management principles of acute and chronic pain with pharmacologic and non-pharmacologic measures.	
NURS 655 Health and the Older Adult	2
Based on a multidisciplinary perspective, issues and topics affecting the health care of the older adult will be analyzed. P, senior or graduate nursing student, graduate or senior student of other health disciplines or consent of the instructor. Required for Gerontology emphasis.	
NURS 660 Introduction to the Clinical Academic Partner	3
This course will introduce registered nurses to a mentoring model to prepare them for clinical teaching-learning experiences with nursing students and/or new nursing employees. P, consent of the instructor.	
NURS 670 Health Policy, Legislation, Economics and Ethics	3
Legal, political, economic, and ethical issues related to health policy will be examined from the perspective of advanced practice nursing roles. P, NURS 615.	
NURS 675 Cultural Competence in Health Care	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. P, Admission to a Graduate Program in nursing or consent of instructor.	
NURS 690 Seminar	(1-4)
NURS 691 Independent Study	(1-3)
NURS 691L Special Problems Clinical	0
NURS 692 Topics	(1-3)

NURS 710 Curriculum Development in Nursing.....	3
This course introduces the student to traditional and contemporary considerations for curriculum planning, design, instruction, and evaluation as applied to nursing education.	
NURS 720 Technology-Based Instruction for Nurse Educators	3
This course will explore the educational and psychological underpinnings of technology-based instruction and challenge the participants to apply those theories in the development of working products. Students will produce media-rich interactive programs for use in nursing education programs or continuing education courses.	
NURS 750 Transformational Leadership in Nursing.....	3
Analysis of effective and efficient methods of providing leadership in the nursing profession. Discussion of a variety of situations that the nursing leader negotiates with regard to strategic planning, program and facility development, budget preparation, fund raising, program evaluation, and the accreditation process. (Elective Course)	
NURS 755 Rural Health Care.....	3
Study of the theoretical and philosophical basis for rural health, providing an overview of rural health issues, healthcare priorities for rural dwellers, and strategies for dealing with challenges facing rural healthcare providers. Areas of emphasis will include: analysis of key rural concepts, rural healthcare policy, impact of technology on rural healthcare, workforce issues in rural health, and challenges facing rural healthcare providers. (Elective Course)	
NURS 760 Health Promotion and Disease Prevention Across the Lifespan	(2-4)
Advanced nursing concepts of health promotion and therapeutic communication applied to individuals, families and groups in community-based environments. National, state and local community resources and directives for health policy, disease prevention, and health maintenance are addressed. Corequisite course: NURS 760L. P, NURS 615 or concurrent, NURS 631.	
NURS 760L Health Promotion and Disease Prevention Laboratory	0
NURS 765 Family Nurse Practitioner Practicum I	5
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. Prerequisite or concurrent NURS 623, 626, ACLS NURS 615, 631, 760.	
NURS 770 Clinical Nurse Specialist – Practicum	(4-6)
Extension and refinement of advanced nursing practice core competencies and the development of expertise in a clinical specialist role are the foci of this course. Researcher, consultant, leadership, educator, and clinical subrole functions will be used to influence the health care environment and advance the nursing profession. Student goals specific to selected specialty area(s) will be the basis for clinical experiences. Students will plan, implement, and evaluate theoretically and research-based interventions to directly and indirectly manage the health of clients and systems in selected specific specialty area(s) through the actualization of synthesized role components. Corequisite course: NURS 770L. P, completion of core requirements.	
NURS 770L Clinical Nurse Specialist - Practicum Clinical Laboratory.....	0
NURS 771 Family Nurse Practitioner Practicum II.....	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. P, NURS 765, PHA 645.	
NURS 774 Nurse Administrator – Practicum.....	6
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. Corequisite course: NURS 774L. P, consent of instructor.	
NURS 774L Nurse Administrator Practicum Clinical Laboratory	0
NURS 776 Family Nurse Practitioner III - Small Group Instruction	3
Emphasis is placed on the concept synthesis and outcome evaluation of the differential diagnoses and referral to multidisciplinary healthcare team members are emphasized in the development of appropriate interventions for the achievement and maintenance of optimal health. Transition from the student nurse practitioner role to professional practice is facilitated. Corequisite course: NURS 777. P, NURS 771.	

NURS 777 Family Nurse Practitioner III – Internship	(3-9)
The clinical internship offers the advanced practice nursing student the opportunity to synthesize and apply theoretical concepts derived from nursing and other health-related disciplines to the clinical practice settings for the provision of primary care to clients across the lifespan. Independent and interdependent clinical decision making is expected and interdisciplinary collaboration and referral are emphasized. Clients are viewed in a personal, cultural, and environment context. Corequisite course: 776. P, NURS 771.	
NURS 778 Nurse Education – Practicum	6
This course is designed to provide teaching experiences in the classroom and clinical settings under the supervision of a faculty preceptor/ mentor. Students will design, implement, and evaluate classroom and clinical education under the direction of a selected nurse faculty mentor. P, consent of instructor.	
NURS 778L Nurse Education - Practicum Clinical Lb.....	0
NURS 785 Self Care: the Older Adult	3
Analysis from a nursing perspective of various factors which alter the self-care of the older adult. P, consent of instructor.	
NURS 788 Problems in Nursing Research.....	(1-2)
Application of the nursing research process with particular emphasis on problems of inquiry in the health care system (project or non-thesis option). Requires five additional credits of electives.	
NURS 790 Seminar.....	(1-3)
NURS 798 Thesis	(1-7)
NURS 810 Doctoral Seminar.....	1
A one credit doctoral seminar that is taken over two semesters except during summers. This seminar provides a forum for pre-candidates and dissertators to integrate and apply skills and content from coursework, life experience, 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 needed for successful student progression through pre-candidacy, candidacy, and completion of dissertation.	
NURS 815 Philosophical Basis for Nursing Inquiry.....	3
Analysis of philosophy of science traditions and their relationship to knowledge development in nursing.	
NURS 820 Theory Development in Nursing.....	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.	
NURS 825 Qualitative Research Methods in Nursing.....	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	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 835 Ethical Issues Influencing Practice and Research in Health	3
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	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 underserved populations.	

- NURS 845 Instrument Construction and Evaluation With Underserved Populations.....3**
 Analysis of classical measurement theory and related measurement concepts. Induction and deductive processes of constructing and evaluating instruments to measure behavioral, biological, social, cultural and clinical phenomena are examined. Content includes instrument scaling techniques and psychometric evaluation procedures. Measurement issues with underserved populations are examined. Students will propose instrument development and psychometric evaluation of instrument items and item scales with a selected underserved population. Basic knowledge of concepts analysis and inferential statistics is expected prior to enrollment.
- NURS 890 Research Practicum(1-6)**
 Nursing research applications for nurse scientist students. Individualized research intensive immersion experience for integration and synthesis of philosophical, theoretical, methodological, and practical dimensions of planning, conducting, and evaluating research in nursing and healthcare. Three credits minimum required for graduation.
- NURS 898 Dissertation - PhD(18-24)**



Nutrition, Food Science and Hospitality

Degrees Offered

PhD Biological Sciences

- *Human Nutrition and Food Science specialization*

MS Family and Consumer Sciences

- *Nutrition and Food Science specialization*

MS Biological Sciences

- *Human Nutrition and Food Science specialization*

Department Head: Professor C.Y. Wang

Graduate Coordinator: Professor Padmanaban Krishnan

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — SNF 425

<http://www3.sdstate.edu/Academics/CollegeofFamilyandConsumerSciences/NutritionFoodScienceandHospitality>

E-mail: cy.wang@sdstate.edu

Phone: 605/688-5161

Fax: 605/688-5603

Program Description

Courses offered in Nutrition and Food Science support the MS degree in Family and Consumer Sciences, MS degree in Biological Sciences, and PhD degree in Biological Sciences.

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Option C

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

Core Requirements

For details see specific programs: MS in Family and Consumer Sciences; MS in Biological Sciences; PhD in Biological Sciences

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 iInternet-based

General requirements begin on page 16 (Master's) and 21 (PhD).

Nutrition, Food Science and Hospitality (NFS) Course Offerings

NFS 522 Advanced Human Nutrition	4
Principles of physiological chemistry and physiology applied to nutrition.	
NFS 523 Medical Nutrition Therapy I	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.	
NFS 523L Medical Nutrition Therapy I Lab	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.	

Graduate Faculty

Basil Dalaly,
Professor,
PhD, University of Nebraska -
Lincoln, 1970
Enzymology

Elizabeth Droke,
Associate Professor,
PhD, North Carolina State
University, 1991,
Nutrition

Gary Lee Frantz,
Assistant Professor,
PhD, University of Nebraska -
Lincoln, 2003
Human Resources and Family
Sciences

Kendra K. Kattelmann,
Professor,
PhD, University of Missouri,
1993
Nutrition

Teresa Kemmer,
Assistant Professor,
PhD, University of Washington-
Seattle, 2001
Nutritional Science

Padmanaban G. Krishnan,
Professor,
PhD, North Dakota State
University, 1989
Food Science (Cereal Science
and Food Technology)

Kurt Rosentrater,
Adjunct Assistant Professor,
PhD, Iowa State University-
Ames, 2001
Agricultural Engineering

Igor Sergeev,
Associate Professor,
PhD, Institute of Biomedical
Problems (Russia), 1984 D.Sc.,
The Institute of Nutrition,
Academy of Medical Sciences
(Russia), 1991
Nutritional Biochemistry

Matthew Vukovich,
Associate Professor,
PhD, Ball State University, 1993
Bioenergetics

Bonny L. Specker,
Professor,
PhD, University of Cincinnati,
1983
Epidemiology

C.Y. Wang,
Professor,
PhD, Iowa State University, 1993
Food Science

NFS 525 Medical Nutrition Therapy II	3
Continuation of NFS 423. P, NFS 523.	
NFS 525L Medical Nutrition Therapy II Laboratory	0
NFS 550 Food Analysis	4
Principles and techniques of physical and chemical analysis of food products. It will include proximate analysis of moisture, protein, lipids and carbohydrates and chemical or instrumental analysis of vitamins, minerals and food additives.	
NFS 550L Food Analysis Laboratory	0
NFS 551 New Food Product Development	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.	
NFS 551L New Food Product Development Laboratory	0
NFS 580 Travel Studies	(1-5)
NFS 590 Seminar	(1-2)
NFS 591 Independent Study	(1-6)
NFS 592 Topics	(1-3)
NFS 593 Workshop	(1-3)
NFS 601 Orientation in Graduate Study	1
An orientation to graduate studies in NFSH including exposure to graduate procedures and policies as well as writing skills. Required of graduate students in their first semester. Internet course.	
NFS 634 Techniques of Food and Nutrition Research	3
Laboratory experience using methods, measurements and instruments for obtaining nutritional data. Topics covered will include methods of conducting field, applied and metabolic studies in food and human nutrition.	
NFS 634L Techniques of Food and Nutrition Research Laboratory	0
NFS 660 Maternal and Child Nutrition	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.	
NFS 662 Sociocultural Aspects of Nutrition	2
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.	
NFS 702 Macronutrients in Human Nutrition	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.	
NFS 704 Phytochemicals	2
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.	
NFS 725 Nutrition and Human Performance	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.	
NFS 760 Vitamins and Minerals in Human Nutrition	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.	

NFS 761 Nutrition of the Aged	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.	
NFS 788 Individual Research and Study	(1-7)
NFS 790 Seminar	1
NFS 791 Independent Study	(1-3)
NFS 792 Topics	(1-3)
NFS 794 Internship	(1-7)
NFS 798 Thesis	(1-7)

Hotel and Foodservice Management (HFM) Course Offerings
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HFM 580 Travel Studies	1-5
HFM 591 Independent Study	1-3
HFM 788 Individual Research and Study	1-7
HFM 791 Independent Study	1-3
HFM 792 Topics	1-3
HFM 798 Thesis	1-7



Pharmacy

Degrees Offered

PhD Pharmaceutical Sciences

Doctor of Pharmacy

MS Biological Sciences

• *Pharmaceutical Sciences specialization*

Graduate Faculty

James Clem,
Professor,
Pharm.D., University of Iowa,
1991
Cardiology

Gareth Davies,
Assistant Professor,
PhD, University of Cardiff, U.K.,
1999
Immunology, Genomics

Chandradhar Dwivedi,
Distinguished Professor,
PhD, Lucknow University, 1972
Pharmacology

Hesham Fahmy,
Associate Professor,
PhD, University of Alexandria,
1993
Medicinal Chemistry

Debra K. Farver,
Professor,
Pharm.D., University of
Nebraska, 1983
Psychiatry

Xiangming Guan,
Professor,
PhD, University of Kansas, 1991
Medicinal Chemistry

Dennis Hedge,
Professor,
Pharm.D., University of Kansas,
1991
Infectious Disease

Jodi Heins,
Professor,
Pharm.D., University of
Nebraska, 1993
Internal Medicine

David L. Helgeland,
Professor,
Ed.D., University of South
Dakota, 2000
Social and Administrative
Sciences in Pharmacy

Acting Dean: Professor Dennis Hedge

Pharmaceutical Sciences Department Head: Distinguished Professor Chandradhar Dwivedi

Pharmacy Practice Department Head: Professor James Clem

Graduate Coordinator: Professor Xiangming Guan

For additional information contact:

Mailing address: SDSU Box 2202C

Pharmacy — SPH 125

WWW: <http://www3.sdstate.edu/Academics/CollegeOfPharmacy>

OR

Mailing address: SDSU Box 2202C

Shephard — SSH 309

WWW: <http://www3.sdstate.edu/Academics/CollegeOfPharmacy/GraduateProgram>

E-mail: xiangming.guan@sdstate.edu

Phone: 605/688-6197

Fax: 605/688-6232

Phone: 605/688-5598

Fax: 605/688-5993

Program Descriptions

The Department of Pharmaceutical Sciences offers courses and research opportunities in pharmaceutical and biomedical sciences to fulfill the requirements for the Doctor of Philosophy (PhD) degree in Pharmaceutical Sciences. The Department also offers a curriculum and research opportunity for combination of Doctor of Pharmacy (PharmD)/PhD degrees in Pharmaceutical Sciences. The core courses, along with the concentration in a major area of research, provide a valuable broad background of preparation for an academic or industrial career. The major objective of the program is to provide the student an opportunity to gain high quality graduate and research experience. A Master of Science (MS) in Biological Sciences with specialization in Pharmaceutical Sciences is also available.

The Doctor of Pharmacy is a six-year program and is the professional degree in Pharmacy. Students interested in this program should consult the General Catalog (undergraduate catalog) for information.

Available Options for Graduate Degrees

<i>Master of Science:</i>	Option A
<i>Doctor of Philosophy:</i>	60-Credit Plan
	90-Credit Plan

Core Requirements for Master of Science

PHA 720	Advanced Medicinal Chemistry.....	3 credits
PHA 740	Advanced Pharmacology	3 credits
PHA 759	Advanced Pharmaceutics	3 credits

Three credits from the following elective courses or other elective courses as determined by the student's Advisory Committee.

PHA 725	Topics in Medicinal Chemistry.....	3 credits
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PHA 745	Topics in Pharmacology.....	3 credits
PHA 765	Topics in Pharmaceutics	3 credits

Three credits from other graduate courses approved by the student's Advisory Committee

Six credits must be taken from the following list of courses:

ABE 503	Energy and Environment	3 credits
ABE 754	Advanced Unit Operations of Food/Biomaterials Processing.....	3 credits
ABS 705	Research Methodology.....	(1-10) credits
ABS 706	Natural Resources Management	(1-10) credits
BIOS 790	Seminar.....	1 credit
BIOS 798	Thesis	(1-7) credits
CHEM 662	Principles of Biochemistry.....	5 credits
DS 722	Advanced Dairy Microbiology	3 credits
HO 580	Environmental Stress Physiology	3 credits
NFS 725	Nutrition and Human Performance.....	3 credits
STAT 541	Statistical Methods II	3 credits
VET 524	Medical and Veterinary.....	3 credits

Core Requirements for Doctor of Philosophy

Credit Summary for PhD in Pharmaceutical Sciences

Required courses, excluding dissertation	20 credits
Electives	20 credits
Dissertation	50 credits
Total Credits	90 credits

Course Requirements

PHA 820	Advanced Concepts in Medicinal Chemistry	3 credits
PHA 840	Advanced Concepts in Pharmacology	3 credits
PHA 846	Techniques in Pharmaceutical Research.....	3 credits
PHA 847	Grant Writing and Academic Development	3 credits
PHA 859	Advanced Concepts in Pharmaceutics	3 credits
PHA 890	Seminar.....	(1+1) credits
PHA 898	Dissertation.....	(1-10) credits
STAT 541	Statistical Methods II	3 credits

The first credit will be taken at the early stage of the program and the second will be taken at the later stage of the program.

Electives can be selected from, but not limited to, the following courses:

ABS 705	Research Methodology.....	(1-10) credits
BIOL 592	Topics.....	(1-5) credits
BIOL 645	Microimaging Techniques	3 credits
BIOL 645L	Microimaging Techniques Lab	0 credits
BIOS 662	Advanced Molecular and Cellular Biology	3 credits
CHEM 622	Advanced Organic Chemistry I.....	3 credits
CHEM 632	Advanced Analytical Chemistry	3 credits
CHEM 642	Advanced Physical Chemistry	3 credits
CHEM 654	Advanced Inorganic Chemistry	3 credits
CHEM 662	Principles of Biochemistry.....	5 credits
CHEM 722	Synthesis of Natural Products.....	3 credits
CHEM 724	Structural Determination of Organic Compounds	3 credits
CHEM 724L	Structural

Determination of Organic

Compounds Lab	0 credits	
CHEM 726	Advanced Organic Chemistry II	3 credits
CHEM 728	Bioorganic Chemistry	3 credits
CHEM 735	Analytical Spectroscopy.....	3 credits
CHEM 736	Chromatography and Separation.....	3 credits

*Thomas Johnson,
Associate Professor,
Pharm.D., North Dakota State
University, 1997
Critical Care*

*Brian Kaatz,
Professor,
Pharm.D., University of
Minnesota, 1977
Clinical Pharmacy*

*Marek Malecki,
Associate Professor,
M.D. Polish Academy of
Sciences, 1976, PhD, Polish
Academy of Sciences, 1982,
Immunology, Gernomics*

*Kimberly Messerschmidt,
Professor,
Pharm.D., South Dakota State
University, 1995
Internal Medicine*

*Jane Mort,
Professor,
Pharm.D., University of
Nebraska-Medical Center, 1985
Geriatrics*

*Srinath Palakurthi,
Associate Professor,
PhD, Indian Institute of Chemical
Technology, 2000
Pharmaceutics*

*Omathanu Perumal,
Assistant Professor,
PhD, National Institute of
Pharmaceutical Education and
Research, 2002
Pharmaceutics*

CHEM 748 Chemical Kinetics	3 credits
CHEM 764 Biochemistry I.....	3 credits
CHEM 766 Biochemistry II.....	3 credits
CHEM 767 Biophysical Chemistry	3 credits
GSR 601 Research Regulations Compliance.....	1 credit
PHA 650 Introduction to Advanced Concepts in Pharmaceutical Sciences	3 credits
PHA 825 Advanced Concepts in Medicinal Chemistry	3 credits
PHA 845 Topics in Advanced Pharmacology	3 credits
PHA 865 Topics in Advanced Pharmaceutics	3 credits

Additional Admission Requirements

GRE: General GRE required

TOEFL: Score of 570 paper-based, 230 computer-based, 88-89 Internet-based

General requirements begin on page 16 (Master's) and Page 21 (PhD).

Pharmacy (PHA) Course Offerings

PHA 645 Pharmacotherapeutics: Application to Advanced Practice.....	(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 in a safe, high quality and cost effective manner. P, FNP program enrollment.	
PHA 646 Neonatal Pharmacotherapeutics	2
Principles of pharmacology in relation to unique neonatal physiologic and behavioral responses. Emphasis will be placed on drug administration, reasoned prescribing practices, and therapeutic drug monitoring. Drug categories and specific preparations which are commonly used in the neonate will be reviewed in tandem with disease specific content.	
PHA 647 Pharmacological Issues in Mental Health Counseling.....	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 650 Introduction to Advanced Concepts in Pharmaceutical Sciences	3
An introduction to advanced concepts in pharmaceutical sciences. P, consent of instructor.	
PHA 700 Directed Studies Practice Experience.....	(4-5)
PHA 701 Home Health/Hospice Practice Experience.....	5
PHA 702 Indian Health Services Practice Experience	5
PHA 703 Pharmacy Administration Practice Experience	5
PHA 704 Nutrition Support Practice Experience	5
PHA 705 Clinical Research Practice Experience.....	5
PHA 706 Critical Care Practice Experience	5
PHA 707 Infectious Disease Practice Experience	5
PHA 708 Surgery Practice Experience	5
PHA 709 Nephrology Practice Experience	5
PHA 710 Pharmacokinetics Practice Experience	5
PHA 711 Oncology Practice Experience.....	5
PHA 712 Nuclear Pharmacy Practice Experience.....	5
PHA 713 Managed Care Practice Experience.....	5
PHA 714 Community Pharmacy Practice Experience.....	5
Clerkship experience at an affiliated site. P, 6th year standing.	
PHA 715 First Steps in Pharmacy Care Practice Experience	4
Students apply knowledge and skills of professional pharmacy practice in community and hospital/institutional health care settings. The fundamentals of patient monitoring and communication with patients and health care practitioners are emphasized.	

PHA 716 Hospital/Institutional Pharmacy Practice Experience	5
Clerkship experience at an affiliated site. P, 6th year standing.	
PHA 717 Community Health and Patient Monitoring Practice Experience	5
Clerkship experience in pharmaceutical care in a community pharmacy.	
PHA 718 Advanced Clinical Lab Monitoring	3
Study of clinical laboratory methods and tests with emphasis on drug monitoring and problem solving of drug therapy. Corequisite course: PHA 718L.	
PHA 718L Advanced Clinical Lab Monitoring Laboratory	0
PHA 720 Advanced Medicinal Chemistry	3
Qualitative and quantitative aspects of the design of therapeutic agents. P, PHA 341 or consent of instructor.	
PHA 723 Ethics in Healthcare Practice	2
Overview of ethical principles and theory, with emphasis on the professional-client relationship. P, 5th year standing.	
PHA 724 Pharmacoeconomics	2
The pharmacoeconomic principles used to evaluate medications, with emphasis on the use of therapeutic outcomes to compare cost effectiveness of therapeutic agents. P, 5th year standing.	
PHA 725 Topics in Medicinal Chemistry	3
Selected areas covering more advanced concepts in medicinal chemistry, new research techniques. P, PHA 341 or consent of instructor.	
PHA 727 U.S. HealthCare Systems	2
An overview of the health care system in the United States and its impact on pharmacy practice will be addressed. Emphasis will be placed on managed care, non-pharmacist health care providers, pharmacoeconomics, drug utilization, and quality assurance and improvement. P, 5th year standing.	
PHA 728 Current Issues in Pharmacy Practice	3
Theory and development of pharmaceutical care concepts. Discusses role of a contemporary pharmacy practitioner within the framework of the U.S. health delivery system. Pharmacy ethics is discussed. P, 5th year standing.	
PHA 729 Advanced Pharmacy Marketing and Management	2
Discussion of strategic marketing and advanced management principles for the pharmacy practitioner.	
PHA 740 Advanced Pharmacology	3
An advanced and comprehensive study of the therapeutic and toxicological effects of drugs including the mechanism of action. Emphasis will be placed on their rational application to the treatment of disease. P, PHA 443 or consent of instructor.	
PHA 741 Patient Assessment and Self Care I	2
Discussion of over-the-counter, herbal, and natural 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. P, P3 standing.	
PHA 741L Patient Assessment and Self Care I Laboratory	0
Corequisite course PHA 741.	
PHA 742 Patient Assessment and Self Care II	2
Continuation of PHA 741. Discussion of over-the-counter, herbal, and natural 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. P, P3 standing. Corequisite course PHA 742L.	
PHA 742L Patient Assessment and Self Care II Laboratory	0
PHA 744 End of Life Care	1
Discussion of the dying process and how to improve end-of-life care for patient pain management	
PHA 745 Topics in Pharmacology	3
A study of current advanced theories in pharmacology. P, PHA 443 or consent of instructor.	
PHA 746 Professional Pharmacy Leadership Skills	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. P, P3 year standing.	
PHA 747 Advanced Clinical Nutrition	1
Advanced study of clinical nutrition including parenteral and enteral nutrition regimens, compounding of nutrition products, and assessment of nutritional status and need. P, P3 year standing.	

PHA 748 Topics in Neonatal and Pediatric Pharmacotherapy	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. P, P3 year standing.	
PHA 749 Care of the Geriatric Patient	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. P, P3 year standing.	
PHA 750 Critical Care Therapeutics	2
Principles of medication use in the critically ill patient. P, 5th year standing.	
PHA 751 Immunotherapeutics.....	2
Therapeutic use and pharmacology of newer immunologic agents, engineered drugs, and biotechnological products. P, 5th year standing.	
PHA 752 Drugs of Abuse and Addiction	2
Discussion of psychoactive drugs, both legal and illegal, that have potential for abuse. P, 5th year standing.	
PHA 753 Women and Children's Health.....	2
Diseases and drug-related issues pertaining to women's and children's health. P, 5th year standing.	
PHA 754 Complementary and Alternative Medicine.....	1
Discussion of alternative, natural, and homeopathic medicines, with emphasis on their appropriate evaluation and use.	
PHA 756 Pharmacotherapeutics I	5
Discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. P, P3 standing.	
PHA 757 Pharmacotherapeutics II.....	5
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. P, P3 standing.	
PHA 758 Pharmacotherapeutics Application Laboratory I	1
Application of pharmacotherapeutic concepts and principles to assess diseases, evaluate and solve therapeutic problems, create drug therapy regimens, and develop monitoring plans. An emphasis will be placed on case-based problem solving. P, P3 standing.	
PHA 759 Advanced Pharmaceutics	3
Theory and application of compartmental models for the study of the time course of drugs in the body. P, PHA 415 or consent of instructor.	
PHA 760 Clinical Pharmacokinetics	3
Advanced pharmacokinetic principles, with emphasis on drug dosing on individual patient basis.	
PHA 761 Pharmacotherapeutics III.....	4
This course is the continuation of PHA 747, Pharmacotherapeutics II 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. P, P3 standing.	
PHA 762 Pharmacotherapeutics IV	4
This course is a continuation of PHA 761, Pharmacotherapeutics II 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. P, P3 standing.	
PHA 763 Pharmacotherapeutics V.....	4
This course is the continuation of PHA 762, 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. P, P3 standing.	
PHA 764 Pharmacotherapeutics Application Laboratory II.....	1
Application of pharmacotherapeutic concepts and principles to assess diseases, evaluate and solve therapeutic problems, create drug therapy regimens, and develop monitoring plans. An emphasis will be placed on case-based problem solving. P, P3 standing.	
PHA 765 Topics in Pharmaceutics	3
Selected areas covering more advanced concepts in pharmaceutics, new research techniques. P, PHA 415 or consent of instructor.	

PHA 767 Early Practice Experience V	0-5
This course is the continuation of Early Practice Experience IV and emphasizes pharmaceutical care skill development related to pharmacy practice.	
PHA 768 Early Practice Experience VI	0-5
Course is the continuation of Early Practice Experience V and the last course of the early practice experience sequence, which emphasizes pharmaceutical care skill development related to pharmacy practice.	
PHA 770 Pediatrics Practice Experience	5
PHA 771 Geriatrics Practice Experience	5
PHA 772 Internal Medicine I Practice Experience	5
PHA 773 Internal Medicine II Practice Experience	5
PHA 774 Ambulatory Care Practice Experience	5
PHA 775 Psychiatry Practice Experience	5
PHA 780 International Pharmacy Practice Experience	5
Study of healthcare systems and the practice of pharmacy at designated international sites. P, P4 standing.	
PHA 784 Seminar I	1
Discussion of current pharmacy and other health care issues and includes developing and delivering a short presentation. P, 5th year standing.	
PHA 785 Seminar II	1
Continuation of 784, with emphasis on discussion of clinical pharmacy concepts and professional presentations. P, PHA 784.	
PHA 790 Seminar	1
PHA 791 Independent Study	(1-3)
PHA 792 Topic	(1-3)
PHA 798 Thesis in Pharmaceutical Science	(1-7)
PHA 820 Advanced Concepts in Medicinal Chemistry	3
A study of the current advances in the area of drug design and discovery. P, PHA 340, 341 or equivalent or consent of instructor.	
PHA 825 Advanced Concepts in Medicinal Chemistry	0
A detailed study of the selected topics in the area of drug design and discovery. P, PHA 820 or equivalent or consent of instructor.	
PHA 840 Advanced Concepts in Pharmacology	3
A study of the current advances in the area of pharmacology especially at molecular level. P, PHA 441, 442, 443 or equivalent or consent of instructor.	
PHA 845 Topics in Advanced Pharmacology	3
A detailed study of the selected topics in the area of pharmacology. P, PHA 840 or equivalent or consent of instructor.	
PHA 846 Techniques in Pharmaceutical Research	3
A study of the current techniques in pharmaceutical research. P, consent of instructor.	
PHA 847 Grant Writing and Academic Development	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. P, consent of instructor.	
PHA 859 Advanced Concepts in Pharmaceutics	3
A study of the current advances in the area of drug formulations and delivery. P, PHA 331, 332 or equivalent or consent of instructor.	
PHA 865 Topics in Advanced Pharmaceutics	3
A detailed study of the selected topics in the area of drug formulations and delivery. P, PHA 859 or equivalent consent. of instructor	
PHA 890 Seminar	1
A presentation on a topic related to pharmaceutical sciences.	
PHA 898 Dissertation	(1-10)
A dissertation written on the pharmaceutical research conducted.	

Philosophy & Religion

Coursework Only

Graduate Faculty

AnnMarie B. Bahr,
Professor,
PhD, Temple University, 1989
World Religions

Dennis D. Bielfeldt,
Professor,
PhD, University of Iowa, 1987
Luther and Christian Theology

Gregory R. Peterson,
Associate Professor,
PhD, Denver University/Illiff
School of Theology, 1996
Ethics Religion and Science

Program Coordinator: Associate Professor Gregory R. Peterson

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 336

E-mail: greg.peterson@sdstate.edu

Phone: 605/688-4933

Fax: 605/688-6754

Philosophy (PHIL) Course Offerings

PHIL 591 Independent Study(1-4)
PHIL 592 Topics.....3

Religion (REL) Course Offerings

REL 591 Independent Study.....1-3



Physics

Degree Offered:

MS Engineering

* Physics emphasis

Department Head: Professor Oren Quist

Graduate Coordinator: Professor Oren Quist

For additional information contact:

Mailing address: SDSU Box 2219

Crothers Engineering Hall — SCEH 314

WWW: <http://www.engineering.sdstate.edu/~physics/physics.htm>

E-mail: oren.quist@sdstate.edu

Phone: 605/688-5428

Fax: 605/688-5878

Program Description

The Physics Department at South Dakota State University offers a program leading to the Master of Science in Engineering with a Physics Emphasis. Required course work in physics along with elective courses selected from the departments of Mathematics and Statistics, Computer Science, General Engineering, Electrical Engineering and Mechanical Engineering support a number of career options in industry, education and applied research. Graduates with this degree may also pursue a PhD degree in physics or an engineering discipline. Areas of research concentration include astrophysics, gravitational physics, remote sensing, image processing, condensed matter, materials science, nuclear physics, and theoretical physics.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

Core Requirements for Master of Science

There are nineteen credits of core requirements for this degree. These requirements consist of:

Electricity and Magnetism, 6 credits
Statistical Mechanics, 3 credits
Theoretical Mechanics, 3 credits
Quantum Mechanics, 6 credits
Seminar, 1 credit

Please check with the Physics Department office for specific course offerings that meet these core requirements.

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79 Internet-based

General requirements begin on page 16 (Master's).

Graduate Faculty

*Yung Huh,
Assistant Professor,
PhD, Iowa State, 2001
Condensed Matter Physics*

*Oren Quist,
Professor,
PhD, University of Denver, 1973
Condensed Matter*

*Joel Rauber,
Professor,
PhD, University of North
Carolina-Chapel Hill, 1985
General Relativity,
Computational Physics*

*Robert McTaggart,
Assistant Professor,
PhD, The Pennsylvania State
University, 1999
Particle Physics*

Physics (PHYS) Course Offerings

PHYS 521 Electromagnetism	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	3
Radioactivity, nuclear spectra and structure, nuclear models, elementary particle theories and high energy physics. P, PHYS 471 or consent of instructor.	
PHYS 539 Solid State Physics	(3-4)
Electronic processes with reference to electrical properties of metals, semiconductors and insulators.	
PHYS 549 Science of Solids	3
This course covers topics directed at satisfying student interests in areas such as magnetism, semiconductors, superconductors, ferroelectrics, and devices based on these aspects of solids. The role of defects in solids and strength of materials may also be included. P, PHYS 439 or consent of instructor.	
PHYS 551 Classical Mechanics	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.	
PHYS 569 Photonics	3
PHYS 571 Quantum Mechanics	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.	
PHYS 590 Seminar	(1-2)
PHYS 591 Independent Study	(1-3)
PHYS 592 Topics	(1-3)
PHYS 691 Independent Study	(1-3)
PHYS 692 Topics	(1-3)
PHYS 721 Electrodynamics I	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. P, PHYS 421.	
PHYS 723 Electrodynamics II	3
The electrodynamics of time varying fields and radiating processes. This will include topics chosen from plane and spherical waves, wave guides, multipole radiation, radiation from moving charges, plasma physics and magneto-hydrodynamics. P, PHYS 721.	
PHYS 743 Statistical Mechanics	3
PHYS 743 Statistical Mechanics	3
Derivations of Boltzmann distribution law, Bose Einstein statistics, Fermi-Dirac statistics, basic theory of gas and liquid states, order-disorder phenomena, the partition function. P, PHYS 341.	
PHYS 751 Theoretical Mechanics	3
Further development of Lagrangian and Hamiltonian methods, canonical transformations, rigid body motion, relativistic mechanics.	
PHYS 771 Quantum Physics I	3
Basic quantum theory, the Schrodinger equation, matrix mechanics and operator methods as applied to the simple harmonic oscillator, hydrogen atom and other simple potentials. A study of angular momentum operators and the central force problem will be included.	
PHYS 773 Quantum Physics II	3
A quantum mechanical treatment of scattering, spin, stationary and time dependent perturbation theory. Other advanced topics such as applications of group theory to quantum mechanics, identical particles and creation and annihilation operators as applied to many particle systems will be studied.	
PHYS 775 Tensors and General Relativity	3

PHYS 775 Tensors and General Relativity3
 Covariance in physics, basic tensor algebra and calculus, affine connections, the Riemann tensor, field equations, linear approximations. The Schwarzschild solution. P, PHYS 421 or consent of instructor.

PHYS 779 Group Theory in Quantum Mechanics3
PHYS 779 Group Theory of Quantum Mechanics3
 Symmetry transformation, continuous groups, finite groups, applications to valence theory, Lorentz group, fundamental particles. P, PHYS 471

PHYS 780 Theoretical Physics(0-18)

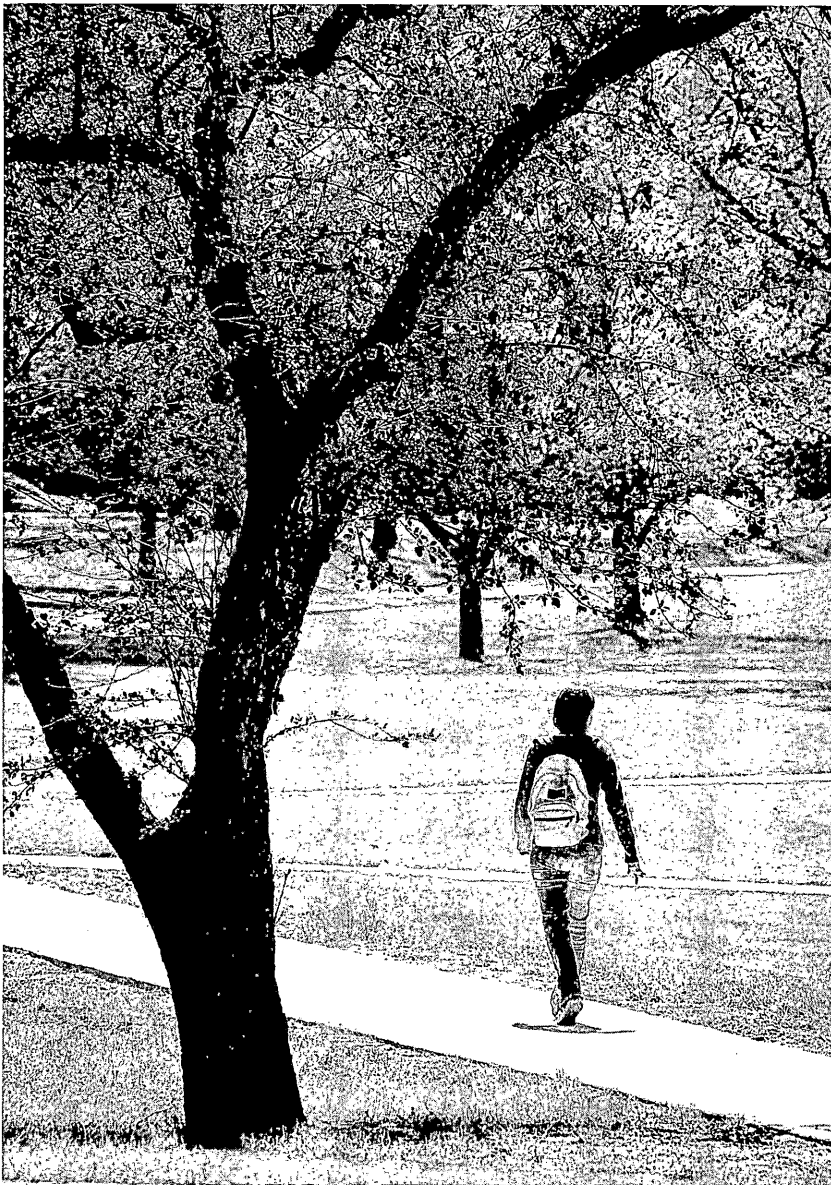
PHYS 787 Research(1-9)

PHYS 788 Research or Design Paper(1-2)

PHYS 791 Independent Study(1-3)

PHYS 792 Topics(1-3)

PHYS 798 Thesis(1-7)



Plant Science

Degrees Offered:

PhD Agronomy

PhD Biological Sciences

- *Plant Molecular Biology specialization*
- *Plant Science specialization*

MS Plant Science

- *Agroecology specialization*
- *Agronomy specialization*
- *Crop Science specialization*
- *Entomology specialization*
- *Horticultural Crop Management specialization*
- *Machinery Systems and Water Management specialization*
- *Plant Pathology specialization*
- *Soil Science specialization*
- *Weed Science specialization*

Graduate Faculty

Sue L. Blodgett,
Professor and Head,
PhD, Kansas State University,
1989,
Entomology

Arvid Boe,
Professor,
PhD, South Dakota State
University, 1979
Breeding - Forages

C. Gregg Carlson,
Professor,
PhD, South Dakota State
University, 1978
Geospatial Statistics

Catherine Carter,
Professor,
PhD, University of Kentucky,
1982
Molecular Biology

Michael Catangui,
Associate Professor,
PhD, University of Nebraska,
1992
Entomology - Extension

Thomas Chase,
Associate Professor,
PhD, University of Vermont,
1986
Pathology - Row Crops

David Clay,
Professor,
PhD, University of Minnesota-
Minneapolis/St. Paul, 1988
Soil Biochemistry/Nutrient
Movement

Department Head: Professor Sue Blodgett

Graduate Coordinator: Professor Howard J. Woodard

For additional information contact:

Mailing address: SDSU, Box 2207A

Agricultural Hall — SAG 004

WWW: <http://PlantSci.sdstate.edu>

E-mail: howard.woodard@sdstate.edu

Phone: 605/688-5123, 688-4774

Fax: 605/688-4602

Program Description

The Plant Science Department is an integrated interdisciplinary department that includes crops, plant breeding, genetics, entomology, plant pathology, soils, water management, and weed science. The primary goals of the department are to conduct research in the above areas, to transmit the results to the public, and to help prepare students for a quality life which includes preparation for an occupation in one or more of the above-mentioned disciplines. Specializations in Horticultural Crop Management, Machinery Systems and Water Management are offered in collaboration with the Department of Horticulture, Forestry, Landscape and Parks, and the Department of Agriculture and Biosystems Engineering, respectively.

Available Options for Graduate Degrees

<i>Master of Science:</i>	Option A
	Option B
<i>Doctor of Philosophy:</i>	60-Credit Plan
	90-Credit Plan

Core Requirements

MS students are required to have 2 credits of Graduate Seminar, one oral and one in poster format. All students are required to have teaching experience.

PhD students are 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 PhD program.

Additional Admission Requirements

GRE: Recommended, but not required

TOEFL: Score of 560 paper-based, 220 computer-based, 83 Internet-based

Students must be accepted by an advisor before admission is granted.

General requirements begin on page 16 (Master's Degree) and 21 (PhD).

Plant Science (PS) Course Offerings

PS 512 Environmental Soil Chemistry	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. P, PS 213-213; and CHEM 108-108L; or CHEM 120-120L	
PS 515 Mycology	2
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs. Crosslisted with BIOL 415/515.	
PS 515L Mycology Laboratory	1
Laboratory experience that accompanies PS 515.	
PS 521 Soil Microbiology	2
Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these organisms. Crosslisted with MICR 521. Equivalent to MICR 521. Corequisite course: PS 521L. P, BIOL 151-151L and BIOL 153-153L or BOT 201-201L.	
PS 521L Soil Microbiology Laboratory	1
Corequisite course PS 521.	
PS 531 Insect Ecology and Biological Control	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 546 Agroecology	3
Agroecology is the study of the ecological principles important in agricultural systems. Topics in this course will include energy flow and nutrient cycling, population and community ecology, and water and nutrient conservation. P, Take 1 group (PS 213-213L, BIOL 101, BIOL 102; or BIOL 151, BIOL 152).	
PS 550 Field Study of Plant Diseases Diagnosis	1
Diagnoses of diseases in field and horticultural crops; observing and studying the relationships among hosts, pathogens, and their environments. Emphasis on field disease recognition and laboratory diagnostic techniques. Corequisite course: PS 550L. P, consent of instructor.	
PS 550L Field Study of Plant Diseases Diagnosis Laboratory	1
Corequisite course: PS 550.	
PS 553 Advanced Genetics	3
Procedures in genetic studies as they relate to molecular and classical genetic applications. Crosslisted with BIOL 453/553. Equivalent to BIOL 553. P, BIOL 371.	
PS 573 Rural Real Estate Appraisal	2
Principles and practices of rural real estate appraisal. Principles of soils valuation and their application for farmland appraisal. Cost, market data, and income approaches to farmland and building appraisal. Tax loan and other specialized rural appraisal procedures. Half-day field trips to area farms are required. Crosslisted with AGECE 473. Corequisite course: PS 573L. P, PS 213-213L, AGECE 271-271L. Half-day field trips to area farms are required.	
PS 573L Rural Real Estate Appraisal Laboratory	1
PS 580 Environmental Stress Physiology	3
Physiology and cellular response of plants to environmental stresses. Crosslisted with HO 480/580 and BIOL 480/580. P, BOT 327-327L.	

