GENERAL CATALOG

SOUTH DAKOTA STATE COLLEGE

BROOKINGS, SOUTH DAKOTA

1963
1964

tion of College Work

TMENTS

The academic program of instruction is coordinated by the Dean of Academic Affairs. The fields of instruction and the degrees offered are classified and grouped under six divisions of the College with a dean in charge of each. The divisions in turn are divided into such departments as are necessary for effective teaching in each field and coordination between fields, with a professor in charge of each department as head.

1. **Agriculture.** The Division of Agriculture includes its closely related science departments, Bacteriology, Botany, Entomology-Zoology and Plant Pathology, the applied science and agricultural production departments, Agronomy, Animal Science, Dairy Science, Poultry Science, Horticulture, and Veterinary Science; and the rural social sciences, Rural Sociology and Economics.

   The division also includes the Agricultural Experiment Station and the Agricultural Extension Service, both of which serve the agricultural industry in South Dakota.
2. **Engineering.** The Division of Engineering includes two closely related basic science departments, Physics and Mathematics, also the technical departments, Agricultural Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Engineering Shops. Degrees are offered in four basic branches of engineering and in Engineering Physics.
3. **Home Economics.** The Division of Home Economics includes the technical departments, Food and Nutrition, Textiles and Clothing, Home Economics Education, Child Development and Family Life. The degree offered provides opportunity for choice of a major department.
4. **Nursing.** The Division of Nursing includes the departments of General Nursing, Clinical Nursing, Rural Nursing, and Public Health Nursing. A major in Nursing for the Bachelor of Science degree is offered for both the Registered Nurse and for basic students.
5. **Pharmacy.** The Division of Pharmacy includes the departments of Pharmacy, Pharmacology, Pharmacognosy, and Pharmaceutical Chemistry. A major in Pharmacy for the Bachelor of Science degree is offered.
6. **Science and Applied Arts.** The Division of Science and Applied Arts includes the departments of Art, Chemistry, Education and Psychology, English, Foreign Languages, History and Political Science, Music, Physical Education, Printing and Journalism, and Speech.

   Students may take an undergraduate major in any of the above mentioned departments. Also available in this division are undergraduate majors in Bacteriology, Botany, Economics, Entomology, Mathematics, Physics, Plant Pathology, Sociology, and Zoology.

STUDENT PERSONNEL DIVISION

This division works in close cooperation with all offices of the College for the general welfare of students. Services include general orientation of Freshmen and new students, and orientation sessions by divisions during the first semester a student is on campus. Services to all students include general counseling, referral to special agencies and individuals, guidance testing for counseling and advisement, student health services, food service, housing, student activities, financial aid and placement.

1. **Placement.** A Placement Counselor provides help in finding part-time work for students while in college, summer work and placement on graduation or on withdrawal from college.
2. **General Registration.** Students who are uncertain about their educational goals are permitted to register for the Freshman and Sophomore years in the General Registration division. There the student is assigned a General Registration adviser who will help the student appraise himself and make educational and vocational plans.
3. **Terminal Curricula.** Two-year terminal programs are offered and supervised by the Director of Terminal Courses. A Two-Year Certificate of Completion may be conferred upon completion of an approved two-year curricula.
4. **Student Financial Aids.** General supervision of scholarships, loans, grants-in-aid and information relating to them is provided in this division.
5. **Pre-Professional Programs.** Programs of study providing the required pre-professional education for all professional areas are available at State College. Counseling, advising and referral for students wishing pre-professional education are provided in this division. Some pre-professional programs are specifically outlined in divisional areas and students seeking preparation for professional education in these fields are referred and transferred to the proper division.

   Other student services are described in the catalog section under Division of Student Personnel Services page xx.

GRADUATE DIVISION

Graduate studies are offered, and advanced degrees recommended, by the college graduate faculty. See the current Graduate Bulletin for requirements for the various advanced degrees.

BULLETIN

South Dakota State College

OF AGRICULTURE AND MECHANIC ARTS—BROOKINGS

ANNUAL CATALOG NUMBER 1962-63

WITH ANNOUNCEMENTS FOR THE 1963-64 SESSION

Volume LV, Number 4, April 1963
Published Quarterly by South Dakota State College, Brookings, South Dakota
Second-class postage paid at Brookings, South Dakota

1963-64 CALENDAR

June, 1963

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
26	27	28	29	30		

July, 1963

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August, 1963

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September, 1963

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October, 1963

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November, 1963

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December, 1963

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

January, 1964

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February, 1964

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

March, 1964

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April, 1964

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May, 1964

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June, 1964

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July, 1964

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August, 1964

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September, 1964

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

TIPS FOR INTERPRETING THE CATALOG

The catalog contains three important entries: A brief description of the department, a detailed description of the courses offered by the department, and an outline of the curriculum required of a student majoring in the department's field of study.

In the curriculum outline, the abbreviations FS refer to the two normal terms of the academic year—Fall and Spring. Entries in the FS columns refer to credit values assigned to respective course. One credit is usually interpreted as one hour of class work per week or as three hours of lab work per week. The respective courses are identified by course name, department, and course number. For example:

Course, Dept., Course No.	F	S
English, Engl 113-123	3	3

Reference is to the English course in the English Department. The course is number 113 and 123, and is normally taken in a two semester sequence of Fall and Spring semesters. A detailed description of the course can be found by looking for English 113 and 123 under the English Department in the Division of Science and Applied Arts catalog.

In this course description, using the same example, you will find "**113-123 English** 3(3,0) FSSu." The "3" outside the parentheses is the credit value. The first number inside the parentheses is the number of recitation hours per week and the second number, in this case "0," is the number of laboratory hours per week that the course requires. The "FSSu" following parentheses means that the courses will be offered in the fall and spring terms and in summer. This system holds true for all course descriptions in the catalog.

INVESTIGATE FURTHER

State College invites you to visit the campus. Guides are available from the Admissions and Records Office. Normal office hours are maintained Monday through Friday. Visits at other times may be arranged upon request. A campus visit will enable you to see facilities and discuss your plans with faculty members.

For further information regarding a campus visit or application for admission contact the Admissions and Records Office.

COLLEGE CALENDAR 1963-64

The regular College Year is divided into Fall and Spring Semesters of approximately seventeen weeks each. The Summer Session is eight weeks.

1963 SUMMER SESSION

June 11, Tue.—Registration, forenoon
June 11, Tue.—Beginning of classes 1:10 p.m.
July 4, Thurs.—Independence Day, a holiday
Aug. 2, Fri.—Session closes at 5:00 p.m.

1963 FIRST SEMESTER

Sept. 9-14, Mon.-Sat.—Freshman Days
Sept. 13-14, Fri.-Sat.—Registration
Sept. 16, Mon.—Beginning of classes
Sept. 30, Mon.—Last day for registration for a course
Oct. 14, Mon.—Last day for incomplete make-up examination
Oct. 14, Mon.—Last day a course may be dropped without penalty
Oct. 14, Mon.—Last day for submitting graduation cards
Oct. 19, Sat.—Hobo Day, University of South Dakota
Oct. 21, Mon.—No classes
Nov. 8, Fri.—Mid-semester reports due
Nov. 11, Mon.—Veterans' Day, a holiday
Nov. 27, Wed.—Classes close at noon for Thanksgiving
Dec. 2, Mon.—Classes resume
Dec. 20, Fri.—Classes close 5:00 p.m. for Christmas recess

1964

Jan. 6, Mon.—Classes resume
Jan. 25, 27, 28, 29, Sat., Mon., Tue., Wed.—Semester examinations
Jan. 29, Wed.—Semester closes at 5:00 p.m.
Jan. 31, Fri.—Graduation exercises 10:00 a.m.

1964 SECOND SEMESTER

Feb. 4, Tue.—Registration
Feb. 5, Wed.—Beginning of classes
Feb. 20, Thurs.—Last day for registration for a course
March 5, Thurs.—Last day for incomplete make-up examination
March 5, Thurs.—Last day a course may be dropped without penalty
March 5, Thurs.—Last day for submitting graduation cards
March 25, Wed.—Mid-semester reports due
March 25, Wed.—Classes close 5:00 p.m. for Easter recess
March 27, Fri.—Good Friday, a holiday
March 29, Sun.—Easter
March 31, Tue.—Classes resume
May 30, Sat.—Memorial Day, a holiday
June 1-4, Mon.-Thurs.—Semester Examinations
June 4, Thurs.—Semester closes at 5:00 p.m.
June 7, Sun.—Seventy-eighth Annual Commencement, 7:15 p.m.

1964 SUMMER SESSION

June 9, Tue.—Registration
June 9, Tue.—Beginning of classes 1:10 p.m.
July 4, Sat.—Independence Day, a holiday
July 31, Fri.—Summer Session closes 5:00 p.m.
Aug. 1, Sat.—Graduation 10:00 a.m.

Regents of Education

HONORABLE MRS. MAYLOU AMUNSON (Term Expires January 1, 1963)..... Mobridge
HONORABLE MISS DONA BROWN (Term Expires January 1, 1963)..... Huron
HONORABLE HARRY J. EGGEN (Term Expires January 1, 1963)..... De Smet
HONORABLE RALPH JONES (Term Expires January 1, 1965)..... Midland
HONORABLE ROBERT DAILEY, JR. (Term Expires January 1, 1965)..... Flandreau
HONORABLE RUSSELL MOLSTAD (Term Expires January 1, 1967)..... Sturgis
HONORABLE R. F. HUBNER (Term Expires January 1, 1967)..... Yankton
HONORABLE ELGIE B. COACHER, Executive Director..... Pierre

Officers of the Board

HONORABLE R. F. HUBNER..... President
HONORABLE MRS. MAYLOU AMUNSON..... Vice President
HONORABLE MISS DONA BROWN..... Secretary

Other South Dakota

State Educational Institutions

University of South Dakota..... Vermillion
School of Mines and Technology..... Rapid City
Northern State Teachers College..... Aberdeen
Southern State Teachers College..... Springfield
General Beadle State Teachers College..... Madison
Black Hills Teachers College..... Spearfish

For Further Information Regarding South Dakota State College

Address Office of Admissions and Records, College Station, Brookings, South Dakota

General Information

NOTICE—Due to conditions which may arise beyond the control of South Dakota State College, statements in this catalog may be changed during the next year without notice. In so far as possible courses listed will be offered, but the College reserves the right to modify any statement in accordance with finances and other unforeseen conditions.

Application Procedure

All contacts concerning application for admission should be made to the Director of Admissions and Records, South Dakota State College, at least one month prior to the intended date of registration.

All Applicants—Must submit the following:

1. A completed application for admission form.
2. A transcript of high school credits. (If an incomplete transcript is submitted following the Junior year or the first semester of the Senior year, a final transcript should be sent following graduation.)
3. A physical examination form completed by family physician. (Any student who fails to submit a physical examination form will not be eligible for College Health Service.)
4. A $5 matriculation fee. The fee is not refundable if the student is accepted.
5. A report of scores from the American College Test. Students not able to present ACT scores in advance will be required to come in one day prior to orientation to take the test. Cost will be $3, plus board expense.

Transfer Applicants—Must submit an original transcript from each college previously attended. (INACCURATE INFORMATION MAY BE GROUNDS FOR REFUSAL OR DISMISSAL.)

Admission to the College

Entrance Credits—To be admitted to the Freshman class at South Dakota State College, a candidate for entrance must present at least 15 units of high school credit. One unit of credit is considered to be a subject which is taught five times a week throughout the high school year, or the equivalent of such instruction.

Of the 15 units of high school credits, some are required, the remainder are elective. In some cases, students who do not present required credits may arrange to make up college entrance deficiencies during the first year of study. In such cases, however, college credit will not be granted for courses taken to satisfy entrance deficiencies. Minimum requirements in specific areas are as follows:

For all divisions—3 units of English, 1 unit of algebra

For Pharmacy and Science and Applied Arts Natural Science Majors—1 additional unit of math (plane geometry)

For Engineering—1½ additional units of math (½ higher algebra, 1 plane geometry)

It is recommended that the remaining elective units should include at least one unit in natural science and one unit in social science covering American history or civics.

Resident Students, No Previous College—A resident student who has graduated from an accredited four-year high school is normally eligible for admission upon presentation of application credentials. (See Application Procedure)

Non-Resident Students, No Previous College—A non-resident student who has graduated from an accredited four-year high school in the upper half of his class is normally eligible for unconditional admission upon presentation of application credentials. (See Application Procedure) A non-resident student who ranks in the lower half of his graduating class may be admitted Scholastically on Probation* if ability test scores indicate potential for college success,

*Scholastic Probation: Students who are admitted on Scholastic Probation or Scholastically Warned are urged to restrict their course load to 14-15 credit hours. Specific academic requirements for removing probationary status are: Scholastic Probation students, unless otherwise specified, must pass at least 12 credits and earn at least a 1.5 grade point average if classified as a Freshman, or a 1.7 grade point average if classified as a Sophomore, or a 1.8 grade point average if classified as a Junior, or a 1.9 grade point average if classified as a Senior. Failure to meet these requirements will result in the following: A Scholastic Probation student will be refused permission to enroll in the college the following semester. An academic refused student may be readmitted once on Scholastic Probation after one semester of non-attendance.

or if a letter of recommendation as to scholastic ability is presented from a State College faculty member.

Transfer Students, Resident and Non-Resident—Students who have previously attended a college or university and wish to enroll at South Dakota State College normally will be unconditionally admitted if their transfer grade average is 2.0 ("C") or above. Transfer students with less than 2.0 ("C") grade average and who have not been refused enrollment at their previous college may be admitted on Scholastic Probation* if ability test scores indicate potential for college success, or if a letter of recommendation as to scholastic ability is presented from a State College faculty member.

Admission of Foreign Students—South Dakota State College appreciates the value and importance of providing educational opportunity for foreign students. To facilitate admission of these students with the least possible inconvenience to the student and the college, the following procedure should be followed: Foreign student potential applicants should submit an official transcript of their previous school credits and grades and a certified statement concerning their proficiency in English. The English proficiency statement is normally obtained from the U. S. Embassy or Consulate in the student's own country. The college will evaluate the student's credits and English proficiency and determine whether he is eligible to apply for admission. At that time, if eligible, the official application for admission form will be sent to the student.

South Dakota State College regrets that it is unable to offer financial aid to foreign students. Applicants therefore should be in a position to pay all expenses. At the time the college grants a foreign student admission, he will be asked to place on deposit with South Dakota State College sufficient funds (minimum $600) to cover the cost of one semester's study. A student will also be asked to have on deposit a similar amount of money prior to registration for each succeeding semester in which he may be enrolled. Registration permits may be withheld until the $600 deposit has been made.

All foreign students are expected to maintain the same level of proficiency and attainment as other students enrolled in the college.

Admission with Advanced Placement—South Dakota State College recognizes that certain able students may be qualified to enter college at a level which may be above or beyond that of the average Freshman student. These able students are recognized in one of two ways. (1) Students may be granted Advanced Placement and credit by superior achievement in the High School Advanced Placement program operated through the cooperation of the College Entrance Examination Board. (2) Each student who enters State College takes placement examinations which may permit him to receive advanced placement and credit. The areas of advanced placement are generally English, chemistry, and mathematics.

Students entering State College with advanced placement and credit are expected to utilize their abilities and placement in such a way that they will enrich their educational experience rather than shorten it. The final decision in granting advanced placement credit and grades rests with the Head of the Department in which the credit is being sought.

Entrance by Certificate or Examination—Students who wish to enter college but lack entrance credits or have not been graduated from an accredited high school may contact the Director of Admissions and Records for information regarding entrance by certificate or examination. Any arrangement for admission by examination or certificate MUST BE COMPLETED at least 30 days prior to the date of intended registration.

Admission as a Special Student—A student who is enrolled with a partial load or a student not planning to work toward a degree may be classified as a special student if the situation warrants such classification. To be eligible for admission as a special student an individual must generally meet the requirements outlined for admission of Freshmen students. Persons not so eligible should contact the Director of Admissions and Records long enough in advance of registration (30 days) to permit the director to counsel with the heads of departments and deans involved and determine eligibility for admission.