Sharon Clay,
Professor,
PhD, University of Minnesota-
Minneapolis/St. Paul, 1986
Weed Research

James Doolittle,
Professor,
PhD, Texas A & M University,
1991
Soil Chemistry

Billy Fuller, Professor,
PhD, Louisiana State University,
1987
Entomology - Field Crops

Ron Gelderman,
Professor,
PhD, North Dakota State
University, 1987
Soil /Plant Analysis

Karl D. Glover,
Associate Professor,
PhD, Kansas State University,
2000
Breeding - Spring Wheat

Jose Luis Gonzalez,
Assistant Professor,
PhD, North Dakota State
University, 2000,
Plant Breeding/Molecular
Genetics

Xingyou Gu,
Assistant Professor,
PhD, South China Agricultural
University-Guangzhou, 1997,
Plant Genetics/Breeding

Paul Johnson,
Professor,
PhD, University of Wisconsin-
Madison, 1992
Entomology - Systematics

Kevin D. Kephart,
Professor,
PhD, Iowa State University of
Science and Technology, 1986
Forage Physiology

Marie Langham,
Professor,
PhD, Texas A&M University,
1986
Plant Pathology - Viruses

Gary D. Lemme,
Professor,
PhD, University of Nebraska,
1988
Soil Genesis

Douglas Malo,
Distinguished Professor, PhD,
North Dakota State University,
1975
Soil Genesis/Classification

Thandiwe Nleya,
Assistant Professor,
PhD, University of Saskatchewan,
1997
Crop Science

Vance Owens,
Professor, PhD, University of
Wisconsin, 1996
Forage Crops - Extension

Cuirong Ren,
Associate Professor,
PhD, University of Missouri,
2001
Statistics

Diane Rickerl,
Professor,
PhD, Auburn University, 1986
Soil Science

Tom Schumacher,
Professor,
PhD, Michigan State University,
1982
Soil Physics and Conservation

Jeffrey M. Stein,
Assistant Professor,
PhD, Michigan State University,
2002
Plant Pathology

Fedora Sutton,
Professor,
PhD, Howard University, 1985
Molecular Biology

Kelley J. Tilmon,
Assistant Professor,
PhD, Cornell University, 2001
Entomology
E. Brent Turnipseed,
Professor,
PhD, Mississippi State
University, 1993,
Agronomy

Zeno Wicks, III,
Professor,
PhD, North Dakota State
University, 1979
Breeding - Corn

Howard J. Woodard,
Professor,
PhD, Rutgers University, 1985
Soil Fertility

**Adjunct/Courtesy/
Joint Faculty**

Randy Anderson,
Professor,
PhD, University of Wyoming,
1980
Weed Science

PS 592 Topics	(1-6)
PS 592L Special Topics Laboratory	(1-6)
PS 704 Viral and Bacterial Diseases of Plants	2
Plant diseases caused by viroids, viruses, bacteria and mycoplasma-like organisms including identification, development, symptoms, and control. Advanced laboratory research methods used in isolation, transmission, culture, purification, microscopy, serology and investigation of the nature and properties of important plant pathogens. Corequisite course: PS 704L. P, consent of instructor.	
PS 704L Viral and Bacterial Diseases of Plants Laboratory	2
Corequisite course: PS 704.	
PS 714 Genetics of Disease Resistance and Host-Plant Pathogen Interactive	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. Corequisite course: PS 714L. P, consent of instructor.	
PS 714L Genetics of Disease Resistance and Host-Plant Pathogen Interactive Laboratory	1
Corequisite course: PS 714.	
PS 720 Insect Anatomy and Physiology	2
Introduction to the internal anatomy of insects, and the principles of the physiology of insect cells, tissues, organs and systems. Corequisite course: PS 720L. P, PS 305, PS 305L.	
PS 720L Insect Anatomy and Physiology Laboratory	1
Corequisite course: PS 720.	
PS 721 Integrated Crop Pest Management	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 722 Behavioral Management of Insects	2
Principals of insect behavior stressing the role of behavior in designing management tactics. Topics include direct exploitation of behavior for control, sub-lethal behavioral effects of pesticides, and the use of semiochemicals for population monitoring and mating disruption. Methods for sampling, measuring and evaluating insect behaviors will be examined. Corequisite course: PS 722L. P, PS 305, PS 305L.	
PS 722L Behavior Management of Insects Laboratory	1
Corequisite course: PS 722.	
PS 732 Field Studies in Pedology	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. P, take 1 group (take PS 310, PS 310L/take GEOG 310, GEOG 310L). The class may be repeated for a maximum of 4 credits.	
PS 733 Advanced Soil Genesis	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. P, consent of instructor.	
PS 741 Crop Breeding Techniques	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 Physical Properties of Soil	3
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. P, consent of instructor.	
PS 744 Soil N, P and K	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. P, consent of instructor.	
PS 745 Soil/Plant Secondary Macronutrients and Micronutrients	2
Forms and reactions of secondary and micronutrients in soils, their plant functions and requirements, as well as deficiency correction. P, consent of instructor.	

PS 746 Plant Breeding	3
Plant Breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects. P, PS 103-103L, BIOL 371.	
PS 754 Chemical Properties of Soil	3
Chemical considerations of the dynamic interactions of soil-water-gas phases as affected by climate, soil age, kinds of minerals or organic matter, added fertilizer elements, and plants. P, consent of instructor.	
PS 756 Quantitative Genetics	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. P, BIOL 371 and STAT 641.	
PS 761 Taxonomy of Insects	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. Corequisite course: PS 761L.	
PS 761L Taxonomy of Insects Laboratory	1
Corequisite course PS 761.	
PS 763 Environmental and Physiological Aspects of Crop Production	2
Systems analysis of factors which limit or increase crop production and the potential for qualitative and quantitative adjustments. P, BOT 327-327L.	
PS 773 Cytogenetics	2
To study the nature and behavior of chromosomes in relation to heredity. Corequisite course: PS 773L. P, BIOL 343-343L, or BIOL 371.	
PS 773L Cytogenetics Laboratory	1
Corequisite course PS 773.	
PS 781 Plant Science Graduate Seminar	1
PS 783 Crop-Water Relationships	2
An examination of the role of water on crop productivity with an emphasis on environmental and physiological factors affecting the absorption, movement and use of water in crops. Water associated stresses will be analyzed in terms of agronomic and physiological mechanisms of adaptation. P, BOT 327-327L.	
PS 785 Soil and Plant Analysis	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. Corequisite course: PS 785L. P, consent of instructor.	
PS 785L Soil and Plant Analysis Laboratory	1
Corequisite course PS 785.	
PS 786 Biometrical Genetics	3
PS 787 Advanced Plant Breeding	3
Consideration of issues relating to germplasm selection, hybridization, evaluation, and perpetuation through a plant breeding program where improved cultivar and/or germplasm release is the objective. P, BIOL 371, STAT 541, PS 746.	
PS 788 Master's Research Problems	(1-3)
PS 791 Independent Study	(1-2)
PS 792 Topics	(1-6)
PS 798 Thesis	(1-7)
PS 898D Dissertation	(1-7)

*Eugene T. Butler, III,
Associate Professor,
PhD, University of California,
1978
Biochemistry and Molecular
Biology*

*Kenton Dashiell,
Professor,
PhD, University of Florida, 1983
Agronomy - Plant Breeding*

*Paul E. Fixen,
Associate Professor,
PhD, Colorado State University,
1979
Soil Fertility*

*Frank Forcella,
Professor,
PhD, University of Oklahoma,
1979
Botany*

*B. Wade French,
Assistant Professor,
PhD, Oklahoma State University
Research
Entomology*

*Louis Hesler,
Associate Professor,
PhD, University of California -
Davis, 1991
Research Entomology*

*Amir Ibrahim,
Associate Professor,
PhD, Colorado State University,
1998
Breeding - Winter Wheat*

*Alex Kahler,
Professor,
PhD, University of California,
1973
Molecular Biology*

*Jan J. Jackson,
Professor, PhD, University of
Minnesota, 1985
Entomology*

*Michael R. Lehman,
Assistant Professor,
PhD, Idaho State University,
2000
Biology - Microbiology*

*Michael J. Lindstrom,
Associate Professor,
PhD, Washington State
University, 1973
Soil Science*

*Jonathan Lundgren,
Assistant Professor,
PhD, University of Illinois, 2003
Research Entomology*

Shannon Osborne,
Assistant Professor,
PhD, University of Nebraska,
1999
Soil Fertility

Joseph L. Pikul, Jr.,
Professor,
PhD, Oregon State University,
1987
Soil Physics

R. Neil Reese,
Professor of Biology and
Microbiology,
PhD, University of Idaho, 1984
Plant Physiology

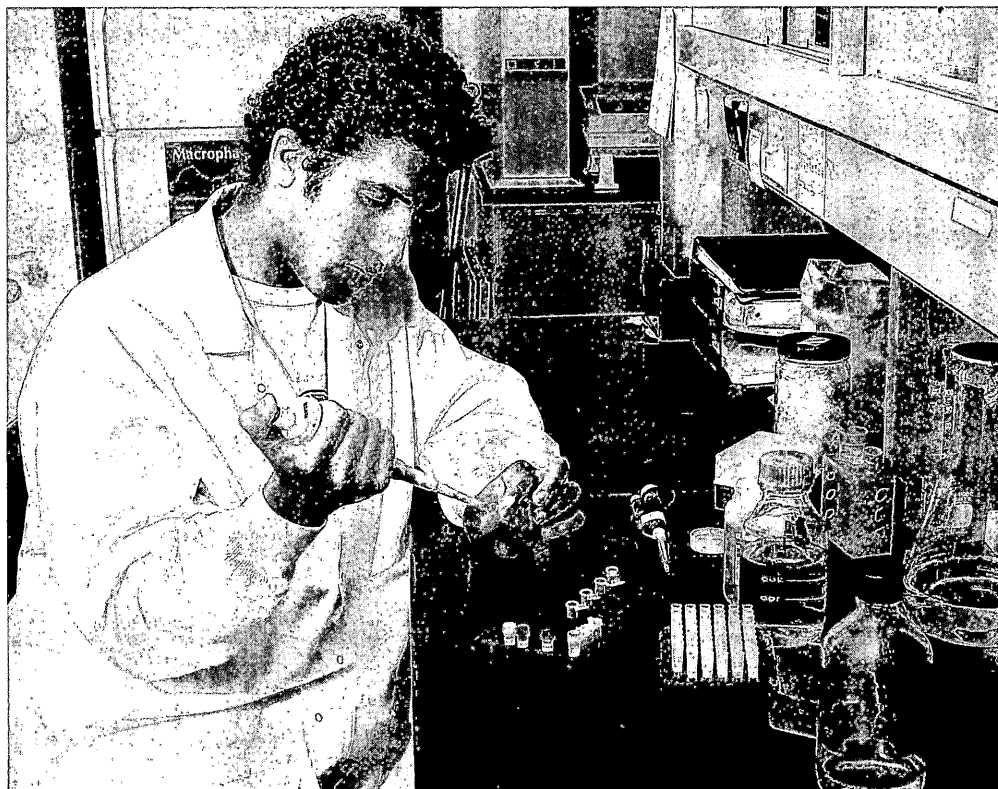
Walter Riedell,
Professor,
PhD, Southern Illinois University,
1984
Plant Physiology

Peter Schaefer,
Professor of Horticulture,
Forestry, Landscape and Parks,
PhD, Michigan State University,
1983
Forest Genetics

Yang Yen,
Associate Professor of Biology
and Microbiology,
PhD, University of Missouri,
1989
Cytogenetics

Biological Sciences (BIOS) Course Offerings

BIOS 662 Advanced Molecular and Cellular Biology	6
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular biology and pave a solid foundation for graduate students as they develop and conduct thesis and dissertation research. It will give students a perspective both on what is known and unknown about cellular structures, organization and their functions, cell chemistry and biosynthesis, genetic mechanisms, and cells in their social context. Undergraduate courses in genetics and cell biology are recommended.	
BIOS 663 Advanced Concepts in Infectious Disease	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. P, BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.	
BIOS 788 Master's Research Problems	(2-3)
BIOS 790 Seminar	1
BIOS 792 Topics	(1-6)
BIOS 798 Thesis	(1-7)
BIOS 890 Seminar	1
BIOS 898D Dissertation	(1-7)



Political Science

Minor Only

Department Coordinator: Professor Gordon Tolle
Graduate Coordinator: Professor Gordon Tolle

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 322

E-mail: gordon.tolle@sdstate.edu

Phone: 605/688-4912

Fax: 605/688-5977

Graduate Faculty

*Gary Aguiar,
Associate Professor,
PhD, Indiana University -
Bloomington, 1996
American Politics*

*Gordon Tolle,
Professor,
PhD, University of Colorado-
Boulder, 1978
Political Philosophy*

Political Science (POLS) Course Offerings

POLS 582 Travel Studies.....(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. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

POLS 591 Independent Study.....(1-3)

POLS 592 Topics.....(1-4)



Psychology

Coursework only

Graduate Faculty

Virginia Norris,
Professor,
PhD, Kent State University, 1991
Health Psychology, Gerontology

Brady Phelps,
Professor,
PhD, Utah State University, 1992
Behavior Analysis, Physiological
Psychology

Debra Spear,
Professor,
PhD, University of North
Carolina, Greensboro, 1987
Behavior Analysis, Behavioral
Pharmacology, Sensation and
Perception

Bradley Woldt,
Professor,
PhD, University of Montana,
1993
Clinical Psychology

Department Head: Professor Virginia Norris

For additional information contact:

Mailing address: SDSU Box 504
Scobey Hall — SSB 336

WWW: <http://www3.sdsu.edu/Academics/CollegeofArtsAndScience/Psychology>

E-mail: Virginia.Norris@sdsu.edu

Phone: 605/688-4322

Fax: 605/688-6754

Psychology (PSYC) Course Offerings

PSYC 540 Forensic Psychology.....3

Forensic Psychology is the application of the science and profession of psychology to questions and issues relating to law and the legal system. This course is a state-of-the-art survey of central topics at the interface of psychology and the law. The field of forensic psychology encompasses contributions made in a number of different areas – research, clinical practice, public policy, and teaching/training – from a variety of orientations within the field of psychology, such as developmental, social, cognitive, industrial-organizational and clinical.

PSYC 582 Travel Studies.....(1-4)

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.

PSYC 591 Independent Study.....(1-4)

PSYC 592 Topics.....(1-4)

Rural Sociology

Degrees Offered:

PhD Sociology

- *Cultural Ecology specialization*
- *Demography specialization*
- *Family Studies specialization*
- *Race, Class, Gender Intersections specialization*
- *Social Deviance specialization*
- *Social Organization specialization*

MS Rural Sociology

- *Applied Research specialization*
- *Community Development specialization (through Great Plains IDEA)*
- *Criminal Justice specialization*
- *Demography specialization*
- *Family Studies specialization*

Graduate Coordinator: Distinguished Professor Donna J. Hess

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 226

WWW: <http://sociology.sdstate.edu>

E-mail: donna.hess@sdstate.edu

Phone: 605/688-4132

Fax: 605/688-6354

Program Description

The Master of Science program is designed to prepare students to continue their academic careers in advanced doctoral programs, enter applied fields such as community development, demography, criminal justice, and research, or enter into the teaching profession. The PhD program in Sociology is designed to prepare students for professional careers in teaching, research and creative activity in academic, government and related areas. Areas of specialization for a major in the PhD program include demography, family studies, cultural ecology, social deviance, social organization, and race, class, gender intersections.

Available Options for Graduate Degrees

<i>Master of Science:</i>	Option A
	Option B
	Option C
<i>Doctor of Philosophy:</i>	60-Credit Plan
	90-Credit Plan

Core Requirements for Master of Science

<i>Courses:</i>	Social Theory, 6 credits.
	Research Methods, 6 credits

Core Requirements for Master of Science

<i>Courses:</i>	Social Theory, 9 credits
	Research Methods, 9 credits
	Profession of Sociology, 3 credits
	Graduate Statistics, 3 credits

Graduate Faculty

Donald Arwood,
Professor,
PhD, South Dakota State
University, 1989
*Research Methods, Demography,
Theory*

Donna J. Hess,
Distinguished Professor,
PhD, Michigan State University,
1974
*Qualitative Methods, North
American Indians*

Diane Kayongo-Male,
Professor,
PhD, Michigan State University,
1974
*Social Theory, Demography,
Evaluation Methods*

Robert Mendelsohn,
Professor,
PhD, Western Michigan
University, 1973
*Social Theory, Social Deviance,
Research Methods*

Meredith Redlin,
Associate Professor,
PhD, University of Kentucky,
2000
*Rural Community Development,
Race, Class and Gender*

Ronald Stover,
Professor,
PhD, University of Georgia-
Athens, 1975
*Anthropology, Industrial
Sociology*

Additional Admission Requirements

GRE: Not required

TOEFL: Score of 550 paper-based, 213 computer-based, 79-80 Internet-based

Both MS and PhD candidates need a minimum of 24 credits of social science courses, of which 18 must be in Sociology.

Master of Science: Courses in Research Methods, Social Theory, and Statistics must be completed as part of the previous work, or made up as prerequisites.

Doctor of Philosophy: Students seeking entrance must have an approved Bachelor's and Master's degree, (thesis option), not necessarily in Sociology.

General requirements begin on page 16 (Master's) and 21 (PhD).

Anthropology (ANTH) Course Offerings

ANTH 591 Independent Study.....	(1-3)
ANTH 592 Topics.....	(1-3)

Criminal Justice (CJUS) Course Offerings

CJUS 591 Independent Study	(1-3)
CJUS 592 Topics.....	3

Sociology (SOC) Course Offerings

SOC 502 Social Deviance.....	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 533 Leadership and Organizations	3
Emphasis is on the emergence of leadership patterns, group dynamics, small groups, and leadership in management.	
SOC 555 Juvenile Delinquency	3
A study of the youthful offender and the causes and consequences of delinquent behavior; preventive and rehabilitative programs are also discussed.	
SOC 556 Community Corrections.....	3
An examination of the history of adult and juvenile treatment and punishment. Emphasis is upon contemporary community based treatment as well as traditional prison-based incarceration. The process of sentencing, particularly the role of the pre-sentence investigation (PSI) is covered. Special attention is devoted to internship and career possibilities in the corrections arena.	
SOC 560 Advanced Criminology.....	3
An extensive examination of major criminological issues and theories including sociological definitions of crime.	
SOC 562 Population Studies	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 582 Sociology of Law	3
This course focuses on the relationship between law and society. Topics include the organization of law in society, law and social control, law as a method of conflict resolution, law as a mechanism of social change, law as a profession, and methods of inquiry in research. The course will also look at alternative dispute resolution techniques, for example mediation. Comparative, and cross-cultural materials used throughout the class to emphasize diversity in law.	
SOC 585 Applied Sociology.....	3
This course articulates the use of sociological concepts in practical settings. Applied and clinical approaches will be explored. A theoretical model for applied sociology will be developed and applied to businesses, organizations, medicine, aging, youth, law, communities, criminal justice, recreation, social services, educational facilities, and additional areas of student interest.	

SOC 620 Social Organization.....	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. P, consent of instructor.	
SOC 621 Social Stratification.....	3
Theories of social stratification. Relationship between social class and education, occupational choice, political preference, religious affiliation and social mobility. P, consent of instructor.	
SOC 630 Social Change	3
Theories concerning factors and processes in social-cultural change. Consideration of various interpretations of social-cultural change in terms of stages, cycles, and trends. P, consent instructor.	
SOC 640 Rural Community Development.....	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. P, consent of instructor.	
SOC 709 Evaluation Research	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.....	3
Major emphasis will be given to research design, problems of measurement, methods of data collection, and analysis and interpretation of data. An integral part of the course will be the development of a research project dealing with some current sociological problem. P, SOC 307, 308, or consent of instructor.	
SOC 711 Qualitative Research Methods.....	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 limitation of qualitative research. P, consent of instructor.	
SOC 712 Sociological Theory I	3
Critical examination of the main schools of sociological theory beginning with the system of Auguste Conte and ending with World War II. P, SOC 403 or consent of instructor. P, SOC 401 or consent of instructor.	
SOC 714 Race, Class, Gender Intersections.....	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 715 Theory Construction.....	3
Focus on theory-building efforts; criteria for development of theories and general approaches to theory construction are covered. These general approaches are examined in depth; various critical approaches to theory development are reviewed.	
SOC 716 Symbolic Interaction.....	3
Focus on major micro-sociological perspective. Basic concepts, assumptions, and key propositions on development of this perspective. Recent applications and critiques of the perspective are examined.	
SOC 720 Profession of Sociology	3
Course designed for those planning a career in teaching Sociology at the college/university level; course is applied with hands-on experiences in preparation for college teaching.	
SOC 762 Applied Demography.....	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.	
SOC 764 Modern Demographic Theory	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	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 790 Seminar	(1-4)

SOC 791 Independent Study	(1-3)
SOC 792 Topics	(1-6)
SOC 794 Internship	(1-6)
SOC 798 Thesis	(1-7)
SOC 898D Dissertation	(1-12)

Community Development (CD) Course Offerings (On-line through GP Idea)
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CD 600 Orientation to Community Development Study1
 This seminar will serve as an orientation to online learning and communities of practice as well as an introduction to the courses, faculty and curriculum connected to the online Master's degree program in community development. In addition, students will have an opportunity to meet each other online and practice using the technology to support learning objectives. This course is available only to graduate students registered in the Community Development specialization.

CD 601 Organizing for Community Change.....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.

CD 602 Community and Regional Economic Policy and Analysis3
 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.

CD 603 Community Natural Resource Management.....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 conservation and development of natural resources with multiple functions. This course is available only to graduate students registered in the Community Development specialization.

CD 604 Community Analysis3
 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.

CD 605 Principles and Strategies of Community Change3
 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.

CD 610 Clusters and Regional Economic Development Workshop3

Clusters are an important tool for understanding regional economies and developing an effective economic development strategy in a competitive, knowledge-based, global economy. This course will examine the theory and application of industry clusters and their role in economic development policy and practice. The course will teach students how to use quantitative and qualitative tools for identifying and analyzing industry clusters in a region and how to develop a cluster-based strategy that fits a region. Students will identify competitive clusters in a region and will conduct an in-depth analysis and prepare a strategy for one of these clusters during the course. This course is available only to graduate students registered in the Community Development specialization. This course is designed for students to learn as well as apply economic development tools for analysis and strategy development.

CD 611 Impact Analysis1

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.

CD 613 Introduction to Native Community Development.....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.

CD 615 Wellness in Native Communities: Challenges and Opportunities.....1

This course will highlight the healthcare issues challenging Native communities and identify strategies and practices to address those challenges. The course will review current statistics documenting the disparity in Indian people's health. It will also examine the impact of the Indian Health System, other bureaucratic systems, and current consumer practices that impact healthcare for Native peoples. Finally the course will look at ways tribes are working to create healthier communities and improve the lifestyle of Indian people. This course is available only to graduate students in the Community Development specialization.

CD 616 Youth Development in Native Communities1

This is a one-credit course within the Working with Native communities track. This course focuses on contemporary issues impacting native youth including: Demographics – Criminal justice, Early parenting, Poverty, Education, Suicide, and Morbidity. Identity formation – Risky behavior, Criminal, Drug, Nutrition, and Youth parenting. Achievement opportunities. This course is available only to graduate students registered in the Community Development specialization.

CD 622 Local Economic Analysis1

This is an applied course that teaches economic base theory, a theory of regional economics, multipliers and how local economics are affected by external events. The course teaches basic methods for the analysis of a local economy. Methods include: trend analysis, location quotients, shift share analysis and retail trade analysis. The level of analysis is limited only by the level of data available. This is an existing course at Missouri. This course is available only to graduate students registered in the Community Development specialization.

CD 623 Ecological Economics3

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.

CD 624 Building Native Community in Economic Capacity3

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.

- CD 625 Land Development Planning.....3**
 Successful land and building development along with building renovation and redevelopment in a community takes place as a product of the interaction of ethical and knowledgeable developers, public officials, financial decision makers, and citizens. This course seeks to introduce development and redevelopment concepts and strategies to persons who may enter or become involved in the development field from the private sector, the public sector, or as citizen activists. The student will gain an appreciation for the activities and the challenges faced by various persons involved in real estate development.
- CD 633 Introduction to Environmental Law3**
 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.
- CD 634 Native American Natural Resource Management3**
 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.
- CD 640 Governance and the Community Development Process3**
 Course focus is on the understanding of the various levels of government and the diversity of governmental forms across the states, reservations, and among nations. Students will compare roles of governments in international settings in relation to community development, and study strategies of evaluating policies that impact community development opportunities. This course is available only to graduate students registered in the Community Development specialization.
- CD 641 Leadership for Change3**
 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.
- CD 642 Grant Writing3**
 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.
- CD 643 Nonprofit Management.....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.

Veterinary Science

Degrees Offered:

PhD Biological Sciences

- *Veterinary Microbiology specialization*
- *Veterinary Pathobiology specialization*

MS Biological Sciences

- *Veterinary Microbiology specialization*
- *Veterinary Pathobiology specialization*

MS Animal Science

- *Veterinary Science specialization*

Department Head: Professor David H. Zeman

Graduate Coordinator: Professor Christopher Chase

For additional information contact:

Mailing address: SDSU Box 2175

Veterinary Science — SAR 105

WWW: <http://vetsci.sdstate.edu>

E-mail: christopher.chase@sdstate.edu

Phone: 605/688-5172

Fax: 605/688-6003

Program Description

Graduate education in the department of Veterinary Science is focused on animal health science, with major emphasis in infectious diseases of food-producing domestic species and zoonotic diseases. Research projects range from basic (mechanistic) to applied science. Students 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.

Available Options for Graduate Degrees

Master of Science: Option A

Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

Core Requirements for Master of Science

For details see specific programs: MS in Biological Sciences; MS in Animal Sciences

Core Requirements for Doctor of Philosophy

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: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's) and 21 (PhD).

Graduate Faculty

*Christopher Chase,
Professor,
D.V.M., Iowa State University,
1980 PhD, University of
Wisconsin, 1990
Virology/Immunology*

*Ying Fang,
Assistant Research Professor,
PhD, South Dakota State
University, 2004
Molecular Virology*

*Philip Hardwidge,
Assistant Professor,
PhD, Mayo Clinic Graduate
School, 2002*

*Jane Christopher-Hennings,
Professor,
D.V.M., University of Minnesota,
1983 MS, University of
Wisconsin, 1990
Molecular Diagnostics and
Research*

*Alan Erickson,
Professor,
PhD, North Dakota State
University, 1989
Biochemistry*

*David Francis,
Professor,
PhD, University of Missouri-
Columbia, 1978
Bacteriology*

*Edward Hamilton,
Professor,
D.V.M., Texas A & M University,
1974 M.Agr., Texas A & M
University, 1992
Livestock Production Economics*

Feng Li,
Associate Professor,
PhD, University of Melbourne,
1997

Molecular Virology and
Antivirals Discovery

Duane P. Matthees,
Professor,
PhD, University of Maryland,
1978
Chemistry

Regg Neiger,
Professor, D.V.M., University of
Minnesota, 1974, PhD, Iowa
State University, 1987
Pathology and Toxicology

Eric Nelson,
Professor,
PhD, South Dakota State
University, 1993
Molecular Virology

Alan Young,
Associate Professor,
PhD, University of Toronto, 1994
Immunology

David H. Zeman,
Professor, D.V.M., Oklahoma
State University, 1980
PhD, Louisiana State University,
1986
Pathology

Weiping Zhang,
Assistant Professor,
PhD, Iowa State University, 1996
Molecular Biology, Molecular
Evolution, Enterotoxigenic E.
Coli Pathogenesis and Vaccine
Development

Veterinary Science (VET) Course Offerings

VET 503 Animal Disease and Their Control.....	3
This course will discuss the various factors that contribute to the development of animal disease and how these factors can be manipulated to prevent or control disease. Emphasis will be placed on understanding disease control concepts and how production and management techniques influence the expression of disease in domestic animals and wildlife.	
VET 523 Advanced Mammalian Physiology	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.	
VET 524 Medical and Veterinary Virology.....	3
Basic course discussing the characterization, structure, and replication of viruses and the pathogenesis of viral disease in man and animals. Crosslisted with MICR 424/524.P, MICR 422 or consent of instructor.	
VET 591 Independent Study	(1-3)
VET 788 Master's Research Problems	(2-3)
VET 791 Independent Study	(1-4)
VET 792 Topics	(1-3)
VET 793 Workshop.....	(1-3)

Biological Sciences (BIOS) Course Offerings

BIOS 662 Advanced Molecular and Cellular Biology	6
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular biology and pave a solid foundation for graduate students as they develop and conduct thesis and dissertation research. It will give students a perspective both on what is known and unknown about cellular structures, organization and their functions, cell chemistry and biosynthesis, genetic mechanisms, and cells in their social context. Undergraduate courses in genetics and cell biology are recommended.	
BIOS 663 Advanced Concepts in Infectious Disease	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. P, BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.	
BIOS 788 Master's Research Problems	(2-3)
BIOS 790 Seminar	1
BIOS 792 Topics	(1-6)
BIOS 798 Thesis	(1-7)
BIOS 890 Seminar	1
BIOS 898D Dissertation - PhD.....	(1-7)

Adjunct/Courtesy/Joint Faculty

David Benfield,
Ohio State University,
PhD, University of Missouri,
1978
Virology

Richard Harland,
Novartis Animal Health
DVM, University of
Saskatchewan, 1982 Master of
Veterinary Science, 1987

Mike Hildreth,
Professor,
Biology/Microbiology PhD,
Tulane University, 1983
Parasitology

David Hurley,
University of Georgia,
PhD, Penn State University,
1988
Immunology

Radhey Kaushik,
Assistant Professor,
SDSU, Department of
Biology/Microbiology, PhD,
University of Saskatchewan,
1998
Microbiology

Sarah Patrick,
University of South Dakota
MPH, PhD, University of
Pittsburgh, 1990, 1992
Epidemiology

Carol Rinehart,
Boehringer Ingelheim
Vetmedica, Inc.
PhD, University of Delaware,
1984

James Robl,
Hematech, Sioux Falls, SD
PhD, University of Illinois,
1983
Reproductive Physiology

Robert Rowland,
Department of Diagnostic
Medicine and Pathobiology,
Kansas State University PhD,
University of New Mexico,
1989
Immunology

T. Sathiyaseelan,
Hematech, Sioux Falls, SD
PhD, University of
Massachusetts, 2000
Immunology

Visual Arts

Coursework Only

Graduate Faculty

*Norman P. Gambill,
Professor,
PhD, Syracuse University, 1976
American Studies, Art History,
Film History, Popular Culture*

Department Head: Professor Norman P. Gambill

For additional information contact:

*Mailing address: SDSU Box 2802
Grove Hall — SGH 101
E-mail: artdept@sdstate.edu*

*Phone: 605/688-4103
Fax: 605/688-6769*

Art Education (ARTE) Course Offerings

ARTE 591 Independent Study(1-3)



Wildlife and Fisheries Sciences

Degrees Offered:

PhD Wildlife and Fisheries Sciences

MS Wildlife and Fisheries Sciences

- *Fisheries specialization*
- *Wildlife specialization*

Department Head: Distinguished Professor Dr. David W. Willis

Graduate Coordinator: Distinguished Professor Dr. Jonathan A. Jenks

For additional information contact:

Mailing address: SDSU Box 2140B

Northern Plains Biostress Laboratory — SNP 138

WWW: <http://wfs.sdstate.edu>

E-mail: david.willis@sdstate.edu

Phone: 605/688-6121

Fax: 605/688-4515

Program Description

Department research, and, therefore, graduate research education, is usually directed toward 1) wildlife-fisheries-agriculture interactions, 2) wetlands, 3) biostress research or 4) survey and assessment of wildlife and fisheries resources. The majority of research activity in the Department is of an applied field nature that revolves around habitat, human users, and organisms (both game and non-game). The Department houses the S.D. Cooperative Fish and Wildlife Research Unit, which is a cooperative effort among SDSU; the S.D. Department of Game, Fish and Parks; the U.S. Department of the Interior; and the Wildlife Management Institute. In general, students are not accepted into the Department's Graduate Program unless an assistantship can be provided. The Department cooperates with a variety of internal and external funding entities to support research projects.

Available Options for Graduate Degrees

Master of Science: Option A

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

Core Requirements for Master of Science

Students are expected to take coursework in statistical methods and graduate seminars.

Core Requirements for Doctor of Philosophy

Students must be proficient in statistical methods and computer application. Courses and experience are also required in college-level teaching and graduate seminars.

Additional Admission Requirements

GRE: Required

TOEFL: Score of 525 paper-based, 197 computer-based, 71 Internet-based

General requirements begin on page 16 (Master's) and 21 (PhD).

Graduate Faculty

Charles R. Berry,
Professor,
PhD, Virginia Polytechnic
Institute and State University,
1976
Fish Physiology

Michael L. Brown,
Professor,
PhD, Texas A & M University,
1993
*Fish Culture, Fisheries
Management*

Steven R. Chipps,
Associate Professor,
PhD, University of Idaho, 1997
Aquatic Ecology

Lester D. Flake,
Distinguished Professor
Emeritus,
PhD, Washington State
University, 1971
Wildlife Ecology

Brian D. S. Graeb,
Assistant Professor,
PhD, South Dakota State
University, 2006,
Fisheries Ecology

Leigh H. Fredrickson,
Adjunct Professor,
PhD, Iowa State University, 1967
*Waterfowl and Wetland Ecology
and Management*

Kenneth F. Higgins,
Professor Emeritus,
PhD, North Dakota State
University, 1981
Wildlife Management

Daniel E. Hubbard,
Professor,
PhD, South Dakota State
University, 1988
Wetland Ecology

Jonathan A. Jenks,
Distinguished Professor,
PhD, Oklahoma State University,
1991
Population Dynamics, Wildlife
Ecology

Kent C. Jensen,
Associate Professor,
PhD, Texas A&M University,
1990
Ornithology, Wildlife Ecology

Susan P. Rupp,
Assistant Professor,
PhD, Texas Tech University,
2005,
Spatial Wildlife Ecology

Charles G. Scalet,
Professor Emeritus,
PhD, University of Oklahoma,
1971,
Ichthyology

David W. Willis,
Distinguished Professor,
PhD, Colorado State University,
1980
Fisheries Management

Michael C. Wimberly,
Associate Professor,
PhD, Oregon State University,
1999
Forest Ecology

**Philosophy Statement for
Master of Science Degree in
Wildlife and Fisheries
Sciences**

to educate students for management-level positions with state and federal agencies, private companies, and for the pursuit of higher academic degrees.

It is our goal to build on the foundation that students obtained during their undergraduate education, primarily directing them into some more specific area of wildlife or fisheries. By using specifically identified coursework areas and mentoring we will 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.

An MS degree involves a fulltime commitment normally requiring two to three years to complete.

Wildlife and Fisheries Sciences (WL) Course Offerings

WL 513 Advanced Fisheries Management.....3
Principles and techniques of selected practices for reservoir, lake, pond and lotic fisheries management.

WL 513L Advanced Fisheries Management Laboratory.....0

WL 515 Upland Game Ecology and Management3
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.

WL 515L Upland Game Ecology and Management Laboratory.....0

WL 517 Large Mammal Ecology and Management.....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.

WL 517L Large Mammal Ecology and Management Laboratory0

WL 519 Waterfowl Ecology and Management3
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.

WL 519L Waterfowl Ecology and Management Laboratory.....0

WL 521 Grassland Fire Ecology.....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. Crosslisted with RANG 521.

WL 521L Grassland Fire Ecology Laboratory0

WL 525 Wildlife Nutrition and Disease.....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. Corequisite course: WL 525L.

WL 525L Wildlife Nutrition and Disease Laboratory0

WL 592 Topics.....(1-3)

WL 592L Special Topic in Wildlife and Fisheries Laboratory0

WL 712 Wetlands Ecology and Management3
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.

WL 712L Wetlands Ecology and Management Laboratory.....0

WL 713 Animal Population Dynamics.....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.

WL 713L Animal Population Dynamics Laboratory0

WL 714 Fish Structure and Function3
Emphasis on anatomy, physiology, and histology of fishes and how these areas relate to fish management, water pollution, and fish culture. Economically important game and cultured species are stressed.

WL 714L Fish Structure and Function Laboratory.....0

WL 715 Wildlife Research Design.....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.

WL 715L Wildlife Research Design Laboratory	0
WL 717 Aquatic Trophic Ecology	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.	
WL 717L Aquatic Trophic Ecology Laboratory.....	0
WL 718 Ecology of Aquatic Invertebrates	3
The identification of and ecological relationships associated with aquatic invertebrates; aquatic ecosystems of the north-central states are emphasized. Corequisite course: WL 718L.	
WL 718L Ecology of Aquatic Invertebrates Laboratory.....	0
WL 719 Stream Ecology and Management	3
Interrelationships of biotic and abiotic components of lotic ecosystems. Hydrologic and geologic influences on lotic habitat and biota will be stressed, as well as watershed management aspects. Corequisite course: WL 719L	
WL 719L Stream Ecology and Management Laboratory	0
WL 720 Quantitative Fisheries Science	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. Corequisite course: WL 720L.	
WL 720L Quantitative Fisheries Science Laboratory.....	0
WL 721 Natural Resource Modeling.....	3
An introduction to the theory, methodology, and application of ecological models as they pertain to natural resource conservation and management issues. Emphasis will be placed on problem-driven approaches, steps involved in the modeling process, kinds of models, model classification, and model application and interpretation based on real-world examples. Corequisite course: WL 721L.	
WL 721L Natural Resource Modeling Laboratory	0
WL 722 Natural Resource Policy and Administration.....	3
Emphasis is placed on codified law and policy and non-codified policy of federal and state agencies, and their effects on the management and administration of fish and wildlife resources. Areas of study include development of agency policy, influence of policies on management, policy and resource conflict, and public involvement in the management process. Corequisite course: WL 722L.	
WL 722L Natural Resource Policy and Administration Laboratory	0
WL 767 Fire and Ecosystems.....	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. Crosslisted with GSE/GEOG/BIOL 767.	
WL 791 Independent Study.....	(1-3)
WL 798 Thesis	(1-7)
WL 898D Dissertation.....	(1-12)

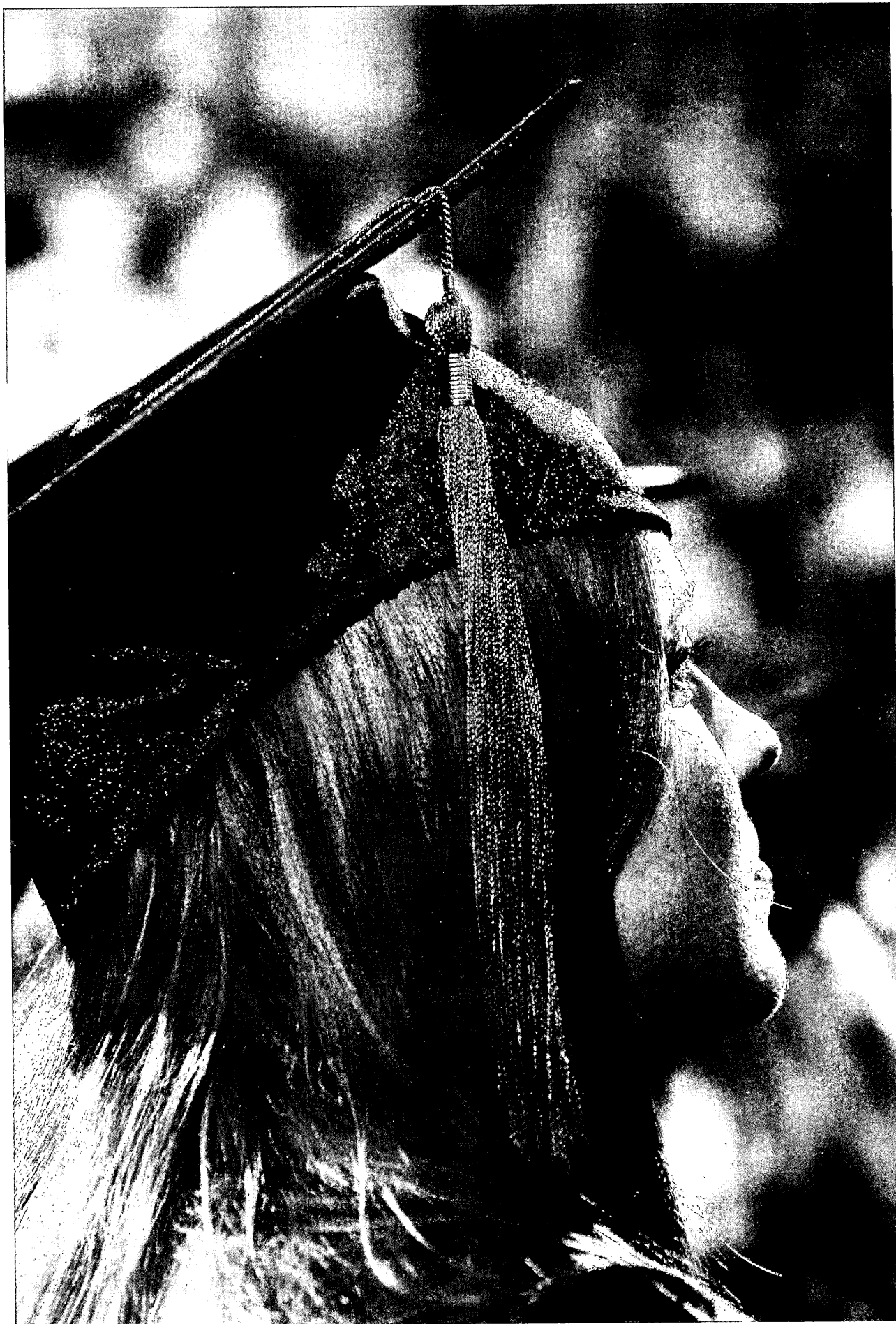
***Philosophy Statement for
the PhD Degree in
Wildlife and Fisheries
Sciences***

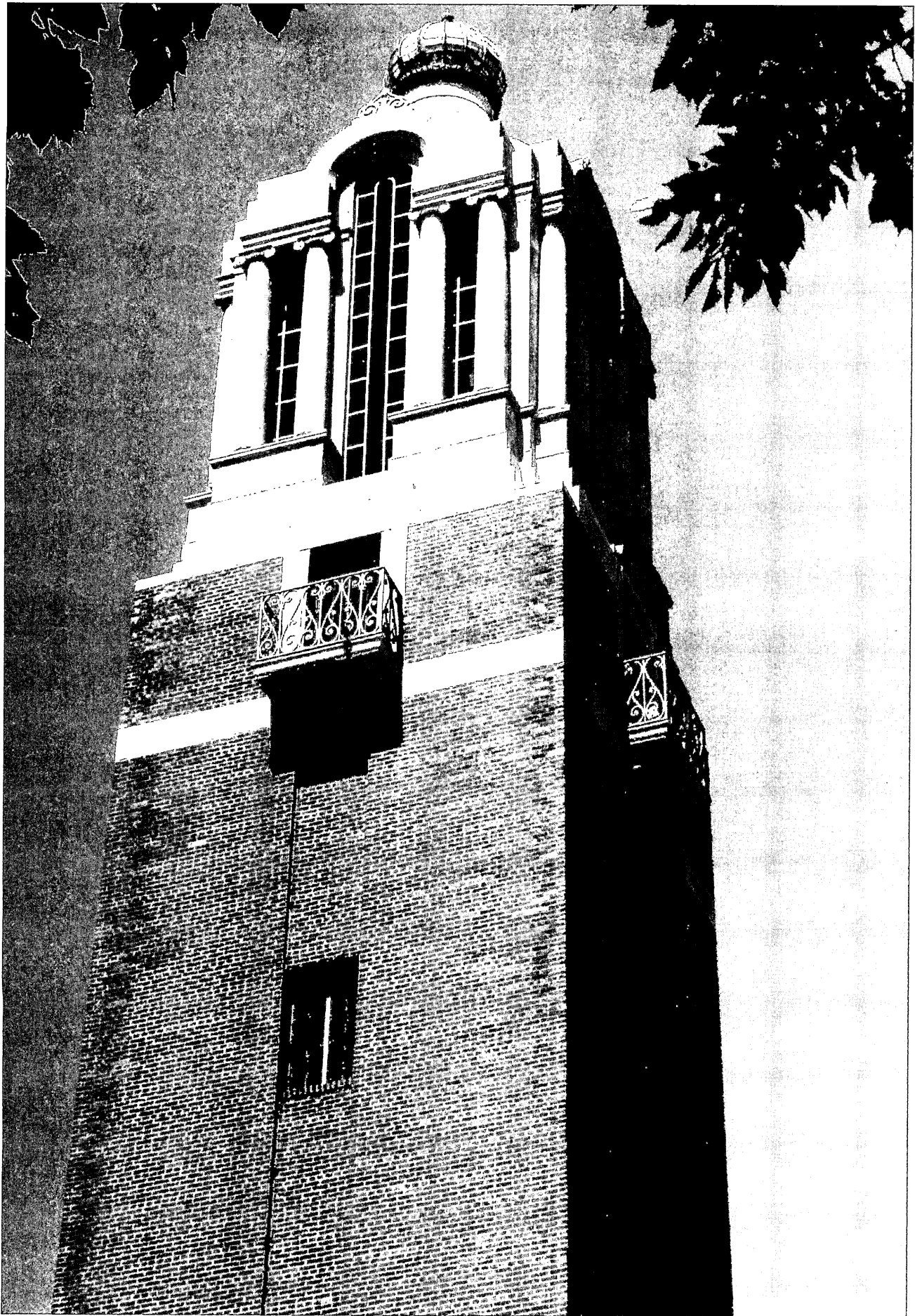
to educate students for upper-level management, research, and administrative positions with state and federal agencies, and private companies. It is also intended to prepare students in the teaching, research, and service component responsibilities needed for faculty positions with universities and colleges.