*See footnote on preceding page.

Tuition, Living and Other Expenses

Regular Semester Expenses	Resident	Non-Resident
TUITION		
Full time enrollment (8 credits or more)	$ 99.00	$183.00
Part time enrollment (1 through 7 credits) per semester credit hour	7.00	12.00
General College Fee (charged all students enrolled for 8 credits or more) (Includes laboratory fees, health fee, alumni fee, Student Union fee, and fees for other services.)	35.25	35.25
Student Association Fee (charged all students enrolled for 8 credits or more)	11.50	11.50
Board (average based on meals for 7 days a week)	175.00	175.00
Residence Hall Rooms	From $81.00 to $121.50	
Books and Supplies (Estimated)	From $30.00 to $50.00	
DEPOSITS		
Military Uniform Deposit (Men students only) (Deposit less loss charges returned at end of school year)	$20.00	
Dormitory Room Deposit (Deposit less any damage charges returned at end of school year)	10.00	
Total Deposits, Fall Semester only	$30.00	

Resident Tuition. The tuition for students who are residents of South Dakota are as follows:

All collegiate courses, $99.00 each semester.

The eight-week summer session, $64.00.

The five-week summer session, $40.00.

Non-resident Student Defined. The residence of a student at matriculation determines his residence status for tuition purposes throughout his period of attendance at the institution.

A non-resident student is a student less than 21 years of age whose family resides outside of South Dakota or whose family has resided within the state for a period of less than 12 months immediately prior to the date of matriculation; or a student 21 years of age or over who resides outside of South Dakota, or who has resided within the state for a period of less than 12 months after reaching his majority and prior to the date of matriculation.

Residence for fee purposes is not necessarily governed by either voting residence or by qualification for any of the various types of resident licenses.

Non-resident Tuition. The tuitions for students who are not residents of South Dakota are as follows:

All collegiate courses, $183.00 each semester.

The eight-week summer session, $96.00.

The five-week summer session, $60.00.

No reduction is made in regular tuition when a student enters late.

Fees. Each applicant for admission to South Dakota State College must pay, at the time of application, the $5.00 matriculation fee. This fee is not refundable if the applicant is accepted but does not enroll.

The general college fee is $35.25 per semester. (The 1964 Summer session general college fee is $17.60 for all students enrolled in five credits or more.)

The Students' Association fee (activity) of $11.50 per semester includes class dues, subscription to the South Dakota Collegian (weekly) and Jack Rabbit (annual); admission to athletic events, plays, concerts, debates; use of tennis courts and other privileges. (The summer session activity fee is $4.00.)

Nursing students will be required to purchase uniforms during the first year at an estimated cost of $40.00.

Cost of travel to and from the clinical units will be borne by the student. In addition, there will be a $50.00 fee charged during the semester in which the student is enrolled in Public Health.

The regents have imposed a fee of $10.00 to be collected from all students who enroll and pay their registration costs after the time announced for that purpose.

Failure to pay any indebtedness when due results in immediate withdrawal of classification. In order to be readmitted the student must pay the indebtedness plus a readmission fee of $5.00.

Deposits. To reserve a room in a residence hall or a married student apartment each applicant must remit $10.00 to the Bursar of the College with his agreement and application for room reservation. The room deposit is held by the Bursar as a breakage deposit. The unused part is refunded at the end of the college year. This deposit is not refundable unless for some reason the student is not admitted to the college or is prevented from enrolling by circumstances beyond his control.

A $20.00 military uniform deposit is required of all Freshman and Sophomore male students (see Military Requirements). The deposit will be returned at the end of the year, or

on withdrawal from the College, with the return of all items of the uniform.

The foregoing estimate does not include expenses for laboratory breakage, travel, laundry, entertainment, nor cost of clothing. While the above is considered as a reasonable estimate, much depends upon the character of the student and the work he is taking. In some of the technical courses the cost of books may be larger than the amounts mentioned in the estimate.

When entering College all students should have sufficient money available (about $500) to pay for immediate expenses such as tuition, books, and board and room.

Board and Room

Board. Meals are served at two college dining rooms in the residence halls, at the Jungle in the Student Union and at cafes in the city of Brookings, several of which are near the college.

Meals at College facilities will cost $300 to $360 for the year depending upon whether the student chooses the five or seven day per week eating plan.

All Freshmen residing in college residence halls will eat their meals in the residence hall dining rooms.

Residence Halls. The cost of rooms in the college residence halls is $162 to $243 for the college year for each student, two in a room, depending upon the building in which the room is located. The cost of rooming in a private home is $4 to $6 a week.

All unmarried students, not residents of Brookings, men under 23 years of age and women under 25 years of age at the time of their registration, are required to live in college residence halls. All single students must reside in rooming places approved by the faculty.

If an applicant who has been accepted for admission does not enroll, except for some reason beyond his control, the deposit is not refundable unless a request for refund is made to the Housing Office prior to August 15th.

Married Student Housing. A $10.00 deposit is required to place a student's name on the waiting list for married student housing on campus. One and two bedroom apartments are available for married students. All apartments are unfurnished except for forty-eight new fireproof, one bedroom apartments, which have kitchens furnished. One and two-bedroom apartments of non-fireproof construction rent for $24.50 and $29.50 a month respectively, and the student must also pay for electricity and heat. The fireproof apartments rent for $62.50 per month including utilities.

Efforts toward providing a wholesome and pleasant living environment at State College are made by the college, and full information about this service can be found under "Student Housing" in the Division of Student Personnel Services.

Academic Information

Definition of Terms

Grade Points are numerical weights assigned to hours of academic work, according to the letter grades earned. The following schedule of grade points shall apply: A—4 grade points; B—3 grade points; C—2 grade points; D—1 grade point; E—2 grade points toward graduation but course not counted in grade point average; F—no grade points. Example: The following will illustrate the way in which grade points are related to the grades of a student in the subjects named:

Military, 1 credit; grade A; grade points 4.
Mathematics, 5 credits; grade B; grade points, 15.
Chemistry, 4 credits; grade C; grade points, 8.
French, 4 credits; grade C; grade points, 8.
English, 3 credits; grade D; grade points, 3.
Total credits—17; total grade points—38.

A Grade Point Average is the quotient obtained by dividing the number of grade points earned by the number of hours attempted (i.e., those hours for which grades of A, B, C, D, or F are recorded). In computing grade point averages all hours attempted (i.e., graded A, B, C, D, or F) are included even though, because of repetition of work, some of them may for other purposes be considered canceled.

Semester Credit Hours ("credits") are the numerical values assigned to hours of academic work, according to the amount of time required for lecture, recitation or laboratory. Normally, one credit is equivalent to one hour of lecture or class recitation per week for one semester. Three hours of laboratory work, where no outside preparation is required, is considered to be equivalent to one hour of recitation, and is assigned a value of one credit hour. Four hours of nursing practice are equivalent to one credit hour.

Degree Requirements

The Bachelor of Science degree is offered in 81 major fields in six college divisions. Requirements for obtaining a Bachelor of Science degree are as follows:

Over-all college requirements:

1. **Completion of at least 136 semester credit hours (except Engineering—142; Pharmacy—164).**
2. **An average of at least two grade points per credit hour for courses passed.** (This means that a student must have twice the number of grade points as credit hours passed in those college courses for which grades of A, B, C, D, or E are recorded.)

   In computing the required grade points, credit hours and grade points canceled by courses later repeated and passed, and courses not accepted at the time of transfer from another college or division are not included in the computation.
3. **Satisfactory completion of at least one year of Physical Education.** Men and women students who enter the college below Sophomore classification (45 or more credits accepted by the Director of Admissions and Records) without two credits in physical education, are required to take general physical education twice a week throughout one year. Additional physical training may be required in some curricula and of students who need corrective exercises. No credit allowed in physical education for military service.

   Any student 23 years of age or older at the time of initial enrollment in the college is excused from the requirement of physical education.
4. **Satisfactory completion of Freshman Orientation.**
5. **Satisfactory completion, on the part of all physically qualified male students, of at least two years of Military Science.**

   The Morrill Act of 1862 establishing the Land-Grant Colleges of the several states provided that training should be given in Military Science and Tactics. In fulfillment of this act, two years basic military training is required of all male students, unless excused for previous military service, physical disability or by reason of age. The regulations, description of the required basic military work and the optional advanced work leading to a reserve officer's commission, the deposits for uniforms, and other details are stated in the section of this catalog dealing with the department of military science and tactics, and the department of air science, division of Science and Applied Arts. Military requirements for transfer students are also outlined under Military Science in the Science and Applied Arts Division catalog.
6. **Satisfaction of the communication skills requirement (a) students who have not completed the basic college English requirements (English 113-123 or 143-153) with at least a "C" average must qualify themselves in an English skills examination, (b) students who receive a grade of "D" in Speech 103 must take Speech 11 Remedial Speech until they receive a final course grade of "E."**
7. **Completion of the final year's work in residence.** (34 semester credit hours, 68 grade points.)

Divisional and Major Field Requirement

Completion of the courses outlined under the divisional and major field curricula to the satisfaction of the divisional dean and head of the major department.

The Certificate of Completion. The certificate of completion is offered for the satisfactory completion of two years of work in prescribed areas in the Divisions of Agriculture, and Science and Applied Arts. Requirements for this certificate are set forth under the Division of Student Personnel section of this catalog.

Non-Degree Courses. In addition to the courses leading to degrees, the College offers special and short courses in several important and practical lines of work. See index for Non-Degree courses.

The Degree Master of Science (or Master of Education) is conferred upon students who have received the degree of Bachelor of Science from this or another institution offering an equivalent course of study and who in addition have completed a year of advanced work in accordance with the regulations of the College governing this degree. See Graduate Bulletin.

The Degree Doctor of Philosophy is offered in three major areas, Animal Science, Plant Science, and Social Studies. See Graduate Bulletin.

Student Responsibilities

It is the responsibility of South Dakota State College to provide educational opportunities of the highest quality for all who have the ability and the willingness to continue their education beyond the secondary school. State College offers to such students a challenge to work at their highest capability and to achieve excellence in their chosen field. To be of maximum service to the individual and his society, scholastic requirements reflecting expected quality and effort have been established. The college staff attempts to administer these requirements with concern for the individual, and at the same time realizes there can be no compromise with acceptable standards.

Students who are in serious academic difficulty receive adequate warning. The advice

of the faculty advisers, and the professional testing and counseling services are available for those who need and want it.

Graduation Requirements. Each student is responsible to see that he has satisfied the requirements for graduation as listed under Degree Requirements. This shall include notifying the Admissions and Records Office in event any course, other than a failed course, is repeated. Any student who has questions concerning the proper satisfaction of specific requirements should consult his major adviser or the Office of Admissions and Records. No credit for graduation will be allowed in part of a subject which is extended over more than one semester, unless the part covered is fairly complete in itself. The decision with regard to this point must necessarily rest with the head of the department in which the subject is offered.

No credit for less than one year's work in foreign language will be allowed toward a degree unless the student has presented entrance credit for at least one year of high school work in the language.

The amount of credit that may be counted toward a degree in such subjects as practical music, typewriting, forging, carpentry, and similar work is naturally limited unless such work is a part of the scheme of study that is being pursued. Intercollegiate debating, editorial work on student papers, and other work outside regular class work are also included.

Records of students up for graduation will be checked by the Office of Admissions and Records. Any student who has not met all of the requirements as outlined above will not be permitted to graduate until such requirements have been satisfied.

Class Attendance. Regular attendance at all class and laboratory sessions is an obligation as well as an opportunity for each student. The progress of the entire class is hampered if any student's attendance is irregular. Students are expected to attend all class and laboratory meetings for which they have registered. Each student is held responsible for the class work assigned in the courses in which he is enrolled. Any work missed must result in a reduction of final grade unless the student is permitted to, and does, make up the work.

However, in holding students responsible for the work of their classes, the College does give every reasonable consideration to a student whose work is interfered with by illness or similar circumstances. The College does not have any system of excusing absences but when they are unavoidable, the student is permitted time to make up such work as is practicable and his schedule of subjects may be reduced by his classifying officer to give him extra time to make up the work.

Instructors shall keep attendance records and report the total absences for the semester along with the final grade of each student. These include absences from the beginning of the semester for any student who enters the class after the first meeting.

At the discretion of the instructor a report of irregular attendance of any student may be made to the Student Personnel office at any time, and should be made before the student's work becomes hopeless. If a student persists in irregular attendance in a class he may be dropped from the class with a grade of Failure (H) by the Dean in charge of his classification upon recommendation from the instructor. If a student persists in irregular attendance in several of his classes he may be dismissed from the College by the Committee on Scholastic Standards.

As a means of detecting promptly any case of illness, absence from the campus, or other matter which may be desirable to report to parents, each instructor shall report promptly to the Student Personnel office two consecutive absences of any student. If the instructor secures from other members of the class any information concerning the reason for this absence, this information should accompany the report. Additional reports should be made for continued absences until the instructor knows that the cause has been determined and reported.

Registration. Each student registering at State College is advised by a member of the faculty. A schedule of classes consistent with the student's plan of study and properly adjusted as to the amount of work is arranged for the student.

The normal rate of progress will find the student enrolled in at least 17 credits each semester. To be considered a full-time student, a student must carry 12.0 semester credits. A student will not be permitted to register in more than 20 semester credits during his first term of attendance. Registration in more than 20 semester credits in subsequent terms is permitted only when the previous semester's work is of high caliber.

A student registered in more than 20 hours must pay a fee of $12.00 per credit for each credit hour over 20. All overloads up to 22 credit hours inclusive must be approved by the Dean of the Division. Any student wishing to register in more than 22 credit hours must petition the Scholastic Standards Committee for permission. No student will be permitted to take more than 24 credit hours.

A student registered in more than 20 credit hours in any semester will receive credit for

only 17 hours unless his record for the semester meets one of the following requirements: (1) A grade point average of 3.0 for all work; or (2) a grade point average of 2.5 for all work and no grade below "C." If his credits are reduced to 17, grade points will be allowed for 17 credits at the average grade for the semester.

Transfer Credits. Advanced credit may be obtained by presenting certified grades from other recognized and accredited institutions. Acceptance of such credit is contingent upon the grade received and the work covered. The college reserves the right to cancel credit accepted from any institution should the student prove to be deficient in a subject for which credit was given. Advanced credit accepted but not prescribed for the student's planned curriculum may be used as elective credit in so far as his course permits. Reasonable substitutions for required work may be granted. Transfer applicants should see Admission of Transfer Students on pages v-vi and note the Physical Education and Military requirements on page ix.

Grading System

Grades. The grading system of the college is generally based on achievement in comparison with other members of the class. This system assumes that the fairest and most intelligible record of a student's work is that which indicates his approximate rank in comparison with his fellow students. To be valid, the comparison must be made in large and small classes in the same subject over a series of years. Under these conditions, the distribution of grades in each class should approach a college average distribution.

The quality of work done by students is indicated by the following marks:

A—Exceptionally high.

B—Superior.

C—Fair.

D—Passing (lowest passing mark).

E—Satisfactory.

F—Failure. The student must repeat the subject in a regular class in order to get a passing mark. Repeating the course will not remove the failure from the student's permanent record.

G—Withdrawal with no grade.

H—Withdrawal from a course with failure.

I—Incomplete, is a temporary report indicating (a) that for some good reason beyond the student's control the essential work in a subject has not been completed, (b) that the work which has been completed was of a passing grade, and that it is deemed practicable for the student to complete the subject in a satisfactory way without repeating it in a regular class. The student must make arrangements at the beginning of the next semester in which he is enrolled and by the date specified in the college calendar to remove the "incomplete" by meeting the requirements of the course. If the incomplete is not removed as specified here, it becomes a failure and will be recorded as such on the student's permanent record.

The grades A, B, C, D, and F, reported to the Office of Admissions and Records, may be changed only by recommendation of the instructor and permission of the Dean of the Division.

A required course, that has been failed, must be repeated at the first opportunity unless other arrangements are approved by the Dean of the Division.

Repeating a Course to Raise the Grade. When a student repeats any course, the new grade received shall be counted in place of the old grade, but the latter will remain on the student's permanent record. It is the student's responsibility to notify the Office of Admissions and Records when a non-fail course is repeated. Credits and grade points earned for the old grade cannot be counted toward the total credits and grade points required for graduation.

Class Rank

1. For promotion to sophomore rank, the student must have earned at least 30 semester credit hours and 50 grade points. The freshman requirements in English, military, physical education, and orientation should be completed.
2. For promotion to junior rank, the student must have accumulated at least 65 semester credit hours and 120 grade points.
3. For promotion from junior to senior rank, the student must have accumulated at least 100 semester credit hours. In addition he must have twice the number of grade points as hours passed in those college courses for which grades of A, B, C, D, or E are recorded.

Scholarship Requirements*

The normal rate of progress toward graduation requires that a student averages 17 semester credit hours and 34 grade points each semester. Any undergraduate student to be in good scholastic standing, must maintain in each semester:

1. Freshman—a 1.5 grade point average.

*These requirements affect students classified as Freshmen in the Fall of 1963 and will apply progressively with each year. Sophomore, Junior, and Senior students are affected by the 1962 catalog requirements.

2. Sophomore—a 1.7 grade point average.

3. Junior—a 1.8 grade point average.

4. Senior—a 1.9 grade point average.

Students who do not maintain the above average will have their scholastic status affected in the following manner:

a. **Probation**—At the end of the first semester in which a student does not meet the requirements, he will be placed on a "Scholastic Probation" status. The Probation status requirement will be determined in each instance in accord with the existing class rank standard. The student will not be permitted to hold a campus office, participate in extra-curricular activities, or go on off-campus trips which are not an integral part of the regular course activity. These students will not be permitted to have an automobile on the campus. The Dean will require such students to carry a reduced load for the next semester.

b. **Refused**—The student will be placed on a "refused" status if he fails to meet the requirements at the end of his probationary semester. He may be readmitted on a "scholastic probation" status after one semester of non-attendance. A student who has been refused readmittance twice, will not ordinarily be permitted to re-enroll.

c. Summer school will not count as a semester in this plan but a student may remove his probationary status through summer school work. A "refused" status cannot be removed by summer school attendance.

d. A student admitted on a "probation" status will be subject to the applicable regulations which cover the case or as established as part of his conditions of admission.

e. The Scholastic Standards Committee will periodically review all students with an unsatisfactory accumulative grade point average for whatever action is necessary.

Scholastic Honors. Candidates for the degree of Bachelor of Science who have demonstrated superior performance throughout their college work are recognized by honors awards at Commencement.

1. To be eligible for honors a student must have been in residence for two years, must not have failed in any subject and must have earned a grade-point average of 3.25 or higher.

2. Students who transfer here from other colleges shall, for the purpose of determining honors, receive full value for grades and credits transferred, provided the institutions are fully accredited. Limited credits, if more than ten have been gained, shall be valued at the average of all the limited credits gained.

3. Honors shall be awarded on the basis of grade-point averages, but the number of students to receive honors **automatically** on such a basis shall not exceed 1 in 12 seniors for each division, with 1 additional for a major fraction of 12.

4. Should the number of eligible students in any division exceed 1 in 12 seniors for that division, those who are in excess for that division shall be considered by a committee of the faculty representing each division. This committee may, or may not, add to the honors list. Whatever its conclusions may be, they shall be based solely upon the scholarship of the eligible students considered, and the ratio of the total number of honors to the total number of seniors. In no case shall the total honor list exceed one-tenth of the graduating class.

5. Honors shall be of three degrees, in accordance with the following scale:

With Honor—grade-point average 3.25 to 3.499

With High Honor—grade-point average 3.5 to 3.749

With Highest Honor—grade-point average 3.75 or above

6. Honor students shall have the appropriate honors inscribed upon the diplomas which they receive at graduation.

Examination for College Credit. A student currently enrolled in the College who has studied a subject independently or has done work of college level elsewhere for which he is unable to get a transcript acceptable to this institution, may take a special examination to establish credit under the conditions specified below:

1. The student must consult the head of the department concerned who will conduct a preliminary survey of the work in which the student claims to be prepared, and determine if an examination is warranted, what topics it should cover and what credit may be expected.

2. The student must consult the Dean of the division in which the student expects to receive a degree to determine whether credits by examination in the proposed subject will be acceptable toward the degree.

3. The student must pay a fee of $4.50 per credit before taking the examination. (No charges are made for examinations to obtain credit for entrance to the College nor for credit covering studies pursued in the Armed Services.)

4. The student must have a grade point average of 2.5 or above if he is classified as a freshman or sophomore, or a grade point average of 3.0 or above if classified as a junior or senior. (Rule does not apply to students taking advanced placement tests for which credit may be granted on the basis of the test perform-

ance.) The student must make at least a "C" grade to count toward the total credits for the degree, but the grade for any examination, whether passed or failed, will be on the record.

Credits earned by examination will be counted in determining the grade point average.

5. No more than thirty-four credits obtained by examination for credit may be applied toward the Bachelor's degree in the College.

6. Specific details are enumerated on a blank which must be filed by the student who wishes to take such an examination. Copies of this blank may be obtained at the Office of Admissions and Records.

7. Students who are not currently enrolled, but who were previously students in good standing, may acquire credit by examination providing they meet the above conditions.

Auditor. Registration as an auditor in lectures or recitations, but not for laboratory sessions, may be permitted with the consent of the department concerned and with the approval of the Dean. Such registration carries permission to listen only. No examinations and no credits are given. The audit fee is $10.50 for 1 to 9 credits and $19.50 for 10 or more credits.

Elective Work. Electives are offered so that a student may develop special talents or interests. The choice of subjects is left to the student, provided the selections made are consistent with the academic standards of the College.

The Dean of the division in which the degree is sought may refuse to approve an elective if he thinks that the subject should not be counted toward that degree, or he may approve classification in the subject with the notation that it is not to be counted toward a degree.

In general, elective subjects are not given to fewer than five students unless there is some special reason for doing so. Instructors should not abolish classes without the approval of the Dean of the division concerned.

Historical Sketch

Establishment. An act of the Territorial Legislature, approved February 21, 1881, provided that "an Agricultural College for the Territory of Dakota be established at Brookings, provided that a tract of land not less than eighty acres be secured and donated to the Territory of Dakota."

The Legislature of 1883 provided for the erection of the first building. This building, known as Central, was opened for use September 24, 1884 and razed in April 1962.

The Enabling Act admitting the State of South Dakota, approved February 22, 1889, provided that 120,000 acres of land be granted for the use and support of the Agricultural College, in accordance with the act of Congress making donations of land for such purpose. The acts of Congress referred to are primarily the act of July 2, 1862, known as the Morrill Act, providing that 30,000 acres of public land for each representative in Congress be given to each state toward "the endowment, support, and maintenance of at least one college, where the leading object shall be, without excluding scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts." By the Enabling Act of 1889 Congress granted to South Dakota for the Agricultural College 40,000 additional acres, in lieu of a grant that had been made to the new states in 1841. Thus the total land grant for the Agricultural College was 160,000 acres.

In the Morrill Act of 1862, such colleges were spoken of as "Colleges of Agriculture and Mechanic Arts." In order that the name might more nearly conform to the object for which the College was established, the Legislature of 1907 changed the name from "The Agricultural College of South Dakota" to "The State College of Agriculture and Mechanic Arts."

The Agricultural Experiment Station* was organized in 1887, under the Hatch Act of Congress, which provided for the establishment of agricultural experiment stations in connection with agricultural colleges. These stations were established for the purpose of conducting experiments and research in connection with all branches of the home and agricultural industries of the United States due regard being paid to the various conditions and needs of the respective states. It is also their object to aid in diffusing among the people useful and practical information in all subjects connected with homes and agriculture. The South Dakota Station conducts its investigations chiefly along the following lines; livestock, dairying, soils, field experiments with crops, greenhouse work, trees, and small fruits, injurious insects, chemistry of plant growth, and foods. In the home, studies are made of foods, their selection, preparation and conservation, textiles and clothing, and the various phases of home management.

The Agricultural Extension Service was established to carry to the people of the state the results of the work of the College, and also

*See the index for additional information concerning the Agricultural Experiment Station and the Agricultural Extension Service.

such methods as the most successful farmers and homemakers have approved for different localities. From its earliest history, the College has sent out members of its staff to help the people of the state by addressing farmers' meetings, acting as judges at fairs and for agricultural clubs, and in various other ways. The College, however, had no money available to conduct such work in a systematic way until 1914, when the Smith Lever Act was passed by Congress providing $10,000 annually to each state beginning with July 1, 1914, to be used for agricultural extension work by the State Colleges of Agriculture in cooperation with the United States Department of Agriculture. The act also provided that beginning with July 1, 1915, additional amounts, which increased for a period of five years are to be given to the different states upon the condition that the states appropriate equal funds for the extension work.

State and Federal Support. The State of South Dakota by action of the Legislature in 1890 accepted the Federal Land Grant and thereby assumed the responsibility of conducting an educational institution meeting the purposes of the grants. Support from state funds is granted and controlled by the Legislature. The regular biennial appropriation act provides funds for salaries and other regular expenses. Special appropriation acts provide for buildings or other capital expenditures. The Legislature has also accepted at various times additional grants from the Federal government, some for instructional work, some for research, and some for extension work in agriculture and home economics. These are itemized in the annual financial report of the College.

Purposes

In accepting the provisions of the "Morrill Act" of Congress of 1862, the State of South Dakota, in 1889, "bound itself legally and morally to carry out the purposes for which the grants and annuities were intended." The purposes of this, so-called Land-Grant College Act, are:

. . . the endowment, support, and maintenance of at least one college (within each state) where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agricultural and mechanic arts, in such a manner as the legislatures of the states may respectively prescribe . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

The South Dakota Code in 1939 carries a statement of purposes which originally appeared in the Session Laws of Dakota Territory in 1887 and which read as follows:

The purpose of this institution is to afford practical instruction in agriculture and the natural sciences connected therewith, and also the sciences which bear directly upon industrial arts and pursuits.

South Dakota State College accepts these statements of purpose as fundamental, but of necessity takes account of the tremendous changes in conditions since 1862. Agriculture and the mechanic arts have since become applied sciences and corresponding emphasis is placed upon the sciences and their applications. The right of women to educational opportunities has become an established principle and is recognized in this College by placing homemaking and nursing on a par with agriculture and the mechanic arts, and by providing other career opportunities for women as well as for men. In addition, the College accepts responsibility for the promotion of research, adult and youth education as authorized by Federal and State laws passed subsequently to those mentioned above.

Thus, stated in terms of modern conditions, but within the spirit of the "Morrill Act" and the early legislative acts of South Dakota, the purposes of South Dakota State College are:

1. To provide professional education in the fields of agriculture; engineering; home economics; pharmacy; nursing; teacher education; the basic physical, biological, and social sciences, and the humanities on both the undergraduate and graduate levels.
2. To provide citizenship training and general education essential for the understanding and appreciation of the American way of life and its relation to the world community.
3. To promote, through various activities, student self-development in cooperation, leadership and other personal attributes.
4. To provide vocational or terminal education in agriculture, printing, secretarial science, and several other areas.
5. To promote and conduct research in agriculture; engineering; home economics; pharmacy; nursing; teacher education; the basic physical, biological, and social sciences, and the humanities.
6. To promote and conduct extension educational programs for the youth and adults in South Dakota.
7. To provide other services for the welfare of the state.

Organization and Government

The Board of Regents. The control of the educational institutions of the state, which are sustained wholly or in part by the state, is vested in a board of seven members designated as the Board of Regents. The members are appointed by the Governor by and with the consent of the Senate, for six year terms which expire in rotation. It is provided that the Regents shall be "persons of probity and wisdom and selected from among the best known citizens, residents of different portions of the state, none of whom shall reside in the county in which any state educational institution is located, and shall be selected from among the different political parties of the state existing at the time of making appointment."

The Board of Regents has the power and responsibility for managing all property and funds of the institutions, for employing members of the faculty and other employees, to establish departments, to fix courses of study, to fix tuition fees and other fees, to confer degrees upon recommendation of the faculty, and to guard against unwise duplication of departments. The Board has the authority and responsibility for all regulations necessary to the functioning of the institutions under its control, but it may delegate to the president, deans, principal, or faculty of any school so much of this authority as in its judgment seems proper and in accordance with the usual custom in such cases.

The Faculty. The faculty consists of the president, the deans and other administrative officers, and the teachers with rank of instructor or above. The faculty is responsible in general for academic standards and procedures, including the recommendation to the Regents of candidates for degrees. The president annually appoints certain faculty committees which take up such work as may be assigned to them by the president or the faculty. An administrative council of administrative officers and faculty representatives acts on matters of general policy or special problems which may be referred to it by the president or the faculty.

Student Conduct. The state, through its institutions of higher education, provides the opportunity for its future citizens to get a college education at greatly reduced cost. In return the state and the College demand from enrolled students high standards of conduct and scholarship. These high standards of conduct apply off the campus as well as on the campus. They must be considerably higher than the minimum required by law since the purposes of the College are related to good citizenship as directly as to intellectual abilities. Honesty, sobriety, and decency are of course essential.

Upon entering the College each student assumes the responsibility for adapting his own conduct to the purposes of the institution and to the welfare of the student body. When it becomes known that a student is not so conducting himself, the College authorities may restrict or cancel such privileges as seem necessary to correct the attitude of the offender and to protect the welfare of the student body.

Any action of minor importance by the College may be informal and unrecorded, but **disciplinary action involving permanent expulsion, suspension for a period, probation or other serious penalty becomes a part of the student's record** and a statement to that effect will be sent to the student's parents.

For the guidance of students in special phases of college life in which specific guidance is deemed necessary, the College issues regulations such as those relating to student organizations, social events, dormitory life, and rooming houses. Where no specific rule is given, the College standard of good conduct will apply, both on and off the campus.

The most recent edition of the General College Regulations is considered a supplement to this College Catalog.

By action of the Regents, hazing in every form is prohibited. As interpreted by them, hazing is interference with the personal liberty of others and includes any act of domination by some students over others which may lead to the physical injury, intimidation, or humiliation of the latter students.

Automobiles. The College recommends that students attending State College should not be furnished automobiles by their parents. Very few of our students have need for an automobile, and the operation of one while attending college is not only expensive but usually interferes with the students' college work.

The privilege of any student to operate an automobile on the campus will be withdrawn by the College if the student is on scholastic probation, and may be withdrawn for disciplinary reasons.

All motor vehicles operated in the college area by students, faculty, or employees must be registered each year with the college and must display a college identification tag. Students may register their vehicles and obtain tags, during registration, at the Cashier's office. Traffic and Parking Regulations will be issued at the time the vehicle is registered.

Failure to register a vehicle or other violation of Traffic Regulations will result in the assessment of a violation fee.

Locations, Buildings, Equipment

The Location. The College is located in Brookings, which has a population of 10,558, including students. The city is situated on the Chicago and Northwestern Railway, on U. S. Highways Number 14 and Number 77, and has regular airline service at the Brookings Municipal Airport.

Brookings is a city of modest but attractive homes with a number of active churches, and good local schools. The citizens are interested in good city government and in maintaining a good moral environment for their own children. Few educational institutions are more advantageously located.

The College Buildings and Grounds. The College owns a total of 1,420 acres in the Brookings area. When the substations and Camp Lakodia are included the total is 4,431 acres. The college campus is ornamented with many varieties of beautiful trees and shrubs, and laid out with necessary walks and drives. Adjoining to the east are the horticulture gardens, and to the north, northeast, and northwest are the college farms.

Two old buildings were torn down in the winter of 1961-62 to make room for the new Shepard Hall to be completed in 1964. They were Central built in 1884, the first building on the campus, and Old North built in 1887.

The Extension Building, completed in 1886, has been successively used as a dormitory and for classrooms and offices; in 1917 it was moved to the present location, and remodeled. It now houses special services.

The Administration Building was occupied in 1913, and the north extension was added in 1918. It provides executive offices, and auditorium, laboratories, classrooms and offices for the Divisions of Pharmacy and Home Economics, and Art department.