By building on the educational foundation that these students obtained from bachelor's and master's degree work, we will endeavor to raise them to a higher intellectual plateau. While coursework is involved, this is primarily a research and mentoring educational experience.

This degree requires original thought and research contributions, synthesis and development of information, and contributions to the world and its resources. Through mentoring and other educational experiences we desire to bring spirit, enthusiasm, imagination, and optimism to these students. They must develop independence, mature judgement, and a tolerance of differences among people, but an intolerance to inferior products and nonprofessional attitudes. We will strive to help these students become both operationally and conceptually creative.

A PhD degree involves a full-time commitment normally requiring three to five years of effort beyond the MS degree.





FACULTY AND STAFF

As of December 2007

The number immediately after the title of a member of the staff indicates the year when the person was first employed as a regular member of the University staff, the number following, if there is one, is the year of appointment to present rank.

General Administration

- Chicoine, David L.**, President, Professor of Economics, Graduate Faculty, 2007; BS, South Dakota State University, 1969; MS, University of Delaware, 1971; MA, Western Illinois University, 1978; Ph. D., University of Illinois, 1979.
- Peterson, Carol J.**, Provost and Vice President for Academic Affairs, Professor of Nursing, Graduate Faculty, 1977, 2000; Diploma in Nursing, Methodist Kahler School of Nursing, 1960; BS, University of Minnesota, 1963; MEd, 1964; PhD, 1969.
- Reger, Michael P.**, Executive Vice President for Administration, Assistant Professor of Education, Graduate Faculty, 1979, 2000; BA, Western Illinois University, 1970; MS, 1972; PhD, Ohio State University, 1983.
- Adelaine, Michael F.**, Vice President for Information Technology, Chief Information Technology Officer, Director of Agricultural Information Technologies, Professor of Agricultural and Biosystems Engineering, 1990, 2003; BS, Michigan State University, 1974; MS, University of Nebraska, 1985; PhD, 1989.
- Kephart, Kevin D.**, Vice President for Research and Dean of Graduate School, Professor of Plant Science, Graduate Faculty, 1986, 2005; BS, Montana State University, 1979; MS, University of Wyoming, 1982; PhD, Iowa State University, 1987.
- Rames, Marysz Palczewski**, Vice President for Student Affairs, 1987, 2004; BS, University of Northern Colorado, 1982; MA, 1986; EdD, University of South Dakota, 1997.
- Helling, Mary Kay**, Associate Vice President for Academic Affairs and Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1978, 2003; BS, SDSU, 1977; MS, 1982; PhD, Purdue University, 1992.
- Ruffolo, John J.**, Associate Vice President of Research & Sponsored Programs and the Graduate School and Professor of Biology and Microbiology, Graduate Faculty, 1999; BS, Loyola University, 1965; MS, University of Iowa, 1969; PhD, 1972.
- Tschetter, Wesley G.**, Associate Vice President for Finance and Business, 1982, 2000; BS, SDSU, 1969; MBA, University of South Dakota, 1971.
- Rickerl, Diane Holland**, Associate Dean of the Graduate School and Professor of Plant Science, Graduate Faculty, 1986, 1996; BS, Iowa State University, 1972; MA, 1976; MS, Auburn University, 1984; PhD, 1986.
- Aschenbrener, Matthew S.**, Assistant Vice President for Student Services and Registrar, 2003, 2007; BS, SDSU, 1992; M.P.A., University of South Dakota, 1994; EdD, University of Kansas, 2001.
- Kattelmann, Dean E.**, Assistant Vice President of Facilities and Services, 2002; BS, Missouri State University, 1976; MS, University of Missouri, 1989.
- Welsh, Tracy**, Director of High School Relations and Admissions, 1984, 1997; BA, Fontbonne College, 1980.
- Yarrow, Gary**, Director of Environmental Health and Safety, Professor of Chemistry; General, Radiation, Biological and Chemical Safety Officer; Graduate Faculty, 1993, 1998; BS, SDSU, 1977; MS, Ohio State University, 1979; PhD, University of Minnesota, 1985.
- ## Academic Deans
- Brown, Lewis F.**, Dean of the College of Engineering, Professor of Electrical Engineering, Graduate Faculty, 1992, 2000; BS, SDSU, 1984; MS, Iowa State University, 1986; PhD, 1988.
- Corbett, Keith W.**, Interim Dean of General Studies, 1981, 2004; BS, SDSU, 1976; MEd, 1987; EdD, University of South Dakota, 2001.
- Gleim, David E.**, Dean of Libraries, 2007; BA, Brescia University, 1971; MSL.S., University of Kentucky, 1973; PhD, University of North Carolina-Chapel Hill, 1992.
- Jorgensen, Jerry D.**, Dean of the College of Arts and Sciences, Professor of Communication Studies and Theatre, Graduate Faculty, 1979, 2000; BS, SDSU, 1978; MS, 1984; PhD, University of Nebraska, 1990.
- Lemme, Gary D.**, Dean of the College of Agriculture and Biological Sciences, Professor of Plant Science, 2005; BS, SDSU, 1974; MS, 1975; PhD, University of Nebraska, 1979.
- Nichols, Laurie Stenberg**, Dean of the College of Family and Consumer Sciences, Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1994; BS, SDSU, 1978; MS, Colorado State University, 1984; PhD, Ohio State University, 1988.
- Nichols, Timothy J.**, Dean of the Honors College, Associate Professor of Sociology, Graduate Faculty, 1994, 2008; BS Washington State University, 1986; M.A.Ed., 1993; PhD, South Dakota State University, 2001.
- Olson, Roberta K.**, Dean of the College of Nursing, Professor of Nursing, Graduate Faculty, 1994; BS, SDSU, 1964; MSN., Washington University, 1968; PhD, Saint Louis University, 1984.
- Smith, Howard B.**, Interim Dean and Professor of Education and Counseling, 1978, 2003; BA, University of Sioux Falls, 1965; M.Div., Central Baptist Theological Seminary, 1968; MEd, SDSU, 1974; EdD, University of South Dakota, 1980.
- Tidemann, Gail Dobbs**, Dean of the Office of Continuing and Extended Education, Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1986, 1997; BS, Jacksonville State University, 1977; MA, University of Alabama, 1978; PhD, 1986.
- ## Regental Distinguished Professors
- Bailey, Harold S.**, Vice President for Academic Affairs Emeritus, Distinguished Professor of Higher Education, 1951, 1985; BS, Massachusetts College of Pharmacy, 1944; MS, 1948; PhD, Purdue University, 1951.
- Wagner, Robert T.**, President Emeritus, Professor Emeritus of Rural Sociology, Distinguished Regental Professor of Higher Education, 1970, 1997; BA, Augustana College, 1954; M.Div., Seabury Western Theological Seminary, 1957; S.T.M., 1970; PhD, SDSU, 1972; L.H.D., Augustana College, 1994; D.P.S., SDSU, 1997; D.D., 2000.
- ## Distinguished Professors
- Burns, Robert V.**, Distinguished Professor Emeritus, Interim Head of History and Political Science, Dean Emeritus of Honors College, Graduate Faculty, 1970, 1994; BS, SDSU, 1964; MA, University of Missouri, 1966; PhD, 1973.
- Costello, William J.**, Distinguished Professor Emeritus of Animal and Range Sciences, 1965, 1991; BS, North Dakota State University, 1954; MS, Oklahoma State University, 1960; PhD, 1963.
- Dwivedi, Chandradhar**, Distinguished Professor and Head of Pharmaceutical Sciences, Graduate Faculty, 1987, 2000; BS, Gorakhpur University, 1964; MS, 1966; PhD, Lucknow University, 1972.

- Evenson, Donald P.**, Distinguished Professor Emeritus of Biology and Microbiology, Graduate Faculty, 1981, 1996; BA, Augustana College, 1964; PhD, University of Colorado, 1968.
- Flake, Lester D.**, Distinguished Professor Emeritus of Wildlife and Fisheries Sciences, Graduate Faculty, 1972, 1999; BS, Brigham Young University, 1965; MS, 1966; PhD, Washington State University, 1971.
- Granholt, Nels H.**, Distinguished Professor of Biology and Microbiology, Graduate Faculty, 1968, 1978; BA, University of Massachusetts, 1964; PhD, Iowa State University, 1968.
- Gritzner, Charles F.**, Distinguished Professor of Geography, Graduate Faculty, 1980, 1995; BA, Arizona State University, 1958; MA, Louisiana State University, 1960; PhD, 1969.
- Hegge, Margaret J.**, Distinguished Professor Emerita of Nursing, Graduate Faculty, 1969, 1999; BA Gustavus Adolphus College, 1969; MEd, SDSU, 1972; EdD, University of South Dakota, 1983; MS, University of Minnesota, 1984.
- Hess, Donna J.**, Distinguished Professor and Head of Rural Sociology, Graduate Faculty, 1974, 1998; BA, Marquette University, 1965; MA, State University of New York, 1971; PhD, Michigan State University, 1974.
- Jenks, Jonathan A.**, Distinguished Professor of Wildlife and Fisheries Sciences, Graduate Faculty, 1991, 2006; A.A., Unity College, 1982; BS, 1984; MS, University of Maine, 1986; PhD, Oklahoma State University, 1991.
- Johnson, James L.**, Distinguished Professor Emeritus of Communication Studies and Theatre, Director of Theatre, Graduate Faculty, 1973, 2001; BS, Kansas State University, 1960; MA, University of South Dakota, 1961; PhD, University of Kansas, 1973.
- Johnson, W. Carter**, Distinguished Professor of Horticulture, Forestry, Landscape and Parks, Graduate Faculty, 1989, 2006; BS, Augustana College, 1968; PhD, North Dakota State University, 1971.
- Malo, Douglas D.**, Distinguished Professor of Plant Science, Graduate Faculty, 1975, 1999; BS, Iowa State University, 1971; MS, North Dakota State University, 1974; PhD, 1975.
- Mc Farland, Douglas C.**, Distinguished Professor of Animal and Range Sciences, Graduate Faculty, 1986, 1997; BA, Southern Connecticut State College, 1971; MS, Washington State University, 1975; PhD, 1984.
- Pritchard, Robbi H.**, Distinguished Professor of Animal and Range Sciences, Graduate Faculty, 1984, 2005; A.A.S., Black Hawk College, 1975; BS, Southern Illinois University, 1977; MS, 1978; PhD, Washington State University, 1983.
- Redhead, Ruth W.**, Distinguished Professor Emerita of Foreign Languages, 1962, 1989; B.Ed., University of Vermont, 1945; MA, University of Minnesota, 1954; PhD, 1971.
- Ryder, Mary R.**, Distinguished Professor of English, Graduate Faculty, 1989, 1997; BA, Monmouth College, 1972; MA, Illinois State University, 1981; PhD, University of Illinois, 1987.
- Schingoethe, David J.**, Distinguished Professor of Dairy Science, Graduate Faculty, 1969, 2001; BS, University of Illinois, 1964; MS, 1965; PhD, Michigan State University, 1968.
- Wahlstrom, Richard C.**, Distinguished Professor Emeritus of Animal and Range Sciences, 1952, 1988; BS, University of Nebraska, 1948; MS, University of Illinois, 1950; PhD, 1952.
- Widvey, Lois L.**, Distinguished Professor Emerita of Education, Graduate Faculty, 1973, 1998; BS, Northern State University, 1955; MSED., 1958; EdD, University of Nebraska, 1971.
- Willis, David W.**, Distinguished Professor and Head of Wildlife and Fisheries Sciences, Graduate Faculty, 1987, 1995; BS, University of North Dakota, 1977; MS, 1978; PhD, Colorado State University, 1980.
- Woodard, Charles L.**, Distinguished Professor of English, Graduate Faculty, 1975, 1985; BS, Dakota State University, 1964; MA, University of Nebraska, 1966; PhD, University of Oklahoma, 1975.
- Wrage, Leon J.**, Distinguished Professor Emeritus of Plant Science, Extension Specialist, 1961, 1994; BS, SDSU, 1961; MS, 1964.

Faculty, Staff

- Aaron, David**, Assistant Professor of Physics, 1986; BS, SDSU, 1975; MS, University of Wisconsin, 1981.
- Abraham, Julie B.**, Instructor of English, 2002; BA, Augustana College, 1990; MA, SDSU, 2003.
- Abraham, Ross P.**, Professor of Mathematics and Statistics, Graduate Faculty, 1997, 2006; BS, Augustana College, 1990; MA, University of Montana, 1993; PhD, University of Houston, 1997.
- Ackman, John D.**, Professor of Communication Studies and Theatre, Graduate Faculty, 1978, 2002; BS, SDSU, 1978; M.F.A., University of Montana, 1984.
- Adamson, Dwight W.**, Associate Professor of Economics, Graduate Faculty, 1989, 1995; BA, Washington State University, 1976; MA, 1983; PhD, 1988.
- Aguiar, Gary G.**, Associate Professor of Political Science, Graduate Faculty, 1999, 2003; BA, COE College, 1983; BA, University of Hawaii, 1990; MA, Indiana University, 1993; PhD, 1996.
- Ahrendsen, Wendy**, Instructor of Mathematics and Statistics, 1995; BA, Wartburg College, 1995; MS, SDSU, 1999.
- Alfson, Troy M.**, Assistant Director of Conference and Special Services, 2003, 2005; BS, Bemidji State University, 1994; MS, University of Wisconsin, 1996.
- Anand, Sanjeev**, Assistant Professor of Dairy Science, Graduate Faculty, 2006; BS, D.S. College (India), 1978; MS, National Dairy Research Institute (India), 1981; PhD, 1986.
- Andera, Tim**, Professor of Education and Counseling, Graduate Faculty, 2000, 2006; A.A.S., University of South Dakota, 1974; BST., 1976; BS, 1977; BSE., 1977; MS, Bemidji State University, 1986; EdD, Illinois State University, 1994.
- Andersen, Brenda F.**, Associate Director of Student Health Services, 1982, 1984; BS, SDSU, 1979; MS, 1986.
- Andersen, Shane M.**, Research/Extension Associate, 2000; BS, SDSU, 2000; MS, 2003.
- Anderson, Carla L.**, Program Director for Upward Bound, TRiO, 2004, 2005; BS, SDSU, 2002.
- Anderson, Carter D.**, Adjunct Assistant Professor, 2006; BS, North Dakota State University, 1981; MS, 1983.
- Anderson, Gary A.**, Professor of Agricultural and Biosystems Engineering, Graduate Faculty, 1987, 1999; BS, SDSU, 1975; MS, Iowa State University, 1985; PhD, 1987.
- Anderson, Jill L.**, Research Assistant II, Dairy Science, 2005; BS, University of Delaware, 2003; MS, SDSU, 2005.
- Anderson, Randy**, Adjunct Professor, Plant Science, 2004; BS, SDSU, 1974; MS, 1976; PhD, University of Wyoming, 1980.
- Anderson, Rick L.**, Manager of Information Security, 1996, 2006; BS, Saint Cloud State University, 1991.

- Andrews, Alfred S.**, Professor of Electrical Engineering, Graduate Faculty, 1981, 2001; BS, Alexandria University (Egypt), 1974; MS, SDSU, 1982; PhD, Virginia Polytechnic Institute and State University, 1991.
- Andrews, Madeleine Y.**, Professor of Electrical Engineering/Teaching Learning Center Coordinator, Graduate Faculty, 1980, 2001; BS, Cairo University (Egypt), 1977; MS, SDSU, 1983; PhD, Virginia Polytechnic Institute and State University, 1991.
- Archer, Misty D.**, Residence Hall Director, 2005; BS, Central Michigan University, 2004.
- Arnio, Robert**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, B. A., Black Hills State University, 1971; MA University of Iowa, 1972, PhD, University of Iowa, 1979.
- Arnold, Mary P.**, Professor and Head of Journalism and Mass Communication, Graduate Faculty, 2002, 2005; BA, Dakota Wesleyan University, 1969; MA, University of South Dakota, 1973; PhD University of Iowa, 1994.
- Aro, Carlene D.**, Professor/Serials Librarian, 1989, 1998; BA, Oregon State University, 1981; M.L.S., University of Michigan, 1982; MEd, SDSU, 1993.
- Arwood, Donald**, Professor of Rural Sociology, Graduate Faculty, 1986, 1999; BS, SDSU, 1980, MS, 1982; PhD, 1989.
- Auger, Donald L.**, Assistant Professor of Biology and Microbiology, Graduate Faculty, 2003; BA, Saint John's University, 1975; PhD, University of North Dakota, 1995.
- Austin, Jane E.**, Adjunct Assistant Professor of Wildlife and Fisheries, 1997; BS, University of Maine, 1980; MS, University of Missouri, 1983; PhD, 1988.
- Baer, Adam D.**, Geospatial Analyst, 2006; BS, University of Missouri- Columbia, 2003; MS, 2005.
- Baer, Rebecca**, Associate Professor of Pharmacy Practice, 2001, 2006; BS, University of Georgia, 1982; BS, SDSU, 1993; PharmD, 1995.
- Baer, Robert J.**, Professor of Dairy Science, Graduate Faculty, 1982, 1992; BS, University of Georgia, 1977; MS, 1979; PhD, 1983.
- Baggett, Marie-Pierre E.**, Associate Professor of Modern Languages, 1998, 2002; BA, Université de Clermont (France), 1986; MA, University of California, 1989; PhD, 1996.
- Baggett, Paul B.**, Instructor of English, 2002; BA, University of California-Irvine, 1987; MA, California State University- Long Beach, 1993.
- Bahr, Jr., Alvin M.**, Instructor of Mathematics and Statistics, 1998; BA, SDSU, 1996; MS, 2000.
- Bahr, Ann Marie B.**, Professor of Philosophy and Religion, Graduate Faculty, 1988, 1993; BA, Lawrence University, 1972; MA, Stanford University, 1975; PhD, Temple University, 1989.
- Bakker, Kristel K.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 2003; BS, SDSU, 1990; MS, 1996; PhD, 2000.
- Baldwin, Sara T.**, Assistant Professor of Nursing, 1990, 2002; BS, University of Utah, 1980; MS, University of Portland, 1990; PhD, University of Nebraska, 2006.
- Ball, John J.**, Professor of Horticulture, Forestry, Landscape and Parks, 1991, 2001; BS, Michigan Technological University, 1976; MS, Michigan State University, 1979; PhD, 1982.
- Barnes, Thomas G.**, Adjunct Associate Professor of Wildlife and Fisheries, 2003; BA, Huron College, 1979; MS, SDSU, 1982; PhD, Texas A&M University, 1988.
- Bassett, Janine D.**, Instructor of Nursing/Nurse Practitioner, 2000; BS, SDSU, 1992; MS, 2004.
- Bassett, Kurt D.**, Professor of Mechanical Engineering, Graduate Faculty, 2005, 2007; BS, SDSU, 1981; MS, 1983; PhD, North Dakota State University, 1996.
- Bassett, Susan D.**, Instructor of Nursing, 1992; BS, SDSU, 1982; MS, 1998.
- Baszler, Jared C.**, Head Coach, Women's and Men's Golf, 2003; BA, Grinnell College, 2002.
- Baumberger, Susan R.**, Instructor, Nutrition, Food Science, and Hospitality, 2004; BS, SDSU, 1990; MS, 2003.
- Bayer, Michelle A.**, Instructor of General Studies, 2007; BA, SDSU, 1995; MEd, University of Nevada, Las Vegas, 2005.
- Beare, Tianna M.**, Research Coordinator, Martin Endowed Human Nutrition Program, 1999; BS, SDSU, 2002.
- Beck, Dwayne L.**, Research Manager of Dakota Lakes Field Station, Professor, 1979, 1995; BS, Northern State University, 1975; PhD, SDSU, 1983.
- Becker, Danielle**, Reference and Electronic Resources Librarian/Associate Professor, 2006; BA University of Minnesota-Minneapolis, 1994; MS, Hamline University, 2003; M.L.S., Pratt Institute, 2006.
- Behl, Diana M.**, Assistant Professor of Visual Arts, 2005; B.F.A., Bowling Green State University, 2001; MA, University of Iowa, 2004; M.F.A., 2005.
- Behnken, James C.**, Research Associate II, Electrical Engineering, 2005; A.A., University of Minnesota Technical College, 1983; B.BA, University of North Dakota, 1988; MEd, SDSU, 1996.
- Bell, Julie A.**, Assistant Professor of Human Development, Consumer and Family Sciences, 1975, 1980; BS, SDSU, 1970; MS, 1976.
- Benevento, Nicole**, Instructor of Modern Languages, 2004; BA, University of Florida, 2002; MA, 2004.
- Benzer, Fatih**, Associate Professor of Visual Arts, 2003; B.F.A., Dokuz Eylul University (Turkey), 1992; MA, California State University, 1996; EdD, Arizona State University, 2000.
- Berg, Donald J.**, Professor of Geography, Graduate Faculty, 1990, 2002; BA, North Dakota State University, 1964; MA, 1966; MA, University of California, 1971; PhD, 1976.
- Berg, Jerry A.**, Adjunct Supply Technician, AROTC-Military Science, 1989; BS, SDSU, 1974.
- Berg, Jr., Robert K.**, Manager, SESD Experiment Station Farm, Professor, 1993, 1998; BS, Oklahoma State University, 1981; MS, 1982; PhD, Iowa State University, 1987.
- Bergmann, Peter J.**, Research Assistant II, Wildlife and Fisheries Sciences, 1990; BA, Gustavus Adolphus College, 1989; MS, SDSU, 1992.
- Berkland, Diana**, Adjunct Instructor of Nursing, 1996; BSN., SDSU, 1972; MSN., 1994.
- Berry, Jr., Charles R.**, Adjunct Professor of Wildlife and Fisheries Sciences, Graduate Faculty, 1985, 1991; BS, Randolph-Macon College, 1967; MS, 1970; PhD, Virginia Polytechnic Institute and State University, 1976.
- Beutler, Martin K.**, Extension Specialist and Professor of Economics, Graduate Faculty, 1986, 1998; BS, Utah State University, 1980; MS, 1982; PhD, Purdue University, 1986.
- Bielfeldt, Dennis D.**, Professor of Philosophy and Religion, Graduate Faculty, 1995, 2004; BS, SDSU, 1977; MA, University of Iowa, 1984; PhD, 1987.

- Biesecker, Matthew J.**, Assistant Professor of Mathematics and Statistics, 2003; BS, California State University, 1994; MS, Utah State University, 1996; PhD, 2004.
- Binkley, Mark R.**, Academic Development Specialist and Instructor, General Studies, 1985; BS, SDSU, 1978, BS, 1987; MEd, 1986.
- Binkley, Teresa L.**, Research Technician, Martin Endowed Human Nutrition Program, 1998; BS, SDSU 1988; MST., 1997.
- Binstock, Greg**, Assistant Track and Field Coach, 2005; BA, Augustana, 1995; MS, Bemidji State University, 2005.
- Birch, Carol**, Instructor of Nursing, 1990; BSN., Loyola University, 1979; MS, Northern Illinois University, 1981.
- Bjordahl, Janet A.**, Assistant Professor of Chemistry and Biochemistry, 1990; BS, SDSU, 1973; PhD, 1999.
- Blackford, Carol M.**, Instructor of English, 2004; BA, SDSU, 1980; MA, 1984.
- Blackwell, Brian G.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 2001; BS, SDSU, 1990; MS, Texas A&M University, 1993; PhD, SDSU, 2001.
- Blaseg, Karyl**, Adjunct Instructor of Nursing, 2002, 2006; BA, Augustana, 1992; MS, Clarkson College, 1997.
- Bleakley, Bruce H.**, Professor of Biology and Microbiology, Graduate Faculty, 1991, 2003; BS, Michigan State University, 1978; MS, 1981; PhD, University of Florida, 1986.
- Bliss, Norman B.**, Adjunct Professor of Geography, 1994; BS, University of California, 1967; MS, University of Washington, 1970; PhD, University of Pennsylvania, 1978.
- Blodgett, Sue L.**, Professor and Head of Plant Science, 2007; BS, Syracuse University, 1974; MS, Cornell University, 1980; MS, Kansas State University, 1987; PhD, 1989.
- Bly, Anthony G.**, Research Associate II, Plant Science, 1990; BS, SDSU, 1988; MS, 1992.
- Bock, Mary K.**, Admissions Counselor/Writer, 2006; BA, College of Saint Thomas, 2005.
- Boe, Arvid A.**, Professor of Plant Science, Graduate Faculty, 1976, 1991; BA, Pacific Lutheran University, 1972; MA, University of South Dakota, 1976; PhD, SDSU, 1979.
- Bohn, Marlys**, Assistant Professor and Head, Nursing Student Services, 2005; A., North Dakota State University, 1986; BSN., Moorhead State University, 1988; MS, University of North Dakota, 1992. PhD, University of North Dakota, 2008.
- Bommisetty, Venkateswara R.**, Research Assistant Professor of Electrical Engineering, 2004; BS, Nagarjuna University, 1990; MS G. B. Pant University, 1993; D. Eng., Toyama University, 2001.
- Bonnemann, Howard**, Dairy Plant Manager and Instructor of Dairy Science, 1997; BS, SDSU, 1982; BS, 1987; MS, 1984.
- Bonvallet, Geoffrey A.**, Assistant Professor of Physics, 2005; BA, College of Wooster, 2000; MS, University of Wisconsin, 2002; PhD, 2005.
- Booher, James M.**, Head of Athletic Training and Professor of Health, Physical Education and Recreation, Graduate Faculty, 1967, 1983; BA, Nebraska Wesleyan University, 1965; MS, SDSU, 1969; PhD, University of Utah, 1976.
- Bortnem, Robin R.**, Research Associate II in Plant Science, 1985; BS, South Dakota State University, 1984; MS, 1989.
- Boulware, Jeffrey S.**, Associate Professor of Education and Counseling, 2002; BS, Montana State University, 1974; MS, Embry-Riddle Aeronautical University, 1987.
- Bowne, Mary**, Assistant Professor of Human Development, Consumer and Family Sciences, 2005;; BS, SDSU, 1999; MS, 2001; EdD, University of South Dakota, 2005.
- Bowyer, R. Terry**, Adjunct Professor of Wildlife and Fisheries, 2003; BS, Humboldt State University, 1970; MS, Humboldt State University, 1976; PhD, University of Michigan, 1985.
- Boysen, Roxann K.**, Instructor of Nursing, 1989; P.N., Worthington Community College, 1974; A.A., University of South Dakota, 1979; BS, SDSU, 1989; MS, 1995.
- Bradfeldt-Waring, Sara A.**, Adjunct Assistant Professor, Education and Counseling, 2003; BA, SDSU, 1990; MA, 2002; EdD University of South Dakota, 2006.
- Brandt, Bruce E.**, Professor of English, Graduate Faculty, 1979, 1989; BA, University of Denver, 1969; MA, 1971; PhD, Harvard University, 1977.
- Brandt, Kevin L.**, Manager of University Networking Systems and Services, 1999, 2005; BS, SDSU, 2001.
- Brawand, John E.**, Associate Professor of Music and Director of Orchestra, 1998, 2003; B.M., University of North Texas, 1978; M.M., 1980; D.MA, University of Texas, 1985.
- Brennan, Elizabeth A.**, Residence Hall Director, 2004; BA, Webster University, 2003.
- Brewster, James, T.**, Assistant Women's Basketball Coach, 2007, BA, Charleston Southern University, 1994.
- Briddick, Hande**, Assistant Professor of Education and Counseling, Graduate Faculty, 2002, 2004; BS, Middle East Technical University (Turkey), 1991; MS, Kent State University, 1995; PhD, 2004.
- Briddick, William C.**, Assistant Professor of Education and Counseling, Graduate Faculty, 2002, 2005; BA, Southern Illinois University, 1987; MEd, Vanderbilt University, 1989; PhD, Kent State University, 2005.
- Briese, Pamela**, Adjunct Assistant Professor of Chemistry and Biochemistry, 2004; BS, University of South Dakota, 1979; MS, 1996.
- Britzman, Darwin G.**, Adjunct Professor of Animal and Range Sciences, 1999; BS, SDSU, 1953; MS, University of Minnesota, 1962; PhD, SDSU, 1964.
- Britzman, Mark J.**, Professor of Education and Counseling, Graduate Faculty, 1987, 2004; BS, SDSU, 1982; MEd, 1984; EdD, University of South Dakota, 1987.
- Brokmeier, Susanne**, Instructor of Human Development, Consumer and Family Sciences, 2005; BS, Martin Luther College, 1987; MEd, SDSU, 2003.
- Brooks, April**, Professor of History, Graduate Faculty, 1993, 2002; BA, Hunter College, 1966; MA, Tulane University, 1968; PhD, 1974.
- Brooks, Teresa**, Adjunct Lecturer of Nursing, 2007; A.A., USD, 1980; BS, Mt. Marty College, 1990.
- Brost, Todd D.**, Instructor of Mathematics and Statistics, 1992; BS, SDSU, 1990; MS, 1993.
- Brown, Marilyn H.**, Instructor of English, 1985, 1993; BA, Ohio State University, 1964; BS, 1964; MA, 1968.
- Brown, Michael L.**, Professor of Wildlife and Fisheries Sciences, Graduate Faculty, 1994, 2003; BS, Arkansas Technical University, 1986; MS, Texas A&M University, 1989; PhD, 1993.
- Browning, Larry M.**, Professor of Physics, 1990, 2000; BS, Syracuse University, 1975; MS, Purdue University, 1980; PhD, 1984.
- Brozel, Volker**, Associate Professor of Biology and Microbiology, Graduate Faculty, 2003; BS, University of Stellenbosch (South Africa), 1986; MS, University of Pretoria (South Africa), 1990; PhD, 1993.
- Bruner, Eileen**, Instructor of Nursing, 1998; BSN., Mount Marty College, 1972; MS, SDSU, 2006.

- Bruns, Kelly W.**, Associate Professor of Animal and Range Sciences, Graduate Faculty 1995; BS, University of Nebraska, 1992; MS, Michigan State University, 1995; PhD, SDSU, 2001.
- Bubak, Jay**, Assistant Football Coach and Instructor of Health, Physical Education, and Recreation, 2005; BS, Nebraska Wesleyan University, 1993; MS, University of South Dakota, 1999.
- Bucher, Dawn**, Assistant Professor of Nursing, 2007; BS, SDSU, 1994; MS, SDSU, 2000; DrNP, Columbia University, 2007.
- Buck, Dorryl**, Adjunct Assistant Professor of Chemistry and Biochemistry, 2004; BS, University of Iowa, 1966; M.D., 1970.
- Bultman, Gail A.**, Coordinator of Outreach, Human Development, Consumer and Family Sciences, 2001, 2002; BS, Minnesota State University, 1989.
- Bunkers, Sandra**, Professor and Head of Graduate Nursing, 2004; BA, Augustana College, 1978; MS, SDSU, 1983; PhD, Loyola University, 1996.
- Burckhard, Suzette R.**, Associate Professor of Civil and Environmental Engineering, Graduate Faculty, 1997, 2002; BS, SDSU, 1986; MS, Kansas State University, 1992; MS, 1993; PhD, 1997.
- Burgers, Michael R.**, Coordinator of Development, Health, Physical Education, and Recreation, 2003; BS, SDSU, 1999; BS, University of Minnesota, 2000.
- Burns, Robert V.**, Distinguished Professor, Interim Head of History and Political Science, Dean of Honors College, Graduate Faculty, 1970, 1994; BS, SDSU, 1964; MA, University of Missouri, 1966; PhD, 1973.
- Burrows, Rhoda L.**, Associate Professor of Horticulture, Forestry, Landscape and Parks, 2001, 2006; A.A., Commercial College, 1979; BA, Montana State University, 1983; MS, University of Minnesota, 1987; PhD, 2001.
- Butler, III, Eugene**, Associate Professor of Biology and Microbiology, 2001; BS, University of California, 1973; PhD, 1978.
- Butler, Jack**, Adjunct Associate Professor of Biology and Microbiology, Graduate Faculty, 2001; BS, Southeastern Oklahoma State University, 1997; MS, North Dakota State University, 1983; PhD, Texas A&M University, 1986.
- Byer, Danielle**, Residence Hall Director, 2007; BS Augustana 2006; MS South Dakota State University, 2008
- Byrne, Vicki L.**, Adjunct Instructor of Human Development, Consumer and Family Sciences, 2003; BS SDSU, 1981; MS, 1992.
- Calhoon, Catherine C.**, Instructor of Nursing, 1991; BSN., Loretto Heights College, 1973; MS, University of Utah, 1977.
- Carlisle, Kristen M.**, Complex Director, 2004; BS, Bemidji State University, 2004; MS, SDSU, 2007.
- Carlson, C. Gregg**, Interim Associate Dean of Agriculture and Biological Sciences and Interim Director of CES, Professor of Plant Science, Graduate Faculty, 1974, 1994; BS, Western Illinois University, 1969; MS, SDSU, 1972; PhD, 1978.
- Caron, Matthew A.**, Research Assistant II in Plant Science, 2005; BS, SDSU, 2002.
- Carson, Paula P.**, Associate Professor of Nursing, Graduate Faculty, 1983, 1995; BS, SDSU, 1975; MSN., University of Minnesota, 1985; PhD, University of Arizona, 1992.
- Carter, Catherine D.**, Professor of Plant Science, Graduate Faculty, 1989, 2002; B.M.E., George Peabody College, 1971; BS, 1975; MS, 1976; PhD, University of Kentucky, 1982.
- Cartrette, David P.**, Assistant Professor of Chemistry and Biochemistry, Graduate Faculty, 2003; BA, North Carolina State University, 1992; BS, 1992; MS, Western Carolina University, 1997; PhD, Purdue University, 2003.
- Caspers-Graper, Mary**, Acquisitions Librarian/Professor, 1985, 1998; BA, Luther College, 1979; MA, University of Iowa, 1980; M.L.S., University of Arizona, 1985.
- Cassel, E. Kim**, Information Resource Management Specialist and Professor of Dairy Science, 1989, 2000; BS, Delaware Valley College, 1975; MS, Cornell University, 1978; PhD, 1983.
- Catangui, Michael A.**, Extension Entomologist/Associate Professor of Plant Science, Graduate Faculty, 1986, 2002; BS, University of the Philippines, 1982; MS, SDSU, 1987; PhD, University of Nebraska, 1992.
- Cech, Holly**, Adjunct Lecturer of Nursing, 2004; A.A., Dakota Wesleyan University, 1996; BS, SDSU, 2001.
- Cecil, Mathew**, Associate Professor of Journalism and Mass Communications, 2005, 2007; BS, SDSU, 1995; MA, Mankato State University, 1997; PhD, University of Iowa, 2000.
- Cempellin, Leda**, Assistant Professor of Visual Arts, 2006; Dottore in Lettere Moderne (Laurea), University of Padua, Italy, 1999; Dottore di Ricerca in Storia dell'Arte (PhD), University of Parma (Italy), 2004.
- Cervantes-Laurean, Daniel**, Assistant Professor of Chemistry and Biochemistry, 2004; BS, Universidad Michoacana de San Nicolas de Hidalgo (Mexico), 1985; PhD, North Texas State University, 1992.
- Chandler, Norma L Nusz.**, Instructor of Engineering Technology and Management, 2001; BS, S.D. School of Mines and Technology, 1982; MS, SDSU, 2005.
- Chang, Jiyul**, Postdoctoral Research Associate, GIS-Center of Excellence, 2003; BS, Yonsein University (Korea), 1988; MS, SDSU, 1997; PhD, 2002.
- Chase, Christopher**, Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty, 1992, 2001; D.V.M., Iowa State University, 1980; MS, University of Wisconsin, 1987; PhD, 1990.
- Chase, Thomas E.**, Associate Professor of Plant Science, Graduate Faculty, 1990, 1995; BS, State University of New York, 1979; PhD, University of Vermont, 1986.
- Chatterjee, Somenath**, Postdoctoral Research Associate, 2007. BS, Midnpur College, 1995; MS, Vidhyasagar University, 1997; PhD, I.I.T. – Kharagpur, 2004.
- Chavez, Russel S.**, Adjunct Military Instructor, 1999.
- Cheesbrough, Thomas M.**, Professor and Head of Biology and Microbiology, Graduate Faculty, 1990, 2000; BS, University of Wyoming, 1976; MS, 1978; PhD, Purdue University, 1982.
- Chen, Ding-Geng**, Associate Professor of Mathematics and Statistics, 2005; BS, Changsha University, 1981; MS, Hunan University, 1987; PhD, University of Guelph, 1995.
- Chevalier, Timothy J.**, Adjunct Instructor of Modern Languages, 2001; BA, Augustana College, 1982; MS, Western Maryland College, 1993.
- Chiggs, Steven R.**, Adjunct Associate Professor of Wildlife and Fisheries Sciences, Graduate Faculty, 1999; BS, Davis and Elkins College, 1990; MS, West Virginia University, 1992; PhD, University of Idaho, 1997.
- Christensen, Rhonda**, Adjunct Lecturer of Nursing, 2004; BSN., SDSU, 1999.
- Christiansen, Reggie**, Head Baseball Coach/Instructor, 2004; BA, Menlo College, 1998; MS, University of Kansas, 2004.
- Christianson, Steven**, Instructor of Engineering Technology and Management, 2007; BA University of Minnesota, BS SDSU, 1978.
- Christie, Jill**, Adjunct Lecturer in Nursing, 1990; BS, SDSU, 1976.

- Christopher-Hennings, Jane**, Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty, 1990, 2007; BS, University of Wisconsin, 1975; MS, 1990; D.V.M., University of Minnesota, 1983.
- Cissell, Marie A.**, Instructor of Nursing, 2002; BSN., SDSU, 1984; M.N., University of Mary, 1995.
- Clague, Carolyn L.**, Extension Youth Development/4-H Specialist/ Associate Professor of Extension, 1977, 2002; BA, SDSU, 1974; MEd, 1975; EdD, University of South Dakota, 2000.
- Clapper, Jeffrey A.**, Professor of Animal and Range Sciences, Graduate Faculty, 1997, 2007; BS, Ohio State University, 1982; MS, 1987; PhD, Purdue University, 1992.
- Clark, Marvin**, Manager of Classroom Technology Services, 1993, 2005; BA, SDSU, 1992; MEd, 2002.
- Clark, Randy**, Assistant Professor of Visual Arts, 2000; B.F.A., University of Utah, 1978; M.F.A., Utah State University, 2002.
- Clay, David E.**, Professor of Plant Science, Graduate Faculty, 1989, 2001; BS, University of Wisconsin, 1976; MS, University of Idaho, 1984; PhD, University of Minnesota, 1988.
- Clay, Sharon A.**, Professor of Plant Science, Graduate Faculty, 1989, 1998; BS, University of Wisconsin, 1977; MS, University of Idaho, 1982; PhD, University of Minnesota, 1986.
- Clayborne, Andre B.**, Adjunct Assistant Professor of Education and Counseling, 1991; BS, University of South Dakota, 1982; MEd, 1985; EdD, 1992.
- Clem, James**, Professor and Acting Head of Pharmacy Practice, Graduate Faculty, 1992, 2002; BS, University of Iowa, 1989; PharmD, 1991.
- Clouse, Robert**, Adjunct Assistant Professor of Aerospace Studies, 2005; BS, University of Idaho, 2000, M.S, Touro University International, 2007.
- Cochrane, Claudia V.**, Research Coordinator, 2006; BA, Centro Unificado de Ensino de Brasilia (Brazil), 1984; MA, Pennsylvania State University, 1996.
- Cochrane, Mark**, Senior Research Scientist of Geographic Information Science Center of Excellence/Professor, 2005; S.B.O., Massachusetts Institute of Technology, 1993; PhD, Pennsylvania State University, 1998.
- Cogswell, Kurt D.**, Professor and Head of Mathematics and Statistics Graduate Faculty, 1997, 2006; BS, Massachusetts Institute of Technology, 1978; MS, North Dakota State University, 1991; PhD, Northwestern University, 1996.
- Cole-Dai, Jihong**, Associate Professor of Chemistry and Biochemistry, Graduate Faculty, 2000; BS, University of Science and Technology of China, 1982; MS, University of Maryland, 1984; PhD, 1987.
- Conklin, Joshua K.**, Assistant Football Coach and Lecturer of Health Physical Education and Recreation, 2003; BS, Dakota State University, 2003.
- Converse, Barbara**, Extension Assistant, 2000; BS, SDSU, 1968.
- Coon, Heather**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2002.
- Cooley, Jerry E.**, Instructor of English and General Engineering, 1983; BS, SDSU, 1973; MA, 1986.
- Cooper, Joseph J.**, Complex Director, 2006; BS, Northern Michigan University, 2006.
- Coull, James R.**, Instructor of Music and Assistant Director of Bands, 1983, 1991; B.M.E., SDSU, 1980; MEd, 1985.
- Cowan, Cynthia**, Adjunct Lecturer of Nursing, 2006; Diploma in Nursing, St. John's School of Nursing, 1974; BS, Black Hills State University, 2002.
- Craig, Gloria P.**, Associate Professor of Nursing, Graduate Faculty, 1998, 2003; BSN., Buena Vista College, 1989; MSN., Drake University, 1993; Ed.S., 1996; EdD, 1997.
- Crandall, Connie J.**, Assistant Director of Operations and Administration, 1981, 2005; BS, Union College, 1975; MS, SDSU, 2002.
- Crawford, Kylene**, Adjunct Lecturer of Nursing, 2007; BSN, SDSU, 2006.
- Crawley, Ricky A.**, Associate Professor of Music, 1997, 2002; B.M.E., James Madison University, 1982; M.M., Michigan State University, 1984; PhD, Florida State University, 2001.
- Creal, Tim**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, Graduate Faculty, 2001; BS, Black Hills State University, 1978; MS, SDSU, 1990; Ed.S., University of South Dakota, 1994; EdD, 1996.
- Creer, Andrew R.**, Assistant Professor of Health, Physical Education, and Recreation, 2006; BS, Utah State University, 1998; MS, 2001; PhD, Ball State University, 2004.
- Crickard, Jennifer**, Director of Marketing and University Relations, 1994, 1998; BS, West Virginia University, 1981; MA, 1986.
- Croft, Tammy**, Adjunct Lecturer of Nursing, 2006; BSN, SDSU, 2001.
- Crowe, Don**, Professor of Music, 1995, 2004; B.M.E., Furman University, 1976; M.M., Florida State University, 1979; D.M.A., University of Arizona, 1994.
- Cumber, Carol J.**, Professor of Economics, Graduate Faculty, 1990, 2003; BA, North Dakota State University, 1979; M.B.A, 1984; PhD, SDSU, 1994.
- Cundy, Denise**, Instructor of Nursing, 2006; BS, Huron College, 2001; MS, SDSU, 2004.
- Cunningham, Deryl**, Assistant Men's Basketball Coach/Lecturer, 2007; BS, Kansas State University, 1994.
- Cutler, Kay Marie-Zenk**, Associate Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1997, 2002; BA, University of Minnesota, 1989; PhD, University of Texas, 1995.
- Dalaly, Basil**, Professor of Nutrition, Food Science, and Hospitality, 2004; B.S, University of Baghdad, 1965; MS, SDSU, 1967; PhD, University of Nebraska, 1970.
- Dalsted, Kevin J.**, Director of Engineering Resource Center, 1977, 1998; BS, North Dakota State University, 1974; MS, 1977.
- Daly, Angela**, Instructor of General Studies, 2006; BS, Saint Cloud State University, 1989; MA, University of South Dakota, 1994.
- Daly, Russell**, Assistant Professor of Veterinary Science and Extension Veterinarian, 2005; BS, SDSU, 1988; D.V.M, Iowa State University, 1990.
- Daniels, Ann M.**, Extension Family Life, Parenting & Child Care Specialist/Associate Professor of Human Development, Consumer and Family sciences, 1999, 2004; BS, University of Arkansas, 1988; MEd, 1990; PhD, Kansas State University, 1999.
- Danielson, Amy**, Complex Director, 2007; BS Bemidji State University, 2005.
- Danker, Kathleen A.**, Professor of English, Graduate Faculty, 1990, 2001; BA, University of Nebraska, 1971; MA, 1974; PhD, 1985.
- Dashiell, Kenton**, Adjunct Professor of Plant Science, Graduate Faculty, 2005; B.S, Purdue University, 1976; MS, Oklahoma State University, 1979; PhD, University of Florida, 1983.
- Davies, Gareth E.**, Assistant Professor of Pharmaceutical Sciences, Graduate Faculty, 2005; BS, University of Plymouth (United Kingdom), 1995; PhD, University of Cardiff (United Kingdom), 2000.
- Davis, Alan**, Professor of Education and Counseling, Graduate Faculty, 2005; BA, Western Washington University, 1978; M.R.C., University of Kentucky, 1980; PhD, Oregon State University, 1984.

- Davis, David E.**, Assistant Professor of Economics, Graduate Faculty, 2005; BSBA, University of South Dakota, 1993; MA, University of Oregon, 1998; PhD, 1998.
- Davis, Deena**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2005.
- Davis, Jack B.**, Area Management Specialist, Agricultural and Biological Sciences, 1994, 1999; BS, SDSU, 1982; A.A., Dakota Wesleyan University, 1988; M.B.A., University of South Dakota, 1989.
- De Boer, Delvin E.**, Professor of Civil and Environmental Engineering, Director of Water and Environmental Engineering Research Center, Graduate Faculty, 1978, 1997; BS, SDSU, 1978; MS, 1980; PhD, Iowa State University, 1990.
- De Haven, Rodney**, Coordinator and Head Coach, Cross-Country/Track, 2004; BS, SDSU, 1989.
- De Perno, Christopher S.**, Adjunct Assistant Professor of Wildlife and Fisheries, 2000; BS, Central Michigan University, 1990; MS, Purdue University, 1994; PhD, SDSU, 1998.
- DeBates, Debra A.**, Associate Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1991, 2004; BS, SDSU, 1974; MS, 1993; PhD, Iowa State University of Science and Technology, 1999.
- Delfanian, Fereidoon**, Professor of Mechanical Engineering, Graduate Faculty, 1979, 2001; BS, SDSU, 1977; MS, 1980; PhD, North Dakota State University, 1995.
- Delfinis, Teresa M.**, Coordinator of Student Services, College of Pharmacy, 1986, 2002, 2007; BS, SDSU, 1997; MS, 2004.
- Delzer, Michele M.**, Instructor of Nursing, 2001; BS, SDSU, 1993; MS, 2004.
- Deneke, Darrell L.**, IPM Coordinator, Plant Science, 1979, 1985; BS, SDSU, 1979.
- DeSchepper, Carol J.**, Adjunct Assistant Professor of Nursing, 1992, 1999; BS, Augustana College, 1970; MSN., Texas Women's University, 1976; M.H.A., University of Minnesota, 1989.
- DeWald, James D.**, Instructor of Electrical Engineering, 2001; BS, SDSU, 1982; BS, 1992; MS, 1994.
- DeWald, Jerry M.**, Instructor of Engineering Technology and Management, 2005; BS, SDSU, 1965; M.B.A., University of Saint Thomas, 1980.
- Dickinson, Bruce**, Assistant Professor of Nutrition, Food Science and Hospitality, 2007; BS, University of Northern Colorado, 1983; MBA, University of Sioux Falls, 1997; D.Ed., USD-Vermillion, 2003.
- Diddle-Hildebrandt, Laura D.**, Associate Professor of Music, 2003, 2007; B.M., Indiana University, 1989; MAT., 1991; PhD, University of South Carolina, 2005.
- Diersen, Matthew A.**, Risk and Business Management Specialist and Associate Professor of Economics, Graduate Faculty, 1999, 2004; BA, University of Minnesota, 1993; MS, North Dakota State University, 1995; PhD, University of Illinois, 1999.
- Dieter, Carla J.**, Associate Professor of Nursing and Family Nurse Practitioner, Student Health Services, Graduate Faculty, 1984, 2005; A., College of Saint Mary, 1975; BSN., University of Nebraska, 1978; MS, SDSU, 1989; EdD, University of South Dakota, 2001.
- Dieter, Charles**, Associate Professor of Biology and Microbiology, Graduate Faculty, 1987, 2005; BS, Concordia Teachers College, 1977; MS, SDSU, 1987; PhD, 1993.
- Digatono, Daniel T.**, Adjunct Assistant Professor of Education and Counseling, 2005; BS, University of Minnesota, 1978; M. North American Baptist Seminary, 1984; MS, St. Thomas University, 1988; PhD, Nova Southeastern University, 1997.
- Djira, Gemechis D.**, Assistant Professor of Statistics, 2007; BS, Addis Ababa University, 1990; MS, Addis Ababa University, 1994; MS, Limburgs Universitair Centrum, 2001; MS, Limburgs Universitair Centrum, 2002; PhD, University of Hannover, 2005.
- Donaway, Dianne**, Adjunct Lecturer of Nursing, 2005; A.S.N., Huron University, 1999; BSN., SDSU, 2004.
- Donovan, Kathleen**, Professor and Head of English, Graduate Faculty, 1994, 2000; BA, Spalding College, 1968; MA, University of Nebraska, 1988; PhD, University of Arizona, 1994.
- Doolittle, James J.**, Interim Director, North Central Sun Grant Center, Professor of Plant Science, Graduate Faculty, 1991, 2001; BS, Purdue University, 1982; MS, Texas A&M University, 1986; PhD, 1991.
- Doubkova, Marcela**, Geospatial Analyst, 2006; MA, University of Nebraska-Omaha, 2006.
- Douglas, C. D.**, Executive Director, TRiO, 1998, 2001; BA, Southwest State University, 1992; MS, SDSU, 1998.
- Drake, E. Gayle**, Academic Program Coordinator, Capital University Center, 2003; BA, Dakota Wesleyan University, 1988; MA, University of South Dakota, 1991.
- Drew, Anna**, Research Assistant, 2007; BS, SDSU, 1998.
- Droke, Elizabeth**, Associate Professor of Nutrition, Food Science and Hospitality, 2005; BS, University of Illinois, 1985; MS, Ohio State University, 1988; PhD, North Carolina State University, 1991.
- Du, Ding**, Assistant Professor of Economics, Graduate Faculty 2005; BS Shanxi Finance and Economics College, 1995; MA Nankai University, 1998; MA West Virginia University, 2001; PhD, 2003.
- Duan, Shanzhong**, Assistant Professor of Mechanical Engineering, 2004; BS, Kunming Institute of Technology, 1982; MS, Tianjin University, 1988; PhD, Rensselaer Polytechnic Institute, 1999.
- Dwivedi, Chandradhar**, Distinguished Professor and Head of Pharmaceutical Sciences, Graduate Faculty, 1987, 2000; BS, Gorakhpur University, 1964; MS, 1966; PhD, Lucknow University, 1972.
- Eide, Gerri A.**, Assistant State Supervisor in Education and Counseling, 1996, BS, SDSU, 1993; MS, 1997.
- Eide, Jennifer**, Lecturer/Horse Unit Manager, 2006; BS, SDSU, 1995.
- Eidenshink, Jeffery**, Adjunct Assistant Professor of Geography, 2002; BS, SDSU, 1973; MS, 1979; PhD, 2001.
- Eischen, Michelle R.**, Instructor of Visual Arts, 2004; B.F.A., The School of the Art Institute of Chicago, 1999; M.F.A., University of South Dakota, 2004.
- Ekeland, Mark O.**, Athletics Special Projects Coordinator, Intercollegiate Athletics, 1977, 2004; BA, Augustana College, 1973; MA, SDSU, 1978.
- Ekstrand, Renae J.**, Instructor of Human Development, Consumer, and Family Sciences, 2006; A.S., North Central Technical Institute, 1980; BS, Bemidji State University, 1986.
- Ellison, Susan**, Adjunct Professor of Chemistry and Biochemistry, 2003; BA, Concordia College, 1979; M.D., University of South Dakota, 1993.
- Ellingson, Wayne D.**, Instructor of Economics, 1980, 1984; BS, Iowa State University, 1970.
- Ellis, Andrew R.**, Instructor of Biology and Microbiology, 2001; BS, SDSU, 2001; MS, 2006.
- Ellsbury, Michael M.**, Adjunct Associate Professor of Plant Science, Graduate Faculty, 1992; BA, University of Colorado, 1970; MS, Colorado State University, 1974; PhD, University of Arizona, 1979.
- Elverson, Cynthia D.**, Assistant Professor of Nursing, NACC Coordinator, 1992, 2004; 2008; BS, University of Missouri, 1979; MS, University of California, 1986; PhD, University of Nebraska, 2007.

- Emmons, Patrick J.**, Assistant Professor of Civil and Environmental Engineering, 1991; BA, Winona State University, 1968; MS, Northern Arizona University, 1978.
- Emo, Kenneth R.**, Assistant Professor of Education and Counseling, 2005; BS, University of California, 1983; MEd, 1990; PhD, University of Colorado, 2005.
- Emo, Wendy**, Instructor of General Studies, 2007; BA, University of California, 1983; MEd, SDSU, 2006.
- Enander, Glen E.**, Instructor of Philosophy and Religion, 1994; BS, SDSU, 1993; MA, North American Baptist Seminary, 1998; MA, SDSU, 2003.
- Enevoldsen, Bernadine L.**, Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1964, 2001; BS, SDSU, 1964; MS, 1986; PhD, University of Minnesota, 1993.
- Enz, Molly K.**, Assistant Professor of Modern Languages, 2007; BA, Concordia College, 1996; MA 2000; PhD 2005.
- Erdman, Katherine**, Career Development Specialist and Assistant Professor of General Studies, 1994; BS, Mankato State University, 1989; MS, 1994; EdD, University of South Dakota, 2004.
- Erickson, Alan K.**, Professor of Veterinary Science, Graduate Faculty, 1990, 2004; BA, Minot State College, 1983; BA, 1984; PhD, North Dakota State University, 1989.
- Erickson, Bradley L.**, Coordinator of Intramurals, Head Men's and Women's Swimming and Diving Coach, and Assistant Professor, 1974, 1994; BS, SDSU, 1974; MS, 1975.
- Erickson, Christina**, Adjunct Lecturer of Nursing, 2005; BA, Gonzago University, 1985; BSN., SDSU, 2002.
- Erion, Ralph L.**, Professor of Education and Counseling, Graduate Faculty, 1985, 1996; BA, Inter American University, 1972; MAEd., 1975; PhD, Texas A&M University, 1985.
- Euliss, Jr., Ned H.**, Adjunct Associate Professor of Wildlife and Fisheries Sciences, 1997; BS, Appalachian State University, 1973; MS, Humboldt State University, 1984; PhD, Oregon State University, 1989.
- Even, Vilisa**, Adjunct Lecturer of Nursing, 2003; BS, SDSU, 1998.
- Evenson, Pamela M.**, Adjunct Instructor of Nutrition, Food Science and Hospitality, 2002; BA, Moorhead State University, 1979; BS, 1987; MS, SDSU, 2001.
- Eversgerd, Spring**, Instructor of Nursing, 2006; A.A., Kaskaskia Community College, 1996; BS, Southern Illinois University-Edwardsville, 1998; MS, 2000.
- Eynard, Anna**, Research Associate I, Plant Science, 1998; MS, 1983; PhD, 1994; PhD, SDSU, 2001.
- Ezenwoye, Onyeka**, Assistant Professor Software Engineering, 2007; B. Engr. University of Manchester, 2000; MS Florida International University, 2006; PhD, Florida International University, 2007.
- Fahmy, Hesham**, Associate Professor of Pharmaceutical Sciences, Graduate Faculty, 2004, 2007; BS, University of Alexandria (Egypt), 1987; MS, 1990; PhD, 1993.
- Fahrenwald, Nancy**, Coordinator of Nursing Research/Assistant Professor of Nursing, Graduate Faculty, 1995, 2006; BS, SDSU, 1983; MS, University of Portland, 1988; PhD, University of Nebraska, 2002.
- Fang, Ying**, Research Assistant Professor of Veterinary Science and Center for Infectious Disease Research and Vaccinology, Graduate Faculty, 2005; BS, Southwestern University, P. R. China, 1990; MS, Iowa State University, 1997; MS, South Dakota State University, 2000; PhD, South Dakota State University, 2004.
- Farrokh-Baroughi, Mahdi**, Assistant Professor of Electrical Engineering, 2007; BS, Iran University of Science and Technology, 1997; MS, Sharif University of Technology, 2000; PhD, University of Waterloo, 2006.
- Farver, Debra K.**, Professor of Pharmacy Practice, Graduate Faculty, 1983, 2000; PharmD, University of Nebraska, 1983.
- Fausti, Scott W.**, Professor of Economics, Graduate Faculty, 1991, 2001; BA, North Dakota State University, 1986; MS, University of Illinois, 1988; PhD, 1991.
- Fellner, Michael J.**, Assistant Professor of Education and Counseling, Rapid City Site, Graduate Faculty, 2001; BA, University of New York, 1967; MA, Temple University, 1969; PhD, University of Texas, 1973.
- Fennell, Anne**, Professor of Horticulture, Forestry, Landscape and Parks, Graduate Faculty, 1992, 2002; BS, Iowa State University, 1979; MS, University of Minnesota, 1982; PhD, 1985.
- Ferrell, Laurie Ann Troth**, Instructor of English, 2000; BA, SDSU, 1997; MA, 2002.
- Fiechtner, Helen**, Professor of Pharmacy Practice, 1991, 1998; BS, SDSU, 1976; PharmD, University of Texas, 1979.
- Fiedler, Doris R.**, Nursing Program Advisor and Lecturer of Nursing, 2003; BSN., Mount Marty College, 1998.
- Fiedler, Mary**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 1990.
- Finn, Lynne A.**, Assistant Director of Facilities and Services, 1987, 1997; BS, SDSU, 1993.
- Finnegan, Tamara**, Adjunct Lecturer of Nursing, 2005; BSN., SDSU, 1982.
- Fischer, Janet**, Professor of Pharmacy Practice, 1986, 1996; PharmD, Creighton University, 1986.
- Fisk, Joy**, Project Assistant, Martin Endowed Human Nutrition Program, 2000, 2006; BS, SDSU, 2000.
- Fixen, Paul E.**, Adjunct Associate Professor of Plant Science, 2000; BS, SDSU, 1975; MS, 1977; PhD, Colorado State University, 1979.
- Fjelland, Joyce E.**, Assistant Professor of Nursing, 1997, 2002; BSN., Augustana College, 1966; MS, University of Minnesota, 1989, PhD, University of Nebraska, 2007.
- Flint, Donna L**, Associate Professor of Mathematics and Statistics, 1999, 2004; A.A., Eastfield College, 1986; BA, University of Texas, 1992; MS, 1994; PhD, 1999.
- Flynn, M. L.**, Professor of English, Graduate Faculty, 1990, 2000; Ph.B., DePaul University, 1969; MA, University of Missouri, 1977; PhD, 1985.
- Fokken, Paul**, Assistant Professor of Health, Physical Education, and Recreation, 2004; BS, University of Iowa, 1989; MA, 1995; PhD, Indiana University, 2003.
- Foland, Kay L.**, Associate Professor of Nursing, Graduate Faculty, 1982, 1999; BS, SDSU, 1980; MSN., University of Nebraska, 1982; PhD, University of Texas, 1989.
- Forbes, Amy K.**, Instructor of Nursing, 2006; BSN., Augustana College, 2000, MS, SDSU, 2006.
- Forcella, Frank**, Adjunct Professor of Plant Science, 2003; MS, Montana State University, 1977; PhD, Oklahoma State University, 1979.
- Fosnight, Eugene**, Adjunct Associate Professor of Geography, 2004; BS, Purdue University, 1972; MS, University of Michigan, 1992; PhD, 2000.
- Foss, Lolita M.**, Associate Registrar, 2002; BA, Concordia College, 1992.
- Foss, Nancy**, Adjunct Instructor of Nursing, 1996; BS, Mt. Marty College, 1986; MS, SDSU, 1992; MS, 1994.
- Foster, Neal R.**, Manager of Seed Certification Division, 2005; BS, SDSU, 1998; MS, Kansas State University, 1994; PhD, Montana State University, 2003.
- Fouberg, Erin Hogan**, Adjunct Associate Professor of Geography, 2003; BS, Georgetown University, 1992; MA, University of Nebraska, 1993; PhD, 1997.

- Fourney, Robert S.**, Assistant Professor of Electrical Engineering, 2003; BS, Virginia Polytechnic Institute and State University, 1985; MS, University of Maryland, 1989; PhD, 2001.
- Fox, Elizabeth**, Circulation Librarian/Associate Professor, 1994, 2002; B.M.E., Lawrence University, 1987; M.L.S., University of Texas, 1991; MEd, SDSU, 1997.
- Francis, David H.**, Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty, 1978, 1988; BS, Brigham Young University, 1971; MS, 1974; PhD, University of Missouri, 1978.
- Franklin, Douglas R.**, Associate Professor of Economics, 1988, 1993; BA, University of New Mexico, 1975; MA, 1978; PhD, Utah State University, 1982.
- Frantz, Gary L.**, Assistant Professor of Nutrition, Food Science and Hospitality, Graduate Faculty, 2003; BS, University of Nebraska, 1982; MS, Kansas State University of Agriculture and Applied Sciences, 1986; PhD, University of Nebraska, 2003.
- Fredrickson, Leigh H.**, Adjunct Professor of Wildlife and Fisheries, 2002; BS, Iowa State University, 1961; MS, 1963; PhD, 1967.
- Fredrikson, Susan K.**, Career Development Specialist, 1994; BA, SDSU, 1975; MEd, 1979.
- Freese, Shelly**, Adjunct Lecturer of Nursing, 2007; BS, Si Tanka University, 2004.
- French, Bryan W.**, Adjunct Assistant Professor of Plant Science, 2000; BS, Oklahoma State University, 1981; MS, Brock University, 1986; PhD, Oklahoma State University, 1998.
- French, Jeannie K.**, Professor of Visual Arts, 1990, 1998; BA, University of Wisconsin, 1974; M.F.A., 1983; MS, SDSU, 1997.
- Frewaldt, Shannon**, Instructor of Visual Arts, 2007; BA, Augustana College, 1999; M.F.A. University of Iowa, 2002.
- Fruechte, Kari L.**, Character Counts Project Leader and Extension Associate, Family Youth Development/4-H, 2002; BS, Mankato State University, 1992; MS, University of Minnesota, 2000.
- Fuller, Billy W.**, Professor of Plant Science, Graduate Faculty, 1988, 2000; BS, Auburn University, 1976; MEd, Auburn University, 1978; MS, Clemson University, 1982; PhD, Louisiana State University, 1987.
- Fuller, Jill**, Adjunct Instructor of Nursing, 2001, 2006; BA, St. Olaf College, 1976; BS, Minot State University, 1979; MS, Brigham Young University, 1982; PhD, University of Utah, 1991.
- Funchion, Michael F.**, Professor of History, Graduate Faculty, 1973, 1983; BA, Iona College, 1966; MA, Loyola University, 1968; PhD, 1973.
- Furois, Michael E.**, Adjunct Assistant Professor of Education and Counseling, 2001; BS, Montana State University, 1990; MS, Arizona State University, 1995; PhD, University of Northern Colorado, 2000.
- Gaalswyk, Colin J.**, Senior Mechanical Engineer, Facilities and Services, 1998, 2002; BS, SDSU, 1994; MS, 2000.
- Gab, Orville**, Assistant Professor of Geography, 1985; BS, SDSU, 1975; MS, 1979.
- Galipeau, David W.**, Professor of Electrical Engineering, Graduate Faculty, 1992, 2001; B.E., University of Rhode Island, 1971; MS, University of Maine, 1989; PhD, 1992.
- Galster, Dwight H.**, Associate Professor of Mathematics and Statistics, Graduate Faculty, 2003, 2005; BA, Concordia College, 1984; BS, Mankato State University, 1990; MS, North Dakota State University, 1994; PhD, 2001.
- Gambill, Norman**, Professor and Head of Visual Arts, Graduate Faculty, 1992; BA, Emory University, 1962; MA, University of Iowa, 1966; PhD, Syracuse University, 1976.
- Gamradt, Kenneth A.**, Instructor of Computer Science, 1992; BS, SDSU, 1985; MS, 1992, MS, 1994.
- Garcia, Alvaro D.**, Extension Specialist and Associate Professor of Dairy Science, 2001, 2004; D.V.M., University of Uruguay, 1983; MS, University of Minnesota, 1987; PhD, 1997.
- Garry, Byron G.**, Associate Professor of Engineering Technology and Management and Coordinator of Electronics Engineering Technology Program, 1981, 2002; BS, SDSU, 1981; MS, 1988.
- Garst-Santos, Christine**, Instructor of Modern Languages, 1997; BA, Colorado State University, 1994; MA, 1997.
- Gates, Roger N.**, Associate Professor of Animal and Range Sciences/Extension Range Specialist, Graduate Faculty, 1978; BS, Muhlenberg College, 1974; MS, SDSU, 1978; PhD, University of Nebraska, 1985.
- Ge, Xijin**, Assistant Professor of Statistics, 2007; BS, Beijing University of Science and Technology, 1994; MS, 1997; PhD, The University of Tokyo, 2000.
- Gelderman, Ronald H.**, Manager of Soil Lab and Professor of Plant Science, Graduate Faculty, 1973, 1998; BS, SDSU, 1972; MS, 1976; PhD, University of North Dakota, 1987.
- Gengler, Mary**, Instructor, Nutrition, Food Science, and Hospitality, 2007; BS, SDSU, 1980; MS, SDSU, 2007.
- German, David R.**, Research Associate III, Water Resources Institute, 1986; BS, SDSU, 1975; MS, 1978.
- Gerwing, James R.**, Professor Emeritus of Plant Science, 1980, 2002; BS, University of Minnesota, 1975; MS, 1978.
- Getz, John E.**, Professor of Journalism and Mass Communication, 1985, 1999; BS, SDSU, 1964; MA, University of Arizona, 1985; EdD, University of South Dakota, 2001.
- Giago, Doris J.**, Associate Professor of Journalism and Mass Communication, 1992, 1998; BS, SDSU, 1989; MS, University of Kansas, 1992.
- Gibbons, Jeanette G.**, Instructor of Computer Science, 1987, 2000; BS, SDSU, 1984; BS, 1989; MS, 2003.
- Gibbons, William R.**, Professor of Biology and Microbiology, Graduate Faculty, 1980, 1997; BS, SDSU, 1980; BS, 1980; MS, 1982; PhD, 1987.
- Gibson, Susan A.**, Associate Professor of Biology and Microbiology, Graduate Faculty, 1993, 1999; BS, University of Oklahoma, 1974; MS, 1981; PhD, 1989.
- Gigliotti, Larry M.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 1993; BS, Pennsylvania State University, 1975; MS, Michigan State University, 1983; PhD, 1989.
- Gilkersin, III, David L.**, Project Engineer, Finance and Budget, 1997, 2002; BS, SDSU, 1976; MS, 1999.
- Gilkerson, Deanna S.**, Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1977, 2000; BS, SDSU, 1975; MS, University of Nebraska, 1978; PhD, Iowa State University, 1993.
- Gillman, Sally A.**, Assistant Professor of Human Development, Consumer and Family Sciences, 2003; BS, University of Vermont, 1974; MS, University of Illinois, 1994; PhD, 2003.
- Gilmanov, Tagir G.**, Associate Professor of Biology and Microbiology, Graduate Faculty, 1997, 2002; MS, Moscow State University (Russia), 1972; PhD, 1976.
- Giri, Chandra Prasad**, Adjunct Professor; B.Sc., Tribhuvan University (Nepal), 1985, 1987; M.Sc., Asian Institute of Technology (Bangkok), 1993; PhD, 1998.
- Gjernes, Brooke**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2004.

- Glover, Karl D.**, Associate Professor of Plant Science, Graduate Faculty, 2002, 2006; A.A.S., Iowa Lakes Community College, 1991; BS, SDSU, 1994; MS, 1996; PhD, Kansas State University of Agriculture and Applied Sciences, 2000.
- Goddard, Paula K.**, Instructor of Nursing, West River, 1996; BS, West Virginia University, 1972; MS, SDSU, 1989.
- Goertz-Koerner, Joellen**, Adjunct Assistant Professor of Nursing, 1985; BSN., Mount Marty College, 1977; MSN., SDSU, 1982; PhD, Fielding Institute, 1993.
- Gonda, Michael**, Assistant Professor, 2008; PhD, University of Wisconsin-Madison, 2006.
- Gonzalez, Jose L.**, Assistant Professor of Plant Science, 2006; BS, University of Navarra (Spain), 1991; Post Graduate, Mediterranean Agronomic Institute of Zaragoza, 1995; PhD, University of North Dakota, 2000.
- Gorham, Elizabeth E.**, Extension Family Resource Management Specialist and Associate Professor of Human Development, Consumer and Family Sciences, 1999, 2004; BS, Iowa State University, 1968; MS, Utah State University, 1971; PhD, Oregon State University, 1992.
- Grady, Kathleen A.**, Assistant Professor of Plant Science, 1980, 1991; BS, University of Illinois, 1978; MS, Iowa State University, 1980.
- Graeb, Brian D. S.**, Assistant Professor of Wildlife and Fisheries Sciences, Graduate Faculty, 2007; BS, Colorado State University, 1998; MS, University of Illinois, 2003; PhD, South Dakota State University, 2006.
- Graham, Tanya D.**, Associate Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory, 2000, 2004; BS, Oklahoma State University, 1991; D.V.M., 1994.
- Grahek, Diane**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, BA Business Admin., 1995, MS C & I, 2002.
- Granholt, Nels H.**, Distinguished Professor of Biology and Microbiology, Graduate Faculty, 1968, 1978; BA, University of Massachusetts, 1964; PhD, Iowa State University, 1968.
- Granbois, Connie L.**, Assistant Grants Administrator, 1997, 2000; BA, Dakota Wesleyan University, 1981.
- Graper, David F.**, Professor and Head of Horticulture, Forestry, Landscape and Parks, 1990, 2000; BS, University of Wisconsin, 1983; MS, Colorado State University, 1985; PhD, University of Maryland, 1990.
- Graves, Nicole A.**, Instructor of Human Development, Consumer and Family Sciences, 2000; BS, SDSU, 1997; MS, 2002.
- Greear, Kerry**, Adjunct Instructor of Nursing, West River Nursing, 1990; BS, SDSU, 1980; MSN., University of Texas, 1985.
- Green, Marci J.**, Research Associate II in Plant Science, 2006; BS, North Dakota State University, 1993; MS, 1999.
- Grenz, Micah J.**, Athletic Development Assistant, 2002; BS, SDSU, 2003.
- Greve, Ronald J.**, Assistant Director of Technical Services, 1973, 1993; BS, SDSU, 1969; MS, 1972.
- Gritzner, Charles F.**, Distinguished Professor of Geography, Graduate Faculty, 1980, 1995; BA, Arizona State University, 1958; MA, Louisiana State University, 1960; PhD, 1969.
- Gritzner, Janet H.**, Professor of Geography, Graduate Faculty, 1980, 1996; BA, University of Maryland, 1965; MA, 1970; PhD, Louisiana State University, 1978.
- Grives, Steven M.**, Assistant Professor of Music, Director of Choral Activities, 2003; BA, Bowdoin College, 1991; M.M., University of Maine, 1994; D.M.A., University of Colorado, 2000.
- Gu, Xingyou**, Assistant Professor of Plant Science, 2006; BS, Yangzhou University (China), 1985; PhD, South China Agricultural University (China), 1997.
- Guan, Xiangming**, Professor of Pharmaceutical Sciences, Coordinator of Graduate Studies, Graduate Faculty, 1995, 2005; BS, Zhejiang Medical University, 1982; MS, University of Kansas, 1988; PhD, 1991.
- Gustafson, Curtis O.**, Assistant Professor of Economics, 1989, 2003; BS, SDSU, 1976; M.P.A., University of South Dakota, 1986; EdD, 2004.
- Hacker, Patricia E.**, Professor of Health, Physical Education and Recreation, Graduate Faculty, 1991, 1995; B.Ed., Glenville State College, 1973; MS, West Virginia University, 1983; PhD, University of Wyoming, 1988.
- Haggerty, Kayte M.**, Retention Advisor, TRiO, 2006; BA, SDSU, 2003; MS, 2005.
- Haigh, Ronald H.**, Senior Livestock Superintendent, Animal and Range Sciences, 1979, 1990; BS, SDSU, 1974.
- Halaweish, Fathi T.**, Professor of Chemistry and Biochemistry, Graduate Faculty, 1995, 2007; BS, University of Mansoura (Egypt), 1976; MS, 1981; PhD, Institute of Science & Technology (United Kingdom), 1987.
- Haleta, Laurie L.**, Professor and Head of Communication Studies and Theatre, Graduate Faculty, 1977, 2001; BS, SDSU, 1977; MA, 1983; PhD, University of Nebraska, 1994.
- Hall, Lon A.**, Research Associate III, Plant Science, 1975, 2001; BS, SDSU, 1972; MS, 1990.
- Hall, Mary B.**, Adjunct Professor of Dairy Science, 2004; BS, Cornell University, 1982; MS, Virginia Polytechnic Institute, 1983; PhD, Cornell University, 1996.
- Hall, Robert G.**, Extension Specialist/Professor of Plant Science, 1982, 1994; BS, University of Idaho, 1969; MS, 1974; PhD, University of Missouri, 1978.
- Hall, Teresa J. K.**, Professor and Head of Engineering Technology and Management, Director of SDSU Product Development Center, Graduate Faculty, 2003; BA, University of Northern Iowa, 1989; MS, 1991; PhD, Iowa State University of Science and Technology, 1997.
- Hallman, Clark**, Head of Public Service/Reference Head/Professor, 1983, 1995; BS, University of Pittsburgh, 1971; M.L.S., 1977; MS, SDSU.
- Hamer, George H.**, Associate Professor of Computer Science, 1989, 1997; BS, North Dakota State University, 1980; MS, Moorhead State University, 1992; PhD, North Dakota State University, 2006.
- Hamer, Julie**, Financial Aid Counselor, 1993; BA, SDSU, 1992.
- Hansen, Daniel J.**, Assistant Professor of Pharmacy Practice, 2007; BS, SDSU, 2003; PharmD, 2005.
- Hansen, Matthew**, Co-Director of Geographic Information Sciences Center of Excellence/Professor, 2004; B.E., Auburn University, 1988; MA, University of North Carolina-Charlotte, 1993; MS, 1995; PhD, University of Maryland, 2002.
- Hansen, Stephanie A.**, Research Associate II, Plant Science, 1994; BS, SDSU, 1994; MS, 1996.
- Hanson, Dennis W.**, Research Assistant II, Wildlife and Fisheries, 1993; BS, SDSU, 1973.
- Hanson, Karla**, Instructor of Nursing, 2001; BSN., Mankato State University, 1983; MS, SDSU, 2005.
- Hanson, Margarita L.**, Instructor of Modern Languages, 2007; BA, Pennsylvania State University, 1993; MA, 2006.
- Hardin, Richard Cable**, Assistant Professor in Visual Arts; BS, James Madison University, 1995; M.F.A. Ohio University, 1999.

- Hardwidge, Philip**, Assistant Professor of Veterinary Science and Center for Infectious Disease Research and Vaccinology, Graduate Faculty, 2005; BS, University of Illinois, 1997; PhD, Mayo Clinic Graduate School, 2002; Postdoctoral Fellow, University of British Columbia, Canada, 2005.
- Harper, Ruth**, Professor of Education and Counseling, Graduate Faculty, 1994, 2003; BA, Cornell College, 1973; MEd., University of Wisconsin, 1977; PhD, Kansas State University, 1987.
- Harris, Mac R.**, Director of the Agricultural Heritage Museum, 2006; BS, Oklahoma State University, 1975; MA, 1975.
- Hartenhoff-Crooks, Nancy**, Coordinator of Disability Services, 2003, 2005; BS, SDSU, 1987; MS, 2003.
- Hassan, Ashraf Nasr Eldin**, Associate Professor of Dairy Science, Graduate Faculty, 2003, 2007; B.S, Alexandria University (Egypt), 1983; M.S, Minia University (Egypt), 1990; Ph.D, University of Georgia/Minia University (Egypt), 1997.
- Haug, Lynet**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2004.
- Haug, Mary**, Associate Professor of English, 1979, 2002; BA, SDSU, 1968; MA, 1976.
- Haug, Michael F.**, Instructor of English, 2003; BSE., Black Hills State University, 1971; MS, SDSU, 1973.
- Hauschild-Mork, Melissa**, Instructor of Health, Physical Education and Recreation, 1988; BS, SDSU, 1987; MS, Indiana University, 1988.
- Hawkins, Sarah**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2006.
- Hayungs, Lori L.**, Instructor of Human Development, Consumer and Family Sciences, 2001; BS, Iowa State University, 1992; MS, SDSU, 1997.
- He, Dong**, Bioimaging Research Associate, 2001, 2005; BS, Chenydu University (China), 1987; MS, SDSU, 1995.
- He, Hongshan**, Research Assistant Professor of Electrical Engineering, 2007; BS, Lanzhou University, 1990; MS, Lanzhou University, 1993; PhD Zhongshan University 1996.
- Heaton, Timothy A.**, Chief of University Police and Director of Campus Security, 1995, 1998; BA, Upper Iowa University, 1993.
- Hedge, Dennis**, Associate Dean of the College of Pharmacy, Professor of Pharmacy Practice, Graduate Faculty, 1992, 2002, 2007; PharmD, University of Kansas, 1991.
- Hefling, Joel L.**, Assistant Professor of Communication Studies and Theatre, 1970, 1978; BSE., Emporia State University, 1964; MS, 1970.
- Hegerfeld, Joan M.**, Extension Food Safety Specialist/Instructor, Nutrition, Food Science and Hospitality, 1994, 2002; BS, SDSU, 1980; B.S, Dakota Wesleyan University, 1981; M.S, SDSU, 1999.
- Hegg, Annie**, Assistant Professor of Pharmacy Practice, 2007; BS, SDSU, 2004; PharmD, 2006.
- Hegland, Jane E.**, Professor and Head of Apparel Merchandising and Interior Design, Graduate Faculty, 2001, 2006; BA, Saint Olaf College, 1985; MA, University of Minnesota, 1991; PhD, 1995.
- Heiberger, Gregory A.**, Pre-Health Professional Advisor, 2005, 2007; BS, 2004; MS SDSU, 2006.
- Heinle, Jeff T.**, Assistant Professor of Communication Studies and Theatre, 2003; BA, University of Wisconsin, 1987; M.A, University of New York, 1990; PhD, University of Wisconsin, 1999.
- Heins, Jodi R.**, Professor of Pharmacy Practice, Graduate Faculty, 1994, 2004; PharmD, University of Nebraska, 1993.
- Heinze, Benjamin K.**, Assistant Athletic Trainer/Instructor of Health, Physical Education and Recreation, 2003; BS, Winona State University, 1998; MS, SDSU, 2000.
- Held, Jeffrey E.**, Extension Sheep Specialist and Professor of Animal and Range Sciences, 1990, 2001; BS, University of Wisconsin, 1982; MS, University of Illinois, 1985; PhD, 1989.
- Helder, Dennis L.**, Professor and Head of Electrical Engineering and Computer Science, Director of Engineering Research, Graduate Faculty, 1983, 2003; BS, SDSU, 1979; BS, 1980; MS, 1985; PhD, North Dakota State University, 1991.
- Helgeland, David**, Professor of Pharmacy Practice, Graduate Faculty, 1989, 2006; BS, SDSU, 1974; M.BA, University of South Dakota, 1982; EdD, 2000.
- Heller, Barbara**, Administrative Assistant/Instructor, Entrepreneurial Studies Program, 2003; BS, SDSU, 2003; MS, 2004.
- Hellickson, Mylo A.**, Professor of Agricultural and Biosystems Engineering, Graduate Faculty, 1969, 1982; BS, North Dakota State University, 1964; MS, 1966; PhD, West Virginia University, 1969.
- Helmbolt, Shawn M.**, Admissions Counselor, 2002; BA, SDSU, 2002.
- Hendricks, Bernard D.**, CE Coordinator and Instructor of Pharmacy Practice, 1982, 1987; BS, SDSU, 1977.
- Hendrickx, Lori D.**, Associate Professor of Nursing, Graduate Nursing, 1998; BSN., University of North Dakota, 1981; MSN., University of Wisconsin, 1989; EdD, University of Montana, 1998.
- Henebry, Geoffrey M.**, Senior Research Scientist of Geographic Information Science Center of Excellence/Professor, 2005; BA, Saint John's College, 1982; MA, University of Texas- Dallas, 1986; PhD, 1989.
- Herbek, Gene N.**, Adjunct Associate Professor Chemistry and Biochemistry, 1991; B.S, University of Nebraska, 1972; M.D., 1975.
- Herman, Michael**, Professor and Head of Military Science, 2005; BS, Northland Regents College, 1995; MS, Touro University International, 2003.
- Heslep, Larry**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, BA Social Studies, 1967, MEd Educational Administration, 1983, EdD Educational Administration, 1995.
- Hesler, Louis S.**, Adjunct Associate Professor of Plant Science, Graduate Faculty, 1999; BS, Texas Christian University, 1984; MS, Texas A&M University, 1986; PhD, University of California, 1991.
- Hess, Donna J.**, Distinguished Professor and Head of Rural Sociology, Graduate Faculty, 1974, 1998; BA, Marquette University, 1965; MA, State University of New York, 1971; PhD, Michigan State University, 1974.
- Hesson, Margie**, Instructor of Nursing, 1991, BSN., Delta State University, 1986; MSN, University of Mississippi, 1990.
- Heylens, Kathy**, Assistant to the Athletic Director-Compliance, 1978, 1986; SDSU.
- Hietpas, Steven M.**, Professor of Electrical Engineering and Coordinator Electrical Engineering, Graduate Faculty, 1994, 2004; BS, Montana State University, 1984; MS, 1991; PhD, 1994.
- Hildreth, Michael**, Professor of Biology and Microbiology, Graduate Faculty, 1987, 1997; BA, Westmar College, 1977; PhD, Tulane University, 1983.
- Hilgers, Kimberly R.**, Instructor of Horticulture, Forestry, Landscape and Parks, 2006; BS, Iowa State University, 2003; MS, 2005.
- Hill, Kendra H.**, Instructor of Biology and Microbiology, 2004; BA, University of Delaware, MS, Johns Hopkins University, 1994.

- Hinde, E. Dennis**, Associate Professor of Journalism and Mass Communication, 1996, 2002; BA, California State University, 1967; MA, Texas Tech University, 1983; PhD, University of Southern Mississippi, 1999.
- Hippen, Arnold R.**, Professor of Dairy Science, Graduate Faculty, 1998, 2007; BS, Iowa State University, 1991; MS, 1996; PhD, 1997.
- Hirko, Ronald J.**, Assistant Professor of Chemistry and Biochemistry, 2003; BS, Kent State University, 1965; PhD, Utah State University, 1967.
- Hobbs, Barbara B.**, Associate Professor and Head of Nursing, West River, 1994, 2004; BSN., San Diego State University, 1970; MSN., California State University, 1991; PhD, University of Nebraska, 2004.
- Hoffman, Peggy**, Lecturer, 2003, 2007; BS, Clarkson College, 1995.
- Holland, Richard S.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 1998; BS, University of Nebraska, 1977; MS, 1980; PhD, 1987.
- Holler, Larry**, Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory and University Veterinarian, 1994, 2004; BS, Kansas State University, 1980; D.V.M., 1984; PhD, Washington State University, 1993.
- Holm, Richard P.**, Adjunct Assistant Professor of Nursing, 1982; BA, University of South Dakota, 1971; M.D., Emory University, 1978.
- Holm, Thomas**, Adjunct Assistant Professor of Geography, 2004; BS, SDSU, 1979; MS, 1982.
- Holmes, Lawrence W.**, Adjunct Instructor of Education and Counseling, 2004; BS, Moorhead State University, 1964; MS, 1980; Ed.S., 1987.
- Holmes, Robert A.**, Adjunct Instructor of Education and Counseling, Rapid City Site, Graduate Faculty, 2001; BA, University of New York, 1970; MSW., 1977.
- Holst, Betty**, Adjunct Instructor of Nursing, 2003; MSN., SDSU, 1981.
- Hood-Weaver, Bonnie**, Adjunct Assistant Professor of Education and Counseling, Graduate Faculty, 2000; BS, Castleton State College, 1967; MEd, University of New Hampshire, 1975; EdD, University of Massachusetts, 1986.
- Horner, Arlene J.**, Adjunct Instructor of Nursing, 1996; BA, Augustana College, 1976; MS, SDSU, 1995.
- Horsley, Gwen K.**, Instructor of English, 2002; BA, University of South Dakota, 1994; MA, 1997.
- Hostetler, Chris**, Assistant Professor, 2008, PhD, Washington State University, 2003.
- Hove, Jason M.**, Sports Information Director, 2006; BA, SDSU, 1996.
- Howard, Gregory B.**, Adjunct Assistant Professor of Education and Counseling, 1998, BA, University of Nebraska at Lincoln, 1979; MSW., University of Nebraska at Omaha, 1982; PhD, Texas Tech University, 1991.
- Howard, John E.**, Coordinator of Distance Education, 2005; BA, University of Wisconsin, 1975; MA, New Mexico State University, 1994.
- Hu, Zhong**, Associate Professor of Mechanical Engineering, Graduate Faculty, 2002, 2007; MS, Tsinghua University (China), 1983; PhD, 1988.
- Hubbard, Daniel E.**, Professor of Wildlife and Fisheries Sciences, Graduate Faculty, 1980, 2000; BS, Michigan State University, 1975; MS, SDSU, 1979; PhD, 1988.
- Hubert, Mindy Beth**, Range Livestock Research and Extension Associate, 2005; BS, SDSU, 1999; MS, 2001.
- Hublou, Lynn M.**, Instructor of English, 1995; BA, SDSU, 1979; MA, 1984.
- Huh, Yung Moo**, Assistant Professor of Physics, Graduate Faculty, 2002; BS, Myongji University (Korea), 1997; PhD, Iowa State University of Science and Technology, 2001; MS, 2002.
- Humburg, Daniel S.**, Professor of Agricultural and Biosystems Engineering, Graduate Faculty, 1985, 2005; BS, University of Wisconsin, 1982; MS, SDSU, 1987; PhD, University of Illinois, 1991.
- Humphrey, Joe**, Assistant Equestrian Coach, 2005; BS, Western Kentucky University, 2000; MS, 2002.
- Hunter, Daniel**, Adjunct Professor of Aerospace Studies, 2007, BS New Mexico University, 1999.
- Hunter, Rebecca J.**, Instructor of Mathematics and Statistics, 2001; BA, SDSU, 1999; MS, 2004.
- Hurley, Philip J.**, Assistant Swim Coach/Instructor, 2004; BA, Dickinson College, 1998.
- Ibrahim, Amir Mohamed Hussein**, Adjunct Associate Professor of Plant Science, Graduate Faculty, 2000, 2004; BS, 1991; MS, 1994; PhD, Colorado State University, 1998.
- Ihlen, Jada**, Adjunct Lecturer of Nursing, 2005; BSN., Minot State University, 1996.
- Ingemansen, Jack A.**, Manager/Foundation Seed Stocks, 1982, 1989; BS, SDSU, 1981, MS, 1985.
- Isham, D. Dean**, Associate Professor of Apparel Merchandising and Interior Design, 1995, 2001; B.U.S. Oklahoma State University, 1987; M.F.A., Winthrop University, 1995.
- Iverson, Angie P.**, Instructor of Modern Languages, 2005; BA, SDSU, 2004; MA, Middlebury College, 2005.
- Jahn, Teresa T.**, Instructor of Nursing, 2004; A.A., SDSU, 1977; BSN., Mount Marty College, 1983; MSN., University of Nebraska- Medical Center, 1993.
- Jackson, Jan J.**, Adjunct Professor of Plant Science, 2007; BS, South Dakota State University, 1972; MS, 1973; PhD, University of Minnesota, 1985.
- Jackson, Sherry**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, BS Nursing, 1974, MS Nursing, SDSU, 1997.
- James, Matthew R.**, Instructor of Horticulture, Forestry, Landscape, and Parks, 2003; B.S, SDSU, 2001; MS, 2002.
- Janssen, Larry L.**, Professor of Economics, Graduate Faculty, 1978, 1989; BS, University of Nebraska, 1971; MS, Oklahoma State University, 1974; PhD, University of Nebraska, 1978.
- Jenks, Jonathan A.**, Distinguished Professor of Wildlife and Fisheries Sciences, Graduate Faculty, 1991, 2006; A.A., Unity College, 1982; BS, 1984; MS, University of Maine, 1986; PhD, Oklahoma State University, 1991.
- Jensen Bender, Wendy S.**, Professor of Pharmacy Practice, 1996, 2006; BS, SDSU, 1993; PharmD, 1995.
- Jensen, Kent C.**, Associate Professor of Wildlife and Fisheries, Graduate Faculty, 2003, 2006; A.A., Fullerton Collete, 1979; BS, SDSU, 1985; MS, Montana State University, 1988; PhD, Texas A&M University, 1990.
- Jewel, Melody E.**, Assistant Professor of Chemistry and Biochemistry, 2004; BA, University of Minnesota, 1997; BS, 1997; MS, 1999; PhD, 2002.
- Joffer, Coral Lee**, Assistant Professor of Nursing, 1985; BS, SDSU, 1964; MS, University of Minnesota, 1969.
- Joffer, Patricia A.**, Associate Professor of Rural Sociology, 1992, 2005; BS, University of South Dakota, 1985; MA, 1987; PhD, SDSU, 1995.
- Johansen, Laurie**, Adjunct Lecturer of Nursing, 2004; A.A., University of South Dakota, 1995; BSN., SDSU, 2004.
- Johnson, Aaron**, Assistant Professor of Communication Studies & Theatre, 2007; BS University of Wisconsin, Whitewater, 2000; MA West Virginia University, 2001; EdD West Virginia University, 2004.