The Old Engineering Building, completed in 1901, is occupied by the Division of Nursing with its various classrooms and laboratories. The Engineering Division has shops, drawing rooms and classrooms in this building. The College Radio and Film Production units, Mathematics, and Remedial Speech are also located here.

Engineering Hall, completed in 1957, houses offices, laboratories, and classrooms of Civil, Electrical, Mechanical Engineering, and Engineering Physics.

The Horticulture Building, completed in 1901, together with the large Greenhouse, furnishes room for the work that is being conducted by the department of Horticulture.

An Agronomy Seed House completed in 1948 provides space primarily for soils personnel and plant breeders to examine and process their materials. It also provides a place where students get practical experience in agronomy work.

An Agronomy Green House and Head House completed in 1949 provides a place to grow and produce experimental crops under controlled conditions.

The Stock Judging Pavilion affords excellent facilities for judging and studying the different kinds of livestock. A modern abattoir provides a laboratory for the study of the cutting and curing of meats.

The brick Horse Barn does much to facilitate the instructional work in horse production.

The Speech Building, formerly Classroom Annex, houses the Speech department and Secretarial Science.

The Chemistry Building was occupied in January 1929. It is a modern fire-proof structure.

The Old Dairy is a two-story building erected in 1899, and enlarged in 1902, and again in 1911. It is presently used for classrooms, laboratories, and offices.

The Gymnasium, completed in the year 1918, is devoted entirely to the College programs in Physical Education and athletics.

The Armory was erected in 1941 to be used by the department of Military. The building and its equipment have been designed to meet the needs of a modern Reserve Officers' Training Corps.

The Women's Dormitories are Wenona Hall, built in 1909, and Wecota Hall, built in 1916, together with the Annex to Wecota Hall, which was completed in December, 1939, and Waneta Hall completed in 1959.

East Men's Hall erected in 1921; Scobey Hall, 1940; Harding Hall, 1954; Brown Hall, 1959; Mathews Hall, completed in 1962 are men's dormitories. Men's Dining Hall, completed with Mathews, connects Brown and Mathews Halls. Development Hall is a small men's dormitory.

State Court, completed in 1959, is a group of permanent, modern apartments for married students.

College Grove is a group of temporary buildings, from government surplus, used for married student housing.

The Economics and Music Buildings are temporary buildings declared surplus by the government and moved to the campus.

The Veterinary Building, a brick building erected in 1920, furnishes quarters for the Veterinary department.

The Veterinary Research Laboratory, completed in 1950 is used for animal disease studies and research work.

The Lincoln Memorial Library was built in 1927 and was dedicated by President Calvin Coolidge. It provides modern and efficient library facilities.

The Coughlin Campanile or Chimes Tower, built in 1929, was a gift of Charles L. Coughlin of the class of 1909. The tower houses eighteen tubular chimes. These are electrically played and are used to mark the hours, also to give concerts of hymns and other music. The tower is surmounted by two powerful lights, one revolving and the other stationary, which serve as a beacon to aviators.

The Pugsley Union is the center of student social life. It provides very suitable office and other space for student organizations, including the Student Association Bookstore. Game rooms and lounges provide well managed recreational facilities. The cost of erection and most of the cost of operation are being financed from student union fees, plus a PWA grant and alumni gifts. The main building was opened in 1940 and an addition in 1957.

The Printing and Rural Journalism Building was completed in 1951 and provides modern facilities for the department of Printing and Journalism, and the Audio-Visual Center. The postoffice, College Station, is also housed in this building.

Agricultural Hall, completed in 1952, houses the major portion of the Division of Agriculture. In addition to several classrooms and laboratories, there are offices for the Agricultural Division, Extension Service and Experiment Station.

The Plant Pathology-Botany Building was completed early in 1955 and together with a set of modern greenhouses, furnishes quarters for research and teaching in plant diseases.

The Foundation Seed Stocks Building, completed in December 1955, was financed by the Seed Stocks Corporation of the South Dakota State College Foundation, and placed on State College land by permission of the Legislature. The building is for the purpose of cleaning certified, pure seed, raised by the Corporation and distributed to County Crop Improvement members.

The Agricultural Engineering Building, replacing one destroyed by fire in January 1957, was occupied in the fall of 1959.

The new Dairy-Bacteriology Building was opened in 1961, and provides new quarters for those two departments.

The Industrial Arts Building, erected in 1936, is occupied by that department.

Student Health Center is a converted residence that houses the Student Health Services.

All buildings on the main campus are heated by steam from a central power plant which also generates a portion of the electricity required. The college has a power contract with the Bureau of Reclamation and in an emergency can obtain electricity from the City of Brookings.

Near the campus are the President's home and the Home Economics Home Management House. On the adjoining college farm are located the livestock dairy barns, together with several dwellings and a number of small buildings which are used for agricultural purposes.

The College furnishes first-class postal facilities. College Station, Brookings, South Dakota, is a Federal post office, located in the Printing and Rural Journalism building. Mail is delivered at convenient times during the day, making it unnecessary for students to go to the city postoffice. The college has regular mail pickup and delivery service.

Farms and Horticultural Gardens. The college farms include 1,240 acres, about 360 of which are used by the Agricultural Experiment Station as an experimental farm. Here the field experiments with crops, soils, and livestock are conducted, and the students may witness and actually participate in this scientific work. The remainder of the farm is used as a crop, stock and dairy farm under the direction of the agricultural division.

The horticultural gardens comprise about 50 acres adjoining the campus. Here, and in the greenhouses, a large amount of work in fruit propagation and plant experimentation is being carried on.

The Laboratories, Shops and Museums. Well-fitted laboratories and shops have been provided in all those departments where their use is made necessary by modern educational methods. The value of illustrative materials has been recognized, and numerous departments have made large collections and museums. The equipment of the various departments is described in connection with the description of their work.

The College also maintains educational units including classrooms, faculty offices and student facilities at Watertown, Madison, and Rapid City for the Division of Nursing.

The Library

The library is one of the vital organs of every college. It provides materials of instruction and research for all departments. Training and practice in the use of books and libraries is an essential part of a college education and is the basis of all sound research.

Lincoln Memorial Library is an attractive building on the south side of the campus. It

has seating facilities for 360 readers in three reading rooms. The collection consists of about 144,000 bound volumes plus thousands of pamphlets and other ephemeral materials. As a Depository Library it receives most of the important documents of the United States and the State of South Dakota. More than 1,850 titles of scientific, technical and general periodicals are currently received. Most of these are bound and preserved for permanent reference. Much material is available on both microfilm and microcards, together with reading facilities for enlarging these specialized types of records.

The collection is organized and administered by a staff of trained librarians, who are always on duty to aid faculty and students make the best use of the library's facilities.

In addition to scientific and scholarly works the library has a wide selection of books for cultural and recreational reading. An open-shelf browsing collection of 5,000 volumes is kept in the Main Reading Room. It is constantly renewed with interesting new titles.

While the principal purpose of the college library is to serve the needs of faculty and students in residence, its facilities are also open to the people of the city and state, insofar as this does not interfere with the work of the college.

A small branch library is maintained at Watertown to serve the students and faculty in the clinical portion of the Nursing program.

College Affiliations and Accreditations

For various purposes outlined below, the College holds institutional membership in a number of educational associations. The Association of Land-Grant Colleges and Universities, through cooperative efforts of its members, promotes activity in the several states to fulfill the aims expressed in the Morrill Act of 1862, and in the subsequent acts of Congress relating to Land-Grant Colleges, as these acts have been accepted by the state legislatures. In a time of emergency this association advises Congress concerning special services that its member institutions can provide to benefit the nation.

The North Central Association of Colleges and Secondary Schools is the regional accrediting agency for a group of nineteen states, including South Dakota. Its purpose is to maintain high standards of instructional work and educational programs. Good administrative procedures, personnel practices, adequate plant facilities, and other matters related to quality of instruction come under its scrutiny and by means of periodic surveys and reports to the member institutions it enables them to study their own problems to much better advantage. The membership of State College in this association and accreditation by the association gives to the graduates of State College a standing recognized in the North Central group of states and also in the other regional accrediting associations of the United States.

The American Association of University Women is concerned with the educational opportunities provided for women, and with all policies or procedures in which equal opportunity for women may be involved. Membership in this association opens up to women graduates the privilege of individual membership in the chapters of the association and carries with it substantial advantages in professional and social organizations for women. At present this membership privilege is open to graduates in most of the curricula pursued by women at State College, primarily the B.S. in Home Economics, Science and Applied Arts (except Clinical Technology), Agriculture, Civil Engineering, and Nursing. The list of curricula is being extended as certain specific requirements of the association are received and studied. Any woman graduate who is interested in the standing of a special curriculum should make inquiry to the Dean of Women for the latest list of curricula registered by the association.

The departments of Agricultural, Civil, Electrical, and Mechanical Engineering, and Engineering Physics are accredited by the Engineers Council for Professional Development.

All departments in the Division of Nursing are accredited by the National League for Nursing.

The curriculum in Journalism is accredited by the American Council on Education for Journalism.

Preparation of secondary teachers at both the undergraduate and graduate level is accredited by the National Council for Accreditation of Teacher Education.

The curriculum in Pharmacy is accredited by the American Council on Pharmaceutical Education.

The College also holds membership in the American Council on Education, the National Education Association, the American Association of Colleges of Pharmacy, the American Society for Engineering Education, The Association of Accredited Schools and Departments of Journalism, the American Library Association, the National Commission on Accrediting Agencies, American Chemical Society, National League for Nursing, and several others which are concerned with more limited phases of college work.

The College Year

The regular college year is divided into the Fall and Spring semesters as shown for the coming year in the College calendar on the third page of this catalog. The various curricula show organization of subjects by semesters. These schedules are followed as closely as conditions permit but the subjects may also be offered in semesters other than those indicated if the demands justify doing so. Others may be offered only in alternate years because of limited demand.

The College may register students in work outside the regular semesters or the Summer Session when arrangements can be made for conducting or supervising such special work without excessive cost to the College.

The Summer Session

The Summer Session for 1963 will be an eight-week session opening on June 11 and closing on August 2, and a five-week session opening June 11 and closing July 12.

The purpose of the Summer Session is threefold: (1) to provide for regular students who wish to shorten the time required for their graduation; (2) to offer work, primarily on the graduate level, to high school teachers, graduate nurses, and others who have only the summer available for study; (3) to enable high school graduates to start their college work in June instead of September, particularly those students whose normal period of college work is likely to be interrupted by military service.

Courses will be offered in all six divisions of the College—Home Economics, Science and Applied Arts, Agriculture, Engineering, Nursing, and Pharmacy. The divisions offer work in the Summer Session to fit in with the work of the regular semesters so that students may, by attending the Summer Session, shorten the total period of time necessary to complete work for a degree.

Since one of the principle functions of the College is to train teachers along vocational lines, its shops, laboratories, experimental plots and livestock are available for this purpose. Many of the departments of the College offer work during the summer for graduate credit. In certain of the departments it is desirable that students plan to do at least some of their graduate work during the Summer Session.

Special work-shop courses of one to three weeks are planned with the Summer Session program, with and without college credit.

An interesting social and recreational program is maintained. The Pugsley Union Building is the center of social activities.

Women students are required to room in the dormitory. Men students will find good housing accommodations in private rooming houses near the campus or in one of the men's dormitories.

The grill room of the Union Building is open for service, and board can be obtained at other eating places near the College campus.

The faculty of the Summer Session will be largely members of the regular faculty of the College. Guest faculty members also help to enrich the Summer Session offerings.

Expenses: Tuition for the eight-week Summer Session will be $64.00, General College fee $10.00, a Union fee $2.70 and an Activity fee $4.00. However, students who have not previously registered at State College must pay a matriculation fee of $5.00. This fee is paid only once and is not required of those who have previously registered at State College.

Tuition for the five-week Session on a normal load will be $40.00. College fees $7.00, Union fee $2.70 and Activity fee $4.00.

Tuition for out-of-state is one-half more.

A combined tuition-fee of $7.00 per credit-hour for a one to seven credit hour load. Out-of-state $9.50.

A combined tuition-fee of $7.00 per credit-hour on all workshops. Out-of-state $9.50.

Summer Session courses are scheduled to meet expected demands and are described in more detail in a Summer Session Bulletin issued in the winter. Copies will be mailed from the Office of Admissions and Records upon request.

A late registration fee of $10 is collected from all students who enroll and pay their registration costs after the time announced for that purpose.

Division of Student Personnel Services

RAYMOND Y. CHAPMAN, Dean

The College Student Personnel Services is organized for the benefit of all students. To aid in the balanced development of the students to the full extent of their aptitudes and interests, a personal and individual relationship between the College and the student is fostered and maintained.

The division is under the supervision of the Dean of Student Personnel Services, and includes full-time professional staff in counseling, testing and research, placement, loans, scholarships, student health, student housing, student activities, dean of women and dean of men.

The staff works closely with the Deans of the several divisions and with many other departments providing student personnel services including admissions and divisional placement offices.

Academic Advisement

The College Student Personnel Service coordinates the academic advisement program of 120 part-time faculty advisers, appointed from the faculties of the various divisions to advise Freshman and Sophomore students. It also provides a program of academic advisement for General Registration students which makes it possible for the student to meet with an academic adviser who is familiar with all the curricula offered at the institution. This is particularly helpful to students who are in doubt as to the type of college work they wish to pursue.

The faculty advisers are selected not only on the basis of interest and willingness to serve in this capacity but also on the basis of skill and personal suitability for establishing the kinds of personal relationships needed to aid the student in making educational and social adjustments. Students are expected to consult their advisers frequently, preferably weekly, to learn more about college majors and related careers, to consider the appropriateness of their vocational goals, and to enroll in classes appropriate to their curriculum. Each faculty adviser is assigned only a small group of students so that he will be able to provide close personal attention.

At the beginning of the Junior year, the student is assigned a faculty adviser from his major department.

Counseling Services Office

The present Counseling Services Office was organized in 1942 for the purpose of providing special counseling services for those students seeking vocational, personal, and educational guidance. This office has specially trained counselors who, with the use of scientific methods, assist students in choosing a career, evaluate the student's potential for college work, determine how the College might help the student develop academic skills, and consider questions which are of personal concern to the student. The Counseling Services Office can be very helpful to students as they begin their college experience. Individual interpretations of all psychological and educational test data are available to students.

Personnel Records

Each entering student furnishes, with his application for admission, complete information concerning his family, high school, vocational data, extra-curricular activities, health data, and various practical experiences.

On entrance to the College all students are required to take a battery of psychological, educational, and placement tests measuring scholastic aptitude, achievement in various scholastic fields, special aptitudes, and interests. Data from these tests are assembled in the Personnel Office with the student's cumulative personal folder and used in counseling and academic advisement with the student.

While a student is in attendance at the College, detailed cumulative information concerning him is developed. Records are continued and made available for post-graduation counseling.

Testing Service

The Department of Tests and Measurements provides a testing and scoring service for students, faculty, and for high schools and colleges in South Dakota. The major function of the department is the administration of the testing program for all new students.

This department also conducts evaluative studies and research on the values of test data in counseling and in predicting success in various educational curricula.

New Student and Freshman Days

All new students and Freshmen are expected to participate in the "New Student and Freshman Days" at the beginning of the fall semester or the special meeting held at the beginning of the spring semester. These programs

are organized to prepare the student for college life and college activities.

Orientation Program

The College Student Personnel Service sponsors, in cooperation with the various divisions, a complete orientation program. All first time students and transfer students with less than 30 semester hour credits are required to enroll in an Orientation course. Carefully prepared programs will introduce the student to College rules and regulations, study habits, student activities, self appraisal, career information, and other data acquainting the student with matters important to college success. It involves both large and small group activities.

Summer Counseling Clinics

All new students are urged to participate, if at all possible, in one of the summer counseling clinic programs sponsored by the College to better prepare them for their first term at South Dakota State College. These clinics provide an appropriate combination of orientation to campus life, counseling, appraisal of the student's academic background and skills, and academic advisement. The clinics are designed to aid students who have already been accepted for admission to South Dakota State College by providing a better understanding of the College, aiding the prospective student in making more intelligent choices of subjects, to earn better grades, and in general to get off to a good start in college. South Dakota State College, as well as former student participants, considers the Counseling Clinic experience a very valuable opportunity. Students are urged to select a clinic coming early in the summer, if possible, since later clinics may be filled to capacity. There is a very nominal clinic and board and room fee for these two and one-half day Summer Clinics.

Financial Aids

The College recognizes that able students should have the opportunity for higher education regardless of their financial position and therefore provides a complete scholarship, loan and employment program. In general, scholarship awards are granted primarily for high scholastic ability, with financial need a secondary factor. Loans or grants-in-aid are given primarily for economic need with adequate scholastic achievement also considered. The College Student Personnel Service Office also handles money available to students from federal legislative programs and private grants with varying requirements for eligibility for awards. Employment assistance, including summer work or part-time jobs, is provided for students. Efforts are made to help the student find employment which can be related to his academic program and ultimate vocational goals if at all possible.

College Withdrawals

A student finding it necessary to withdraw from the College is urged to consult with his faculty adviser in the interest of working out the best vocational plan possible. When a student decides to withdraw he should obtain permission from the Dean of his division and have this permission approved by the Dean of Student Personnel Services. At this time he will have a withdrawal interview and be provided with authorization to withdraw from the College. A student who leaves the college without obtaining an official withdrawal will be reported as having failed the semester's work. Refunds are made only on the basis and date of official withdrawal. Freshman students should obtain their parent's written approval before initiating withdrawal procedures.

Terminal Curricula

The College has a provision for two-year terminal curricula, the requirements of which are explained below. The terminal curricula provide an opportunity for students, who for some reason do not wish to continue a four year course, to organize their college work on a two-year basis. Completion of one of the two-year curricula leads to a Certificate of Completion.

Requirements for the Certificate of Completion

Major field ..... semester hours of credit 16
Minor field ..... semester hours of credit 12
Constants:
English ..... 6 semester hours
Physical Education ..... 2 semester hours
Military (men) ..... 4 semester hours
Orientation ..... 1 semester hour
Science—Math or
Language ..... 6 semester hours
semester hours of credit 19
Electives (Minimum)
..... semester hours of credit 19
Total credit (Minimum)
..... semester hours of credit 66
Total grade points (Minimum) 125

Major and minor fields are developed for individual students with their advisers and approved by the head of the department concerned and the Dean of Student Personnel.

Student Health Service

The Student Health Service is not responsible for the physical welfare of students while out of Brookings unless they are absent on an approved college trip, taking college work out of town, such as students in the Division of Nursing or other departments that are giving courses handled directly by State College. The Student Health Service will not be responsible for the care of students injured while riding in a motor vehicle in Brookings unless they are on an approved college trip nor any student needing medical attention as a result of violation of law or College regulations.

The Student Health Service will not provide or be responsible for any services to students who have failed to file the required medical examination report prior to admission or prior to readmission after an absence of one year from the college.

1. After payment of the General College fee, and filing of the required medical examination, a student is entitled to the following services through the Student Health Service.

(1) *Treatment by the college nurse in the Health Service Center of minor ailments and injuries.* The nurse will be on duty from 8:00-12:00 noon, and 1:00-5:00 p.m. on MTWTF. Nurses are available in the infirmaries in Wecota and Waneta Halls for residents of the women's dormitories. Office hours are posted at the beginning of each semester. In cases of emergencies the nurse may be called at other times by a house mother.

(2) *Attention of a college physician.* A college physician will be in attendance in the Student Health Service Center at 8:30 a.m. daily except Saturday and Sunday. Students should consult the doctor at this hour or make arrangements through the Health Service to consult him at the downtown clinic of the college physician.

A student who finds it necessary to have a physician call on him in his room or home, may leave word at the following places during office hours: Student Health Service—Phone Extension 469; Office of the Brookings Clinic—Phone 692-6236. For night calls or other emergencies requiring the immediate services of a physician or in case neither of the above offices answer, a student may phone the residence of a college physician or the college nurse. Phone numbers are as follows: Mrs. Sykes—692-2506; Dr. Davidson—692-2525; Dr. Henry—692-2925; Dr. Lushbough—692-4174; Dr. Patt—692-4416; Dr. Roberts—692-2334; Dr. Tank—692-2225. Wecota infirmary phone number; Women—Extension 638.

(3) *General Hospital care at the Brookings Municipal Hospital for a period not to exceed 30 days per school year.* This includes the cost of the room in the hospital, ordinary drugs such as aspirin or its derivatives, sulpha and simple dressings. The student must pay for his own meals while in the hospital.

(4) *Immunity Tests.* Insofar as practicable, these will be administered whenever there is occurrence of contagion in the community. (Student pays for cost of drugs only.)

(5) *Nursing students,* off-campus, are entitled to the same health and hospitalization privileges that are offered to other students. Arrangements are made on a contract basis with each agency to care for these students during field experience. In some instances physical examinations and additional immunizations are required prior to field work. These are individually arranged and carry a minimal charge.

2. Students will pay for the following services at reduced rates which have been arranged by the Health Service:

(1) *X-ray and Laboratory Test Service.* Students may obtain diagnostic X-ray and laboratory tests at the Brookings Municipal Hospital or at the office of the college physician at a cost of one-half the regular charge for the particular procedure, when the cost is $10 or less, the other one-half being borne by the Student Health fund. If the cost of a series of X-rays or laboratory tests is over $10, the student will pay three-fourths of the cost in excess of $10 and the Student Health Service one-fourth of the cost in excess of $10. The Health Service does not pay for the cost of therapeutic X-ray treatments or extensive pathology tests.

(2) *Medicines and drugs.* The Division of Pharmacy maintains a dispensary where only prescriptions issued to students by their physician will be filled. The dispensary, with a registered pharmacist in charge, will be open Monday through Friday from 8:00 to 10:00 a.m., and from 3:00 to 5:00 p.m. A charge covering the cost of material will be made to the student. All prescriptions will be cash on delivery.

(3) *Epidemics.* In case of an epidemic of any quarantinable disease, proper housing and care will be furnished, insofar as possible, to the students at cost.

3. For the following services the Health Service assumes no financial responsibility. Students should make their own arrangements for payment.

(1) *Hospitalization in hospitals other than the Brookings Municipal Hospital and those*

designated in areas where training is being conducted, and in excess of 30 days per school year or for illness due to conditions which existed prior to the opening of the college year.

(2) *Physician's and nurse's care for major injuries for certain specific and chronic diseases, and for conditions which existed prior to the opening of the school year.*

(3) *Expense of operation.* The Health Service does not pay the cost of operations including such items as physician's fee, anesthesia, charge of operating room, oxygen, etc.

(4) *Special Nursing.* Student Health Service does not bear the expense of special nurses.

(5) *Dental Care.*

(6) *Pathology Tests.* (Except as described under item 2, (1).

(7) *Services rendered for treatment under conditions described in paragraph directly under the heading "Student Health Service."*

(8) *Activities Injuries.* Student Health Service does not bear costs for athletic, rodeo, or other activity injuries.

(9) *Between semesters.* Students are not covered between semesters unless previous arrangements have been made through the Student Health Service Office.

4. Note.

The college will in no way interfere with the rights of the student to employ on his own responsibility a physician or surgeon of his own choice, provided in so doing he complies with the regulations governing physical examinations and such health measures as may be prescribed by the Health and Sanitation committee of the College. The College will lend assistance in securing physicians or quarters for hospitalization when requested to do so by students or their parents.

The services of the College nurse are not available for the care of individuals with contagious diseases or where special duty is required.

Student Housing

A student's living environment is a vital part of his college experience. In this environment the student should find pleasant and wholesome conditions, be able to grow in a capacity to adjust to new circumstances, and develop intellectually, socially and physically.

Every effort is made by the college authorities to provide and maintain such a living environment.

Three new residence halls and a new food service dining hall have been built on the campus since 1958 with the latest completed in September, 1962. Forty-eight one-bedroom apartments of fireproof construction have also been built for married students during that same period of time.

Room and Board

If new students will write—the men to the Director of Student Housing, the women to the Dean of Women—these persons will assist them in getting suitably located. Students interested in married housing should also contact the Director of Student Housing.

All single students must live in rooming places approved by the Student Housing Committee. Wherever students reside, they are expected to conform to the general regulations of the College governing absences from the home, study hours, and other matters. Men students are not permitted to room in residences where women students, women employed in or about the city, or any girls or women not members of the householders immediate family, are rooming. This rule applies conversely to women students.

The Residence Halls

Everything possible is done to make a real home for those who live in the residence halls. The students assume a large share in the government of the halls and are thus encouraged to form orderly habits and high ideals of conduct. The purpose of those in charge is to make the residence halls as attractive and home-like as possible, and to create the spirit of cooperation that is found in a real home.

Residents of the men's halls at South Dakota State College have developed resident organizations or clubs for each hall which operate under a written constitution approved by the members and the college administration. This constitution provides a structure within which duly-elected student representatives, subject to the majority opinion of the membership, guide the organization in participation in self-government and the development of social, athletic, educational and cultural programs. These organizations initiate, plan and participate in a wide range of activities such as dances, discussion groups, musical groups, picnics, exchange dinners, athletics, charitable projects and any other activities which they feel provide for the needs of their members. To finance these activities and to purchase newspapers, magazines, books and other materials for the organizations, a minimum assessment

of $3 per academic year is made to each resident of the halls by his club.

Incoming students should be prepared to participate in or promote the club organization and activities. At State College group living has always been considered a rather definite privilege because it contributes in so many ways to what is called a "college education." Therefore, all residents are expected to cooperate in compliance with the general regulations of the residence halls and payment of any fees determined by the hall governments.

Each room is provided with closets, single beds, mattresses, straight chairs, study table, dresser with mirror, a linoleum or tile floor covering, and window shades.

Each student must arrange for his own linens (sheets, pillow cases, towels) mattress pad, a pillow, two blankets, a clothes bag and possibly a study lamp.

Individual package linen service from a laundry is available near campus and provides personal linen service at an approximate cost per package of $27-$28 for the full school year.

Resident nurses acting under the direction of the Student Health Service do everything possible to maintain health among the students, and to care for them when ill.

Waneta, Wenona, and Wecota Halls and Wecota Annex will accommodate 580 young women.

Scobey and Harding Halls house 460 men students. Brown and Mathews Halls accommodate 820 men. Development Hall lodges 83 men students.

Students in nursing, while taking clinical courses, reside in housing near the hospital or health agency and will take their meals in the hospital cafeterias or use community eating facilities.

Board

Meals will be served cafeteria style in two College dining halls. The cost for meals will be approximately $300 or $360 for the college year depending on whether the student chooses the five or seven day eating schedule. The seven day program will include 20 well-balanced, nutritious meals per week (Monday through Sunday noon.) The five day program will include all meals Monday through Friday and reservation may be made for occasional weekend meals. Regular boarders may invite guests to dine with them in either dining hall. Charges for guest meals will be collected at meal time.

All freshmen students, living in residence halls, board with the College Food Services. All board must be taken for the full semester. Students not living in residence halls and upperclass students living in residence halls may board with the College Food Services at established rates on a semester basis only. Tray service to student rooms will not be provided.

The Jungle room in the Pugsley Union building also offers excellent food facilities at reasonable rates.

Board may also be obtained in private homes or nearby eating places at somewhat higher prices.

Off Campus

Those students who cannot be accommodated in college facilities may reside in rooms available off campus.

The Student Housing Office provides a service in this area for both the student and the householders who have rooms to rent. Householders are required to meet minimum physical property standards and both students and householders are expected to maintain General College rules for student conduct.

Householders may list available rooms with the Housing Office where individual assistance is given to students in selecting desirable off campus quarters.

Householders are visited periodically by someone from the Housing Office to discuss property standards and other matters of mutual concern.

Housing for Married Students

The college provides 164 apartments for rental to married students. Sixty-four have two bedrooms and 100 have one bedroom. The apartments are furnished with a hot water heater and either a space heater or a furnace. A few of the one bedroom apartments have the cook stove and refrigerator furnished. All other furnishings are the responsibility of the occupant. Forty-eight of the one bedroom apartments (State Court) are of new fireproof construction and each apartment has a furnished kitchen, tiled floors, and is individually heated by a natural gas furnace.

The College maintains a trailer park which accommodates 30 families. Only modern trailers are allowed in the area. Usually there is a waiting list for both apartments and trailer parking space. Early application is recommended.

The Student Housing Office also helps many students to find quarters for their families in Brookings and surrounding towns.

A $10 deposit is required to place one's name on the waiting list for all College housing.

Scholarships and Awards

Following is a list of scholarships and awards granted through the College. Detailed information concerning them may be obtained by writing to the Committee on Scholarships, Division of Student Personnel, South Dakota State College. Some scholarships are available only to students enrolled in specific divisions. Many others are open to all students as indicated by the listing.

Open to All

Alumni Association Scholarships
AAUW Scholarship
Beadle County Alumni Scholarship
Lyle Bender Memorial
Blue Key Scholarship
Boys State Outstanding Citizen Scholarship
Stephen F. Briggs General Scholarships
Brookings Rotary Club Scholarship
F. O. Butler Scholarships
Delta Kappa Gamma Scholarship
Faculty Association Scholarship
Faculty Women's Association Scholarship
Harold S. Freeman Memorial Scholarship
General Motors College Scholarship
Girls State Outstanding Citizen Scholarship
Guidon Scholarship
John W. Headley Memorial Scholarships
W. Marvin Kemp Memorial Scholarship
H. B. Mathews Scholarships
LaVerne Noyes Scholarship
Millard G. Scott Real Estate Scholarship
Sigma Lambda Sigma Award
South Dakota Regents Indian Scholarships
Ben Tjomsland Memorial Scholarship
SDSC Athletic Scholarships
State College General Scholarships
F. A. Strand Memorial Scholarship
Student Association Scholarships
Matthew Tiernan Scholarships
War Service Grants-in-Aid

Open in Agriculture and Home Economics

Ag Club Scholarship
Brown County Crop Improvement Scholarship
F. O. Butler Ag Scholarships
Consumers Cooperative Association Scholarships
Corn Exchange Bank of Elkton Scholarship
Danforth Foundation Summer Fellowship
Farmers Union Central Exchange Scholarship
Federal Land Bank Scholarships
First National Bank of Volga Scholarship
T. M. Olson Dairy Club Scholarship
F. H. Peavey Scholarships
Pierre Production Credit Scholarship
Ralston-Purina Scholarship
Sears Roebuck Agricultural Scholarships
South Dakota Seed Trade Association Scholarship
State Dairy Association Scholarship
Terrace Park Dairy Scholarships
Matthew Tiernan Scholarships
Tri-State Milling, Watertown Milling, Dakota Improved Seed Scholarship
American Youth Foundation Summer Camp Fellowship
Black Hills Power and Light Company Scholarship
Brookings Homemakers Club Scholarship
Coles Department Store Scholarship
Danforth Foundation Summer Fellowship
Home Economics Scholarship
Home Economics Club Scholarship
Verna S. Lippert Scholarship
Phi Upsilon Omicron Scholarship
Alice Rosenberger Scholarships
School Lunch Scholarships
Sears Roebuck Home Economics Scholarships
South Dakota Rural Electric Association Scholarship
Supersweet Feeds Scholarship
Susan Z. Wilder Scholarships

Open for 4-H Members

Extension Agents Scholarship
Investor Owned Power Companies of South Dakota Scholarship
Sioux City Stockyards Scholarships
Sioux Falls Stockyards Scholarships
South Dakota American Dairy Association Scholarships
South Dakota 4-H Leaders Association Scholarships
South Dakota Frozen Food and Locker Association Scholarship
South Dakota REA Cooperatives Scholarship
Sperry-Hutchinson Company Scholarships
State College 4-H Club Scholarship
J. R. Watkins Scholarships

Open in Engineering

Associated General Contractors of South Dakota, Huron Building Chapter Scholarship
Associated General Contractors of South Dakota, Pierre Highway Chapter Scholarship
Brookings Farmers Co-op Scholarship
Brookings Ready-Mix Scholarship
Stephen F. Briggs Engineering Scholarships
East River Power Cooperative, Madison, Scholarship
Egger Steel Company Scholarship
Foster-Bell Scholarship
Hassenstein Steel Company Scholarship
Homestake Mining Company Scholarship