- Johnson, Annette M.**, Associate Professor of Pharmacy Practice, 2001, 2006; BS, SDSU, 1997; PharmD, 1999.
- Johnson, Carrie L.**, Financial Aid Counselor, 2003, 2004; BS, Dakota State University, 2003.
- Johnson, Debra K.**, Staff Counselor, Counseling Center, 2002; BS, University of Minnesota, 1979; MS, SDSU, 1988.
- Johnson, Delmar R.**, Director of Administrative and Research Computing, 1969, 1993; BS, 1969; MEd, 1991.
- Johnson, E. Janet**, Assistant Professor of General Studies, 1990, 2006; BA, Augustana College, 1969; MAEd., Virginia Polytechnic Institute and State University, 1980; MA, University of Iowa, 1988; EdD, University of South Dakota, 2003.
- Johnson, Patricia S.**, Professor of Animal and Range Sciences, Graduate Faculty, 1986, 1997; BA, Fort Lewis College, 1974; BS, 1975; MS, Utah State University, 1978; PhD, 1987.
- Johnson, Paul J.**, Professor of Plant Science, Graduate Faculty, 1993, 2002; BS, Oregon State University, 1982; MS, University of Idaho, 1987; PhD, University of Wisconsin, 1992.
- Johnson, Rex R.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 1996; BS, Ball State University, 1979; MS, Iowa State University, 1984; PhD, South Dakota State University, 1996.
- Johnson, Thomas J.**, Associate Professor of Pharmacy Practice, Graduate Faculty, 1998, 2003; PharmD, North Dakota State University, 1997.
- Johnson, W. Carter**, Distinguished Professor of Horticulture, Forestry, Landscape and Parks, Graduate Faculty, 1989, 2006; BS, Augustana College, 1968; PhD, North Dakota State University, 1971.
- Johnston, Aaron J.**, Head Women's Basketball Coach, Health, Physical Education and Recreation, 1997, 2000; BA, Gustavus Adolphus College, 1996.
- Johnston, Carol A.**, Professor of Biology/Microbiology, Graduate Faculty, 2003; BS, Cornell University, 1974; MS, University of Wisconsin, 1977; PhD, 1982.
- Johnston, Heidi**, Adjunct Lecturer of Nursing, 2007; A.A., USD, 2001; BS, SDSU, 2004.
- Jones, Allen L.**, Associate Professor of Civil and Environmental Engineering, Graduate Faculty, 2003, 2006; BS, University of Idaho, 1986; MS, 1988; PhD, University of Washington, 2003.
- Jones, Amy J.**, Engineer/Project Manager, Facilities and Services, 2003, 2006; BS, Purdue University, 1995; MS, Georgia Institute of Technology, 1997.
- Jones, Amy L.**, Assistant Professor of Nursing, Graduate Faculty, 1992; BS, SDSU, 1989; MS, SDSU, 1996; EdD, University of South Dakota, 2005.
- Julson, James L.**, Professor of Agricultural and Biosystems Engineering, Graduate Faculty, 1981, 2005; BS, SDSU, 1975; MS, 1977; PhD, University of Nebraska, 1998.
- Kahler, Alex L.**, Adjunct Professor of Plant Science, Graduate Faculty, 1980, 1985; A.A., Long Beach City College, 1963; BS, University of California, 1965; MS, 1967; PhD, 1973.
- Kallemeyn, Kendra**, Assistant Admissions Officer, 2006; BS, SDSU, 2006.
- Kalsbeck, Steven**, Research Associate II, Plant Science, 1997; BS, Dordt College, 1971; MS, SDSU, 1988.
- Kalscheur, Kenneth F.**, Associate Professor of Dairy Science, Graduate Faculty, 2000, 2006; BS, University of Wisconsin, 1990; MS, University of Maryland, 1996; PhD, 2002.
- Kampmann, Jennifer A.**, Instructor of Human Development, Consumer and Family Sciences, 2003; BS, SDSU, 2000; MS, 2003.
- Kappen, Carrie**, Adjunct Lecturer of Nursing, 2007; BS, Iowa State University, 1978; BA, Augustana, 2001.
- Karnopp, Adam R.**, Assistant Director of Student Union and Activities, 2001, 2005; BS, Northern State University, 1998; MS, 2001.
- Kattelmann, Kendra K.**, Professor of Nutrition, Food Science and Hospitality; Director, Didactic Program in Dietetics, 1997; Graduate Faculty, 1997, 2006; BS, SDSU, 1977; MS, University of Arkansas, 1984; PhD, University of Missouri, 1993.
- Kaushik, Radhey S.**, Assistant Professor of Biology and Microbiology, Graduate Faculty, 2003; BS, Haryana Agricultural University (India), 1985; MS, 1988; PhD, University of Saskatchewan (Canada), 1998.
- Kayongo-Male, Diane E.**, Professor of Rural Sociology, Graduate Faculty, 1985; BA, State University of New York, 1970; MA, Michigan State University, 1972; PhD, 1974.
- Kayongo-Male, Henry**, Professor of Biology and Microbiology, Graduate Faculty, 1986, 1995; BS, Makerere University (Uganda), 1969; MS, Michigan State University, 1972; PhD, 1974.
- Ke, Weiming**, Assistant Professor of Mathematics and Statistics, 2005; B.E., Beijing University, 1986; MS, Memphis State University, 2002; PhD, 2005.
- Keller, Michael A.**, Coordinator of Composition and Professor of English, Graduate Faculty, 1993, 2002; BA, Colorado State University, 1975; MA, University of Illinois at Chicago, 1981; PhD, 1993.
- Kelley, Van C.**, Associate Professor and Head of Agricultural and Biosystems Engineering, Director of Water Resources Institute, Graduate Faculty, 1978, 2000; BS, Texas A&M University, 1976; MS, New Mexico State University, 1978; PhD, University of Illinois, 1999.
- Kemmer, Teresa**, Assistant Professor of Nutrition, Food Science and Hospitality, 2007; BS, North Dakota State University, 1985; MSA, Central Michigan University, 1991; PhD, University of Washington, 2001.
- Kemp, Daniel C.**, Professor of Mathematics and Statistics, Graduate Faculty, 1976, 1986; BA, Knox College, 1963; MS, University of Arizona, 1967; PhD, Oklahoma State University, 1975.
- Keppord, Joyce**, Assistant Registrar, 1981, 2005; BS, SDSU, 2004.
- Kertz, Nancy K.**, Instructor of Graduate Nursing, 2005; A.S., Vincennes University, 1998; BSN., Indiana State University, 1993; M.N., 1997.
- Kervin, Michael**, Director of Residential Life, 2000, 2005; A.S., Lincoln Land Community College, 1977; BS, Eastern Illinois University, 1979; MS, 1981.
- Kieckhefer, Andrea**, Publications Editor, 2006; BS, SDSU, 1999.
- Kieffer, Pam I.**, Adjunct Instructor of Chemistry and Biochemistry, 2002; BS, SDSU, 1970; MS, 1973.
- Kightlinger, Lon**, Adjunct Assistant Professor of Biology and Microbiology, 2002; BA, Augustana College, 1977; PhD, University of North Carolina, 1993.
- Kimn, Jung-Han**, Assistant Professor of Mathematics, 2007; BA, Yonsei University, 1992; MS, Seoul University, 1994; PhD, New York University, 2001.
- Kindermann, Ross P.**, Professor of Mathematics and Statistics, Graduate Faculty, 1988, 1996; BA, Dartmouth College, 1972; MS, University of Illinois, 1974; PhD, 1978.
- Kirby, Jacquelyn A.**, Lab Coordinator/Lecturer of Nursing, 1991, 2008; BS, SDSU, 1989.

- Kirby, John D.**, Associate Dean and Director of Agricultural Experiment Station, Professor of Animal and Range Sciences, 2006; BS, University of Nebraska-Omaha, 1981; MS, 1982; PhD, Oregon State University, 1990.
- Kirby, September L., Wellness Assistant and Instructor of Health, Physical Education and Recreation, 1991, 2005; BS, SDSU, 1983; MS, 1994.
- Kistler, Scott**, Livestock Superintendent, Veterinary Science, 1988, 1995; BS, SDSU, 1981.
- Kjelden, Marlene**, Adjunct Lecturer of Nursing, 2000; A.A.S., Regents College of New York, 1995.
- Kjelden, Rebecca A.**, Instructor of General Studies, 2002; BS, SDSU, 2001; MS, 2001.
- Kjellsen, Michael**, Research Associate III, Wildlife and Fisheries Sciences, 1986; BS, SDSU, 1985; MS, 1985.
- Klaver, Robert W.**, Adjunct Assistant Professor of Wildlife and Fisheries, 2001; BS, Iowa State University, 1971; BS, University of Montana, 1974; MS, 1977; PhD, SDSU, 2001.
- Klawiter, Ruth A.**, Instructor of Nursing, 1996; BSN., Capital University, 1984; MS, SDSU, 2000.
- Klein, Nicole L.**, Professor of Economics, Graduate Faculty, 1997, 2006; BA, SDSU, 1990; MS, Kansas State University, 1994; PhD, 1996.
- Kleinjan, Jonathan L.**, Research Associate II, Plant Science, 2000; BS, SDSU, 1996; MS, 2002.
- Klinkefus, Rob**, Assistant Men's Basketball Coach, 2007; BA, Buena Vista University, 2000; MS, Drake University, 2005.
- Klock, Frank A.**, Assistant Professor of Journalism and Mass Communication, 1990, 2006; BS, SDSU, 1973; University of Nebraska, 2005, MA.
- Klumb, Robert A.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 2004; BS, University of Wisconsin; Milwaukee, 1990; MS, University of Wisconsin - Stevens Point, 1997; PhD, Cornell University, 2003.
- Knudsen, David E. B.**, Professor of Animal Disease Research and Diagnostic Laboratory, 2002, 2007; BS, Colorado State University, 1979; D.V.M., 1982.
- Korzeniewski, Lori**, Adjunct Lecturer of Nursing, 2005; BS, SDSU, 1997.
- Kraljic, Mary B.**, Reference, Distance Librarian/ Professor, 1991, 2003; BS, Saint Cloud State University, 1980; MA, University of Texas, 1984; M.L.S., Texas Woman's University, 1989.
- Kriech, Linda R.**, Adjunct Lecturer, Nursing, 1994; BS, SDSU, 1993.
- Krishnan, Padmanaban G.**, Professor of Nutrition, Food Science and Hospitality, Graduate Faculty, 1988, 2000; BS, University of Madras (India), 1977; MS, North Dakota State University, 1983; PhD, 1989.
- Kropenske, Linda L.**, Associate Professor of Undergraduate Nursing, 2005; BA, Elmhurst College, 1976; MS, Saint Xavier College, 1980; EdD, University of South Dakota, 1989.
- Krueger, Jerome A.**, Associate Professor of Biology and Microbiology, Graduate Faculty 2005, 2007; BS, University of Minnesota, 1983; MS, University of Michigan, 1985; PhD, University of Minnesota, 2002.
- Kruit, Jane E.**, Associate Controller, Finance and Budget, 1982, 1993; BS, Dakota State University, 1977.
- Kruse, Heather R.**, Assistant Professor of Pharmacy Practice, 2003; BS, SDSU, 1996; PharmD, 1998.
- Kuebler, Michelle**, Assistant Director of Admissions, 1994; BS, SDSU, 1994.
- Kurtenbach, Kami L.**, Instructor of General Studies, 2001; BS, SDSU, 1986; MEd, 1987.
- Kurtenbach, Paula L.**, Instructor of Computer Science, 2005; BS, SDSU, 1985; BS, 1994; MS, 2002.
- Kurtz, Jeri V.**, Director of Institutional Research, Finance and Budget, 1987, 1996; BS, SDSU, 1970; MST., 1991; EdD, University of South Dakota, 2001.
- Kurtz, Rachel M.**, Adjunct Assistant Professor of Geography, 2004; BS, SDSU, 1996; MS, University of Tennessee, 1999; PhD, Pennsylvania State University, 2003.
- Kutscher, Eric C.**, Associate Professor of Pharmacy Practice, 2002, 2007; PharmD, University of Iowa, 2001.
- Ladonski, James B.**, Instructor of Biology, 2006; BS, Michigan State University, 1995; Southern Illinois University, 1999.
- Laible, Brad R.**, Assistant Professor of Pharmacy Practice, 2004; BS, SDSU, 1999; PharmD, 2001.
- Lais, Karla**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2002.
- Lammers, Cristina R.**, Associate Professor of Nursing, Graduate Faculty, 2001; M.D., University of Uruguay, 1984; M.P.H., University of Minnesota, 1997.
- Lampson, Joyce M.**, Assistant Professor of Communication Studies and Theatre, 1978, 1995; BA, SDSU, 1971; MA, University of South Dakota, 1972.
- Landes, Daniel W.**, Assistant Dean of Arts and Sciences, 2003; BS, Minot State College, 1973; MS, Bemidji State University, 1979; PhD, University of North Dakota, 1982.
- Landmark, Shari**, Wellness Center Coordinator, 2000; BS, SDSU, 1999; MS, 2004.
- Lane, Joanna**, Head Softball Coach, 2007; BA, Georgetown College, 2002; MS, Florida State University, 2003.
- Lane, Kari R.**, Instructor of Nursing, 2003; BSN., Drake University, 1996; MSN., 2002.
- Langelett, George L.**, Associate Professor of Economics, Graduate Faculty, 2002, 2006; BS, Northwestern Lutheran Theology Seminary, 1991; PhD, University of Nebraska, 2000.
- Langham, Marie A. C.**, Professor of Plant Science, Graduate Faculty, 1991, 2001; BS, East Texas State University, 1975; MS, 1977; PhD, Texas A&M University, 1986.
- Larsen, Jay**, Director of Financial Aid, 1980; BS, Mankato State University, 1972; MEd, SDSU, 1981.
- Larson, Betty J.**, Instructor of Mathematics and Statistics, 1981, 2000; BA, Arizona State University, 1959; MA, California State Polytechnic University, 1965.
- Larson, Christine L.**, Professor of Mathematics and Statistics, Graduate Faculty, 1992, 2006; BA, Augustana College, 1985; MS, Montana State University, 1987; EdD, 1996.
- Larson, Gary E.**, Professor of Biology and Microbiology, Graduate Faculty, 1979, 1989; BS, Kearney State College, 1972; PhD, North Dakota State University, 1980.
- Laubach, Matthew S.**, Manager, Dairy Research and Training Facility/Lecturer, 2007; BS, North Dakota State University, 1999; MS, North Dakota State University, 2007.
- Law, David A.**, Project Manager/Engineer, Facilities and Services, 2000; BS, SDSU, 1998.
- Law, Margo H.**, Instructor of Mathematics and Statistics, 2005; BSE., Minot State College, 1993; MS, University of North Dakota, 1995.
- Lea, Clark**, Assistant Football Coach Instructor, 2007; B.A, Vanderbilt University, 2004; MS, Vanderbilt University, 2007.
- Lee, Lisa**, Adjunct Lecturer of Nursing, 2005; BSN., SDSU, 2002.
- Lee, MaryJo B.**, Engineering Diversity Coordinator, 1982; BS, University of Maryland, 1975; MA, 1976; PhD, SDSU, 1998.

- Lee, Steve C.**, Associate Professor of Pharmacy Practice, 2001, 2006; BS, SDSU, 1988; PharmD, Creighton University, 2000.
- Lehman, Chadwick P.**, Adjunct Assistant Professor of Wildlife and Fisheries, 2005; BS, University of Minnesota, 1994; MS, SDSU, 1998; PhD, 2005.
- Lehman, Michael**, Adjunct Assistant Professor of Plant Science, 2004; BA, University of Colorado, 1983; MS, University of Virginia, 1991; PhD, Idaho State University, 2000.
- Leiferman, Deborah L.**, Instructor of Mathematics and Statistics, 2001; BS, Northern State University, 1980; BS, SDSU, 1984; MS, 1989.
- Leigh, Jr., Larry M.**, Imaging Engineer, Physics, 2002; BS, SDSU, 1998.
- Lemon, Michael D.**, Associate Professor of Pharmacy Practice, 1997, 2003; A.S., Colby Community College, 1990; PharmD, University of Kansas, 1994.
- Lenertz, Kristin**, Instructor of Biology/Microbiology, 2006; BS, Jacksonville University, 1996; MS, Auburn University, 2002.
- Leslie, Jr., David M.**, Adjunct Professor of Wildlife and Fisheries Sciences, 2002; BS, Prescott College, 1971; MS, University of Nevada, 1977; PhD, Oregon State University, 1982.
- Leslie-Steen, Pamela F.**, Assistant Professor, Animal Disease Research and Diagnostic Lab, 1973, 1992; BS, SDSU, 1972; MS, 1975.
- Li, Feng**, Associate Professor of Veterinary Science and Center for Infectious Disease Research and Vaccinology, 2005; B.V.Sc., Laiyang Agricultural College, China, 1985; M.V.Sc., Chinese Academy of Agricultural Sciences, China, 1988; PhD, University of Melbourne, Australia, 1997.
- Lichty, Melodie L.**, Manager of Information Technology Services, 1985, 2005; BS, SDSU, 1984; MS, 1989; PhD, 1993.
- Liles, Jason**, Head Wrestling Coach/Instructor, Intercollegiate Athletics, 1993; BS, Bowling Green State University, 1979; MEd, Miami University, 1982.
- Lim, Sunho**, Assistant Professor of Software Engineering, 2005; BS, Hankuk Aviation University (Korea), 1996; MS, 1998; PhD, Pennsylvania State University, 2005.
- Lindell, Lisa R.**, Catalog Librarian/Professor, 1990, 2003; BA, Augustana College, 1987; M.L.S., University of Wisconsin, 1988; MA, SDSU, 1993.
- Lindstrom, Michael J.**, Adjunct Associate Professor of Plant Science, 1982; BS, University of Idaho, 1965; MS, 1967; PhD, Washington State University, 1973.
- Lindzey, Frederick G.**, Adjunct Associate Professor of Wildlife and Fisheries Sciences, 2000; BS, Texas A&M University, 1968; MS, Utah State University, 1971; PhD, Oregon State University, 1976.
- Lis, Anthony S.**, Professor of Music and Composer in Residence, 1987, 1999; [B.M.], University of Oklahoma, 1979; M.M., University of Cincinnati, 1981; D.M.A, 1985.
- Liu, Yi**, Assistant Professor of Software Engineering, 2005; MS, 1998; PhD, University of Mississippi, 2005.
- Lochridge, Angela**, Adjunct Lecturer of Nursing, 2005; BSN., SDSU, 1997.
- Logue, Brian A.**, Assistant Professor of Chemistry and Biochemistry, 2004; BS, SDSU, 1995; PhD, Oregon State University, 2001.
- Longieliere, Darwin G.**, Internal Auditor, Finance and Budget, 1984; BA, Yankton College, 1973.
- Lonowski, Delmer E.**, Professor of Political Science, 1991, 2001; BA, George Washington University, 1968; MAEd., University of Nebraska, 1986; MA, 1988; PhD, 1991.
- Looby, Peter**, Adjunct Professor of Health, Physical Education, and Recreation, 2004; BS, Stanford University, 1986; M.D., Washington University, 1990.
- Lord, Janet E.**, Professor and Head Undergraduate Nursing, Graduate Faculty, 2003; BSN., University of Nebraska, 1974; M.N., University of Texas, 1977; PhD, 1982.
- Loveland, Thomas R.**, Adjunct Professor of Geography, Graduate Faculty, 1994; BS, SDSU, 1974; MS, 1976; PhD, University of California, 1999.
- Lu, Huitian**, Professor of Engineering Technology and Management, Coordinator of Applied Research and Graduate Industrial Management Program, Graduate Faculty, 1999, 2005; BS, 1982; MS, 1986; MS, Texas Technical University, 1992; PhD, 1998.
- Lubeck, Paula**, Adjunct Lecturer of Nursing, 2004; BS, University of Nebraska, 1992; BSN., 1995.
- Lundgren, Dennis R.**, Manager of Print Lab, 1977, 1983; BS, SDSU, 1969; MS, 1971.
- Lundgren, Jonathan G.**, Adjunct Assistant Professor of Plant Science, Graduate Faculty, 2005; BS, University of Minnesota, 1998, MS, 2000; PhD., University of Illinois, 2003.
- Lutz, Zachary R.**, Business Manager, Student Union and Activities, 2004; BS, SDSU, 2002; MS, 2004.
- Lyons, Nancy N.**, Professor of Apparel Merchandising and Interior Design, Graduate Faculty, 1977, 2004; BS, North Dakota State University, 1974; MS, 1997; EdD, University of South Dakota, 2001.
- Lyons, Patrick A.**, Professor of Economics, 1975, 1984; BS, SDSU, 1969; M.B.A., University of South Dakota, 1970; J.D., 1974.
- Maca, Martin**, Professor of Horticulture, Forestry, Landscape and Parks, 1992, 2003; BS, Utah State University, 1968; MS, 1984.
- Madsen, Lisa J.**, Instructor of English, 2001; BA, SDSU, 1995; MA, 1998.
- Madsen, Sara K.**, Assistant Professor of Chemistry and Biochemistry, 2003; BA, Central Washington University, 1988; PhD, University of Wyoming, 1998.
- Mahgoub, Hesham**, Assistant Professor of Civil and Environmental Engineering, 2006; BS, Cairo University (Egypt) , 1988; MS, 1990; PhD, 1994.
- Mahlum, Keith A.**, Assistant to Athletic Director for Athletic Development, Intercollegiate Athletics, 1991, 2003; BS, University of Wisconsin, 1991; MS, SDSU, 1992.
- Malecki, Marek**, Associate Professor of Pharmaceutical Sciences, 2007; M.D., Medical Academy, Poznan (Poland), 1976; PhD, Polish Academy of Sciences, Warsaw (Poland), 1982.
- Malo, Douglas D.**, Distinguished Professor of Plant Science, Graduate Faculty, 1975, 1999; BS, Iowa State University, 1971; MS, North Dakota State University, 1974; PhD, 1975.
- Malsom, Beth J.**, Safety and Health Consultant, Engineering Extension, 2006; BS SDSU, 2004.
- Mann, Colleen N.**, Assistant Professor of Nursing, 1992, 1993; BSN., Mount Marty College, 1985; MS, SDSU, 1993.
- Manning, James D.**, Program Director of Engineering Extension, 1981; BS, SDSU, 1972; BS, 1980; MS, 1985.
- Manzer, Jeanne Jones**, News Editor, University Relations, 2006; BA, Iowa State University, 1974; MA, SDSU, 1990.
- Manson, Mary J.**, Adjunct Instructor of Nursing, 2003; BS, SDSU, 1978; MS, 1993.

- Marshall, Donald M.**, Associate Dean and Director of Academic Programs, College of Agriculture and Biological Sciences, Professor of Animal and Range Sciences, Graduate Faculty, 1984, 2002; BS, University of Missouri, 1979; MS, Oklahoma State University, 1981; PhD, 1984.
- Marshall, Nancy J.**, Documents Librarian/Professor, Graduate Faculty, 1993, 2007; BA, University of Wisconsin, 1991; M.L.S., 1993; MS, SDSU, 1998.
- Martin, Rebecca**, Assistant Professor of Psychology, 2004; BS, Michigan State University, 1996; MA, University of Connecticut, 2002; PhD, 2004.
- Mathews, David A.**, Instructor of Engineering Technology and Management, 2000; BS, Southwest Missouri State University, 1970.
- Mathiason, Katherine L.**, Research Assistant II, Horticulture, Forestry, Landscape and Parks, 1999; BS, SDSU, 1999.
- Matt, Tonya**, Instructor of Nursing, 2007; A.A., USD, 1978, BS, University of Nebraska, 1991; MS, SDSU, 1993.
- Matthees, Duane**, Professor of Veterinary Science - Olson Biochemistry Laboratory, Graduate Faculty, 1980, 1991; BA Augsburg College, 1972; PhD, University of Maryland, 1978.
- Matzner, Steven L.**, Adjunct Assistant Professor of Biology and Microbiology, 2002; BA, Augustana College, 1990; MS, University of California, 1994; PhD, 1999.
- Maurer, Rebecca J.**, Instructor of Nursing, 1995; BSN., University of Dubuque, 1979; MSN., 1987.
- Maxson-Stein, Kimberly L.**, Research/Extension Associate/Manager, 2004; MS, Michigan State University, 2000.
- May, Alan R.**, Area Marketing Specialist, Agricultural and Biological Sciences, 1979, 1999; BS, SDSU, 1978.
- McFarland, Douglas C.**, Distinguished Professor of Animal and Range Sciences, Graduate Faculty, 1986, 1997; BA, Southern Connecticut State College, 1971; MS, Washington State University, 1975; PhD, 1984.
- McKinney, Jimmy R.**, Professor of Music and Director of Bands, 1975, 1991; B.M.E., Oklahoma State University, 1971; MEd, University of Arkansas, 1972.
- McCoy, Donald D.**, Adjunct Instructor of Psychology, 2004; BS, SDSU, 1986; MS, Kansas State University, 1988.
- McCurry, Michael W.**, Extension Specialist, 2000, 2006; BS, Montana State University, 1976; MEd, Northern Montana College, 1992.
- McCutcheon, Terry**, Rodeo Coach and Instructor, Agriculture and Biological Sciences, 1999; BS, Murray State University, 1981; MS, 1985.
- McDaniel, Philip J.**, Assistant Volleyball Coach and Instructor of Health Physical Education and Recreation, 2005; BS, Culver-Stockton College, 1996; MS, University of Wisconsin, 1998.
- McEntee, Jason T.**, Assistant Professor of English, 1996; BA, SDSU, 1994; MA, 1998; PhD, University of Kentucky, 2004.
- McGahey, Peter**, Assistant Women's Soccer Coach/Instructor, 2007; BA, University of Denver, 1996; BA, Metropolitan State College of Denver, 1999; MA, Ball State University, 2005.
- McGee, Megan**, Head Women's Equestrian Coach, 2004; B.S, California Polytechnic State University, 1985.
- McManus, Bradley**, Research Associate I in Plant Science, 2000; BS, SDSU, 1991.
- McTaggart, Robert**, Assistant Professor of Physics, 2004; BA, West Virginia University, 1991; BS, 1991; PhD, Pennsylvania State University, 1999.
- Meadows, Luke R.**, Assistant Football Coach/Lecturer, of Health, Physical Education, and Recreation, 1999; BS, SDSU, 1999.
- Melby, Lynette**, Adjunct Lecturer of Nursing, 2007; A.A. USD, 2005; BS, SDSU, 2007.
- Melum, Laurie A.**, Assistant Women's Basketball Coach and Lecturer of Health, Physical Education and Recreation, 2000; BA, Augustana College, 1998.
- Mendelsohn, Robert D.**, Professor of Rural Sociology, Graduate Faculty, 1976, 1986; BS, Illinois State University, 1967; MS, Western Michigan University, 1971; PhD, 1973.
- Mennenga, Heidi**, Instructor, 2004; BSN., SDSU, 2001; MS, 2006.
- Messerschmidt, Kimberly**, Professor of Pharmacy Practice, Graduate Faculty, 1995, 2005; BS, SDSU, 1985; PharmD, 1995.
- Mettler, Cory J.**, Instructor of Electrical Engineering, 2002; BS, SDSU, 2002; MS, 2005.
- Metzger, Lloyd E.**, Associate Professor and Alfred Chair in Dairy Education, Graduate Faculty, 2007; BS, SDSU, 1992; MS, 1994; PhD, Cornell University, 1999.
- Meyer, Gloria**, Adjunct Lecturer of Nursing, 2003; BA, Augustana College, 1992.
- Micijevic, Ana**, Research Associate I in Plant Science, 2006; BS, University of Zagreb (Croatia), 1991; MS, South Dakota State University, 2002.
- Miller, Matthew L.**, Associate Professor of Chemistry and Biochemistry, Graduate Faculty, 2001, 2007; BS, University of South Dakota, 1985; MS, Purdue University, 1998; PhD, 2001.
- Millett, Bruce V.**, Assistant Professor of Geography, 1996; BS, University of New Hampshire, 1995; MS, SDSU, 1999; PhD, 2004.
- Min, Manki**, Assistant Professor of Computer Science, 2006; B.S, Seoul National University, 1997; MS, 1999; PhD, University of Minnesota, 2004.
- Mincks, William R.**, Assistant Professor of Engineering Technology and Management, 2006; BS, Washington State University, 1971; MA, University of Idaho, 1989.
- Minton, Mary**, Assistant Professor of Nursing, 2007; BA, Augustana, 1979; MS, University of Michigan, 1984; PhD, University of Nebraska, 2007.
- Miskimins, Dale W.**, Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory, 1991, 2002; D.V.M., Iowa State University, 1978; MS, 1984.
- Mistry, Vikram V.**, Professor and Head of Dairy Science, Graduate Faculty, 1986, 2002; BS, Gujarat Agricultural University, 1979; MS, Cornell University, 1982; PhD, 1986.
- Mitchell, Scott L.**, Admissions Counselor, 2006; BS, SDSU, 2004.
- Mix, Vickie L.**, Reference Librarian/Assistant Professor, Library, 1992, 2003; BA, SDSU, 1978; M.L.S., University of North Texas, 2003; M.E.D., SDSU, 2005.
- Moe, Nathan A.**, Head Strength and Conditioning Coach, 2005; BS, Moorhead State University, 1996; MEd, University of Texas, 1998.
- Moechnig, Michael J.**, Assistant Professor of Plant Science and Extension Agronomist, 2005; BS, University of Wisconsin, 1997; MS, 2003; PhD, 2004.
- Moeller, Lonell L.**, Professor and Acting Head of Teacher Education, Graduate Faculty, 1981, 1991; BS, SDSU, 1970; MEd, 1976; PhD, Iowa State University, 1981.
- Moldenhauer, William C.**, Adjunct Professor of Plant Science, 1991; BS, SDSU, 1949; MS, University of Wisconsin, 1951; PhD, 1956.
- Monnens, Michael**, Safety and Health Consultant, Engineering Extension, 1993, 1995; BS, SDSU, 1993; MS, 2000.

- Moore, Shannon B.**, Assistant Football Coach/Instructor of Health, Physical Education, and Recreation, 2006; BS, Black Hills State University, 2000; MS, SDSU, 2005.
- Morabito, Daniel G.**, Associate Professor of Horticulture, Forestry, Landscape, and Parks, 2003; BS, Michigan State University, 1969; MS, University of Michigan, 1977.
- Mordhorst, Sandra**, Adjunct Lecturer of Nursing, 2006; BSN., SDSU, 2005.
- Moret, Cody J.**, Farm Operations and Beef Breeding Unit Manager, 1992; BS, SDSU, 1992.
- Mort, Jane R.**, Coordinator/Professor of Pharmacy Practice, Graduate Faculty, 1986, 1997; PharmD, University of Nebraska, 1985.
- Motlas, Teresa**, FNP Program Coordinator, Nutrition, Food Science and Hospitality, 2006; BS, University of Nebraska, 1995; MS, SDSU, 2006.
- Mousel, Eric M.**, Range Livestock Production Specialist and Assistant Professor of Animal and Range Sciences, 2005; BS, University of Nebraska, 1999; MS, 2001; PhD, 2005.
- Moutsoglou, Alexandros**, Professor of Mechanical Engineering, Graduate Faculty, 1986, 1991; BS, University of Missouri, 1973; MS, 1974; PhD, 1977.
- Murphy, Heather L.**, Instructor of English, 2005; BA, SDSU, 1999; MA, 2006.
- Muthukumarappan, K.**, Professor of Agricultural and Biosystems Engineering, Graduate Faculty, 1997, 2006; BS, University of Madras (India), 1981; B.E., Tamil Nadu Agricultural University (India), 1986; M.E., Asian Institute of Technology, 1988; PhD, University of Wisconsin, 1993.
- Muxen, Marla J.**, Professor of Education and Counseling, Graduate Faculty, 1989, 1999; BS, SDSU, 1971; MS, Southern Illinois University, 1980; PhD, University of Minnesota, 1990.
- Mylant, Marylou**, Professor of Nursing, Graduate Faculty, 1992; BSN., Cleveland State University, 1974; MSN., Case Western Reserve University, 1978; PhD, University of Texas, 1988.
- Myrick, April M.**, Instructor of English, 2001; BA, SDSU, 2001; MA, 2003.
- Nagy, Dianne L.**, Service Learning Associate, 2006; BA, Kent State University, 1988; MS, SDSU, 2006.
- Nagy, Michael S.**, Associate Professor of English, Graduate Faculty, 2001; BA, Kent State University, 1987, 2006; MS, 1992; PhD, Saint Louis University, 2001.
- Nagy, Scott M.**, Head Men's Basketball Coach, Intercollegiate Athletics, 1990, 1995; B.BA, Delta State University, 1988; MS, University of Illinois, 1990.
- Napton, Darrell E.**, Professor of Geography, Graduate Faculty, 1992, 1998; BS, University of Missouri, 1973; MA, 1975; PhD, University of Minnesota, 1987.
- Naugle, David E.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 1999; A.S., Iowa Lakes Community College, 1990; BS, Northwest Missouri State University, 1992; MS, SDSU, 1994; PhD, 1997.
- Nauth, K. Rajinder**, Adjunct Professor of Dairy Science, 2003; BS, Indian Agricultural Institute (India), 1959; MS, Agra University (India), 1961; PhD, Cornell University, 1969.
- Neiger, Regg D.**, Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty, 1987, 1998; BS, University of Minnesota, 1973; D.V.M., 1974; MS, Iowa State University, 1983; PhD, 1987.
- Nelson, Eric A.**, Professor of Veterinary Science and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty, 1982, 2003; BA, Mt. Marty College, 1979; MA, University of South Dakota, 1981; PhD, SDSU, 1993.
- Nelson, Neal C.**, Adjunct Instructor of Education and Counseling, 2003; BS, SDSU, 1968; MEd, 1993; Ed.S., University of South Dakota, 1998.
- Nelson, Jacqueline C.**, Grants Administrator, 2004; A.A., SDSU, 1979; BS, 1981; MEd, 1988.
- Ness, Jody**, Instructor of Nursing, 2003; BS., SDSU, 1997; MS, 2005.
- Ness, Troy**, Assistant Professor of Military Science, 2005; BS SDSU, 1996.
- Nichols, Timothy**, Assistant to Dean and Assistant Director of Academic Programs, College of Agriculture and Biological Sciences, 1994, 2002; BS, Washington State University, 1986; MAEd., 1993; PhD, SDSU, 2001.
- Nicolai, Richard E.**, Associate Professor of Agricultural and Biosystems Engineering and Extension Specialist, 2003, 2005; BS, Minnesota State University, 1965; MS, 1970; PhD, 2002.
- Nielsen, Dana**, Adjunct Professor of Aerospace Studies, 2007; BS, Moorhead State University, 1989; MS University of South Dakota, 1996.
- Nielsen, G. Howard**, Professor of Mathematics and Statistics, Graduate Faculty, 1976, 1986; BS, SDSU, 1963; MA, University of Colorado, 1966; PhD, 1969.
- Niles, Michael A.**, Financial Aid Advisor, 2005; BS, SDSU, 1997; MS, 2003.
- Nixon, Lance J.**, ABS Associate/Ag Information Editor, 2001; BA, SDSU, 1986; MA, University of North Dakota, 1993.
- Nleya, Thandiwe M.**, Extension Agronomist/Assistant Professor of Plant Science, 2003; BS, University of Zimbabwe (Zimbabwe), 1984; MS, Southampton University (England), 1989; PhD, University of Saskatchewan (Canada), 1997.
- Nordaune, Trisha**, Program Advisor for Greek Life, Student Union and Activities, 2006; BA, Saint John's University, 2002; MS, Saint Cloud State University, 2005.
- Norris, Virginia**, Professor and Head of Psychology, Graduate Faculty, 1991, 2000; BA, Baldwin-Wallace College, 1983; MA, Kent State University, 1986; PhD, 1991.
- Novotny, Jennifer L.**, Director of Student Union and Activities, 1995, 2005; BA, Moorhead State University, 1995; MS, SDSU, 1997.
- Nussbaumer, Linda L.**, Professor of Apparel Merchandising and Interior Design, 1994, 2007; BS, Mankato State University, 1990; MS, 1992; PhD, University of Minnesota, 1998.
- O'Brien, Jamie L.**, Professor of Economics, 1984, 1994; BS, Augustana College, 1980; M.P.A., University of South Dakota, 1984; J.D., 1982.
- O'Connor, Mary**, Professor of English, Graduate Faculty, 1992, 2002; BA, College of Notre Dame, 1970; M.F.A., Columbia University, 1977; PhD, University of California, 1992.
- O'Connor, Peggy**, Lecturer of Nursing, 2007; BS, BHSU, 1980; BS, SDSU, 2003.
- O'Neill, Douglas E.**, Assistant Professor of Rural Sociology, 1990, 2003; BS, SDSU, 1976; MS, 1979; PhD, 1996.
- O'Neill, Mary**, Program Manager, Engineering Resource Center, 1972, 1984; BS, SDSU, 1972; MS, 1994.
- Odegaard, Doug G.**, Production Supervisor, 1998, 2004.
- Oedekoven, Daniel**, Coordinator for the Community Leadership Program, Field Staff Support, 1994, 1999; BS, University of Wyoming, 1974; MEd, SDSU, 1996.
- Oehlke, Kelley J.**, Associate Professor of Pharmacy Practice, 2002, 2007; PharmD, University of Nebraska, 2001.
- Ohr, David W.**, Adjunct Associate Professor of Chemistry and Biochemistry, 1989; BS, Augustana College, 1967; PhD, University of Arkansas, 1972; M.D., 1977.