Hugill, Blatherwick, Fritzel and Kroeger Scholarship
Leo Lippert Scholarship
Ernest Michaels Scholarship
Northern States Power Company Scholarship
Northwestern Public Service Scholarship
A. C. Ochs Brick & Tile Company Scholarship
Otter Tail Power Company Scholarship
Sioux Valley Empire Electric Scholarship
South Dakota Concrete Products Company Scholarship
South Dakota Society of Engineers Scholarship
Harold Spitznagel Scholarship
Sturdevant's Farm Engineering Scholarship
Tri-State Electric Company Scholarship
American Institute of Electrical Engineers Awards
American Society of Civil Engineers, Student Chapter Award
South Dakota Section of the American Society of Civil Engineers Award
American Society of Mechanical Engineers Award
Sigma Tau Award

Open in Nursing

Anna Haugen Berdahl Award
Black Hills District Medical Society Scholarship
R. Esther Erickson Scholarships
Federal Nursing Traineeship Grants
Dr. Peter Hermanson Scholarship
K. O. Lee Company Scholarship
Nursing Scholarship

Open in Pharmacy

American Foundation for Pharmaceutical Education Scholarships
Lewis Drug Scholarships
Northern Ohio SDSC Pharmacy Alumni Scholarships
O'Connell Brothers Drug Scholarships
Osco Drug Inc. Scholarships
Rowell Laboratories Scholarship
South Dakota Pharmaceutical Association Scholarship
South Dakota State Board of Pharmacy Scholarship
Bristol Award
Ladies Auxiliary to the S. D. Pharmaceutical Association Award
The Lehn and Fink Medal
Merck and Company Award
Rexall Award

Open in Science and Applied Arts

Faculty Art Scholarship—Loan
Aberdeen American-News
George S. Hazard Memorial Scholarship
Charles H. J. Mitchell Scholarship
Printing Laboratory Scholarships
Rapid City Journal Scholarship
Sigma Delta Chi Scholarship
Sioux Falls Argus-Leader Scholarship
Sioux Falls Paper Company Scholarships
South Dakota Press Women Scholarship
Watertown Public Opinion Scholarship
Aeolian Music Scholarship
Brookings Music Store Scholarship
Carl Christensen Scholarship
Dr. Calvin M. Kershner Scholarship
Dr. Charles S. Roberts, Jr. Scholarship
Williams Piano Company Scholarships
Alpha Psi Omega Scholarship
Pi Kappa Delta Scholarship

Student Loan Funds

A number of Student Loan Funds are available to students of the college including the Federally supported National Defense Student Loan. Money for the private loan funds comes from individual and group donations. Information for all loan funds is available from the College Loan Officer, Division of Student Personnel Services, South Dakota State College. Some loan funds are limited to students in specific divisions. Others are open to all students. The following loan funds are available and operative at South Dakota State College.

Open

Mae B. Austin Loan Fund
National Defense Student Loan Fund
Lipp Student Loan Fund
J. W. Shuster Loan Fund
Kessler Student Loan Fund
U.S.A. Funds Inc.

Major

Agriculture

Dave Harris Memorial Loan Fund
Ross Davies Memorial Loan Fund

Engineering

Solberg Loan Fund
Lee Amidon Memorial Loan Fund
Bernard Rozendal Memorial Loan Fund

Home Economics

Home Economics Loan Fund
Susan Z. Wilder Loan Fund

Pharmacy

E. R. Serles Memorial Scholarship and Loan Fund

Science and Applied Arts

George Mooar Smith Memorial Loan Fund
R. A. Turner Memorial Loan Fund

Miscellaneous

Women

Faculty Women's Club Loan Fund
Faculty Women's Club Emergency Loan Fund

County

Brown County Alumni Loan Fund
Edmunds County Loan Fund

4-H

4-H Loan Fund

Juniors and Seniors

Student Association Loan Fund
Arthur S. Mitchell Loan Fund
Rotary Loan Fund
Herbert W. Clarkson State College Student Loan Fund

Employment for Students

Many students earn part of their expenses while attending college by working for the College, the people of the city, hospital, or near-by farmers. No one should expect to earn all his expenses. It is desirable that a student should not hold a part-time job during his first term of attendance, since his full time is needed to permit adjustment to a new situation. In general, students who carry considerable outside work should not attempt to carry a full schedule of college work, and the College reserves the right to limit the student loads of those who are doing a large amount of outside labor. Such students will gain in the end by taking longer than the regular time to complete graduation requirements.

The College maintains a placement service for students who seek part-time work to pay part of their college expense. Those interested should apply to the Office of Student Personnel.

Student Activities

The goal of the social program is the personal development of every student. To this end State College tries to help every man and woman student to find within himself or herself, the satisfactions to be derived from broad interests, good taste, self-discipline, good personal habits, pleasant personality traits, and the maturity and sense of responsibility for democratic thought and action.

Faculty Control

While the students are allowed wide latitude in carrying on affairs which vitally concern themselves, such as athletic, literary, musical, social and other activities, the faculty retains an advisory interest in such matters, and has the right at any time to pass regulations for the welfare of the College. All matters relating to college activities and organizations are under the control, as the case may require, of a Faculty Committee on Student Affairs, or of this committee acting jointly with student committees. The Dean of Men is responsible for the administration of all regulations in this connection. (See General College Regulations.)

The Students' Association

Each regularly enrolled undergraduate student is a member of this Association. The governing board of the Association is the Board of Control which is made up of elected students with the Dean of Women and the Dean of Men as advisers. The dramatics and forensic interests, music interests and the student publications are under the jurisdiction of the Board of Control.

Athletics

All athletic activities are under the control of a committee composed of faculty and students. A complete program of intercollegiate athletics is available to men students. South Dakota State College is a member of the North Central Conference and the National Collegiate Athletic Association. It is guided by and aims to conform with the principles, rules and constitutions of these organizations.

Speech and Drama Activities

A complete program of intercollegiate competition in oratory, extempore speaking and debate is available to all undergraduate students. College credit can be earned by those actively taking part in intercollegiate competition. Excellence is recognized by appropriate awards.

A program ot major drama productions is also presented each year. Any college student may be cast in one or more plays or may assist with producing and directing the show. College credit may be earned.

Musical Organizations

The Department of Music at South Dakota State College provides a complete program of activities in music. The activities which are open to students are: Marching Band, Concert Band, Pasquettes (women), Orchestra, and The Statesmen.

Christian Associations

The student church affiliated groups have as their primary objective the moral development of the student body. The following church groups have active organizations:

Canterbury Club (Episcopalian)
Youth Fellowship (First Church of God)
Gamma Delta (National Association of Lutheran Students, Missouri Synod)
L. S. A. (Lutheran Students' Association)
Newman Club (Catholic)
Roger Williams Club (Baptist)
Wesley Club (Methodist)
Westminster-Pilgrim (Presbyterian, Congregational)
Bethel Fellowship (Bethel Baptist)
Wesleyan Student Fellowship (Wesleyan Methodist)

Activities of these groups are correlated by the Religious Council.

The Graduate Division

South Dakota State College granted its first Master's degree in 1891. In 1957 the establishment of the Graduate Division with a Dean as administrator was authorized.

To assist the Dean in the administration of the Division, seven members of the Graduate Faculty are elected from that group to a Graduate Council. The Graduate Council is composed as follows: The Graduate Dean; two members from the field of biological science; two members from the field of physical science; two members from the field of social science or humanities; and one member from the field of education.

The Graduate Faculty is composed of the college president, academic deans, heads of departments in which graduate courses are given, and other faculty members chosen on the basis of their background and experience and in accordance with policies of the division. All matters of policy and standards are acted on by the Graduate Faculty. In addition, Graduate Faculty members are authorized to teach graduate level courses and to serve as advisers to graduate students or on their advisory examining committees.

Departments Offering Graduate Instruction

The following departments and areas offer graduate majors or courses as indicated:

Doctor of Philosophy:

Agronomy, Animal Science, Biochemistry, Economics, and the areas of Plant Science, and Social Science.

Master of Science:

Agricultural Education, Agricultural Engineering, Agronomy, Animal Science, Bacteriology, Botany, Chemistry, Child Development and Family Relations, Civil Engineering, Dairy Science, Economics, Education, Electrical Engineering, Entomology, Food and Nutrition, Home Economics, Home Economics Education, Horticulture, Journalism, Language Skills (English, Speech), Mathematics, Mechanical Engineering, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology, Pharmacy, Physical Education, Physics, Plant Pathology, Poultry Science, Printing Management, Rural Sociology, Textiles and Clothing, Wildlife Techniques and Conservation, and Zoology.

Master of Education:

Agricultural Education, Education, Home Economics Education, Physical Education, and the areas of Biological Science, Physical Science, Social Science, and Communication.

The major fields shown above may also be selected as minor fields. In addition, History and Political Science or Mechanized Agriculture may be chosen as a minor field.

Supporting courses may be taken for graduate credit in any of the above departments or areas, and, in addition, in Agricultural Extension, General Studies, Home Management and Household Equipment, Industrial Arts Education, and Nursing.

Admission to the Graduate Division

A student may register in the Graduate Division only with the permission of the Dean of the Graduate Division. Before permission to register can be granted, a student must have filed an application for admission to graduate study and one official transcript of credits at least one month before the opening of the term in which he wishes to matriculate. A matriculation fee of $5.00 is required of students registering at South Dakota State College for the first time.

Admission to the Graduate Division requires that the applicant be a graduate of or a candidate for a degree from South Dakota State College or other institution of higher learning. Such institution must be one of recognized standing whose requirements are substantially the same as those in departments of this college in which the advanced degree will be taken. The Graduate Bulletin should be consulted for further admission requirements.

Graduate Credit for Seniors

Seniors at South Dakota State College who are within ten hours of completing their undergraduate curriculum with a grade point average of 2.5 or better, and who have obtained the approval of the Dean of the Graduate Division, may receive credit for graduate courses taken in addition to the courses necessary to complete their undergraduate work provided

their total course load does not exceed eighteen credits. Such courses must be designated for graduate credit at the time of registration. Forms for requesting permission to register for these courses are available at the Graduate Office. Being granted permission to take courses for graduate credit while still a senior does not constitute admission to the Graduate Division.

The Graduate Bulletin

Detailed information and instructions relative to graduate work at South Dakota State College are contained in the Graduate Bulletin. To obtain a copy of this or for additional information, write to the Dean of the Graduate Division.

Fellowships and Graduate Assistantships

The College has a number of Fellowships and Graduate Assistantships in various departments as the need for additional research and instructional help has developed. These assistants usually help with teaching or research work about one-half time and spend the remainder of their time in graduate study.

At the present time the following departments offer Fellowships or Assistantships: Agricultural Engineering, Agronomy, Animal Science, Bacteriology, Bio-Chemistry, Botany, Chemistry, Civil Engineering, Dairy Science, Economics, Electrical Engineering, Engineering Physics, English-Speech, Home Economics, Horticulture, Mathematics, Mechanical Engineering, Pharmacy, Pharmaceutical Chemistry, Physical Education, Plant Pathology, Sociology, Journalism, and Printing Management.

More may be made available in other departments as the need develops. For further information contact the deans of the divisions.

List of Courses for Humanities and Social Science Curriculum Requirements

The following list of courses divided into "Humanities" and "Social Sciences" has been approved by the Scholastic Standards Committee. Courses appearing below may be used to meet Divisional Core Requirements in these areas.

HUMANITIES

Art
- 112 Related Art
- 212 Art Appreciation
- 231 History of American Art
- 343-353 History of Art

Child Development and Family Relations
- 612 The American Woman

English
- All courses numbered 200 or above except 352 Advanced Exposition and the 400 series courses

Food and Nutrition
- 102 Nutrition for Health

Foreign Languages
- All courses except the Reading for Advanced Degrees courses

General Studies
- 131 Language in Everyday Living
- 132 Old Testament Survey
- 133 New Testament Life and Times
- 201 Significant Books
- 222 Introductory Religious Philosophy
- 241 Religion in American Life
- 242 Religious Heritages
- 253 Humanities
- 303 Philosophic Inquiry
- 342 Logic and Scientific Reasoning
- 352 Psychology in Religion
- 362 World Religions
- 462 Philosophy of Science
- 472 Philosophy of Education

History
- 103-113 World History
- 673-683 Cultural History of the U. S.
- 623 Intellectual History

Home Management
- 383 Family Housing

Music
- 102-112 Music Appreciation
- 202-313 Music History

Speech
- 143-153 Stage Craft
- 353 Oral Interpretation
- 472 Play Writing
- 482 Development of the Theatre

Textiles and Clothing
- 102 Costume Selection
- 342 History of Costume

SOCIAL SCIENCES

Child Development and Family Relations
- 122 Individual and the Family
- 223 Human Development and Personality
- 322 Dynamics of Family Development

Economics
- 203-213 Principles of Economics
- 333 Money and Banking
- 402 Agricultural Economics
- 413 Public Finance
- 423 Intermediate Macroeconomics
- 433 Intermediate Economic Analysis
- 453 Agricultural Policy
- 602 Economics Ethics
- 603 Production Economics
- 612 Resource Economics
- 613 Economics of Modern Capitalism
- 633 Pricing in Agriculture and Business
- 643 International Trade
- 653 Comparative Economic Systems
- 663 National Income Analysis
- 673 History of Economic Thought
- 693 Economic Development

Food and Nutrition
- 102 Nutrition for Health

General Studies
- 103-113 Introduction to Social Science
- 312 Principles of Ethics

History
- All History courses except the 700 series

Home Economics
- 212 Introduction to Family Living

Home Management
- 372 Home Management

Political Science
- All Political Science courses except the 700 series

Psychology
- 203 General Psychology
- 302 Child Psychology
- 403 Learning Theory
- 422 Social Psychology
- 603 Adolescent Psychology

Rural Sociology
- All courses in Rural Sociology except the 700 series

Textiles and Clothing
- 102 Costume Selection
- 353 Fashion Economics

Abbreviations Used in This Catalog

DIVISION AND DEPARTMENTAL ABBREVIATIONS

AE, Agricultural Engineering
Ag, Agriculture
AgEd, Agricultural Education
AgExt, Agricultural Extension
Agron, Agronomy
AS, Animal Science
Bac, Bacteriology
Bot, Botany
CD, Child Development
CE, Civil Engineering
Ch, Chemistry
DS, Dairy Science
Econ, Economics
Ed, Education
EE, Electrical Engineering
EG, Engineering Graphics
EM, Engineering Mechanics
Engl, English
Ent, Entomology
ES, Engineering Shops
FL, Foreign Language
FN, Food and Nutrition
Fr, French
GC, Guidance and Counseling
GE, General Engineering
Ger, German
GR, General Registration
GS, General Studies
HE, Home Economics
HEd, Home Economics Education
Hist, History
HM, Home Management
Ho, Horticulture
IAE, Industrial Arts Education
J, Journalism
Lib, Library
MA, Mechanized Agriculture
Math, Mathematics
ME, Mechanical Engineering
Mil, Military
Mus, Music
N, Nursing
Path, Plant Pathology
PE, Physical Education
Pha, Pharmacy
Phy, Physics
PJ, Printing and Journalism
PM, Printing Management
PolS, Political Science
PS, Poultry Science
Psy, Psychology
RS, Rural Sociology
Rus, Russian
SAA, Science and Applied Arts
SecS, Secretarial Science
Sp, Speech
Span, Spanish
TC, Textiles and Clothing
Vet, Veterinary Science
WL, Wildlife
Z, Zoology

MISCELLANEOUS ABBREVIATIONS

***Time and/or credit arranged**
Cr, Credit
F, Fall Semester
L, Laboratory
MTWTFS, Days of week
P, Prerequisite
R, Recitation (Lecture)
S, Spring Semester
Su, Summer Term

Course Numbering System

In the departmental description of subjects, the following numbering system is used:

1. Non-credit courses
1-99 Pre-college or remedial level

2. Courses for Undergraduates (carry undergraduate credit only)
100-199 Freshman level
200-299 Sophomore level

3. Courses primarily for Undergraduates (open to graduate students for credit under restricted conditions with approval of graduate dean—see graduate catalog)
300-399 Junior level
400-499 Senior level
500-599 Fifth year pharmacy level

4. Courses primarily for graduate students (open to selected undergraduate students on an elective basis only)
600-699 Graduate level

5. Courses for graduate students (graduate credit only)
700-799 Graduate level

DIVISION OF AGRICULTURE

ORVILLE G. BENTLEY, Dean

The agricultural work at State College is of three kinds—resident instruction, research, and extension. Experiments and investigations for the benefit of the farmers of the state are carried on in connection with problems of livestock production, dairying, soils, crops, poultry, veterinary, horticulture, agricultural economics, rural sociology, and mechanized agriculture.