- Oien, Fred M.**, Director of Athletics and Professor and Head of Health, Physical Education and Recreation, Graduate Faculty, 1979, 1991; BS, SDSU, 1972; MS, 1975; EdD, University of Massachusetts, 1979.
- Olawsky, Craig**, Research Associate I, Horticulture, Forestry, Landscape and Parks, 2004; BS, SDSU, 1983; MS, Texas Tech University, 1987.
- Olesen, Carol J.**, Lecturer of Chemistry and Biochemistry, 1992; BS, SDSU, 1992.
- Olive, Leslie A.**, Facilities Architect, Facilities and Services, 1991, 1995; BA, Iowa State University, 1976.
- Olson, Bernadette**, Assistant Athletic Trainer and Assistant Professor of Health, Physical Education and Recreation, 1993, 2005; BS, University of Delaware, 1988; MEd, University of Virginia, 1993; EdD, University of South Dakota, 2005.
- Olson, Daniel T.**, Assistant Manager in Seed Certification Service, 1995; BS, SDSU, 1995, MS, 1998.
- Olson, Kenneth C.**, Extension Beef Specialist, Associate Professor of Animal and Range Sciences, 2006; BS, Montana State University, 1979; MS, 1982; PhD, Utah State University, 1986.
- Olson, Lyle D.**, Professor of Journalism and Mass Communication, Graduate Faculty, 1989, 1995; A.A., Bartlesville Wesleyan College, 1974; BS, SDSU, 1976; MA, University of Oklahoma, 1981; EdD, Oklahoma State University, 1988.
- Omodt, Kelly R.**, Instructor of Mathematics and Statistics, 2005; BS, SDSU, 2001; MS, 2005.
- Osborne, Christy A.**, Student Services Adviser, 1988, 1998; BS, SDSU, 1982.
- Osborne, L. J.**, Youth Development/4-H Specialist/Associate Professor, 2000, 2006; BS, Ohio State University, 1981; University of Kentucky, 1983; PhD, Ohio State University, 1991.
- Osborne, Lawrence**, Research Associate II, Plant Science, 2000; BS, University of Nebraska, 1996; MS, 1999; PhD, South Dakota State University, 2006.
- Osborne, Shannon L.**, Adjunct Assistant Professor of Plant Science, Graduate Faculty, 2000; BS, Oklahoma State University, 1994; MS, 1996; PhD, University of Nebraska, 1999.
- Oscarson, Renee A.**, Associate Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1994, 2001; BS, North Dakota State University, 1981; MS, 1985; PhD, Purdue University, 1994.
- Ottersen, Robert J.**, Executive Assistant to the President, 2007; BA, Augustana College, 1985.
- Owen, Jody L.**, Tutoring Coordinator/Instructor, General Studies, 2002; BS, SDSU, 1996; MS, 2002.
- Owens, Jason P.**, Assistant Professor of Modern Languages, 2003; BS, Georgetown University, 1990; MA, 1995; PhD, 2001.
- Owens, Vance N.**, Professor of Plant Science, Graduate Faculty, 1996, 2006; BS, Utah State University, 1990; MS, 1992; PhD, University of Wisconsin, 1996.
- Palakurthi, Srinath**, Assistant Professor of Pharmaceutical Sciences, Graduate Faculty, 2003; B.Pharm., Kakatiya University, 1991; M.Pharm, Gour University, 1993; PhD, Indian Institute of Chemical Technology, 2000.
- Palakurthi, Srinath**, Associate Professor of Pharmaceutical Sciences, Graduate Faculty, 2003, 2007; B.Pharm., Kakatiya University, 1991; M.Pharm, Gour University, 1993; PhD, Indian Institute of Chemical Technology, 2000.
- Palileo, Andrew**, Head Women's Volleyball Coach, Health, Physical Education and Recreation, 2001; BS, Crown College, 1991; BA, 1995; MS, Bethel College, 2000.
- Pannell, Patrick T.**, Associate Professor of Engineering Technology and Management and Coordinator of Construction Management, 2003; BS, University of Arkansas, 1970; MS, University of Florida, 1976.
- Parmely, Ronny**, Assistant Manager of the Seed Testing Lab/Research Assistant, 2004; BS, SDSU, 1974.
- Pasikanti, Sriramulu**, Research Engineer, 2006; BS, Andhra University, (India) 2000; MS, SDSU, 2004.
- Patin, Albert A.**, Safety and Health Consultant, Engineering Extension, 2000; BS, University of Arizona, 1997.
- Paulson, James L.**, Associate Professor of Journalism and Mass Communication, 1987, 2002; BA, University of Nebraska, 1970; M.BA, University of South Dakota, 1993.
- Pavel, Katherine**, Nursing Grants & Projects Coordinator, 2007; BA, SDSU, 2003; MA, SDSU, 2007.
- Pawelek, Karen**, Instructor of Nursing and Nurse Practitioner, 2001; BS, University of New York, 1989; MS, Northeastern University, 1997.
- Pearson, Karen**, Associate Director of South Dakota Cooperative Extension Service, 2004; BS, SDSU, 1972; MS, 1979.
- Pedersen, Amy**, Instructor of General Studies, 2006; BS, SDSU, 1990; MEd, 2006.
- Pedersen, Scott**, Associate Professor of Biology and Microbiology, Graduate Faculty, 1999; BA, University of Colorado, 1984; MA, 1988; PhD, University of Nebraska, 1993.
- Penor-Ceglian, Cindi M.**, Associate Professor of Human Development, Consumer and Family Sciences, Graduate Faculty, 1979, 2002; BS, SDSU, 1979; MEd, 1980; PhD, 1997.
- Penrod, Kathryn M.**, Professor of Education and Counseling, Graduate Faculty, 1991, 2000; BS, Purdue University, 1975; MS, Cornell University, 1981; PhD, 1984.
- Perry, Brandi L.**, Research Assistant II, 2004; BS, University of Missouri, 2000.
- Perry, George**, Assistant Professor of Animal and Range Science, Extension Beef Specialist, Graduate Faculty, 2003; BS, Texas A&M University, 1998; MS, University of Missouri, 2000; PhD, 2003.
- Perry, Robert T. Tad**, Adjunct Professor of Political Science, 2007; A.B., Central Methodist College, 1965; MA, University of Missouri - Columbia, 1967; PhD, 1972.
- Persson, Todd W.**, Adjunct Lecturer of Nursing, 2006; BS, SDSU, 2003.
- Perumal, Omathanu P.**, Assistant Professor of Pharmaceutical Sciences, Graduate Faculty, 2005; BS, Tamilnadu Dr MGR Medical University (India), 1995; MS, Birla Institute of Technology (India), 1998; PhD, National Institute of Pharm. Education (India), 2003.
- Peters, Dean N.**, Research Assistant I, Animal and Range Sciences, 1992; BS, Washington State University, 1980; MS, 1983.
- Peters, Donna L.**, Instructor of Nursing, 2003; BS, Colorado State University, 1973; BSN., University of Colorado, 1976; MSN., 1983.
- Peters, Douglas J.**, Instructor of Mechanical Engineering, 1998, 2001; BA, Southwest State University, 1984; MS, University of North Dakota, 1991; BS, SDSU, 2001.
- Peters, Stacy**, Assistant Professor of Pharmacy Practice, 2007; BS, SDSU, 2002; PharmD, 2004.
- Petersek, Jami L.**, Research Coordinator, 2006; BS, SDSU, 2004.
- Peterson, Denise M.**, Interim Assistant Dean of General Studies, Associate Professor of Education and Counseling, Graduate Faculty, 1997, 2003; BA, University of South Dakota, 1986; MA, 1988; EdD, 1998.
- Peterson, Derek D.**, Director of Bookstore, 1989; BS, SDSU, 1989.

- Peterson, Gregory R.**, Associate Professor of Philosophy and Religion, Graduate Faculty, 2002, 2004; BA, University of Minnesota, 1988; MA, Luther Seminary, 1990; PhD, University of Denver, 1996.
- Peterson, Janet M.**, Accounts Payable Supervisor, Finance and Budget, 1991, 1999; BS, SDSU, 1989.
- Peterson, Meghan**, Nursing Student Services Coordinator, 2007; BS
- Peterson, Raymond L.**, Assistant Professor of Communication Studies and Theatre, 1971, 1978; BS, Dakota State University, 1968; MA, SDSU, 1973.
- Peterson, Robert P.**, Assistant to the Athletic Director, Health, Physical Education and Recreation, 2000; BS, Northern Michigan University, 1992; MA, Central Michigan University, 1995.
- Peterson-Lund, Robin**, Adjunct Instructor of Nursing, 1995; A.A., University of South Dakota, 1975; BS, SDSU, 1981; MS, 1993.
- Pflueger, Burton W.**, Extension Specialist and Professor of Economics, Graduate Faculty, 1985, 1995; BS, University of Nebraska, 1979; MS, 1981; PhD, University of Illinois, 1985.
- Phelps, Brady**, Professor of Psychology, Graduate Faculty, 1992, 2002; BS, Utah State University, 1983; MS, 1986; PhD, 1992.
- Phillips, Ryan**, Assistant Professor of Education and Counseling, 2004; BS, Western Michigan University, 2001; M., 2002.
- Pickard, Sylvia K.**, Instructor of Nursing, 1990; BS, SDSU, 1990; MS, 1997.
- Pikul, Jr., Joseph L.**, Adjunct Professor of Plant Science, 1996; BS, Washington State University, 1976; MS, Oregon State University, 1983; PhD, 1987.
- Pillatzki, Angela E.**, Instructor of Animal Disease Research and Diagnostic Laboratory, 2001; BS, University of Wyoming, 1991; D.V.M., Kansas State University of Agricultural and Applied Sciences, 1995.
- Pittman, Kyle W.**, Geospatial Analyst of Geographic Information Science Center of Excellence, 2005; BS, University of Maryland, 2002; MA, 2004.
- Pohl, Stephen H.**, Professor of Agricultural and Biosystems Engineering/Extension Specialist, 1986, 2006; BS, SDSU, 1973; MS, 1975; PhD, University of Nebraska, 2000.
- Praveccek, Deborah A.**, Assistant Professor of Chemistry, 1974, 2006; BS, Mount Marty College, 1973; MS, SDSU, 1982.
- Prins, Erica**, Adjunct Lecturer of Nursing, 2007; BS, Augustana, 2000.
- Pritchard, Robbi H.**, Distinguished Professor of Animal and Range Sciences, Graduate Faculty, 1984, 2005; A.A.S., Black Hawk College, 1975; BS, Southern Illinois University, 1977; MS, 1978; PhD, Washington State University, 1983.
- Prohaska, Kimberly K.**, Instructor of Computer Science, 1998; BS, SDSU, 1989, MS, 2003.
- Pruitt, Richard J.**, Professor of Animal and Range Sciences, Graduate Faculty, 1983, 1997; BS, Pennsylvania State University, 1973; MS, Kansas State University, 1980; PhD, 1983.
- Puetz, Jon A.**, Safety and Health Consultant, Engineering Extension, 1988, 2000; BS, SDSU, 1987; MEd, 2004.
- Qasmi, Bashir A.**, Associate Professor of Economics, Graduate Faculty, 1987, 2000; BS, University of Agriculture (Pakistan), 1967; MS, University of Manitoba, 1971; MS, University of Agriculture (Pakistan), 1979; PhD, Iowa State University, 1986.
- Qian, Li**, Assistant Professor of Engineering Technology and Management, Graduate Faculty, , 2004, 2005; B.E., Wuhan Institute of Technology (China), 1993; MS, Harbin Institute of Technology (China), 1993; PhD, Kansas State University, 2003.
- Qiao, Qiquan**, Assistant Professor of Electrical Engineering, 2007; BS, Hefei University of Technology, 1999; MS, Shanghai Institute of Optics & Fine Mechanics, 2003; PhD, Virginia Commonwealth University, 2006.
- Quail, Jennifer**, Project Manager, Facilities and Services, 2004, 2007; BS SDSU, 1995.
- Quam, Dori L.**, Instructor of Music, 2000; B.M.E., SDSU, 1985.
- Quinn, Terrence**, Adjunct Assistant Professor of Education and Counseling, Gillette, WY, BS Mathematics, 1979, MA Educational Administration, 2001.
- Quist, Oren P.**, Professor and Head of Physics, Graduate Faculty, 1986, 1997; BA, Gustavus Adolphus College, 1965; MS, University of Denver, 1967; PhD, 1973.
- Racanelli, Carol**, Academic Advisor, 2005; BS Brigham Young University, 1995; MS, Utah State University, 2001.
- Raether, Jason P.**, Lecturer of Nursing, 2003; BS, SDSU, 1995, BA, Augustana College, 2000.
- Raetzman, Donna M.**, International Student Advisor, Special Student Services, 1966; BS, SDSU, 1986.
- Ragsdale, Chalon A.**, Assistant Professor of Music, 2007; B.M.E., University of Oklahoma, 2001; M.M., University of Arkansas, 2003; D.M.A, Rutgers University, 1007.
- Rahman, Shafiqur**, Assistant Professor of Pharmaceutical Sciences, 2007; BS, MS, Dhaka University, 1988; PhD, Memorial University of Newfoundland, 1995.
- Ramos, Maria**, Associate Professor and Head of Modern Languages, Graduate Faculty, 1998, 2004; BA, Universidad de Santiago de Compostela (Spain), 1991; MA, Washington University, 1993; PhD, 1997.
- Ramsay, John D.**, Adjunct Professor of Health, Physical Education, and Recreation, 1997; BS, Southern Methodist University, 1966; M.D., University of Oklahoma, 1974.
- Randall, Rebecca**, Instructor of Nursing, 1986, 1998; BA, Augustana College, 1977; MS, SDSU, 1997.
- Rasmussen, Chris H.**, Instructor of Economics, 1978, 1984; BA, Southwest State University, 1975.
- Rasmussen, Kenneth**, Associate Professor of Education and Counseling, Head of Educational Leadership, Graduate Faculty, 2001; BS, Dana College, 1968; MS, University of Nebraska, Omaha, 1972; PhD, University of Nebraska, Lincoln, 1979.
- Rasmussen, Marilyn F.**, Extension Youth Development Specialist/Associate Professor of Human Development, Consumer and Family Sciences, 1997, 2003; BA, Community College, 1968; MS, University of Nebraska, 1980; PhD, 1997.
- Rauber, Joel D.**, Professor of Physics, Graduate Faculty, 1985, 1994; BS, Emory University, 1978; PhD, University of North Carolina, 1985.
- Raynie, Douglas**, Assistant Professor of Chemistry and Biochemistry, 2004; BA, Augustana College, 1981; MS, SDSU, 1983; PhD, Brigham Young University, 1990.
- Redlin, Meredith**, Associate Professor of Rural Sociology, Graduate Faculty, 2000, 2004; BA, Macalester College, 1979; MAL.S., Hamline University, 1993; PhD, University of Kentucky, 2000.
- Reed, Bradley**, Adjunct Professor of Geography, 2001; BS, Southwest Missouri State University, 1991; MA, University of Kansas, 1986; PhD, 1990.
- Reese, Cheryl L.**, Research Associate II in Plant Science, 1997; BA, University of Minnesota, 1990; MS, 1995.

- Reese, R. Neil**, Professor of Biology and Microbiology, Graduate Faculty, 1988, 1998; BS, Utah State University, 1977; MS, University of Idaho, 1980; PhD, 1984.
- Reeves, Kathryn A.**, Extension Youth Development/4-H Specialist/ Instructor, 1990, 1991; BS, Colorado State University, 1984; MA, University of Northern Colorado, 1990.
- Reicks, Graig W.**, Research Associate I, 2006; BS, South Dakota State University, 2003; MS, 2007.
- Rickerl, Diane H.**, Associate Dean of the Graduate School, Professor of Plant Science, Graduate Faculty, 1986, 1996; BS Iowa State University, 1972; M.A. Iowa State University, 1976; M.S. Auburn University, 1984; Ph.D. Auburn University, 1986.
- Reid, Richard A.**, Assistant Dean of Engineering and Professor of Civil and Environmental Engineering, Graduate Faculty, 1995, 2004; BS, The Citadel, 1981; MS, Georgia Institute of Technology, 1987; PhD, 1995.
- Reider, Rochelle L.**, Adjunct Instructor of Nursing, 1998, 2000; BS, SDSU, 1989; MS, 2000.
- Remund, Charles P.**, Coordinator of Laboratory and Research and Professor of Mechanical Engineering, Graduate Faculty, 1982, 1997; BS, SDSU, 1982; MS, 1983; PhD, University of Nebraska, 1988.
- Ren, Cuirong**, Associate Professor of Plant Science, 2001, 2006; BS, Anhui Normal University, 1986; MS, Hangzhou University, 1989; PhD, University of Missouri, 2001.
- Reynen, Paul**, Adjunct Professor of Health, Physical Education and Recreation, 1997; BS, SDSU, 1982; M.D., University of South Dakota, 1986.
- Reynolds, Paul D.**, Professor and Head of Music, 2005; B.M.E., University of Kansas, 1985; M.M., Florida State University, 1986; D.M.A, University of Maryland, 1994.
- Rice, James A.**, Professor and Head of Chemistry and Biochemistry, Graduate Faculty, 1988, 1999; BA, Saint John's University, 1978; MS, Colorado School of Mines, 1982; PhD, 1987.
- Rickertsen, John R.**, Research Associate II in Plant Science, 1994; BS, University of Nebraska, 1985; MS, 1989.
- Rickwa, Delaina P.**, Physician's Assistant, Student Health Service, 2003; BA, Augustana College, 1994; BS, University of South Dakota, 1999.
- Riedell, Walter E.**, Adjunct Assistant Professor of Plant Science, Graduate Faculty, 1987; BS, Northern Illinois University, 1978; MS, 1980; PhD, Southern Illinois University, 1984.
- Roddy, Shirley J.**, Adjunct Instructor of Nursing, 2001; BSN., University of Pennsylvania, 1984; MSN., University of Virginia Commonwealth, 1988, PhD, University of Nebraska, 2006.
- Roe, Thomas N.**, Assistant Professor of Mathematics and Statistics, 1983; BS, SDSU, 1972; MS, University of Wyoming, 1975.
- Roemen-Kramer, Denise**, Adjunct Lecturer of Nursing, 2007; BS, Augustana, 2005.
- Rogers, Lawrence E.**, Professor of Education and Counseling, Graduate Faculty, 1995, 2004; BA, University of Nebraska, 1964; PhD, 1975.
- Rogness, James D.**, Accounting Analyst, Finance and Budget, 1983; BS, Northern State University, 1979.
- Rogness, Tony**, Assistant Professor of Education and Counseling, 1998, 2001; A.A., Lutheran Brethren Bible College, 1983; BA, Crown College, 1990; MEd, SDSU, 1999; EdD, University of South Dakota, 2005.
- Roiger, Trevor C.**, Assistant Athletic Trainer and Instructor of Health, Physical Education and Recreation, 1999; BS, SDSU, 1997; MA, University of Minnesota, 1999.
- Rolz, Eckhard**, Assistant Professor of Modern Languages, 2005; BA, Utah State University, 1994; MA, University of North Carolina, 1996; PhD, 2000.
- Romereim-Holmes, Loye D.**, Professor of Education and Counseling, Graduate Faculty, 1987, 1997; BS, Northern State University, 1971; MAT., Augustana College, 1977; EdD, University of South Dakota, 1987.
- Ropp, Michael**, Associate Professor of Electrical Engineering, Graduate Faculty, 1999, 2004; BA, University of Nebraska, 1992; MS, Georgia Institute of Technology, 1996; PhD, 1998.
- Rops, Bradley D.**, Research Assistant II, 1993; BS, SDSU, 1986.
- Rosen, Susan K.**, RN Upward Mobility Coordinator/Academic Advisor, Nursing, 1991, 2006; BS, SDSU, 1983; MS, 1989.
- Rosentrater, Kurt**, Adjunct Assistant Professor, 2004; BS, Iowa State University of Science and Technology, 1994; MS, 1996; PhD, 2001.
- Roth, Dale**, Instructor of Engineering Technology and Management, 2006; BS, SDSU, 1958; MS, 1959 Rowland, Lester M., Assistant Professor of Apparel Merchandising and Interior Design, 2001; BS, University of Minnesota, 1992; M.Arch., 1995.
- Roth, Susan**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, BS Education, Black Hills State University, 1975, MEd Educational Administration, SDSU 1989, EdD USD, 2005.
- Rowland, Raymond**, Adjunct Professor, Animal Disease Research and Diagnostic Laboratory, 2004; BA, Fresno City College, 1977; MA, San Francisco State University, 1983; PhD, University of New Mexico, 1989.
- Roy, David P.**, Senior Research Scientist of Geographic Information Science Center of Excellence/Professor, 2005; BS, University of Lancaster (United Kingdom), 1987; MS, University of Edinburgh (United Kingdom), 1988; PhD, University of Cambridge (United Kingdom), 1993.
- Ruden, Bradley E.**, Extension Associate, 1990, 1995; BS, SDSU, 1989; MS, 1995.
- Ruden, Kay R.**, Research Associate I in Plant Science, 1994, 2006; BS, SDSU, 1991; MS, 1999.
- Rumble, Mark A.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 1991; BS, Washington State University, 1976; MS, SDSU, 1979; PhD, University of Wyoming, 1990.
- Rupp, Susan P.**, Assistant Professor of Wildlife and Fisheries Sciences, 2006; BS, Colorado State University, 1994; MS, Texas Tech University, 2000; PhD, 2005.
- Russell, Dennis**, Adjunct Instructor of Psychology, 2004; BS, University of Nebraska, 1997; MS, Saint Cloud State University, 2000.
- Russow, Kristi**, Placement Officer/Instructor of Education and Counseling, 1996; A.A., University of North Dakota, 1988; BA, Concordia College, 1990; MEd, SDSU, 1995.
- Rydell, Renee**, Adjunct Instructor of Chemistry and Biochemistry, 2002; BA, Augustana College, 1978, MS, 2001.
- Ryder, Mary R.**, Distinguished Professor of English, Graduate Faculty, 1989, 1997; BA, Monmouth College, 1972; MA, Illinois State University, 1981; PhD, University of Illinois, 1987.
- Saboe-Wounded Head, Lorna**, Extension Assistant, 2004, and Instructor, 2007; BS, SDSU, 1992; MEd, University of Minnesota, St. Paul, 2002.

- Salehnia, Alireza**, Professor and Coordinator of Computer Science/ Software Engineering, Graduate Faculty, 1989, 1997; BA, Iranian Institute of Advanced Accounting (Iran), 1975; M.BA, Central State University, 1977; PhD, University of Missouri, 1989.
- Samra, Haifa**, Assistant Professor of Nursing, 2007; BS American University, 1982; MS, SDSU, 2003; MS, SDSU, 2007; PhD, SDSU, 2007.
- Sandau, Melinda**, Lecturer of Nursing, 2007; BS, SDSU, 2002; MS, SDSU, 2005.
- Sandness, Linda M.**, Adjunct Assistant Professor of Health, Physical Education and Recreation, 1976, 1982; BS, Augustana College, 1970; MS, Indiana University, 1979; MEd, SDSU, 1980.
- Sandness, Roger K.**, Professor and Head of Geography, Graduate Faculty, 1971, 1992; BS, University of North Dakota, 1967; MS, 1968; PhD, University of Iowa, 1986.
- Santos, Joseph M.**, Professor of Economics, Graduate Faculty, 1997, 2006; A.A., Ocean County College, 1988; BS, The College of New Jersey, 1990; MA, Rutgers University, 1992; PhD, 1996.
- Sarvis, Robert**, Assistant Football Coach and Lecturer of Health Physical Education and Recreation, 2005; BS, Norwich University, 1998.
- Schaal, Daniel J.**, Professor of Mathematics and Statistics, Graduate Faculty, 1983, 2005; BS, SDSU, 1982; MS, 1988; PhD, University of Idaho, 1994.
- Schaefer, Peter R.**, Professor of Horticulture, Forestry, Landscape and Parks, Graduate Faculty, 1983, 1995; BS, Michigan State University, 1978; MS, 1980; PhD, 1983.
- Schardin, Janice M.**, Adjunct Instructor of Nursing, 1986, 2000; BS, SDSU, 1976; MS, 1993.
- Scharnberg, Megan L.**, Admissions Counselor, 2000; BA, SDSU, 2002.
- Scheid, Amber**, Coordinator of Communications, Admissions, 2001; BS, University of Kansas, 1999.
- Schell, Kyle**, Range Management Outreach Coordinator, 2007, BA, Chadron State College, 2006.
- Schiefelbein, Jason L.**, Lecturer of Engineering Technology and Management, 2001; BS, SDSU, 2000.
- Schindler, Frank V.**, Research Associate III, Chemistry/Biochemistry, 1996, 2001; BS, University of Vermont, 1992; MS, North Dakota State University, 1996; PhD, SDSU, 2000.
- Schingoethe, David J.**, Distinguished Professor of Dairy Science, Graduate Faculty, 1969, 2001; BS, University of Illinois, 1964; MS, 1965; PhD, Michigan State University, 1968.
- Schipull, Martin A.**, Assistant Professor of Agricultural and Biosystems Engineering, 1981; BS, University of Wisconsin, 1974; MEd, University of Minnesota, 1981.
- Schleicher, Jr., Leo C.**, Professor of Horticulture, Forestry, Landscape and Parks, Graduate Faculty, 1997, 2001; BS, University of Nebraska, 1989; MS, 1992; PhD Purdue University, 1997.
- Schlobohm, Paul J.**, Livestock Unit Manager, 1999; BS, SDSU, 1983.
- Schmaedeke, James E.**, Campus Coordinator for Judicial Affairs/ Research, 1995; BA, Saint Olaf College, 1973; MA, University of Kansas, 1979; PhD, 1995.
- Schmidt, Karl J.**, Director of International Affairs, Associate Professor of History, 2003; BA, University of South Florida, 1985; MA, Florida State University, 1987; PhD, 1994.
- Schmidt, Robert C.**, Professor of Mathematics and Statistics, Graduate Faculty, 1981, 1996; BS, SDSU, 1979; MS, Iowa State University, 1981; PhD, 1987.
- Schmit, Christopher G.**, Associate Professor of Civil and Environmental Engineering, Graduate Faculty, 1998, 2002; BS, University of Wisconsin, 1991; MS, Iowa State University, 1992; PhD, 1997.
- Schnaser, Kevin G.**, Instructor of Modern Languages, 2007; BA, University of South Dakota Vermillion, 1980; MA, 2007.
- Schramm, Lisa**, Student Project Assistant, 1999; BS, SDSU, 1999.
- Schuelke, Peggy**, Nurse Practitioner, Student Health Services, 2001; BA, Augustana College, 1980; M.S., SDSU, 1992.
- Schulz, Alicia G.**, Program Coordinator, 2001; BA, Chadron State College, 2000.
- Schumacher, Joseph**, Research Engineer, Plant Science, 1987; BS SDSU, 1987; MS, 1990.
- Schumacher, Linda R.**, Administrative Assistant, President's Office, 1972, 1985; A.A., Bethany Lutheran College, 1969.
- Schumacher, Thomas E.**, Professor of Plant Science, Graduate Faculty, 1983, 1993; BA, Bluffton College, 1972; MS, Michigan State University, 1979; PhD, 1982.
- Schumann, Larry**, Building Maintenance Coordinator, Facilities and Services, 1994.
- Sckerl, Jo Ann**, Director of Academic Evaluation and Assessment, 1984, 2004; BA, SDSU, 1973; MA, Mississippi University for Women, 1980; EdD, University of South Dakota, 2002.
- Scovel, Kari A.**, Adjunct Assistant Professor of Education and Counseling, 2001; BS, Mankato State University, 1991; MS, SDSU, 1993; PhD, University of South Dakota, 2000.
- Scully, Augustine F.**, EDAD Program Coordinator and Adjunct Assistant Professor of Education and Counseling, Rapid City Site, Graduate Faculty, 2001; BA, Hiram Scott College, 1970; MEd, University of Toledo, 1971; EdD, University of South Dakota, 1996.
- Seefeldt, Teresa M.**, Assistant Professor of Pharmaceutical Sciences, 2005; BS, SDSU, 2002; PharmD, 2004.
- Selim, Ali A.**, Professor of Civil and Environmental Engineering and Director of Local Transportation Assistance Program, Graduate Faculty, 1977, 1984; BS, Ain-Shams University (Egypt), 1967; MS, University of Missouri, 1974; PhD, 1976.
- Senay, Gabriel**, Adjunct Associate Professor, 2005; BS, Alemaya University of Agriculture (Ethiopia), 1986; MS, Wageningen Agricultural University (Netherlands), 1991; PhD, Ohio State University- Columbia, 1996.
- Sergeev, Igor**, Associate Professor of Nutrition, Food Science, and Hospitality, 2005; BS/MS, Moscow State University, 1977; PhD, Institute of Biomedical Problems, Moscow, 1984; D.Sc., Institute of Nutrition, Academy of Medical Science, Moscow, 1991.
- Shaffer, Thomas R.**, Associate Professor of Psychology, 2001, 2005; BA, Humboldt State University, 1990; MA, 1994; PhD, University of Nevada, 2001.
- Shaver, Patricia S.**, Assistant Professor of Nursing, 1997, 2002; BSN., Saint Olaf College, 1966; MS, University of Minnesota, 1986; PhD, 2004.
- Shelsta, Corey**, Associate Professor of Communication Studies and Theatre, 2000, 2004; BS, SDSU, 1993, M.F.A., Wayne State University, 1996.
- Shim, Yong-Sang**, Assistant Professor of Computer Science, Graduate Faculty, 1997; BS, Yeungnam University (Korea), 1995; MS, SDSU, 1998; PhD, University of Wyoming, 2001.
- Shin, Sung Yun**, Professor of Computer Science, Graduate Faculty, 1991, 2001; BS, Kentucky State University, 1984; MS, University of Wyoming, 1986, PhD, 1991.

- Shivik, John A.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 2003; BS, Frostburg State College, 1990; MS, University of California, 1995; PhD, Colorado State University, 1999.
- Shmagin, Boris A.**, Research Associate II, Water Resources Institute, 2004; MS, Moscow State University (Russia), 1970; PhD, 1979; Postdoctoral, Komensky University and Charles University (Czechoslovakia), 1981-82.
- Shore, Jay**, Associate Professor of Chemistry and Biochemistry, Graduate Faculty, 1995, 1999; BS, Oregon State University, 1986; PhD, University of Illinois, 1992.
- Shukla, Chirag Y.**, Research Associate I, Agricultural and Biosystems Engineering, 2003; BS, Sheth Mansukhlal Chhaganlal College (India), 1997; MS, SDSU, 2003.
- Siekman, Jeffrey A.**, Associate Director of Finance and Business/Controller, 1990; BS, Northern State University, 1982; M.B.A., University of South Dakota, 1995.
- Sieverson, Cheryl L.**, Instructor of Nursing, 1994; BS, SDSU, 1967; MS, 1996.
- Sigl, Arden B.**, Professor and Acting Head of Civil and Environmental Engineering, Graduate Faculty, 1967, 1984; BS, SDSU, 1967; MS, 1969; PhD, Northwestern University, 1977.
- Sime, Stacy**, Adjunct Assistant Professor of Chemistry and Biochemistry, 2004; BS, North Dakota State University, 1988; MSED., Drake University, 1997.
- Simons-Olson, La Quita J.**, Staff Counselor, Student Services, 1998; BS, University of Hawaii, 1986; MS, SDSU, 1991.
- Skogstad, Keith L.**, Assistant Director of Student Union, 2005; BS, SDSU, 1986.
- Skovly, Martin**, Assistant Professor of Military Science AROTC, 2007; BS, South Dakota State University, 2005.
- Skroch, Keri L.**, Research Assistant II in Plant Science, 1989; BS, SDSU, 1987.
- Smart, Alexander**, Associate Professor of Animal and Range Sciences, Graduate Faculty, 2001, 2006; BS, University of Wisconsin, 1989; MS, 1992; PhD, University of Nebraska, 2001.
- Smith, Mary K.**, Adjunct Instructor of Chemistry and Biochemistry, 1981; BS, Mount Marty College, 1976; MS, University of South Dakota, 1996.
- Snell-Feikema, Carol V.**, Instructor of Modern Languages, 2004; BA, University of Iowa, 1977; MS, Mankato State University, 2004.
- Sojka, Nadine**, Adjunct Assistant Professor of Chemistry and Biochemistry, 2004; BA, University of Northern Iowa, 1969; M.H.A., 1996.
- Sommerfeld, Jessica A.**, Assistant Track and Field Coach and Instructor of Health Physical Education and Recreation, 2004; BA, Rice University, 2001; MS, University of Arkansas, 2002.
- Sondey, John A.**, Professor of Economics, Graduate Faculty, 1990, 2001; BA, Bucknell University, 1962; M.B.A., Fairleigh Dickinson University, 1976; MS, Arizona State University, 1979; PhD, Washington State University, 1989.
- Soren, Vicki L.**, Purchasing Agent, Finance and Budget 1984, 1991; A.A., Longview Community College, 1976; B.B.A., University of Missouri, 1978.
- Sovada, Marsha A.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 2002; BA, Saint Cloud State University, 1976; MS, University of Idaho, 1978; PhD, North Dakota State University, 1993.
- Spear, Debra J.**, Professor of Psychology, Graduate Faculty, 1995, 2006; BS, University of Maryland, 1977; MA, University of North Carolina, 1980; PhD, 1987.
- Specker, Bonny**, Director and Professor of Ethel Austin Martin-Edward Moss Martin Endowed Program in Human Nutrition, Graduate Faculty, 1997; BS, University of Cincinnati, 1977; MS, 1980; PhD, 1983.
- Speer, Lindsay**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2003.
- Spencer, Mary A.**, Associate Professor of Music, 1971, 1992; B.M.E., Yankton College, 1967; M.M., University of Cincinnati, 1970.
- Spilles, Carl**, Academic Counselor, Student Services Support, 2004; BA, University of Northern Iowa, 1991.
- Spitz, Maria C.**, Assistant Professor of Modern Languages, 2005; BA, Monmouth College, 1987; MA, Washington University, 1992; PhD, 2001.
- Stapert, Kara**, Adjunct Lecturer of Nursing, 2007; A.A., Colby Community College, 1999; BS, SDSU, 2004.
- Steece, Richard**, Adjunct Professor of Biology and Microbiology; BS, SDSU, 1973; MS, 1975; PhD, University of New Mexico, 1989.
- Steele, Michael Tim**, Professor of Visual Arts, 1985, 1994; A.A., Spokane Falls Community College, 1975; B.F.A., Fort Wright College, 1978; M.F.A., Washington State University, 1980.
- Stein, Jeffrey M.**, Assistant Professor of Plant Science, 2004; BS, Michigan State University, 1997; PhD, 2002.
- Stein, Marianne F.**, Associate/Publications Editor-Writer, 2001; BA, University of Copenhagen (Denmark), 1983; MA, 1990; MS, University of Illinois, 1995; PhD, University of Southern Denmark, 2004.
- Steinlicht, Carrie**, Assistant Professor of Engineering Technology and Management and Coordinator of Manufacturing Engineering Technology Program and Undergraduate Industrial Management Programs, 1997, 2005; BS, Michigan Technological University, 1990; MA, Central Michigan University, 1993.
- Stenvig, Thomas E.**, Associate Professor of Nursing, Graduate Faculty, 2001; BSN., Wayne State University, 1971; M.P.H., University of Hawaii, 1976; MS, SDSU, 1991; PhD, University of Wisconsin, 2001.
- Sternhagen, Mark T.**, Instructor of Engineering Technology and Management, 1986, 1992; A.A.S., University of South Dakota at Springfield, 1984; BS, SDSU, 1986; BSE., Dakota State University, 1986; MS, SDSU, 1991.
- Stickels, Michael**, Residence Hall Director, 2005; BA, University of Northern Iowa, 2005.
- Stiegelmeier, John M.**, Head Football Coach, Intercollegiate Athletics, 1988, 1996; BS, SDSU, 1979; BS, 1979; MA, University of Northern Iowa, 1981.
- Stluka, Suzanne R.**, EFNEP/Nutrition Education Coordinator, Nutrition Food Science and Hospitality, 2006; BS, SDSU, 2004; MS, Eastern Illinois University, 2006.
- Storey, James**, Adjunct Professor of Electrical Engineering, 2004; BS, Cornell University, 1979; MS, University of Wisconsin, 1981; MS, John Hopkins University, 1989.
- Stover, Ronald G.**, Professor of Rural Sociology, Graduate Faculty, 1983, 1992; BA, University of Georgia, 1970; MA, 1973; PhD, 1975.
- Straatmeyer, Lynn L.**, Bursar/Records Management Supervisor, Finance and Budget, 1981, 1982; BS, University of Sioux Falls, 1972.
- Strain, Joey D.**, Assistant Professor of Pharmacy Practice, 2003; BS, SDSU, 2000; PharmD, 2002.
- Stremmel, Andrew J.**, Professor and Head, Human Development, Consumer and Family Sciences, 2004; BA, Pennsylvania State University, 1978; MS, Purdue University, 1981; PhD, 1989.
- Strickler, Susan C.**, Associate Professor of Apparel Merchandising and Interior Design, Graduate Faculty, 1991, 2004; BS, SDSU, 1982; MS, Texas Tech University, 1985; EdD, University of South Dakota, 1996.

- Strohschein, Lisa R.**, Seasonal II, Horticulture, Forestry, Landscape and Parks, 2003; BS, SDSU, 2003.
- Struck, Donald J.**, Assistant Professor of Mathematics and Statistics, 1964, 1972; BS, Saint Cloud State University, 1960; MS, North Dakota State University, 1963.
- Stubbles, Russell L.**, Professor of Horticulture, Forestry, Landscape and Parks, Graduate Faculty, 1989, 1999; BS, Weber State College, 1972; MS, Texas A&M University, 1974; PhD, 1979.
- Sturdevant, James**, Adjunct Assistant Professor of Geography, 2004; BS, SDSU, 1978; MS, Oklahoma State University, 1979.
- Sutton, Fedora**, Professor of Plant Science, Graduate Faculty, 1990, 2001; BA, University of Maryland, 1981; PhD, Howard University, 1985.
- Sutton, Trent M.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 2004; BS, Michigan State University, 1991; MS, 1993; PhD, Virginia Polytechnic Institute and State University, 1997.
- Svec, Harriet**, Associate Professor of Computer Science, 1994; BS, Black Hills State University, 1971; MS, Mankato State University, 1991; EdD, University of South Dakota, 2000.
- Svec, Harvey R.**, Instructor of Engineering Technology and Management, 1994, 1997; BS, SDSU, 1968; MEd, 1973.
- Swain, Larry B.**, Adjunct Professor, 2005; BS, South Dakota State University, 1964; MS, 1984; PhD, University of Nebraska, 1990.
- Swinson, Cindy R.**, Assistant Director of Financial Aid, 1982, 1993; BA, SDSU, 1981; MS, 1984.
- Symes, Julie**, Instructor of Nursing, West River, 2001; BAN., Augustana College, 1981; MS, University of Washington, 1990.
- Tan, Songxin**, Assistant Professor of Electrical Engineering, 2004; BS, Sichuan University, 1994; MS, 1997; PhD, University of Nebraska, 2003.
- Taylor, Alan W.**, Professor of Music, 2002; B.M.E., University of Melbourne, 1969; M.M., University of Melbourne, 1975; M.M.E., Indiana University, 1977; D.M., 1985.
- Taylor, Gary L.**, Associate Professor of Economics, Graduate Faculty, 2000, 2004; BS, Purdue University, 1990; MS, Michigan State University, 1994; PhD, Oklahoma State University, 1995.
- Taylor, John W.**, Professor of English, Graduate Faculty, 1980, 1991; BA, Macalester College, 1969; MA, Indiana University, 1973; PhD, 1973.
- Taylor, Larry M.**, Instructor of Visual Arts, 2004; BA, University of Nebraska, 1999; MA, University of Wisconsin, 2003.
- Thaler, Robert**, Department Head, Extension Swine Specialist, and Professor of Animal and Range Sciences, Graduate Faculty, 1982, 1999; BS, SDSU, 1982; MS, 1984; PhD, Kansas State University, 1988.
- Thanapura, Pravara**, Research Associate I, Engineering Resource Center, 1998; BA, Kasetsart University (Thailand), 1993; MS, SDSU, 1998.
- Theilen, Alicia**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2004.
- Thiesse, Brandon R.**, Admissions Counselor, 2003; BS, SDSU, 2002.
- Thiex, Nancy**, Professor of Veterinary Science – Olson Biochemistry Lab, 1970, 1994; BA, Northern State University, 1970; MEd, SDSU, 1972; MS, 1974.
- Thompson, Amy M.**, Instructor of English, 2003; BA, SDSU, 1993; MA, 1999.
- Thompson, Anne C.**, Instructor of Mathematics and Statistics, 2005; BA, Sam Houston State University, 1965; MA, 1970.
- Thompson, Mary Ellen**, Research Assistant II in Plant Science, 1992, 1998; BS, SDSU, 1989.
- Three Irons, Valerian R.**, Diversity and Service Learning Associate, 1997; A.A.S., Community College, 1990; BA, University of North Dakota, 1994.
- Thudukurthy, Dayasagar**, Research Assistant II, Animal and Range Sciences, 2001; B., Osmania University College of Technology (India), 2000; MS, SDSU, 2004.
- Thue, Roger**, Utility Systems Engineer, Facilities and Services, 1994, 2002; BS, SDSU, 1988.
- Tiernan, Jennifer**, Adjunct Instructor of Journalism and Mass Communication, BA, Eugene Lang College, 1993; MA, University of Wyoming, 1998; PhD, University of Iowa, 2002.
- Tietchen, Todd F.**, Assistant Professor of English, 2006; BA, Montclair State College, 1996; MA, University of New Mexico, 1999; PhD, University of Washington, 2005.
- Tilmon, Kelley J.**, Assistant Professor of Plant Science, 2005; BA, University of Delaware, 1992; MS, 1996; PhD, Cornell University, 2001.
- Ting, Francis**, Professor of Civil and Environmental Engineering, Graduate Faculty, 1995, BS, University of Manchester (Great Britain), 1982; MS, California Institute of Technology, 1983; PhD, 1989.
- Todd, Robert L.**, Adjunct Professor of Biology and Microbiology, 1982, 1988; BS, SDSU, 1965; MS, 1967; PhD, University of Guelph (Ontario), 1974.
- Todey, Dennis P.**, Assistant Professor of Agricultural and Biosystems Engineering, State Climatologist, 2003; BS, Iowa State University of Science and Technology, 1988; PhD, 1995; MS, South Dakota School of Mines and Technology, 1990.
- Tolle, Gordon J.**, Professor of Political Science, Graduate Faculty, 1967, 1984; BA, Oberlin College, 1965; MA, University of Notre Dame, 1967; PhD, University of Colorado, 1978.
- Tolle, Mary L.**, Assistant Professor of Engineering Technology and Management, 1985, 1997; BA, University of Colorado, 1974; BS, SDSU, 1983; MS, 1987; MS, 2000.
- Tolman, Elizabeth**, Associate Professor of Communication Studies and Theatre, 2004; BA, Concordia College, 1993; MA, SDSU, 1995; PhD, Southern Illinois University, 1999.
- Toronto, Emily**, Assistant Professor of Music, 2004; [B.M.], Brigham Young University, 1997; M.M., University of Michigan, 1999; D.M.A, University of Michigan, 2003.
- Trautman, Ellie L.**, Health Educator, Student Health Services, 2002; BS, Moorhead State University, 1984.
- Trautman, Karla H.**, Extension Specialist, 1988; BS, SDSU, 1987; MS, 2003.
- Trenhaile, Jay**, Associate Professor of Education and Counseling, Head of Counseling and Human Resource Development, Graduate Faculty, 1999; BS, Dakota State University, 1986; MS, Kansas State University, 1989; MS, SDSU, 1993; EdD, University of South Dakota, 1996.
- Troelstrup, Jr., Nels H.**, Professor of Biology and Microbiology, Graduate Faculty, 1993, 2004; BA, University of Colorado, 1981; MS, University of Nebraska, 1985; PhD, University of Minnesota, 1992.
- Trooien, Todd P.**, Professor of Agricultural and Biosystems Engineering, 1983, 2006; BS, SDSU, 1983; MS, 1985; PhD, Colorado State University, 1988.
- Trotter, Christopher**, Adjunct Assistant Professor, Aerospace Studies, 2002; BS, Southern Illinois University, 1985; MS, Central Michigan University, 1992.
- Trygstad, Jayme P.**, Assistant Director and Assistant Radiation Safety Officer, Environmental Health and Safety, 2003; BS, SDSU, 2003.