The results of research form a basis for classroom instruction, for extension work, and a means of answering inquiries coming to the college. The Extension Service makes the work of instruction state-wide by making the results of research available to every home in the state.

The aim of resident instruction is to prepare men for successful work and leadership in the field of active farming, in agricultural education, in research work, in administrative and regulatory work, and in many lines of business closely related to agriculture.

The following curricula leading to the Bachelor of Science degree are offered in the Division of Agriculture.

General Curriculum in Agriculture

Most students in the Division of Agriculture will be required to take a basic core of courses. The greater share of these courses should be taken during the first and second years of college. Exceptions to the requirement are Agricultural Science, Pre-Veterinary, Pre-Forestry and the Professional Curriculum in Wildlife Techniques and Conservation.

If they wish, freshmen may enter this curriculum without specifying a major. Students, however, should make their choice of major and option by the last semester of the freshman year and definitely not later than the last semester of the sophomore year. The purposes, objectives, and requirements of the various majors and options are outlined in the discussions under the various departments. If at any time a student desires a change in major and/or option, he should report to the Director of Resident Instruction for counselor reassignment.

All students must complete a minimum of 25 semester hours of credit in courses numbered 300 or above to qualify for the B.S. Degree. Mathematical Analysis 245-254 or Calculus 223-233 may be counted toward the total.

At the discretion of the various departments a minimum of 24 semester credit hours shall constitute a major; sixteen semester credit hours shall qualify a student for a minor.

The core curriculum which follows includes the over-all divisional and college requirements. A student should make every effort to fulfill the core requirements as early as possible in his four-year program.

Core Curriculum in Agriculture

	Semester Hours
COLLEGE REQUIREMENTS:	**16**
Orientation, Or 100	1
Physical Education, PE 101-111	2
Military, Mil 111-121-211-221 or 151-161-251-261	4
English, Engl 113-123 or 143-153	6
Fundamentals of Speech, Sp 103	3
DIVISION OF AGRICULTURE REQUIREMENTS:	**52**
Group I Courses in Agriculture (see list)	12
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2
Science and Mathematics:	**20**
Inorganic Chemistry, Ch 110	4 or 5

College Algebra, Math 113 or Mathematical Analysis I, Math 145 ..... 3 or 5
Introductory Physics, Phy 104; Elementary Physics I, Phy 114 or General Physics I, Phy 205 ..... 4 or 5
Biological Science* 6
Science and Math Electives to total 20 hrs.†

Social Science: **14**

Introduction to Sociology, RS 153 3
National Government, PolS 213 or State and Local Government, PolS 243 3
Principles of Economics, Econ 203 3
Social Science Electives‡ 5

Humanities Electives§ 4

DEPARTMENTAL REQUIREMENTS, OPTION REQUIREMENTS AND GENERAL ELECTIVES 68

Total Hours Required for Graduation 136

Group I Courses in Agriculture

A minimum of 12 credits from courses listed below must be selected and should be completed during the first two years. Some departments require all or specific courses, while others leave the selection entirely to the student and the counselor.

Course	Credit
Crop Production, Agron 103	3
Soils, Agron 213	3
Introduction to Animal Science, AS 103	3
Livestock Management, AS 203 or Animal Nutrition, AS 243	3
Elements of Dairying, DS 103	3
Farm Management and Records, Econ 234	4
Introduction to Entomology, Ent 102	2
General Horticulture, Ho 103	3
General Forestry, Ho 112 or Farm Forestry, Ho 313	2 or 3
Farm Mechanics, MA 202 or Farm Power and Machinery, MA 212 or Electricity for Farm and Home, MA 222 or Soil and Water Mechanics I, MA 342	2
Plant Pathology in Human Affairs, Path 102 or Plant Pathology, Path 234	2 or 4
Poultry Production, PS 103 or Poultry Management, PS 303	3

*Students may choose among the following six courses unless specified by departmental or option requirements: General Botany: Plant Kingdom, Bot 103; General Botany: Seed Plants, Bot 104; General Zoology, Z 103-113; Biology, Bot 113, 123.

†Most departmental curricula will have specific requirements in this area, but for those that do not, the courses should be selected from the fields of bacteriology, botany, chemistry, entomology, mathematics, physics, plant pathology and zoology. Courses in Group I which are of a basic science nature (Ent 102, Path 102 or 234) cannot be counted toward this requirement unless they are over and above the 12 credit minimum for Group I course.

‡Electives in social science may be chosen from the fields of economics, history, political science, psychology and sociology. See page xxxi for approved listing.

§Electives in humanities may be chosen from the fields of art, drama, foreign language, literature, music, philosophy and religion. See page xxxi for approved listing.

IN ADDITION TO THE BASIC PROGRAM AS OUTLINED ABOVE, THREE OPTIONS ARE POSSIBLE IN THE AGRICULTURAL DIVISION. THESE OPTIONS ARE BUSINESS, SCIENCE AND PRODUCTION.

BUSINESS OPTION

This option is for students who plan to enter any of the business phases of agriculture, i.e., sales, administration, public relations, technical advances, etc. Those interested in farming and ranching might also consider this option for each is becoming a significant business enterprise. Students selecting this option will complete the general requirements listed in the Divisional Core plus the following additional requirements to complete their work for a Bachelor of Science Degree. The more specific requirements are listed under the appropriate option in each departmental curriculum.

Course	Credits
Principles of Economics, Econ 213	3
Business Law, Econ 303	3
Survey of Accounting, Econ 323 or equivalent	3
Money and Banking, Econ 333	3
Business Management, Econ 343	3
Statistical Methods I, Econ 353 or equivalent	3
Business Finance, Econ 363	3

SCIENCE OPTION

This option is for the student who desires a strong emphasis in the physical and biological sciences. He will, therefore, be more able to cope satisfactorily with the rapidly occurring scientific advances of the day. This option will also place a student in a good position to do graduate work in most agricultural fields. Students majoring in this option will complete the general requirements listed in the Divisional Core plus the following additional requirements. The more specific requirements are listed under the appropriate option in each departmental curriculum.

The following course areas and corresponding credits will be required over and above the science and mathematics courses required in the basic core:

Chemistry	10
Mathematics and/or Physics	6
Biological Science*	9

*Courses must be selected from at least 2 of the following areas: Bacteriology, Botany, Entomology-Zoology, and Plant Pathology.

PRODUCTION OR TECHNICAL OPTION

This option is for the student who desires a broad and more general education in Agriculture. Those that plan to return to the farm, do county extension work, or serve as fieldmen for breed associations and crop improvement associations will find this to be the logical option. This option also serves the student well who plans to enter any of the areas of production, such as dairy herd supervisor, greenhouse operator or into the various Federal and State agencies upon graduation. No further courses beyond the General Core are required by the Division. The more specific requirements beyond the Core are listed under the appropriate option in each departmental curriculum.

The Curriculum in Agricultural Science

This curriculum is offered to meet the need of present day requirements in the basic sciences. Students completing it will be prepared to engage in graduate work or to enter specialized research laboratories. It is important that the student recognize the value of this program for his particular qualification early in his school career. The student entering this curriculum will have a suitable counselor assigned by the Director of Resident Instruction. This counselor will be responsible for the student's program throughout his undergraduate college work. The student must maintain a superior academic standing to complete the course satisfactorily.

Freshman Year	**Credits**
Orientation, Or 100	1
Military, Mil 111-121 or 151-161	2
Physical Education, PE 101-111	2
English, Engl 113-123 or 143-153	6
Inorganic Chemistry, Ch 110	5
Inorganic Chemistry and Qualitative Analysis, Ch 115	5
Mathematical Analysis I and II, Math 145-155	10
Agricultural Elective	3
	34

Sophomore Year	
Military, Mil 211-221 or 251-261	2
Introduction to Sociology, RS 153	3
Fundamentals of Speech, Sp 103	3
Mathematical Analysis III and IV, Math 245-254	9
General Physics I and II, Phy 205-215	10
Quantitative Analysis, Ch 214	4
Agricultural Elective	3
	34

Junior Year	
General Botany, Bot 103 and 104	7
General Bacteriology, Bac 202	2
Laboratory Techniques, Bac 212	2
Advanced Exposition, Engl 352	2
General Zoology, Z 103, 113	6
Principles of Economics, Econ 203	3
Genetics, Z 303	3
National Government, PolS 213	3
Agricultural Electives	6
	34

Senior Year	
Organic Chemistry, Ch 310-320	10
Foreign Language	8
Statistics Elective	3
Social Science Elective	3
Electives	10
	34

Agricultural Education (AgEd)

Associate Professor Gadda

The National Vocational Education Act and subsequent federal acts require and provide for training of teachers of vocational agriculture. This work has been assigned to South Dakota State College, and has been approved by the State Board of Education and by the Division of Vocational Education of the U. S. Office of Education. In order to do this, the Division of Agriculture and Science and Applied Arts cooperate in offering such teacher preparation work. Students preparing to teach enroll in all the required core courses in the Division of Agriculture. They earn a major in Agricultural Education, with supporting preparation in technical agriculture, farm mechanics, basic sciences, and communications skills to make up the total requirement. Teachers of Vocational Agriculture in South Dakota receive the appropriate certificate to teach in high school, issued by the State Department of Public Instruction. The Professional Education requirement is 22 semester credits in Education including Student Teaching in Vocational Agriculture. The student teaching is done in designated Smith-Hughes

Agriculture departments of high schools in South Dakota.

Students enrolled in this curriculum must file an application with the Education Department prior to enrolling in Education courses. Admission to such courses is based on the following minimum qualifications: (1) An all-college G.P.A. of 2.0 for admission to Education courses, and 2.2 for student teaching; (2) Acceptable college entrance scores; (3) Satisfactory personal, moral, psychological and physical qualifications.

Curriculum in Agricultural Education

Freshman Year	F	S
Orientation, Or 100	1	
Physical Education, PE 101-111	1	1
Military, Mil 101-111 or 151-161	1	1
Crop Production, Agron 103		3
Introduction to Animal Science, AS 103	3	
Elements of Dairying, DS 103		3
Introduction to Entomology, Ent 102 or Plant Pathology in Human Affairs, Path 102	2	
General Botany, Bot 103		3
Inorganic Chemistry, Ch 110	4	
Inorganic Chemistry, Ch 124		4
English, Engl 113-123 or 143-153	3	3
General Zoology, Z 103	3	

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
College Algebra, Math 113 or Mathematical Analysis I, Math 145	3 or 5	
Soils, Agron 213	3 or 3	
Weeds, Agron 233	3 or 3	
Animal Nutrition, AS 243	3	
Livestock Feeding, AS 251	1	
Introduction to Sociology, RS 153	3	
Rural Sociology, RS 202	2 or 2	
Woodworking, IAE 153	3 or 3	
General Bacteriology, Bac 202	2 or 2	
Elementary Organic Chemistry, Ch 134	4	
Fundamentals of Speech, Sp 103	3 or 3	
General Psychology, Psy 203	3 or 3	

Junior Year	F	S
Forage Crops and Pasture Management, Agron 313 or Grain Crops, Agron 343 or General Horticulture, Ho 103	3 or 3	
Poultry Management, PS 303	3 or 3	
Livestock Disease Control, Vet 313	3	
Farm Power and Machinery, MA 212	2	
Electricity for Farm and Home, MA 222	2	
Soil and Water Mechanics II, MA 452	3 or 2	
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114	4 or 4	
Humanities Electives*		2
Principles of Economics, Econ 203-213	3	3
Welding, ES 131		1
Seminar in Agricultural Education, AgEd 351	1 or 1	
Introduction to American Education, Ed 302	2 or 2	
Educational Psychology, Ed 312		2

Senior Year	F	S
Farm Building Mechanization, MA 423 or Soil and Water Mechanics II, MA 452	2 or 2	
Humanities Electives*	2 or 2	
Teaching Farm Mechanics, AgEd 202	2 or 2	
Special Methods in Vocational Agriculture, AgEd 453	3 or 3	
Program Planning in Vocational Agriculture, AgEd 454	4 or 4	
Student Teaching in Vocational Agriculture, AgEd 458	8 or 8	
Farm Management and Records, Econ 234	4 or 4	
National Government, PolS 213 or State and Local Government, PolS 243	3 or 3	
Genetics, Z 303	3 or 3	
Publicity Methods, J 322 or Advanced Exposition, Engl 352	2 or 2	

*May be chosen from the fields of Art, Foreign Language, Literature, Music, Philosophy, and Religion.

Agricultural Extension (AgExt)

The Agricultural Extension program concerns study and training for positions in the Cooperative Extension Service as County Agents or Home Demonstration Agents.

Students who wish to qualify for Extension work as County Agents should give consideration in selection of electives to the following courses. Those which have the asterisk (*) should be given priority consideration.

Course, Department, Number	Credits
*General Psychology, Psy 203	3
Educational Psychology, Ed 312	2
*Sociology of Extension Work, RS 422	2
*Extension Organization and Methods, RS 332	2
*Leadership, RS 262	2
Leadership and Group Organization, RS 633	3
The Rural Community, RS 403	3
Public Speaking, Sp 323	3
*Discussion, Sp 312	2
Parliamentary Procedure, Sp 361	1
Farm Management and Records, Econ 234	4
Home Management, HM 372	2
Public Administration, PolS 333	3
*Publicity Methods, J 322	2

Two Agricultural Extension courses are offered to provide broader training in Extension for the personnel employed in the Coop-

erative Extension Service or those interested in that field.

Courses in various college departments may be offered as the need arises and the department can undertake the instruction.

400 Field Practice Training in Extension 2-5 credits

This course is available to a limited number of students majoring in agriculture or home economics who are interested in Extension work and have completed the junior class. Students will be assigned to a county during the summer for a period of time based upon the convenience of the student. The course will provide training and actual experience in Extension philosophy, methods, organization and procedures. Arrangements with Extension staff must be made prior to registration.

600 Special Problems in Extension 2-6 credits

Individually assigned investigative problems in Extension. Individual conferences with laboratory and/or field work. Arrangements with Extension staff must be made prior to registration.

Agricultural Operation

Although primarily arranged for students of agriculture who have not selected a major field of study and for those individuals who may stay in college less than four years, this curriculum can lead to a Bachelor of Science degree in agriculture. Three options are included in this program of studies: A full four-year degree program, a full two-year schedule of instruction, and a winter short course. Credits earned in any given semester, as well as those earned in the short term, will apply toward a Bachelor of Science degree.

Curriculum in Agricultural Operation, Four-Year Degree Program

This degree course consists of approximately one-fourth agriculture; one-fourth basic science; one-fourth social science, communications, and humanities; and one-fourth elective subjects. When qualifying for a Bachelor of Science degree a student may, through a wise choice of electives, complete courses in a business option, prepare for graduate study, or enroll in special areas of study such as plant and/or animal science.