- Tschetter, Emery J.**, Assistant Director of Planning and Special Projects, College of Agriculture and Biological Sciences, 1984, 1997; BS, SDSU, 1984; MS, 1989.
- Tschetter, Lois J.**, Associate Professor of Nursing, Graduate Faculty, 1983, 2006; BS, SDSU, 1974; MS, 1985; EdD, University of South Dakota, 2001.
- Turnipseed, E. Brent**, Manager of Seed Lab and Professor of Plant Science, 1991, 2002; BS, Mississippi State University, 1984; MS, 1987; PhD, 1993.
- Twedt, Michael P.**, Instructor of Mechanical Engineering and Program Engineer, 1992; BS, SDSU, 1992; MS 1994.
- Twitero, Catherine A.**, Instructor of English, 1992; BA, SDSU, 1992; MA, 1995; J.D., William Mitchell College of Law.
- Ulvestad, Erin L.**, Instructor of Mathematics and Statistics, 2006; BS, SDSU, 2004; MS, 2006.
- Uresk, Daniel W.**, Adjunct Associate Professor of Wildlife and Fisheries Sciences, 1987; BS, University of Utah, 1965; MS, 1967; PhD, Colorado State University, 1972.
- Utecht, Ronald E.**, Professor of Chemistry and Biochemistry, Graduate Faculty, 1988, 1998; BS, Iowa State University, 1983; PhD, 1986.
- Utzman, Dawn P.**, Adjunct Lecturer of Nursing, 2002; BSN., University of Minnesota, 1983.
- Van Buren, Stephen**, Archivist/Head of Special Collections/Associate Professor, 1999, 2003; BA, Bemidji State University, 1975; MA, 1977; MS, 1977; MA, University of Iowa, 1999; PhD, SDSU, 2006.
- Van der Sluis, Evert**, Professor of Economics, Graduate Faculty, 1997, 2006; MS, Iowa State University, 1988; PhD, University of Minnesota, 1993.
- Van Gilder, Deidra J.**, Assistant Professor of Pharmacy Practice, 2006; BS, SDSU, 2000; PharmD, 2002.
- Vandekieft, Ryan**, Admissions Counselor, 2004; BS, SDSU, 2002; MA, University of Minnesota, 2004.
- Veire, Camilla**, Instructor of General Studies, 2007; BS, University of Wisconsin, 1985; MS, SDSU, 1992.
- Venhuizen, Lynda**, Instructor of Human Development, Consumer and Family Sciences, 2000; BS, University of South Dakota, 1991; MS, SDSU, 1998.
- Verschoor, Lynn**, Director, South Dakota Art Museum, 1999; BS, SDSU, 1979; MS, Saint Cloud State University, 1985.
- Vestal, Donald**, Assistant Professor of Mathematics and Statistics, 2006; BS, Colorado State University, 1990; MS, 1992; PhD, University of Colorado-Boulder, 1998.
- Vestal, Sharon**, Assistant Professor of Mathematics and Statistics, 2006; BA, University of South Dakota, 1992; MA, 1994; PhD, University of Colorado, 2000.
- Visker, Tricia M.**, Assistant Professor of Human Development, Consumer and Family Sciences, 2003; A., Central Texas College, 1996; BS, SDSU, 1999.
- Visser, Jerry J.**, Instructor of Engineering Technology and Management and Manager of SDSU Product Development Center, 2001; BS, Kansas State University, 1992; MS, Kansas State University, 2005.
- Vockrodt, Mary L.**, Lecturer of Nursing, 2001; BS, SDSU, 1986.
- Voelzke, Catherine D.**, Adjunct Assistant Professor of Nutrition, Food Science and Hospitality, 1993; BS, SDSU, 1966; MS, 1988.
- Vollan, Charles A.**, Assistant Professor of History, 2006; BA, Hiram College, 1991; MA, University of Tulsa, 1994; PhD, University of Nebraska-Lincoln, 2004.
- Vondruska, Judy**, Instructor in Physics, 2001; BS, University of Nebraska, 1986; MS, University of Arizona, 1992.
- Voss, Jo**, Associate Professor of Nursing, 1995, 2002; BSN., Winona State University, 1980; MSN., University of Minnesota, 1993; PhD, University of Nebraska, 2003.
- Vostad, Jeffrey**, Director of TRiO, 1990, 2004; BA, SDSU, 1990; MEd, 1992; EdD, University of South Dakota, 2004.
- Vukovich, Matthew D.**, Program Manager/Associate Professor of Health, Physical Education and Recreation, Graduate Faculty, 1999, 2003; BS, Iowa State University, 1988; MA, 1990; PhD, Ball State University, 1993.
- Wahlstrom, David A.**, Associate Professor of Engineering Technology and Management, 2004; BS, SDSU, 1964; MS, 1971; J.D., Indiana University, 1983.
- Wake, Carol Marie Fodness**, Associate Professor of Biology and Microbiology, 1991, 2004; BS, SDSU, 1990; MS, 1993; PhD, 1997.
- Walker, John**, Associate Professor of Music and Director of Keyboard Studies, 2001, 2005; B.M., University of California-Santa Barbara, 1977; M.M., San Francisco Conservatory of Music, 1982; D.M.A., University of Colorado-Boulder, 1995.
- Walker, Julie A.**, Beef Specialist and Associate Professor of Animal and Range Sciences, 1997, 2002; BS, North Dakota State University, 1983; MS, Purdue University, 1990; PhD, University of Kentucky, 1995.
- Wallace, Carol J.**, Assistant Professor of Modern Languages, 2007; BA, Morningside College, 1984; MA, 1987; PhD 1999.
- Wallace, Scott**, Professor of Visual Arts, 1995, 2004; B.F.A., Northern Illinois University, 1981; MA, 1983; M.F.A., University of Arizona, 1985.
- Walloch, Mary**, Adjunct Lecturer of Nursing, 2004; A.S., University of South Dakota, 1977; A.A., 1989.
- Wang, C.Y.**, Professor and Head of Nutrition, Food Science and Hospitality, Graduate Faculty, 1993, 2002; BS, Shenyang Agricultural University, 1985; MS, Iowa State University, 1989; PhD, 1993.
- Wang, XiuQing**, Associate Professor of Biology and Microbiology, Graduate Faculty, 2002, 2006; D.V.M., Inner Mongolia College of Agriculture and Animal Husbandry (People's Republic of China), 1988; MS, 1991; PhD, University of Connecticut, 2000.
- Warmann, Gerald W.**, Extension Specialist and Professor of Economics, 2004; BS, University of Missouri, 1973; MS, 1980; PhD, Oklahoma State University, 1984.
- Warren, Merritt G.**, Adjunct Professor of Health, Physical Education and Recreation, 1997; BS, University of Nebraska, 1975; M.D., 1979.
- Warren, Randall F.**, Instructor of Biology, 2007; BS, University of Minnesota, 1993; PhD, Indiana University, 1999.
- Wasberg, Cynthia K.**, Instructor of Human Development, Consumer, and Family Sciences, 2006; BS, SDSU, 1985; MS, Iowa State University, 1998.
- Watrel, Robert H.**, Associate Professor of Geography, Graduate Faculty 2006, 2001; BS, University of North Dakota, 1989; MA, University of Nebraska, 1993; PhD, 2001.
- Weaver, Amanda**, Assistant Professor, 2007; BS, Purdue University, 2001; PhD, 2007.
- Webb Jr., Thomas E.**, Residence Hall Director, 2005; BS, University of Illinois, 2005.
- Weber, Jennifer**, Instructor of Education and Counseling, 2004; BA, SDSU, 1998; MEd, 2003.
- Weber, Karyn L.**, Assistant to the Executive Vice President for Administration, 1990, 2007; BS, SDSU, 1990; MA, 1992.

- Wedemeyer, Lang**, Head Women's Soccer Coach, 2000; BA, Old Dominion University, 1994; MS, 1996.
- Wehbe, Nadim I.**, Associate Professor of Civil and Environmental Engineering, Graduate Faculty, 1998, 2002; B.E., American University of Beirut (Lebanon), 1980; MS, University of Nevada, 1992; PhD, 1997.
- Weinkauf, Craig**, Adjunct Instructor of Education and Counseling, 1977; BS, SDSU, 1974; MEd, 1983.
- Wendell, Nick W.**, Program Advisor for University Programs, Student Union and Activities, 2006; BA, SDSU, 2004.
- Wendorff, Betty J.**, Adjunct Instructor of Education and Counseling, 2002; BA, Southwest State University, 1976; MA, University of Minnesota, 1980.
- Wermedal, Douglas**, Assistant Vice President of Student Affairs, 1998, 2007; BS, SDSU, 1985; MEd., Eastern Illinois University, 1987.
- Werner, Hal D.**, Professor of Agricultural and Biosystems Engineering, Extension Specialist, Graduate Faculty, 1970, 1992; BS, SDSU, 1970; MS, 1971; PhD, University of Minnesota, 1984.
- Werner, LeAnn C.**, Instructor of Mathematics and Statistics, 1991; BS, SDSU, 1970; MS, 1997.
- Wertz-Lutz, Aimee E.**, Assistant Professor of Animal and Range Sciences, Graduate Faculty, 2003; BS, Illinois State University, 1994; MS, University of Illinois, 1997; PhD, 2001.
- West, Thomas P.**, Professor of Biology and Microbiology, Graduate Faculty, 1988, 1993; BA, Purdue University, 1974; MS, Texas A&M University, 1976; PhD, 1980.
- Westwick, Joshua**, Instructor of Communication Studies and Theatre; BS, SDSU, 2001; MS, 2003.
- Wey, Howard E.**, Associate Professor of Nursing, Graduate Faculty, 1997; BS, Wright State University, 1975; PhD, University of Cincinnati, 1980.
- Wheeler, Nancy**, Assistant Professor of Communication Studies and Theatre, 1980, 1986; BS, Dakota State University, 1968; MA, SDSU, 1980.
- White, Leilani J.**, Instructor of Nursing, 1999; BS, SDSU, 1970; MS, 1989.
- White, Nicole**, Adjunct Lecturer of Nursing, 2007; BS, SDSU, 2005.
- Whitehill, Dawn M.**, Associate Professor of Pharmacy Practice, 2002, 2007; PharmD, University of Iowa, 2001.
- Whitlatch, P. Allen**, Assistant Professor of Education and Counseling, Graduate Faculty, 2003; BSE., Northeast Missouri State University, 1968; MA, 1971; Ed.S., 1977; EdD, Drake University, 1997.
- Wicks, III, Zeno W.**, Professor of Plant Science, Graduate Faculty, 1980, 1991; BA, University of Vermont, 1971; MS, North Dakota State University, 1976; PhD, 1979.
- Widman, Jennifer**, Instructor of English, 1999; BA, SDSU, 1990; MA, 1995.
- Wiebe, Kathy**, Instructor of Graduate Nursing, 2005; BSN., Southwestern College, 1978; MS, SDSU, 2005.
- Wiederich, Angela M.**, Instructor of Modern Languages, 2007; BA, South Dakota State University, 2004; MA, South Dakota State University, 2007.
- Wiederrich, Lisa**, Adjunct Lecturer of Nursing, 2006; BS, SDSU, 1995.
- Wiersma, Janice M.**, Payroll Supervisor, 2006; BS, SDSU, 1982; M.BA, University of South Dakota, 1993.
- Wight, Laura M.**, Reference Librarian/Instruction Coordinator/Assistant Professor, 2000, 2004; BA, Norwich University, 1998; M.L.S., Clarion State College, 1999; MS, SDSU, 2004.
- Wilburn, Lonnie**, Assistant Professor of Communication Studies & Theatre, 2007; BA Morehead State University, KY, 2002; M.F.A. Michigan State University, 2007.
- Wilkinson, Daren**, Assistant Football Coach/Instructor, 2004; A.A., Ricks College, 1994; BS, Colorado State University, 1997; MS, 1999.
- Willgohs, Jo Ann**, Instructor of Biology and Microbiology, 1986, 1992; BA, Southwest State University, 1982; MS, SDSU, 1988.
- Williams, Christi L.**, Ticket Manager, Health Physical Education and Recreation, 2003; A.A., Kirkwood Community College, 2002; BS, Wayne State College, 2003; MS, SDSU, 2005.
- Willis, David W.**, Distinguished Professor and Head of Wildlife and Fisheries Sciences, Graduate Faculty, 1987, 2007; BS, University of North Dakota, 1977; MS, 1978; PhD, Colorado State University, 1980.
- Wilson, Ann L.**, Professor of Human Development, Family and Consumer Sciences, Graduate Faculty, 2002; BA, Lewis and Clark College, 1969; MA, Michigan State University 1973; PhD, 1975; MS, SDSU, 1994; MA, Augustana College, 1995; Wilson, James A., Extension Pesticide Education Coordinator, 1980, 1993; BS, SDSU, 1978; MS, 1992; PhD, 2003.
- Wilson-Sweebe, Kimberly**, Children, Youth and Families at Risk Project Leader, 2004; A.S., Seminole Junior College, 1989; BS, University of Oklahoma, 1994; MS, Capella University, 2003.
- Wimberly, Michael**, Senior Research Scientist of Geographic Information Science Center of Excellence/Associate Professor, 2005; BS, University of Virginia, 1990; MS, University of Washington, 1995; PhD, Oregon State University, 1999.
- Winterboer, Venita J.**, Instructor of Nursing, 1986, 1992; BS, SDSU, 1980; MS, 1992.
- Woldt, Bradley**, Professor of Psychology, Graduate Faculty, 1995, 2006; BS, SDSU, 1988; MA, University of Montana, 1991; PhD, 1993.
- Wood, Eric**, Adjunct Associate Professor of Geography, 2004; BS, University of Michigan, 1973; MS, University of Oregon, 1984; PhD, University of Wisconsin, 2002.
- Woodard, Charles L.**, Distinguished Professor of English, Graduate Faculty, 1975, 1985; BS, Dakota State University, 1964; MA, University of Nebraska, 1966; PhD, University of Oklahoma, 1975.
- Woodard, Howard J.**, Professor of Plant Science, Graduate Faculty, 1990, 2000; BS, University of Rochester, 1973; PhD, Rutgers University, 1985.
- Woodburn, Ronald**, Director, Capital University Center, 2004; BS, Oklahoma State University, 1974; MS, University of Alberta, 1977.
- Wright, Cody L.**, Extension Beef Specialist and Associate Professor of Animal and Range Sciences, Graduate Faculty, 2001, 2006; BS, SDSU, 1994; MS, Kansas State University, 1996; PhD, North Carolina State University, 2000.
- Wu, Kangsheng**, Postdoctoral Research Associate, 2005; BS, Beijing Forestry University, 1985; MS, 1988; PhD, Louisiana State University, 2005.
- Wulf, Duane M.**, Professor of Animal and Range Sciences, Graduate Faculty, 1990, 2006; BS, SDSU, 1989; MS, 1993; PhD, Colorado State University, 1996.
- Wuttke, Jodi**, Academic Coordinator for Upward Bound, TRiO, 2006; BS, SDSU, 2006.
- Wylie, Bruce**, Adjunct Assistant Professor of Animal and Range Sciences, 2004; BS, University of Montana, 1979; MS, New Mexico State University, 1989; PhD, 1991.
- Xu, Lan**, Assistant Professor of Biology and Microbiology, Graduate Faculty, 1998; BS, Shanxi University, 1985; MS, Institute of Applied Ecology of Chinese Academy of Sciences, 1988; PhD, North Dakota State University, 1998

- Yan, Xingzhong**, Research Assistant Professor of Electrical Engineering, 2006; BS, Hunan Normal University, 1988; MS, Lanzhou Institute of Chemical Physics, 1991; PhD, Sun Yat-sen (Zhongshan) University, 1996.
- Yao, Rui**, Assistant Professor of Human Development, Family and Consumer Sciences, 2003; MS, Ohio State University, 2001; PhD, 2003.
- Yen, Yang**, Associate Professor of Biology and Microbiology, Graduate Faculty, 1996, 2000; BS, Sichuan Teachers University, 1978; MS, Nanjing Agricultural University, 1986; PhD, University of Missouri, 1989.
- York, Jonathan David**, Assistant Professor of History, 2007; BA, Appalachian State, 1986; MA, 1988; PhD, University of Illinois (Champaign-Urbana) 1997.
- You, Young J.**, Assistant Professor of Chemistry and Biochemistry, 2006; BS, Chungnam National University (Korea), 1994; MS, 1997; PhD, 2001.
- Young, Alan**, Associate Professor of Biology and Microbiology, Graduate Faculty, 2001, 2004; BS, University of Toronto (Canada), 1989; PhD, 1994.
- Young, Douglas B.**, Superintendent of Antelope Research Station, Animal and Range Sciences, 1990; BA, Chadron State College, 1989.
- Youngren, Larry**, Accounts Receivable Supervisor, 2005; BA, Yankton College, 1979.
- Yseth, Kelley**, Admissions Counselor, 2005; BA, College of Saint Benedict, 2004.
- Yseth, Tom**, Lecturer of Nutrition Food Science and Hospitality, 2006; BS, Saint John's University, 1970.
- Zagrodnik, Karen V.**, Associate Professor of English, Graduate Faculty, 2002; BA, Saint Olaf College, 1990; MA, University of Georgia, 1992; PhD, Auburn University, 1998.
- Zelinsky, Robert D.**, Sheep Unit Manager, 2004; BS, North Dakota State University, 1991; MS, 1999.
- Zeman, David H.**, Head and Professor of Veterinary Science, Director of Animal Disease and Diagnostic Lab, Director of Olson Biochemistry Lab, Graduate Faculty, 1986, 1998; BS, North Dakota State University, 1976; D.V.M., Oklahoma State University, 1980; PhD, Louisiana State University, 1986.
- Zhang, Chunsun**, Senior Research Scientist of Geographic Information Science Center of Excellence/Associate Professor, 2005; BS, Liaoning Technical University (China), 1988; MS, 1991; PhD, Federal Institute of Technology (Switzerland), 2002.
- Zhang, Huimin**, Research Associate in Dairy Science, 2007; BS, Shanxi Agricultural University (China), 1984; MS, China/Beijing Agricultural University (China), 1988; MS, Curtin University of Technology (Australia), 2000; PhD, North Dakota State University, 2007.
- Zhang, Shouhong**, Manager of Instructional Design Services, 2002, 2005; BA, Southwest Normal University (China), 1995; MA, Sichuan International Studies University (China), 1998; EdD, East Tennessee State University, 2002.
- Zhang, Weiping**, Research Assistant Professor of Veterinary Science and Center for Infectious Disease Research and Vaccinology, 2005; BS, Zhejiang Forestry College, China; MS, Southwestern Forestry University, China, 1987; PhD, Iowa State University, 1996.
- Zhao, Mojun**, Molecular Biology Research Associate, 2005; MS, Kansas State University, 2005.
- Zimmerman, Jason R.**, Associate Professor of Economics, Graduate Faculty, 1999, 2003; BA, Wabash College, 1994; MS, Purdue University, 1996; PhD, 1998.
- Zimmerman, Kyrsten K.**, Academic Development Assistant, Pharmacy, 2001; BS, Indiana University, 1992; M.H.A., 1995.
- Zobel, Kristen**, Adjunct Lecturer, Nursing, 2004; BS, SDSU, 1984.
- Zwart, Mary Beth**, Assistant Athletic Trainer, Health, Physical Education and Recreation, 1999, 2001; BS, University of Wisconsin, 1999; MS, SDSU, 2001.

Emeriti Faculty, Staff

- Aamot, Mary E.**, Professor Emerita of Cooperative Extension Service, 1967, 1995; BA, Mt. Marty College, 1965; MA, SDSU, 1976; EdD, University of South Dakota, 1985.
- Alexander, Ruth A.**, Professor Emerita of English, 1952, 1990; BA, Michigan State University, 1945; MA, University of Minnesota, 1947; PhD, Michigan State University, 1952.
- Allen, Herbert R.**, Professor Emeritus of Economics, 1963, 1987; BS, Iowa State University, 1950; MS, 1952; PhD, SDSU, 1968.
- Amiotte, Lowell**, Associate Professor Emeritus of Education and Counseling, 1990, 1996; BS, Black Hills State University, 1964; MA, University of South Dakota, 1971.
- Ayers, Clara J.**, Professor Emerita of Mathematics and Statistics, 1964, 1997; BS, Minot State College, 1958; MA, University of Minnesota, 1962.
- Bailey, Harold S.**, Vice President for Academic Affairs Emeritus, Distinguished Professor of Higher Education, 1951, 1985; BS, Massachusetts College of Pharmacy, 1944; MS, 1948; PhD, Purdue University, 1951.
- Bailey, James**, Professor Emeritus of Animal and Range Sciences, 1968, 1986; D.V.M., Iowa State University, 1946.
- Baker, Philip R.**, Professor Emeritus of Spanish, Graduate Faculty, 1973, 1999; BA, University of Connecticut, 1959; MA, Middlebury College, 1965; MAT., University of Hartford, 1968; PhD, Florida State University, 1973.
- Bates, Merritt W.**, Professor Emeritus of Foreign Languages, 1969, 1981; BA, University of Americas, 1954; MA, 1958; PhD, Universidad Nacional De Rosaria (Argentina), 1969.
- Beattie, Patricia K.**, Professor Emerita of Modern Languages, 1968, 1986; BS, SDSU, 1963; MA, Middlebury College, 1964; PhD, University of Minnesota, 1983.
- Bell, Rodney E.**, Professor Emeritus of History, Graduate Faculty, 1970, 2000; BS, Jamestown College, 1955; MA, University of Michigan, 1956; PhD, 1975.
- Berg, Sherwood O.**, President Emeritus, 1975, 1984; BS, SDSU, 1947; MS, Cornell University, 1948; PhD, University of Minnesota, 1951.
- Bergum, Gerald E.**, Professor Emeritus of Computer Science, Graduate Faculty, 1970, 2000; BS, University of Minnesota, 1958; MS, University of Notre Dame, 1962; PhD Washington State University, 1969.
- Billow, Joye**, Professor Emerita of Pharmaceutical Sciences, Graduate Faculty, 1972, 1987; BS, Temple University, 1966; PhD, 1972.
- Blazey, Charles H.**, Professor Emeritus of Health Science, 1965, 1987; BS, State University of New York, 1950; MS, 1960; D.Ed., University of Oregon, 1971.
- Bonnemann, Joseph J.**, Assistant Professor Emeritus of Plant Science, 1955, 1992; BS, SDSU, 1951; MS, 1964.
- Bonzer, Boyd J.**, Associate Professor Emeritus of Animal and Range Sciences, 1948, 1985; BS, SDSU, 1942; MS, 1959.
- Branum, Allen R.**, Professor Emeritus of Psychology and Acting Director of Diversity, 1970, 2000; BS, Montana State University, 1966; MA, University of Montana, 1968; PhD, 1971.
- Broschat, Robert A.**, Associate Professor Emeritus of Mathematics and Statistics, 1966, 1986; BS, Valley City State College, 1960; MS, North Dakota State University, 1962; MS, University of Wisconsin, 1966.

- Brown, Mary M.**, Professor Emerita of English, 1955, 1982; BA, Briar Cliff College, 1938; MA, University of South Dakota, 1947; EdD, 1964.
- Bruce, James D.**, Associate Professor Emeritus of Electrical Engineering, 1960, 1974; BS, Northern State University, 1936; MA, University of South Dakota, 1942; BS, Kansas State University, 1952; MS, 1959; PhD, University of Missouri, 1968.
- Buchenau, George W.**, Professor Emeritus of Plant Science, 1959, 1980; BS, New Mexico State University, 1954; MS, 1955; PhD, Iowa State University, 1960.
- Bugg, Wesley A.**, Director Emeritus of Finance, 1957, 1982; B.Ed., Western State University, 1942; BS, Walton School of Commerce, 1949.
- Bush, Leon F.**, Associate Professor Emeritus of Animal and Range Sciences, 1974, 1978; BS, University of Kentucky, 1950; MS, 1951; PhD, Cornell University, 1954.
- Canaan, Charles W.**, Professor Emeritus of Music and Director of Choral Activity, 1986, 1992; BS, California State University, 1965; MA, Western Michigan University, 1973; D.M.A, Arizona State University, 1986.
- Cardenas, Karen**, Professor Emerita of Modern Languages, 1992, 1994; BA, Grinnell College, 1965; MA, University of Kansas, 1970; PhD, 1973.
- Carlson, C. Wendell**, Professor Emeritus of Animal and Range Sciences, 1949, 1985; BS, Colorado State University, 1942; MS, Cornell University, 1948; PhD, 1949.
- Carson, Paul L.**, Professor Emeritus of Plant Science, 1948, 1985; BS, Northwestern Missouri State University, 1941; MS, Iowa State University, 1947.
- Cecil, Charles F.**, Instructor Emeritus of Journalism and Mass Communication, 1965, 1987; BS, SDSU, 1959; MA, 1970.
- Chappell, Gary S.**, Professor and Head of Pharmaceutical Sciences Emeritus, 1973; 2000; BS, Ohio State University, 1963; PhD, University of Kansas, 1968.
- Cheever, Jr., Herbert E.**, Professor Emeritus of Political Science and Dean of the College of Arts and Science Emeritus, 1968, 2000; BS, SDSU, 1960; MA, University of Iowa, 1962; PhD, 1967.
- Chen, Chen H.**, Professor Emeritus of Biology, 1960, 1975; BS, National Taiwan University, 1954; MS, Louisiana State University, 1960; PhD, SDSU, 1964.
- Christianson, Kenneth D., P.E.**, Professor Emeritus of Mechanical Engineering, 1955, 1991; BS, SDSU, 1949; MS, 1958.
- Chu, Shu-Tung, P.E.**, Professor Emeritus of Agricultural and Biosystems Engineering, 1955; 1999; BS, National Taiwan University, 1956; MS, University of Minnesota, 1960; PhD, 1966.
- Clever, Charles C.**, Associate Professor Emeritus of Mathematics and Statistics, 1965, 1977; BS, Grove City College, 1961; MA, University of Kentucky, 1965.
- Colburn, J. Duane**, Associate Professor Emeritus of Plant Science, 1957, 1990; BS, SDSU, 1950; MS, 1960.
- Collins, Paul E.**, Professor Emeritus of Horticulture, Forestry, Landscape and Parks, 1951, 1981; BA, Gustavus Adolphus College, 1939; BS, University of Minnesota, 1948; MS, 1949; PhD, 1967.
- Colson, John F.**, Professor Emeritus of Music, 1965, 1987; E.M.E., University of Iowa, 1955; MA, 1956.
- Costello, William J.**, Distinguished Professor Emeritus of Animal and Range Sciences, 1965, 1991; BS, North Dakota State University, 1954; MS, Oklahoma State University, 1960; PhD, 1963.
- Crain, David A.**, Professor Emeritus of History, Graduate Faculty, 1973, 1983; BA, Pittsburgh State University, 1960; MA, George Washington University, 1962; PhD Indiana University, 1972.
- Crews, Georgia W.**, Associate Professor Emerita of Nutrition, Food Science and Hospitality, Graduate Faculty, 1984, 2003; BS, Middle Tennessee State University, 1968; MS, University of Tennessee, 1970; PhD, Kansas State University, 2000.
- Crews, Michael G.**, Professor Emeritus of Nutrition, Food Science and Hospitality, Graduate Faculty, 1984, 1990; BS, Virginia Polytechnic Institute and State University, 1972; PhD, 1978.
- Dearborn, Delwyn D.**, Professor Emeritus of Animal and Range Sciences, 1956, 1990; BS, SDSU, 1954; MS, 1959; PhD, University of Nebraska, 1970.
- DeBoer, Darrell W.**, Professor Emeritus of Agriculture and Biosystems Engineering, Graduate Faculty, 1969, 2000; BS, Iowa State University, 1963; MS, 1964; PhD, 1969.
- Deethardt, Dorothy E.**, Professor Emerita of Food Research, 1955, 1972; BS, SDSU, 1937; MS, 1966.
- Dobbs, Thomas L.**, Professor Emeritus of Economics, Graduate Faculty, 1978, 1982; BS, SDSU, 1965; PhD, University of Maryland, 1969.
- Dornbush, James N., P.E.**, Professor Emeritus of Civil and Environmental Engineering, 1949, 1984; BS, SDSU, 1949; MS, University of Minnesota, 1959; D.Sc., Washington University, 1962.
- Duffey, George H.**, Professor Emeritus of Physics, 1945, 1959; BS, Cornell College, 1942; MA, Princeton University, 1944; PhD, 1945.
- Duggan, Margaret M.**, Professor Emerita of English, Graduate Faculty, 1978, 2001; BA, St. John's University, 1958; MA, Columbia University, 1965; PhD, 1972.
- Dybing, C. Dean**, Professor Emeritus of Plant Science, 1960, 1993; BS, Colorado State University, 1953; MS, 1955; PhD, University of California, 1959.
- Easton, Elizabeth**, Associate Professor Emerita of Extension, 1956, 1990; BA, Colorado State College, 1951; MS, Iowa State University, 1965.
- Edeburn, Carl**, Professor Emeritus of Educational Leadership, Graduate Faculty, 1973, 1982; BS, St. Cloud State University, 1963; MA, University of Minnesota, 1969; PhD, University of North Dakota, 1973.
- Edie, Richard**, Professor Emeritus of Visual Arts, 1956, 1987; B.F.A., Kansas City Art Institute, 1951; M.F.A., University of Kansas, 1956.
- Ellerbruch, Virgil G.**, Dean and Professor Emeritus of Electrical Engineering, Graduate Faculty, 1967, 2001; BS, University of Wyoming, 1960; MS, 1961; PhD, 1969.
- Emerick, Royce J.**, Professor Emeritus of Chemistry and Biochemistry, Graduate Faculty, 1957, 1965; BS, Oklahoma State University, 1952; MS, University of Wisconsin, 1955; PhD, 1957.
- Evans, David A.**, Professor Emeritus of English and Writer in Residence, Graduate Faculty, 1968, 1978; BA, Morningside College, 1962; MA, University of Iowa, 1964; M.F.A., University of Arkansas, 1976.
- Evenson, Donald P.**, Distinguished Professor Emeritus of Veterinary Science, Graduate Faculty, 1981, 1996; BA, Augustana College, 1964; PhD, University of Colorado, 1968.
- Evenson, Paul D.**, Professor Emeritus of Plant Science and Statistics, 1959, 2001; BS, University of Nebraska, 1957; MS, 1959.
- Evers, Norman P.**, Instructor Emeritus of Horticulture, Forestry, Landscape and Parks, 1963, 1982; BS, SDSU, 1959.
- Everett, V. Duane**, Professor Emeritus of Education, 1966, 1989; BS, University of Nebraska, 1953; MS, 1962; EdD, 1966.
- Faltemier, Joseph L.**, Professor Emeritus of Rural Sociology, 1975, 1986; BS, Morningside College, 1963; MSW, University of Nebraska, 1965.

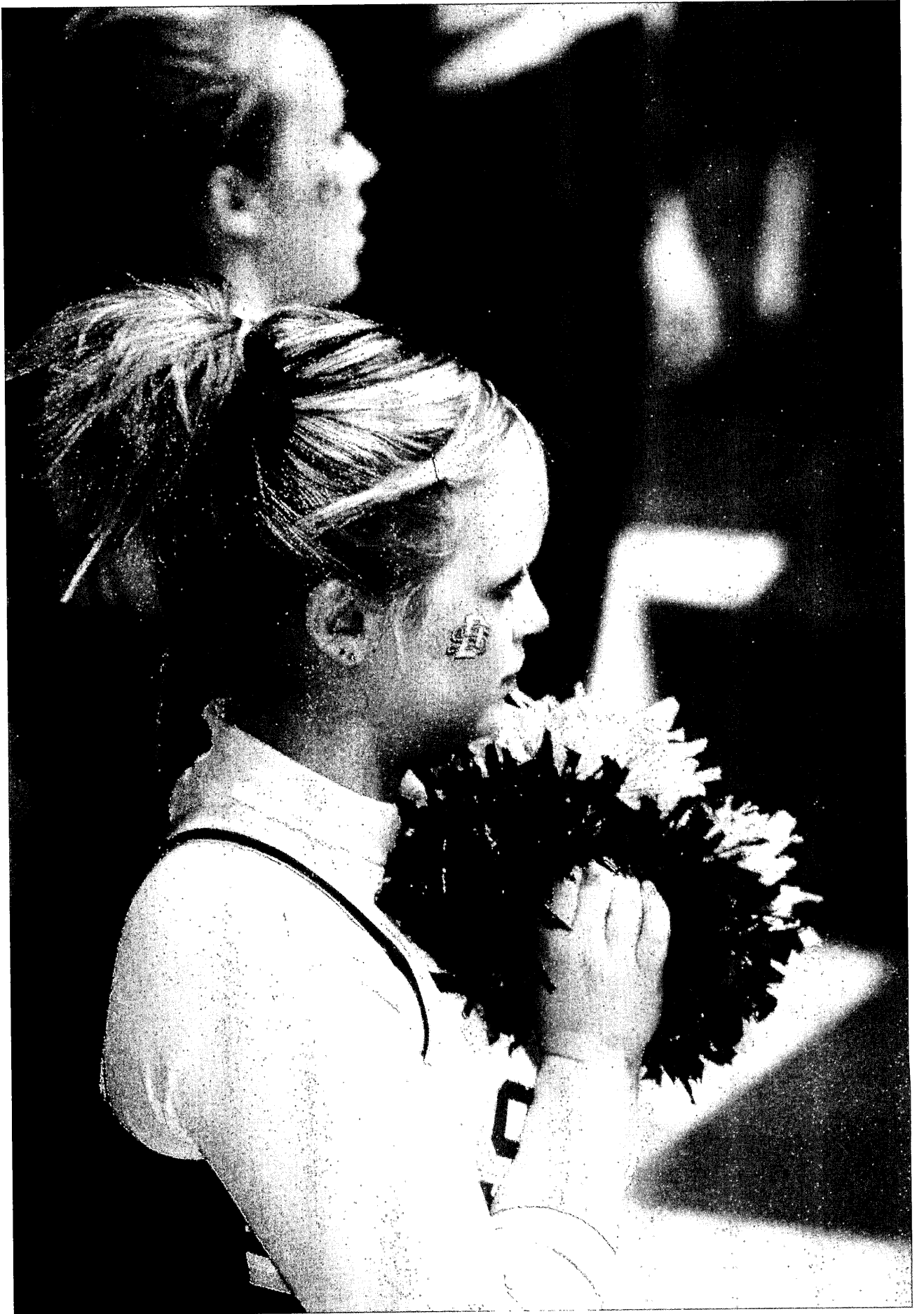
- Ferguson, Jerry L.**, Professor Emeritus of Communication Studies and Theatre, Graduate Faculty, 1970, 1982; BS, SDSU, 1964; MA, University of South Dakota, 1965; PhD, Southern Illinois University, 1973.
- Fiedler, Jerome C.**, Chief Business Officer Emeritus and Associate Director of Finance and Budget, 1967, 1978; BA, Huron College, 1962, MEd, SDSU, 1970.
- Fine, Lawrence O.**, Professor Emeritus of Plant Science, 1946, 1982; BS, North Dakota State University, 1938; PhD, University of Wisconsin, 1941.
- Flake, Lester D.**, Distinguished Professor Emeritus of Wildlife and Fisheries Sciences, Graduate Faculty, 1972, 1999; BS, Brigham Young University, 1965; MS, 1966; PhD, Washington State University, 1971.
- Fleming, Mary J.**, Emerita Extension EFNEP Coordinator/Assistant Professor of Nutrition, Food Science & Hospitality, 1958, 2000; BS, SDSU, 1958; MS, 1974.
- Forsyth, Harry L.**, Professor Emeritus of Health, Physical Education and Recreation, 1955, 1990; BS, SDSU, 1951; MS, 1956; D.P.Ed., Springfield College, 1970.
- Froehlich, Don P.**, Professor Emeritus of Mechanical Engineering, Graduate Faculty, 1982, 1992; BS, SDSU, 1972; MS, 1973; PhD, Cornell University, 1976.
- Gardner, Wayne S.**, Professor Emeritus of Plant Science, 1967, 1985; BS, Utah State University, 1950; MS, 1951; PhD, University of California, 1969.
- Gartner, F. Robert**, Professor Emeritus of Range Sciences, 1956, 1980; BS, University of Wyoming, 1950; MS, University of California, 1956; PhD, University of Wyoming, 1967.
- Gee, Dan H.**, Professor Emeritus of Animal and Range Sciences, 1966, 2001; BS, University of Minnesota, 1965; MS, SDSU, 1967; PhD, 1970.
- Gehrke, Jr., Henry**, Professor Emeritus of Chemistry and Biochemistry, 1964, 1973; BS, Oklahoma State University, 1958; MS, University of Iowa, 1963; PhD, 1964.
- Ghazi, Hassan S.**, Professor Emeritus of Mechanical Engineering, Graduate Faculty, 1984, 2004; BS, Purdue University, 1954; MS, Ohio State University, 1956; PhD, 1962.
- Gilbert, Howard A.**, Professor Emeritus of Economics, 1966, 2001; BA, Central Bible College, 1957; BS, Washington State University, 1961; MA, 1962; PhD, Oregon State University, 1967.
- Graetzer, Hans G.**, Professor Emeritus of Physics, 1956, 1992; BA, Oberlin College, 1952; MS, Yale University, 1953; PhD, 1956.
- Greenbaum, Harry**, Professor Emeritus of Economics, 1961, 1979; BS, Texas A&M University, 1955; MS, Ohio State University, 1956; PhD, 1961.
- Grove, John A.**, Professor Emeritus of Chemistry and Biochemistry, Graduate Faculty, 1968, 1979; BS, Ohio State University, 1961; MS, 1964; PhD, 1966.
- Gunsalus, Merle**, Assistant Professor Emerita of Extension, 1954, 1990; BS, SDSU, 1935.
- Haertel, Lois S.**, Professor Emerita of Biology, Graduate Faculty, 1969, 1988; BS, University of Illinois, 1961; MS, 1963; PhD, Oregon State University, 1969.
- Halverson, Andrew W.**, Professor Emeritus of Chemistry, 1949, 1985; BS, SDSU, 1943; MS, University of Wisconsin, 1947; PhD, 1949.
- Hansen, Lloyd H.**, Extension Program Development Coordinator Emeritus, 1960, 1992; BS, SDSU, 1960; MS, 1972.
- Hanson, Clark W.**, Supervisor of Agricultural Education and Professor Emeritus of Education and Counseling, Graduate Faculty, 1973, 1982; BS, University of Minnesota, 1963; MA, 1971; PhD, Iowa State University, 1972.
- Hassoun, Nadim M., P.E.**, Professor Emeritus of Civil and Environmental Engineering, Graduate Faculty, 1980; 1999; BS, Cairo University, 1956; MS, University of Michigan, 1966; PhD, 1968.
- Hatfield, Warren G.**, Professor Emeritus of Music, 1961, 1993; BA, University of Northern Iowa, 1952; MS, University of Iowa, 1959; PhD, 1967.
- Hecht, Harry G.**, Professor Emeritus of Chemistry, Graduate Faculty, 1973, 1980; BS, Brigham Young University, 1958; MS, 1959; PhD, University of Utah, 1962.
- Hegge, Margaret J.**, Distinguished Professor Emerita of Nursing, Graduate Faculty, 1969, 1999; BA Gustavus Adolphus College, 1969; MEd, SDSU, 1972; EdD, University of South Dakota, 1983; MS, University of Minnesota, 1984.
- Henning, David R.**, Alfred Chair - Associate Professor Emeritus of Dairy Science, Graduate Faculty, 1990, 2006; BS, University of Illinois, 1962; PhD, Oregon State University, 1967.
- Heusinkveld, Marion**, Professor Emeritus of General Engineering, 1984, 1990; BS, University of South Dakota, 1959, M.N.S., 1962.
- Hietbrink, Bernard E.**, Dean/Professor Emeritus of Pharmaceutical Sciences, 1964, 1987; BS, SDSU, 1958; PhD, University of Chicago, 1961.
- Higgins, Kenneth F.**, Professor Emeritus of Wildlife and Fisheries Sciences, Graduate Faculty, 1985, 1994; BS, Colorado State University, 1965; MS, SDSU, 1968; PhD, North Dakota State University, 1981.
- Hilderbrand, David**, Professor Emeritus of Chemistry, Graduate Faculty, 1974, 2004; BA, Southwest Baptist College, 1967; MA, University of Missouri, 1969; PhD, 1971.
- Hillner, Kenneth**, Professor Emeritus of Psychology, Graduate Faculty, 1969, 2000; BA, Dartmouth College, 1960; PhD, Indiana University, 1965.
- Hofland, Sharon A.**, Professor Emerita of Nursing, Graduate Faculty, 1964, 1983; BS, SDSU, 1972; MS, 1972; PhD, 1976; M.N., University of Washington, 1979.
- Hogan, Edward P.**, Professor Emeritus of Geography, Associate Vice President for Academic Affairs and Chief Information Technology Officer Emeritus, Graduate Faculty, 1967, 1999; BS, Saint Louis University, 1961; MA, 1962; PhD, 1969.
- Hollen, Evelyn**, Professor Emerita of Nutrition, Food Science & Hospitality, 1954; BS, Iowa State University, 1934; MS, SDSU, 1942; PhD, Iowa State University, 1963.
- Hoogestraat, Wayne E.**, Professor Emeritus of Communication Studies and Theatre, 1960, 1987; BA, Sioux Falls College, 1951; MA, University of South Dakota, 1953; EdD, Pennsylvania State University, 1963.
- Horton, Maurice L.**, Professor Emeritus of Plant Science, 1964, 1978; BS, Purdue University, 1953; MS, 1959; PhD, Iowa State University, 1962.
- Howard, Richard K.**, Emeritus Assistant Professor of the Cooperative Extension Service, 1970, 2001; BS, SDSU, 1966; MEd, 1976.
- Huether, Ervin A.**, Professor Emeritus of Health, Physical Education and Recreation, 1949, 1979; BA, Yankton College, 1943; MEd, University of Minnesota, 1950.
- Hughins, Ernest J.**, Professor Emeritus of Biology, 1952, 1985; BS, Baylor University, 1943; MS, Texas A&M University, 1949; PhD, University of Illinois, 1952.
- Iden, Norman L.**, Associate Professor Emeritus of Foreign Languages, 1965, 1970; BA, University of Iowa, 1952; MA, 1953.
- Iken, Martha B.**, Assistant Professor Emerita of Nursing, 1980, 1984; BS, Dakota State University, 1967; MA, University of South Dakota, 1968; BS, SDSU, 1977; MS, 1984; EdD, University of South Dakota, 2000.

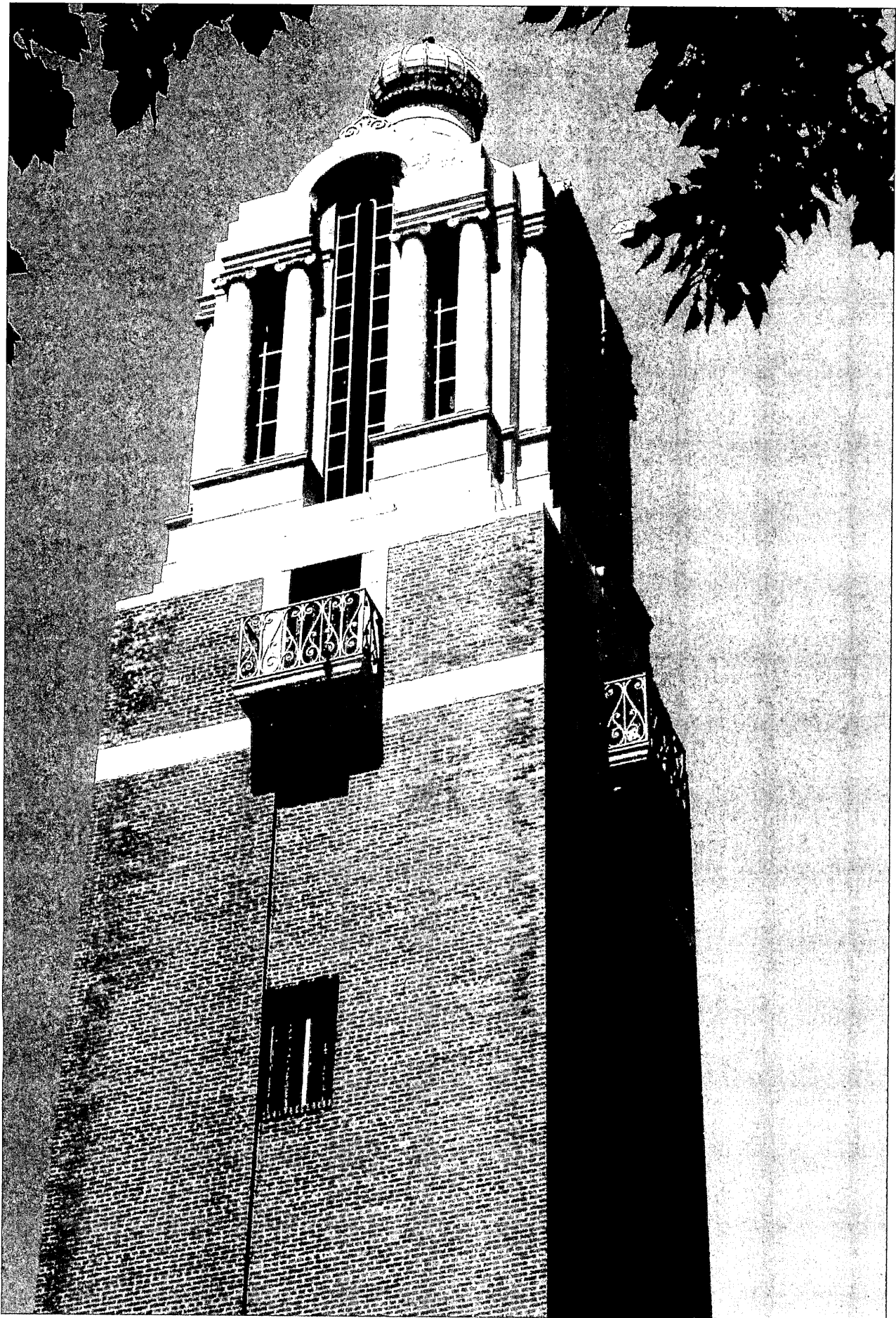
- Jensen, Darrell**, Professor Emeritus of Education/Dean of Education and Counseling Emeritus, 1971, 1981; BS, Northwest Missouri State University, 1959; MA, Drake University, 1965; PhD, University of Iowa, 1971.
- Jensen, William**, Professor Emeritus of Chemistry and Biochemistry, Graduate Faculty, 1967, 1976; BS, University of Minnesota, 1959; MS, University of Iowa, 1962; PhD, 1964.
- Johnson, Corliss L.**, Professor Emeritus of Music, Graduate Faculty, 1972, 1994; B.M.E., Emporia State University, 1965; MS, 1966; D.M.A., University of Colorado, 1972.
- Johnson, Darrell D.**, Professor Emeritus of Veterinary Science, 1976, 2001; BS, North Dakota State University, 1956; BS, Kansas State University, 1961, D.V.M., 1963, PhD, 1976.
- Johnson, James L.**, Distinguished Professor Emeritus of Communication Studies and Theatre, Director of Theatre, Graduate Faculty, 1973, 2001; BS, Kansas State University, 1960; MA, University of South Dakota, 1961; PhD, University of Kansas, 1973.
- Johnson, James R.**, Professor Emeritus of Animal and Range Sciences, 1966, 2001; BS, Montana State University, 1964; MS, 1966; PhD, Oregon State University, 1974.
- Johnson, LeRoy C.**, Associate Professor Emeritus of Horticulture, Forestry, Landscape and Parks, 1965, 1988; BS, Michigan State University, 1951; MS, Kansas State University, 1964.
- Kantack, Benjamin H.**, Professor Emeritus of Entomology and Plant Science, 1962, 1977; BS, Kansas State University, 1951; MS, Oklahoma State University, 1954; PhD, University of Nebraska, 1963.
- Kenefick, Donald G.**, Professor Emeritus of Plant Science and Biochemistry, Graduate Faculty, 1959, 1971; BS, University of Wisconsin, 1951; PhD, Michigan State University, 1959.
- Kerr, Foster**, Water Resources Specialist Emeritus, Agricultural and Biosystems Engineering, 1957, 1990; BS, University of South Dakota, 1933.
- Kildahl, Karen A.**, Professor Emerita of English, Graduate Faculty, 1969, 2001; BS, University of Washington, 1963; MA, 1968; PhD, 1974.
- Kim, Han J.**, Professor Emeritus of Economics, Graduate Faculty, 1967, 1979; A.A., San Joaquin Delta College, 1958; BA, University of California, 1960; MA, University of Oregon, 1962; PhD, Oregon State University, 1969.
- Kingsley, Quentin**, Assistant Professor Emeritus of Plant Science, 1978, 1990; BS, SDSU, 1956; MS, 1963.
- Kirkbride, Clyde A.**, Professor Emeritus of Veterinary Science and Biology and Microbiology, 1967, 1990; D.V.M., Oklahoma State University, 1953; MS, SDSU, 1970.
- Knabach, Wayne E.**, Professor Emeritus of Electrical Engineering, 1957, 1975; BS, SDSU, 1949; MS, 1961.
- Knofczynski, Clayton W., P.E.**, Professor Emeritus of Mechanical Engineering, 1958, 1991; BS, SDSU, 1958; MS, 1966.
- Kohl, Robert A.**, Professor Emeritus of Plant Science, Graduate Faculty, 1975, 1987; BS, Purdue University 1958; MS, Utah State University, 1960; PhD, 1962.
- Kohler, Paul H.**, Professor Emeritus of Animal Science, 1951, 1962; BS, SDSU, 1949; MS, 1950; PhD, University of Minnesota, 1959.
- Kranzler, Albert W.**, Professor Emeritus of Mathematics, 1942, 1981; BS, University of North Dakota, 1937; MS, University of Minnesota, 1950.
- Kranzler, Ruth**, Professor Emerita of Human Development, Consumer and Family Sciences, 1957, 1978; BS, SDSU, 1957; MS, 1969.
- Lacher, Robert J.**, Professor Emeritus of Mathematics and Statistics, Graduate Faculty, 1970, 1982; BS, Saint Cloud State University, 1961; MS, Rutgers University, 1965; D.A., University of Northern Colorado, 1971.
- Laird, Ruth L.**, Associate Professor Emerita of Journalism, 1966, 1980; BA, Cornell College, 1935; MA, University of Iowa, 1966.
- Lamberton, Charles E.**, Professor Emeritus of Economics, Graduate Faculty, 1974, 1984; B.B.A., University of Minnesota, 1960; MS, University of Wyoming, 1970; PhD, Iowa State University, 1975.
- Lattin, Danny L.**, Professor and Dean Emeritus of the College of Pharmacy, Graduate Faculty, 1995; BS, University of Kansas, 1965; PhD, University of Minnesota, 1970.
- Lee, Richard W.**, Professor Emeritus of Journalism and Mass Communication, Graduate Faculty, 1978; BS, University of Illinois, 1956; MA, Southern Illinois University, 1964; PhD, University of Iowa, 1972.
- Leisure, O. W., Professor Emeritus of Physics, Graduate Faculty, 1963, 2004; BS, SDSU, 1960; MS, 1966.
- Leslie, Jerome R.**, Assistant Professor Emeritus in Extension, 1978, 2001; BS, SDSU, 1962; MS, 1990.
- Libel, George W.**, Professor Emeritus of Animal and Range Sciences, 1968, 2001; BS, University of Nebraska, 1966; MS, 1968; PhD, SDSU, 1974.
- Linder, Raymond L.**, Professor Emeritus of Wildlife and Fisheries Sciences, 1964, 1973; BS, University of Nebraska, 1953; MS, Iowa State University, 1955; PhD, University of Nebraska, 1964.
- Lingren, Charles K.**, Professor Emeritus of Educational Leadership, Graduate Faculty, 1976, 1999; BA, University of Northern Iowa, 1958; MA, University of Iowa, 1968; PhD, 1975.
- Luther, Richard M.**, Professor Emeritus of Animal Science, 1964, 1987; BS, SDSU, 1954; MS, 1959; PhD, Iowa State University, 1964.
- Lyle, Mary F.**, Professor Emerita of Extension, 1943, 1984; BS, University of South Dakota, 1943; MS, Iowa State University, 1953; PhD, University of Wisconsin, 1968.
- Marquardt, Steve R.**, Dean and Professor Emeritus of Library Science, Graduate Faculty, 1996; BA, Macalester College, 1966; MA, University of Minnesota, 1970; MA, 1974; PhD, 1978.
- Matz, Ralph L.**, Program Coordinator Emeritus, Cooperative Extension Service, 1980, 1998; BS, SDSU, 1969; MEd, 1971; MS, 1975.
- McCone, William C.**, Associate Professor Emeritus of Animal Science, 1947, 1955; BS, SDSU, 1943, M.D., 1950.
- McMullen, Charles R.**, Professor Emeritus of Biology and Microbiology, Assistant Director of Academic Programs of College of Agriculture and Biological Sciences, Graduate Faculty, 1966, 1986; BS, Northern State University, 1966; MS, SDSU, 1969; PhD, 1974.
- McRoberts, Donald E.**, Associate Professor Emeritus of Chemistry, 1956, 1985; BS, Montana State University, 1943; MS, 1963.
- Meyer, Edward L.**, Professor Emeritus of Communication Studies and Theatre, Supervisor of Speech and Hearing Center, 1965, 1976; BA, Huron College, 1950; MA, University of South Dakota, 1953; PhD, University of Minnesota, 1975.
- Miller, John E.**, Professor Emeritus of History, Graduate Faculty, 1974, 1984; BA, University of Missouri, 1966; MA, University of Wisconsin, 1968; PhD, 1973.
- Miller, Peggy Gordon**, President and Professor Emerita of Education, Graduate Faculty, 1998; BA, Transylvania University, 1959; MS, Northwestern University, 1964; EdD, Indiana University, 1975, L.L.D., Transylvania University (Honorary Degree), 1993.

- Monahan, Maurice L.**, Professor Emeritus of Mathematics, 1956, 1999; BS, SDSU, 1956; MS, University of Illinois, 1964.
- Morgan, Helen N.**, Professor Emeritus of Visual Arts, 1965, 1984; B.F.A., School of the Art Institute of Chicago, 1953; M.F.A., 1964; EdD, Illinois State University, 1984.
- Morrill, Keith**, Associate Professor Emeritus of Biology, 1968, 1975; BS, SDSU, 1959; MA, University of South Dakota, 1963.
- Murra, Gene**, Professor Emeritus of Economics, 1959, 1977; BS, SDSU, 1959; MS, 1960; PhD, Ohio State University, 1963.
- Myers, Gerald A.**, Professor Emeritus of Biology, 1958, 1968; BA, Kearney State College, 1951; MA, University of Northern Colorado, 1957; PhD, SDSU, 1963.
- Nelson, David S.**, Professor Emeritus of Philosophy, 1968, 2001; BA, Augustana College, 1960; MS, S.D. School of Mines and Technology, 1962; PhD, University of Oregon, 1967.
- Nelson, Gorman R.**, Associate Professor Emeritus of Mathematics, 1963, 1984; BA, Augustana College, 1934; MS, S.D. School of Mines and Technology, 1963.
- Nelson, Joy**, Instructor Emerita of Nursing, 1966, 1977; BAE., Art Institute of Chicago, 1952.
- O'Connell, James**, Extension Specialist Emeritus, 1936, 1985; BS, SDSU, 1935.
- Omodt, Gary W.**, Professor Emeritus of Pharmaceutical Sciences, 1958, 1968; BS, University of Minnesota, 1953; PhD, 1959.
- Pahl, Darrel**, Assistant Professor Emeritus of Agricultural and Biosystems Engineering, 1951, 1985; BS, SDSU, 1950.
- Palmer, Ivan S.**, Professor Emeritus of Chemistry and Biochemistry, 1955, 1973; BS, SDSU, 1955; MS, 1956; PhD, Pennsylvania State University, 1960.
- Paradise, Francis C.**, Associate Professor Emeritus of Mechanical Engineering, 1959, 1979; BS, University of Nebraska, 1940.
- Parsons, John G.**, Professor and Head Emeritus of Dairy Science, Graduate Faculty, 1968, 2001; BS, University of Manitoba, 1961; MS, 1963; PhD, Pennsylvania State University, 1968.
- Paynter, Wilford G.**, Assistant Professor of Extension Emeritus, 1949, 1983; BS, SDSU, 1949.
- Pedersen, James O.**, Professor of Education/Dean of General Registration Emeritus, BS, SDSU, 1955; MS, 1962; PhD, Purdue University, 1968.
- Pengra, Robert M.**, Professor Emeritus of Microbiology, 1957, 1981; BS, SDSU, 1951; MS, 1953; PhD, University of Wisconsin, 1959.
- Perpich, Mary**, Associate Professor Emeritus of Journalism and Mass Communication, BA Michigan State University, 1976; MA Michigan State University, 1981.
- Petersen, Marvin E.**, Associate Professor Emeritus of Electrical Engineering, 1982, 1989; BS, S.D. School of Mines and Technology, 1948; MS, Massachusetts Institute of Technology, 1957.
- Peterson, Donald L.**, Extension Specialist and Professor Emeritus of Economics, 1974, 1987; A.A., Austin Community College, 1960; BA, Mankato State University, 1965; MA, 1967; PhD, University of Nebraska, 1973.
- Peterson, Gary**, Professor Emeritus of Biology and Microbiology, Graduate Faculty, 1973, 1983; BS, University of Utah, 1965; MS, Emporia State University, 1969; D.A., University of Northern Colorado, 1971.
- Peterson, Ronald M.**, Professor Emeritus of Horticulture-Forestry, 1953, 1987; BS, Colorado State University, 1947; MS, University of California, 1949; PhD, University of Minnesota, 1953.
- Piersel, David**, Professor Emeritus of Music, 1978, 2000; B.M.E., Simpson College, 1958; MA, University of Iowa, 1964; PhD, 1970.
- Plumart, Phillip E.**, Professor Emeritus of Animal Science, 1961, 1990; BS, University of Illinois, 1950; MS, Kansas State University, 1952.
- Pollmann, Robert J.**, Associate Professor of Plant Science/Manager of Seed Certification Emeritus, 1978, 2004; BS, SDSU, 1961; MEd, 1967.
- Powers, James E.**, Professor Emeritus of Clinical Pharmacy, Graduate Faculty, 1983, 2000; BS, University of Wisconsin, 1957; PharmD, University of Minnesota, 1983.
- Raney, A. Leon**, Professor/Dean of Libraries Emeritus, BS, University of Central Arkansas, 1960; MS, Louisiana State University, 1962; PhD, Indiana University, 1972.
- Redhead, Ruth W.**, Distinguished Professor Emerita of Foreign Languages, 1962, 1989; B.Ed., University of Vermont, 1945; MA, University of Minnesota, 1954; PhD, 1971.
- Reeves, Dale L.**, Professor Emeritus of Plant Science, 1970, 1980; BS, Kansas State University, 1958; MS, 1963; PhD, Colorado State University, 1969.
- Richardson, Jay R.**, Professor Emeritus of Human Development, Consumer and Family Sciences, 1963, 1970; BS, Brigham Young University, 1957; MS, 1958; EdD, Pennsylvania State University, 1969.
- Richardson, Marilyn**, Associate Professor Emerita of Health, Physical Education and Recreation, 1963, 1994; BA, Brigham Young University, 1956; MA, Pennsylvania State University, 1963.
- Richter, Anthony H.**, Professor Emeritus of German, Graduate Faculty, 1971, 1981; BA, Northwestern University, 1965; MAT., 1966; PhD, 1971.
- Roberts, Ardelle A. Lundeen**, Professor Emerita and Head of Economics, 1976, 1977; BS, SDSU, 1970; MS, 1971; PhD, Iowa State University, 1976.
- Rollag, Dwayne A., P.E.**, Professor and Head of Civil and Environmental Engineering, Graduate Faculty, 1965, 1979; BS, University of Minnesota, 1959; MS, SDSU, 1966; PhD, Purdue University, 1975.
- Romans, John R.**, Professor Emeritus of Animal and Range Sciences, 1962, 1997; BS, Iowa State University, 1955; MS, SDSU, 1964; PhD, 1967.
- Rose, Madeleine S.**, Associate Professor Emerita of Nutrition, Food Science & Hospitality, Science Fair Coordinator, Graduate Faculty, 1990, 2000; BS, University of California, 1970; MS, University of Maryland, 1972; PhD, Texas Woman's University, 1985.
- Rose, Robert**, Associate Professor Emeritus of Nutrition, Food Science & Hospitality, 1988, 2000; BS, SDSU, 1970; MS, University of Maryland, 1972; PhD, Texas Woman's University, 1991.
- Rue, Rolland R.**, Professor Emeritus of Chemistry and Biochemistry, 1962, 1983; BA, Macalester College, 1957; PhD, Iowa State University, 1962.
- Sander, Duane**, Dean and Professor Emeritus of Electrical Engineering, 1967, 1999; BS, S.D. School of Mines and Technology, 1960; MS, Iowa State University, 1962; PhD, 1964.
- Sanderson, Cecil**, Professor Emeritus of Extension, 1937, 1984; BS, SDSU, 1937; MS, 1964.
- Sandfort, John F.**, Professor Emeritus of Mechanical Engineering, 1958, 1977; BS, Ohio State University, 1933; BS, 1934; MS Iowa State University, 1947.
- Satterlee, James L.**, Professor Emeritus and Head of Rural Sociology, Graduate Faculty, 1962, 1976; BS, SDSU, 1962, MS, 1963; PhD, 1970.

- Scalet, Charles G.**, Professor Emeritus of Wildlife and Fisheries Sciences, Graduate Faculty, 1973, 1982; BA, Southern Illinois University, 1964; MA, 1967; PhD, University of Oklahoma, 1971.
- Schliessmann, Michael R.**, Assistant Dean and Professor Emeritus of Communication Studies and Theatre, Institutional Management Officer, Graduate Faculty, 1973, 2001; BS, SDSU, 1973, MS, 1974; PhD, University of Kansas, 1981.
- Scholten, Marvin**, Professor Emeritus of Education, 1956, 1985; BA, University of Minnesota, 1949; MA, University of South Dakota, 1950; EdD, 1967.
- Semeniuk, Alexandra O.**, Professor Emerita of Textiles, Clothing, and Interior Design, 1959, 1980; BS, SDSU, 1955; MS, 1961.
- Shank, D. Boyd**, Professor Emeritus of Plant Science, 1946; 1980; BS, University of Nebraska, 1935; PhD, Iowa State University, 1941.
- Shubeck, Fred E.**, Professor Emeritus of Plant Science, 1951, 1985; BS, SDSU, 1940; PhD, University of Minnesota, 1951.
- Skubic, Louis G.**, Professor Emeritus of General Engineering, 1953, 1985; BS, University of Minnesota, 1947; MA, 1953.
- Slyter, Lowell**, Professor Emeritus of Animal and Range Sciences, Graduate Faculty, 1970, 2001; BS, Kansas State University, 1964; MS, University of Nebraska, 1966; PhD, Kansas State University, 1969.
- Smolik, James D.**, Professor Emeritus of Plant Science, Graduate Faculty, 1967, 1988; BS, SDSU, 1965; MS, 1969; PhD, 1973.
- Sorenson, Jerry A.**, Professor Emeritus of General Engineering Technology, Graduate Faculty, 1984, 2000; BSE., University of South Dakota, 1963; MEd, University of Illinois, 1967.
- Spinar, Leo H.**, Professor Emeritus of Chemistry and Biochemistry, 1966, 1970; BA, University of South Dakota, 1951; MS, University of Wisconsin, 1953; PhD, 1958.
- Spinar, Melvin F.**, Professor Emeritus of Visual Arts, 1969, 1989; BA, Dakota Wesleyan University, 1962; MA, University of Iowa, 1965; M.F.A., 1966; M.F.A., 1966.
- Steinley, Gary L.**, Professor Emeritus of Education and Counseling, Graduate Faculty, 1979, 1992; BS, Black Hills State University, 1963; MA, Fresno State University, 1967; PhD, University of Utah, 1970.
- Stofflet-Gouldin, Dorothy**, Professor Emerita of Textiles, Clothing and Interior Design, 1962, 1977; BA, Coe College, 1933; MS, Iowa State University, 1948.
- Stuart, Signe**, Professor Emerita of Visual Arts, 1972, 1974; BA, University of Connecticut, 1959; MA, University of New Mexico, 1960.
- Stymiest, Clair**, Associate Professor of Plant Science Emeritus, 1967, 2004; BS, SDSU, 1966; MS, 1970.
- Sunde, Carl R.**, Professor Emeritus of Modern Languages, 1970, 1980; BA, Luther College, 1962; MA, University of Iowa, 1967; PhD, 1974.
- Swanson, Robert N.**, Professor Emeritus of Veterinary Science, 1965, 1996; BS, Ft. Hays Kansas State College, 1953; MS, Kansas State University, 1960; D.V.M., 1960; PhD, 1964.
- Swedlund, Harriet, P.**, Director of International Programs Emerita and Assistant Professor Emerita of Apparel Merchandising, 1984, 1994; BS, Iowa State University, 1954; MS, 1957.
- Sweeney, Jerry K.**, Professor Emeritus and Head of History, Graduate Faculty, 1970, 2000; BA, Fort Hays Kansas State University, 1962; MA, Kansas State University, 1967; PhD, Kent State, 1970.
- Taylor, Donald C.**, Professor Emeritus of Economics, 1980, 1996; BS Cornell University, 1959; MS, University of Minnesota, 1964; PhD, 1965.
- Thompson, John E.**, Professor Emeritus of Economics, 1952, 1985; BS, University of South Dakota, 1950, MS, SDSU, 1953; PhD, University of Wisconsin, 1960.
- Tidemann, Larry J.**, Director Emeritus of Cooperative Extension Service, 1970, 1999; BS, SDSU, 1970; MS, 1972.
- Tiltrum, Charles A.**, Associate Professor Emeritus of Civil and Environmental Engineering, 1981; BS, SDSU, 1972; MS, 1974.
- Trapp, Lansford E.**, Assistant Professor Emeritus of Mathematics, 1967, 1983; BS, SDSU, 1948; MS, Kansas State University, 1950.
- Tucker, William L.**, Agricultural Experiment Station Statistician/Professor Emeritus of Mathematics and Statistics, 1963, 1972; BS, University of Kentucky, 1952; MS, North Carolina State University, 1957; PhD, 1963.
- Vandever, Jan J.**, Professor Emerita of Mathematics and Statistics, Graduate Faculty, 1981, 1990; BS, Monmouth College, 1967; MEd, Rutgers University, 1971; MAT., Colorado State University, 1973; PhD, University of North Dakota, 1976.
- Wadsworth, Jr., William S.**, Professor Emeritus of Chemistry, 1962, 1970; BS Trinity College, 1950; MS, 1952; PhD, Pennsylvania State University, 1955.
- Wagner, Robert T.**, President Emeritus, Professor Emeritus of Rural Sociology, Distinguished Regental Professor of Higher Education, 1970, 1997; BA, Augustana College, 1954; M.Div., Seabury Western Theological Seminary, 1957; S.T.M., 1970; PhD, SDSU, 1972; L.H.D., Augustana College, 1994; D.P.S., SDSU, 1997; D.D., 2000.
- Wahlstrom, Richard C.**, Distinguished Professor Emeritus of Animal and Range Sciences, 1952, 1988; BS, University of Nebraska, 1948; MS, University of Illinois, 1950; PhD, 1952.
- Walker, Darwin E.**, Professor Emeritus of Music, 1973, 1979; BS, Northern State University, 1959; MA, University of Northern Colorado, 1968; EdD, 1972.
- Walstrom, Robert J.**, Professor Emeritus of Plant Science, 1955, 1988; BS, University of Nebraska, 1947; MS, 1949; PhD, Iowa State University, 1955.
- Werner, Hal D.**, Professor Emeritus of Agricultural and Biosystems Engineering, 1970, 1992; BS, SDSU, 1970; MS, 1971; PhD, University of Minnesota, 1984.
- West, George A.**, Professor Emeritus of English, Graduate Faculty, 1969, 2000; BS, SDSU, 1965; MA, University of Nebraska, 1967; PhD, 1972.
- Whalen, Richard H.**, Professor Emeritus of Biology and Microbiology, Graduate Faculty, 1967, 1990; BS, College of Saint Thomas, 1954; MS, University of Illinois, 1956; PhD, Purdue University, 1965.
- White, Everett M.**, Professor Emeritus of Plant Science, 1954, 1990; BS, Iowa State University, 1948; MS, 1950; PhD, 1953.
- Whitehead, Eugene I.**, Professor Emeritus of Chemistry, 1941, 1983; BS, SDSU, 1939; MS, 1941.
- Widvey, Harold W.**, Professor Emeritus of Communication Studies and Theatre, 1972, 1978; BSEd., Northern State University, 1957; MSED., 1961; PhD, University of Nebraska, 1971.
- Widvey, Lois I.**, Distinguished Professor Emerita of Education, Graduate Faculty, 1973, 1998; BS, Northern State University, 1955; MSED., 1958; EdD, University of Nebraska, 1971.
- Wiersma, John L.**, Professor Emeritus of Agricultural and Biosystems Engineering, 1943, 1983; BS, SDSU, 1943; MS, 1950; PhD, University of California, 1970.
- Williams, Louis P.**, Professor Emeritus of English, Graduate Faculty, 1965, 1983; BA, University of Texas, 1960; MA, 1965; PhD, University of Minnesota, 1976.

- Williamson, Edward**, Associate Professor Emeritus of Plant Science, 1947, 1990; BS, SDSU, 1947; MS, 1952.
- Wills, Rena**, Professor Emerita of Nutrition, Food Science & Hospitality, 1952, 1976; BS, Iowa State University, 1940; MS, 1946.
- Witherington, Paul**, Professor Emeritus of English, 1970, 1993; BA, Baylor University, 1954; MA, University of Texas, 1960; PhD, 1964.
- Wrage, Leon J.**, Distinguished Professor of Plant Science Emeritus, Extension Specialist, 1961, 2004; BS, SDSU, 1961; MS, 1964.
- Yarbrough, Jerry W.**, Professor Emeritus of English, 1968, 1976; BA, Abilene Christian University, 1960; MA, University of Texas, 1962; PhD, 1968.
- Yocom, Kenneth L.**, Professor Emeritus of Mathematics and Statistics, Graduate Faculty, 1962, 1980; BS, SD School of Mines and Technology, 1960; MS, University of Wyoming, 1962; PhD, 1972.





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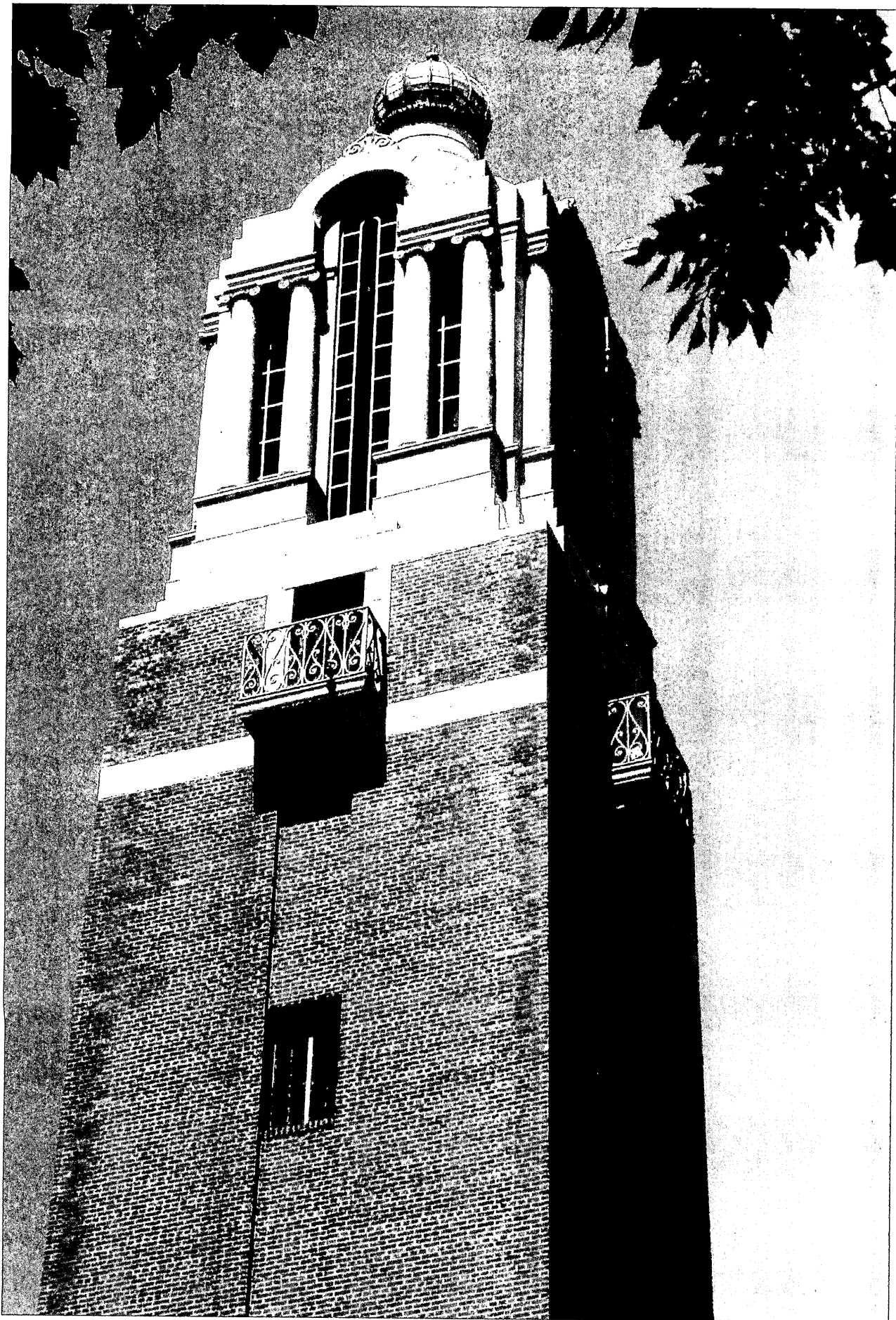
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APPLICATION MATERIALS

Application for Admission

Application for Admission to a Degree Program

Processing of an application will begin only when the application form, application fee, transcripts, letters of recommendation, and test data as required by department are received in the Graduate School. If an applicant fails to complete the application file for the term proposed to begin graduate work, a new date of entry will need to be specified.

Complete application files will include:

1. Complete, signed application form. Please fill in requested information by typing or printing in ink. An application form is included at the back of this catalog.
2. \$35.00 application fee. This fee is charged to degree-seeking students only, and is non-refundable regardless of what action is taken on the application for admission.
3. Official transcripts from each higher education institution attended. The Graduate School will access all South Dakota regental transcripts, but the student must furnish all those from non-regental institutions. The earned Bachelor's Degree must be noted on the undergraduate transcript. When an incomplete transcript is furnished in support of the application, a complete transcript will be required by the end of the first semester of coursework.
4. Letters of recommendation. Two letters of recommendation are required from persons acquainted with the applicant's academic record. Three letters are required of applicants into the Nursing or Family Financial Planning programs. For CHRD, please contact the department for the recommendation forms. Signed letters of recommendation may be submitted on plain paper or letterhead, if desired, or recommenders may use the forms included in the back of this catalog.
5. The GRE test is required of all applicants into Biology, Chemistry (strongly recommended), English, Microbiology, Pharmaceutical Sciences, Plant Science, and Wildlife and Fisheries.
6. Some programs require additional admission materials. Applicants should consult the specific requirements for each program.
7. The TOEFL score is required of all international students. This score must be an original score, a copy of a verifiable score, or a certified copy of the original score sheet.
8. Proof of immunity for Measles (Rubeola) and Rubella are required for all new, re-admit, and transfer students at all state institutions. (If you were born before January 01, 1957, you are exempt from this requirement.) Please contact Student Health Services at 605/688-6146 for further information.
9. Applications and all related documents should be mailed to:

Graduate School
South Dakota State University
Administration Bldg., Room 130
Box 2201
Brookings, SD 57007-1998



Graduate School Admission — Degree Seeking

South Dakota State University, Graduate School, Box 2201, Brookings SD 57007-1998

Applying as a graduate student for the first time at SDSU Reapplying

BIOGRAPHICAL INFORMATION

Legal Name _____
 LAST FIRST MIDDLE FORMER PREFERRED NAME

Permanent Address _____
 Street, RFD, or Box City State or Country Zip Code

Local Address _____
 (all SDSU correspondence will be sent to this address) Street, RFD, or Box City State or Country Zip Code

Home Phone _____ Work Phone _____ E-mail Address _____

Social Security Number _____ Birth Date _____

Emergency Contact _____
 Name Daytime Phone Number Relationship

Citizenship: USA Resident Alien Other (specify citizenship) _____ Country of Birth _____

Have you obtained a visa? Yes No If yes, type of visa: _____ Date of initial entry into the U.S. _____

Have you lived in South Dakota for the past 12 months? Yes No If no, please explain _____

If you are a South Dakota resident, but you have not lived in South Dakota for the past 12 months, please explain _____

EDUCATIONAL BACKGROUND

University Granting Bachelor's Degree _____ Degree _____ Date Received _____

University Granting Master's Degree _____ Degree _____ Date Received _____

List ALL Colleges/Universities Attended:

School Name	City	State	Dates Attended
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Standardized admissions tests taken (GRE, MAT, TOEFL) minimum TOEFL of 525 required _____

Name of Test	Latest date test taken	Score
_____	_____	_____

Have you ever been dismissed from any college? Yes No If yes, when and for what reason? _____

Have you ever applied for admission to another graduate school? Yes No If yes, what college? _____ Were you admitted? Yes No

PROFESSIONAL OBJECTIVE

Term graduate work desired _____
 Indicate Spring/Summer/Fall Year

Are you planning to work on a master's or doctoral degree at SDSU? Master's Doctoral Campus Location _____

What Graduate program do you plan to pursue? _____ Specialization (see catalog for choices) _____

Have you previously applied as a graduate student at SDSU? Yes No If yes, when? _____

ADDITIONAL INFORMATION

This information is used for institutional research and Federal reports. Your responses will in no way affect your admission. Please circle your answers.

SEX: Male Female DISABILITY: Audio Visual Learning Disabled Mobility-Ambulatory Mobility-Wheelchair

MARITAL STATUS: Married Unmarried ETHNIC GROUP: American Indian Asian African American Hispanic White Other Unknown

Providing your social security number is voluntary. Refusal to disclose this information will not affect your eligibility for admission. The number will be used solely for record-keeping purposes to provide positive identification. If you are admitted, your social security number will appear upon your official transcript; thus, it may be disclosed to outside parties, but only under those conditions that permit disclosure of the transcript.

SDSU offers all educational programs, materials, and service to all people without regard to age, race, color, religion, sex, handicap, or national origin. SDSU is an Equal Opportunity/Affirmative Action Employer.

All answers I have given on this application are complete and accurate to the best of my knowledge. If admitted, I agree to observe the rules and regulations South Dakota State University and to pay all fees and charges assessed.

Signature _____ Date _____



Graduate Admission/Registration — Non-Degree

South Dakota State University, Graduate School, Box 2201, Brookings SD 57007-1998

Legal Name _____
Last First Middle Former Name(s)

Preferred First Name _____ Social Security Number _____ - _____ - _____ Birth Date _____

PERMANENT MAILING ADDRESS

Street _____ City _____ State _____ Zip Code _____

Home Phone (____) _____ - _____ Work Phone (____) _____ - _____ E-mail Address _____

EMERGENCY CONTACT

Name _____ Relationship to you _____

Street _____ City _____ State _____ Zip Code _____

Telephone (____) _____ - _____

RESIDENCY

Have you lived in South Dakota for the past 12 months? Yes No

If you are a South Dakota resident, but you have not lived in South Dakota for the past 12 months, please explain _____

The following information is optional. The information is used in compliance with Title VI of the Civil Rights Act of 1964. Your responses in no way affect your admission.

Gender Male Female
Ethnic Group American Indian or Alaskan Native Asian or Pacific Islander Black, not of Hispanic Origin Hispanic
 White, not of Hispanic origin Other Do not wish to respond
Citizenship USA Resident Alien Other (Specify Citizenship) _____ Country of Birth _____

EDUCATIONAL DATA

A bachelor's degree from an ACCREDITED institution is a prerequisite for pursuing graduate work. (Coursework numbered 500 and above.)

Institution Bachelor's Degree Earned: _____
School City State Date Obtained

Have you ever enrolled in graduate school at a South Dakota public university? Yes No If yes, where _____

Semester you wish to enroll: Fall _____ Spring _____ Summer _____

Have you ever enrolled in graduate classes at SDSU? Yes No If so, when? _____

Are you currently enrolled in a graduate school program at SDSU? Yes No

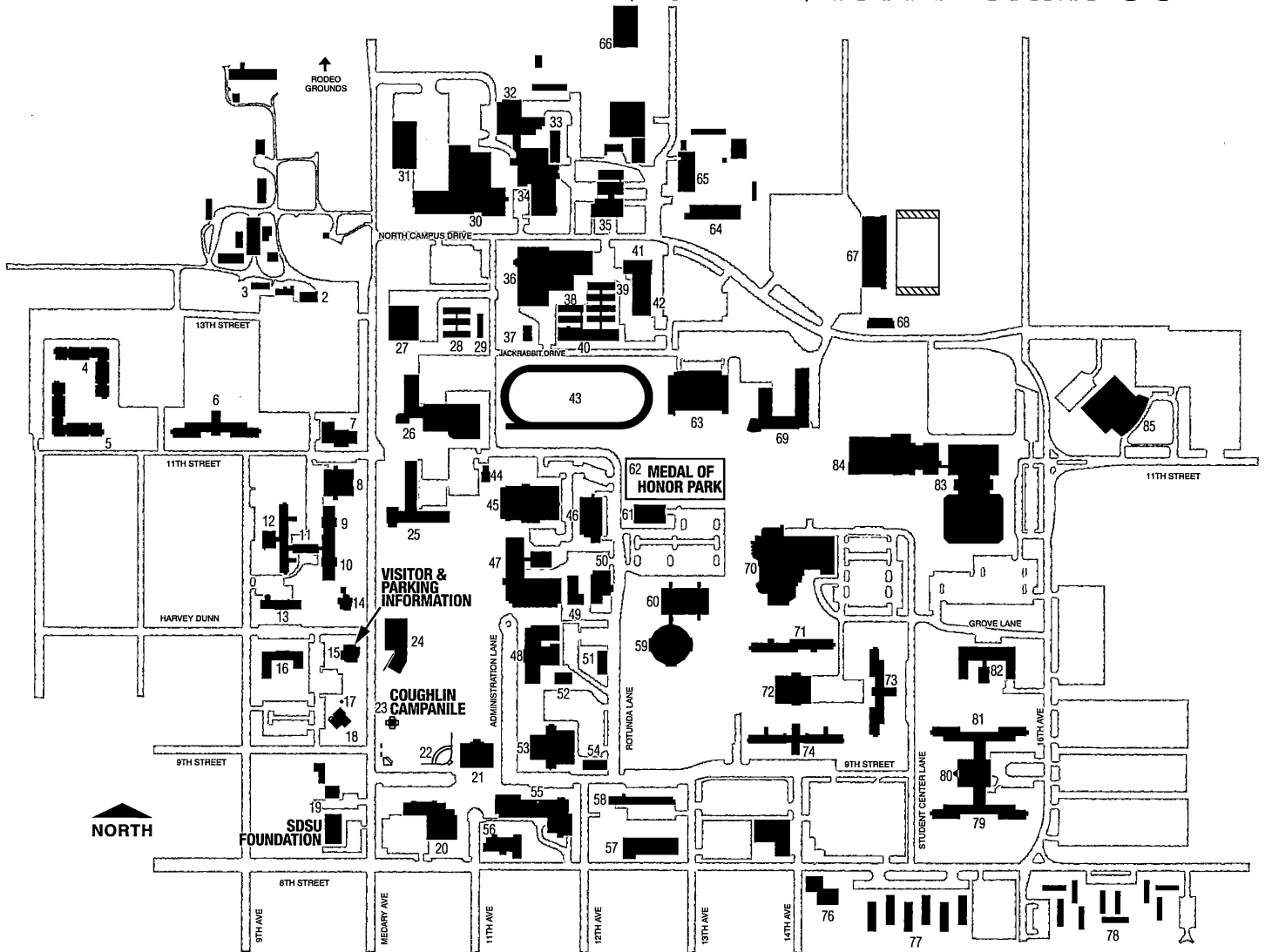
COURSE INFORMATION — please check the class(es) you are registering for in the appropriate box(es).

Reference No. (5 digits)	Dept.	Course Number	Section	Course Title	Credit Hours	Campus Location

All answers I have given on this application are complete and accurate to the best of my knowledge. If admitted, I agree to observe the rules and regulations of South Dakota State University and to pay all fees and charges assessed thereunder.

Signature _____ Date _____

SOUTH DAKOTA STATE UNIVERSITY CAMPUS



Administration Building (Doner Auditorium) (SAD).....	48	Frost Arena (Stanley J. Marshall HPER Center) (SPE).....	80	Scobey Hall (SSB).....	16
Ag Vehicle Storage (Surplus Property Storage).....	3	Grove Hall (SGH).....	71	Sexauer Field (SSF).....	43
Agricultural Engineering (SAE).....	69	Hansen Hall (SHN).....	6	Solberg Hall (SSO).....	53
Agricultural Hall (SAG).....	25	Harding Hall (SHH).....	58	South Dakota Art Museum (SMU).....	24
Agricultural Heritage Museum (SMU).....	7	Heat / Power Laboratory (SHPL).....	49	SDSU Foundation (Enterprise Center).....	19
Alvida M. Sorenson Family Resource.....	15	Hilton M. Briggs Library (SBL).....	63	Stanley J. Marshall HPER Center (Frost Arena) (SPE).....	83
& Management Center (FRMC).....		Horticulture & Forestry (SHF).....	41	State Court.....	77
Animal Disease Research & Diagnostic Lab (SAR).....	34	Horticulture Greenhouse (SHG).....	42	State Village.....	78
Animal Resource Wing (SAW).....	32	Industrial Arts Building (SIA).....	54	Student Health (West Hall) (SWH).....	13
Animal Science Arena (SAA).....	31	Intramural Building (SIM).....	45	Sylvan Theatre (SSY).....	22
Animal Science Complex (SAS).....	30	Larson Commons (Food Service) (SLC).....	80	Tompkins Alumni Center (SDSU Alumni Association).....	18
Avera Health Science Complex (Shepard Hall).....	47	Library (Hilton M. Briggs Library) (SBL).....	63	Tompkins Alumni Center Clock Tower (STA).....	17
Bailey Hall (SBY).....	4	Lincoln Music Center (Peterson Recital Hall) (SLM).....	21	United Lutheran Center.....	76
Berg Hall (SBG).....	5	Mathews Hall (SMH).....	71	University Police Department (SOR).....	15
Binnewies Hall (SBN).....	79	Medary Commons (CAP Center, Food Service)(SMC).....	8	University Relations (SCM).....	51
Briggs Library (SBL).....	63	Medal of Honor Memorial Park.....	62	University Stores & Services (SSTO).....	65
Brown Hall (SBH).....	74	Motor Pool Complex (SMPC).....	2	University Student Union (SSU).....	70
Caldwell Hall (SCH).....	82	Northern Plains Biotstress Laboratory (SNP).....	36	(Volstorff Ballroom, Food Service, Dept. of Student Activities, Bookstore)	
Catholic Campus Parish.....	75	Nursing, Family & Consumer Sciences, &.....	60	Veterinary Isolation Building (SVI).....	33
Central Heating Plant (SCP).....	50	Arts & Sciences Building (formerly NFA) (SNF)		Waneta Hall (SWN).....	12
Communications Center (University Relations) (SCM).....	51	Old Horticulture.....	52	Wecota Annex (SWX).....	11
Coolidge Sylvan Theatre (SSY).....	22	Performing Arts Center (SPAC).....	85	Wecota Hall (SWC).....	10
Coughlin-Alumni Stadium (SCS).....	67	Peterson Recital Hall (Lincoln Music Center) (SLM).....	21	Wellness Center.....	84
Coughlin-Alumni Stadium Locker Room.....	68	Physical Plant Shops (SPP).....	64	Wenona Hall (SWE).....	9
Coughlin Campanile.....	23	Physiology Laboratory (SPL).....	37	West Hall (Student Health) (SWH).....	13
Crothers Engineering Hall (SCEH).....	55	Pierson Hall (SPP).....	73	West Headhouse & West Greenhouses (SWHH).....	28
Dairy Microbiology (SDM).....	26	Plant Science Building (SPSB).....	40	Wheat Commission Greenhouse (WCG).....	29
DePuy Military Hall (SDP).....	61	Plant Science Seedhouse (SSD).....	27	Wintrose Student Success Center (SWSC).....	56
East Headhouse (SEHH).....	39	Plant Science West Greenhouses.....	38	Woodbine Cottage (President's Residence) (SWBC).....	14
Electrical Engineering & Computer Science Complex.....	57	Print Lab (SYE).....	46	Yeager Hall (SYE).....	46
Ethel Austin Martin Building (Biology Annex) (SEM).....	44	Pugsley Continuing Education Center (SPC).....	20	(US Post Office, Central Mail, Print Lab)	
Equestrian Center.....	66	(RDTN Studios/Classrooms, Christie Ballroom)		Young Hall (SYH).....	81
Foundation Seed Conditioning Plant (SFSS).....	35	Rotunda for Arts & Sciences (SRO).....	59		



South Dakota State University

Admissions Office

Box 2201

Brookings, SD 57007

Periodical