Freshman Year	**F**	**S**
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100	1	
Physical Education, PE 101-111	1	1
Crop Production, Agron 103		3
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110		4
Introduction to Animal Science, AS 103	3	
Free Electives	8	5
Sophomore Year	**F**	**S**
Military, Mil 211-221 or 251-261	1	1
College Algebra, Math 113		3
Farm Management and Records, Econ 234		4
Fundamentals of Speech, Sp 103		3
Livestock Management, AS 203	3	
Principles of Economics, Econ 203	3	
Soils, Agron 213	3	
Social Science Elective	2	
Free Electives	5	6
Junior Year	**F**	**S**
General Botany, Bot 103-104	3	4
Elementary Organic Chemistry, Ch 134	4	
General Bacteriology, Bac 202-212	4	
Introduction to Sociology, RS 153		3
National Government, PolS 213 or State and Local Government, PolS 243		3
General Zoology, Z 103-113	3	3
Free Electives	3	5
Senior Year	**F**	**S**
Advanced Exposition, Engl 352 or Publicity Methods, J 322		2
Genetics, Z 303	3	
General Psychology, Psy 203		3
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114	4	
Humanities Elective	4	
Statistical Methods I, Econ 353 or Mathematics Elective		3
Free Electives	6	9

Curriculum in Agricultural Operation, Two-Year Certificate Program

This option includes all courses listed in the freshman and sophomore years of the degree program of studies. It is especially arranged for students who plan to study agriculture for less than four years. A certificate of completion is awarded to students who earn 66 semester credits and 125 grade points.

Winter Term Program

This six-week term begins the first week in December and closes the last week of January in each school year. The schedule of instruction is arranged for students who wish to study agriculture on the collegiate level at an agricultural college, but do not choose to enroll in a full two-year or four-year course. Credit earned from courses in this curriculum may be applied, on an elective basis and at the discretion of the major department, toward a two year certificate of completion or a Bachelor of Science degree in agriculture. The list of courses is as follows:

Course	Credit
Orientation, Or 100	0
Crop and Soil Management, Agron 110	1.5
Farm Management and Records, Econ 110	1.5
Farm Mechanics, MA 110	1.5
Livestock Management, AS 110	1.5

A certificate of completion is awarded to students who finish the course and earn at least a 1.5 grade point average.

Departments of Instruction

Agronomy (Agron) Crops and Soils

Professors Fine, Brage, Derscheid, Franzke, Kinch, Ross, Shank, Stone, Wells, Westin; Associate Professors Carson, Price, Rumbaugh, Runkles, Shubeck, White; Assistant Professors Albrechtsen, Beatty, Buntley, Colburn, Hovland, Kenefick, Moore, Warner; Instructors Dosland, Dybing, Evenson, Loper, Ward

The Agronomy Department offers courses in both crops and soils at the undergraduate and graduate level. Students trained at the graduate level are qualified for employment as teachers and research workers by state and federal agencies, commercial industries or enterprises of their own. Completion of an undergraduate curriculum provides training for agricultural work such as: ranching, farming, county agricultural agents, soil and crop phases of farm management, loan companies and banks, seed buying and selling, elevator operation, commercial seed production, grain grading, soil survey, soil conservation, land appraisal, and feed or fertilizer companies.

Instruction in soils includes courses dealing with the origin and development of soils, soil management and fertility, soil classification and mapping, soil conservation, soil physics, soil mechanics, soil chemistry, and soil microbiology.

Instruction in crops includes courses in cereal and forage crops, seed production and processing, weed identification and control, grain and seed grading and testing, plant breeding, plant genetics, pasture management and statistical research methods.

A broad choice of electives enables Agronomy students to prepare for many fields in soils and crops. However, they can be included in three general areas (a) Technical or Production and Industry in Crops and/or Soils, (b) Soil Science and (c) Crop Science. The Agronomy curriculum for the three areas contains only the minimum required courses. Each student is encouraged to develop an individual course program to satisfy his needs, interests, and aptitudes. A broad choice of electives enables Agronomy students to prepare for particular fields in soils and crops.

Below is the outline of required courses needed to complete the requirements for a major in Agronomy, and following that is the list of courses offered by the Agronomy Department. Also given are some suggested courses in the crops and soils areas that will be helpful in preparing a student in his particular field of interest. That is particularly true if he may eventually take graduate work.

Curriculum in Agriculture, Agronomy Major*

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
Inorganic Chemistry and Qualitative Analysis, Ch 115 or Inorganic Chemistry, Ch 124		5 or 4
College Algebra, Math 113 or Mathematical Analysis I, Math 145	3 or 5	
Plane Trigonometry, Math 133 or Mathematical Analysis II, Math 155		3 or 5
Crop Production, Agron 103	3	

Orientation, Or 100	1	
Physical Education, PE 101-111	1	1
Military, Mil 111-121 or 151-161	1	1
Agricultural Group I courses		3

Sophomore Year	**F**	**S**
General Botany, Plant Kingdom, Bot 103	3	
Military, Mil 211-221 or 251-261	1	1
General Botany: Seed Plants, Bot 104		4
Soils, Agron 213	3	
Advanced Exposition, Engl 352		2
Fundamentals of Speech, Sp 103		3
Introduction to Sociology, RS 153	3	
Elementary Organic Chemistry, Ch 134 or 310	4 or 5	
Principles of Economics, Econ 203		3
Introduction to Entomology, Ent 102	2	
Animal Nutrition, AS 243		3
Electives		

Junior Year	**F**	**S**
Genetics, Z 303	3	
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 or General Physics I, Phy 205	4 or 5	
National Government, PolS 213 or State and Local Government, PolS 243	3	
Plant Physiology, Bot 424		4
General Bacteriology, Bac 202-212	4	
Social Science Electives (additional hours)	6	
Humanities Electives (additional hours)	4	
Electives		

Senior Year	**F**	**S**
Undergraduate Agronomy Seminar, Agron 491	1	1
Electives		

*All Agronomy majors must complete at least 24 hours of course credit in Agronomy.

Technical Option

Students interested in the Production and Industry area of Agronomy (Crops and Soils) preparing for agricultural work in production aspects such as farming or ranching; governmental work such as County Agent, Farm and Home Administration, Soil Conservation Service, Commodity Credit Corporation, etc., or in processing or sales with a commercial concern such as seed buying, fertilizer sales, elevator manager, etc., should choose the Technical Option in the Production and Industry area of study.

Some suggested electives in this area might be Agronomy: 233, 243, 303, 312, 313, 323, 343, 372, 414, 422, 483; Economics 303, 323, 353; Entomology 233.

Crop Science Option

A Crop Science Option is offered for students interested in an intense study of applied plant science. In addition to the courses specifically listed in the Agronomy major, the student will need to take Agronomy 422, Chemistry 214, and Plant Pathology 234 and complete six additional hours in Chemistry and six additional hours in Mathematics and/or Physics.

Some suggested additional courses are Agronomy 233, 303, 312, 313, 323 and 343.

Soil Science Option

A Soil Science Option is offered which will meet the requirements developed by the Soil Science Society of America. In addition to the courses specifically listed in the Agronomy major, a student will be required to take Agronomy 243 and Chemistry 214 and complete six additional hours in Chemistry, six additional hours of Mathematics and four additional hours of Physics.

Some sample elective courses which might be included in a Soil Science program are: Agronomy 323, 372, 414, 432, 443, 452, 462, 483, 672; Animal Science 323; Bacteriology 444; Botany 404; Chemistry 310, 410, 615; Horticulture 313; Mathematics 155, 245, 254, 265; and Physics 215, 373, and 383.

UNDERGRADUATE COURSES

103 Crop Production 3(2,2) FS

Fundamental practices and principles; crop distribution; growth process; response to environment. Grain and forage crops, including their distribution, use, improvement, growth, harvesting, and marketing.

110 Crop and Soil Management 1½ (3,3) 6 wks.

Similar to Crop Production, Agron 103 and Soils, Agron 213 except that selected topics will be used and adjusted to fit six-week class schedule arranged for Winter Term short course students.

213 Soils 3(2,3) FS

Origin, development, physical properties, fertility and management of soils. P, Ch 110.

233 Weed Control 3(2,2) F

Identification of weed plants; growth, dissemination, economic importance, and distribution. Chemical and cultural methods of control and eradication. P, 103 or Ho 103.

243 Geology 3(3,0) S

Fundamental geologic processes, including rock weathering, work of wind, ground water, streams, glaciers, lakes, ocean, volcanism, mountain formation, origin of earth, minerals and rocks. P, Ch 110.

303 Seed Technology 3(2,2) S

Seed laws, seed testing rules and procedures. Seed anatomy, physiology, dormancy and the aging proc-

esses. Purity and germination interpretations and evaluations. Identification of crop and weed seeds. P, 233.

312 Seed Production and Processing 2(2,0) F

Production and harvesting of seed crops. Seed processing and grading procedures and machinery. Conditioning, drying storage, and marketing; production of certified and hybrid seed crops. P, 103 or Ho 103.

313 Forage Crops and Pasture Management 3(2,2) S

Grasses, legumes and other plants; their establishment, management and use in hay, pasture, silage and green manure. P, 103.

323 Soil Management, Fertility and Fertilizers 3(3,0) F

Considerations and practices in soil management, including rotations, use of fertilizers and crop residue management to maintain and improve productivity. Chemical composition of soils, fertilizers and crops and relationships between soils and crops. P, 213.

343 Grain Crops 3(2,2) F

Distribution, adaptation, classification and culture of corn, wheat, oats, barley, sorghums, flax, soybeans and other grain crops. Marketing and market quality determinations. P, 103, Z 303.

372 Soil Conservation 2(2,0) F

Value of soil as natural resource; effects of soil physical properties, type of rainfall, vegetation, cultural practices on soil erosion. Methods of conservation of soil, water, and plant nutrients with special emphasis on agronomic practices. P, 213.

414 Soil Genesis, Classification and Survey 4(3,4) S

Factors and processes of soil formation and development. Field work on identification, classification, and mapping. Application of soil data in terms of land use capabilities. P, 213, 243.

422 Crop Breeding 2(2,0) F

Application of genetic principles and allied subjects used in breeding crop plants. P, 103, Z 303.

432 Crop Ecology and Physiology 2(2,0) S

Analysis of environmental factors and their interactions on growth and distribution of economic crops. Effects of manipulation of these factors on physiology of plant and quality of crop. P, 103, Bot 424.

443 Soil Chemistry 3(2,3) F (Offered in 1963)

Basic chemical phenomena in soil genesis, weathering, mineralization of organic matter and nutrition of plants. Reactions of soils with waters and soil amendments; colloidal properties as applied to soils; chemical characterization of soils in laboratory. P, 213, Ch 213. Alternate years.

452 Soil Physics 2(2,0) S

Physical properties of soils: texture, structure, colloids, moisture relations. Effect of these properties on growth of crops and utilization of soils. P, 213, Phy 124 or 205.

462 Soil Morphology 2(2,0) S (Offered in 1964)

Field studies involving writing detailed soil profile descriptions; correlation of soil profile characteristics with land use, management, and potential productivity. P, 213, 243. Alternate years.

483 Irrigation—Crop and Soil Practices 3(3,0) S

Management of South Dakota soils and crops under irrigation. Movement and storage of water in soil; cropping systems; crop varieties; use of legumes, manures and commercial fertilizers. Soil acidity, salinity, and alkali. P, 213, Math 113.

490 Crops or Soils Problems 1 or 2 FSSu

Assigned readings, research, and written reports. P, consent of instructor. Limit of 2 hours for B.S. degree.

491 Undergraduate Agronomy Seminar 1(1,0) FS

Review of literature and original investigations in technical crop and soil bulletins and agronomic journals with written and oral reports. Two hours required for graduation.

GRADUATE COURSES

613 Biometry 3(3,0) F

Principles of statistical methods as applied to biological data with special reference to experimental design, reduction of experimental data and tests of significance and their interpretation. P, Math 113.

633 Advanced Genetics 3(2,2) F

Procedures in genetic studies, cytoplasmic influences, gene physiology, mutagenesis, chromosomal changes, linkage, and of steps toward genetic code. P, Z 303.

672 Soil Mineralogy 2(2,0) F (Offered in 1964)

Soil minerals and their identification. P, 213, 243. Alternate years.

703 Cytology 3(2,2) S (Offered in 1965)

Physio-chemical nature of cell inclusions with reference to their role in heredity. P, 422, 633. Alternate years.

713 Cytogenetics 3(2,2) S (Offered in 1964)

Nature and behavior of chromosomes in relation to heredity, with consideration of cytogenetic studies. P, 422, 633. Alternate years.

723 Advanced Plant Breeding 3(3,0) S (Offered in 1964)

Basic principles of quantitative variation in crop plants; method of analysis of effects due to genetic and environmental sources; and programs of improvement. P, 422, 613. Alternate years.

742 Advanced Soil Fertility 2(2,0) S (Offered in 1964)

Chemistry of soil-plant relationships; advanced theory and practice in use of fertilizers. P, 323. Alternate years.

743 Advanced Soil Physics 3(3,0) F (Offered in 1964)

Hydraulic conductivity, unsaturated water flow, moisture tension, release characteristics, structural

relationships to practical problems and intrinsic soil properties; colloidal content and relationship to above phenomena. P, 453, Math 333. Alternate years.

753 Advanced Soil Chemistry 3(3,0) S (Offered in 1964)

Advanced chemical considerations of soil constituents in dynamic environment of soil; conditioning effects of climate and other environmental factors; characteristics, reactions, and importance of clay mineral and colloidal complex. P, 443. Alternate years.

763 Advanced Weed Physiology and Control 3(3,0) F (Offered in 1964)

Physiological and ecological principles of weed control including methods of elimination. Chemistry and applications of herbicides. P, 233, Ch 134, Bot 424. Alternate years.

772 Advanced Soil Morphology and Genesis 2(2,0) S (Offered in 1965)

Classification and nomenclature of soil; factors governing and processes active in soil development; soil geography. P, 414, 462. Alternate years.

773 Design and Analysis of Experiments 3(3,0) S (Offered in 1964)

Organization and integration of research projects with application of statistical methods and experimental design. Use of analysis of variance and covariance, various components, multiple and curvilinear regression for data reduction and interpretation. P, 613. Alternate years.

780 Advanced Crops or Soils Problems 1 or 2 FSSu

Laboratory or field research with relevant literature reviews, conferences and reports. P, consent of instructor.

781 Agronomy Seminar 1(1,0) FS

Reports and discussions of current investigations in Agronomy (two credits required for M.S., three for Ph.D.).

790 Thesis 5-8 FSSu

Animal Science (AS)

Professors Wahlstrom, Dinkel, Embry, Kohler; Associate Professors Bush, Kamstra, Lewis, McCarty, McCone; Assistant Professors Gartner, Minyard, Ray, Seerley, Tuma; Instructors Knight, Luther (on leave), Whetzal

The department of Animal Science offers instruction in animal breeding, feeding and nutrition, management, selection, judging, marketing, meats, and wool. Courses pertain to beef cattle, horses, sheep, and swine under both farm and ranch conditions. Students may choose any one of three options in Animal Science. These options are: (a) Business option, (b) Production option, and (c) Science option. Students are encouraged to supplement their class and laboratory work with practical experience in the line of work which they plan to pursue after graduation.

Students who major in Animal Science receive basic training for farm and ranch operation, county extension and 4-H club agents, teaching in colleges, research work, State and Federal agricultural programs, livestock marketing agencies, livestock association fieldmen, packing industry, feed companies, and agricultural representatives for businesses interested in agriculture.

A curriculum in Range Management is offered for those interested in range management positions in the Bureau of Land Management, Bureau of Reclamation, Extension Service, Forest Service, National Park Service, State and Federal Land Appraisal Agencies, and research and graduate work in many institutions of higher education in the United States.

Curriculum in Agriculture, Animal Science Major

Freshman Year	**F**	**S**
Orientation, Or 100	1	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
Elementary Organic Chemistry, Ch 134		4
Introduction to Animal Science, AS 103	3	or 3
Introduction to Sociology, RS 153	3	or 3
Biology, Bot 113-123 or General Zoology, Z 103-113	3	3

Sophomore Year	**F**	**S**
Military, Mil 211-221 or 251-261	1	1
Animal Nutrition, AS 243	3	
Livestock Feeding, AS 251	1	
Meat and Meat Processing, AS 213	3	or 3
Fundamentals of Speech, Sp 103	3	or 3
Principles of Economics, Econ 203	3	or 3
National or State and Local Government, PolS 213 or 243	3	or 3

Junior and Senior Years	**F**	**S**
Genetics, Z 303	3	
Principles of Animal Breeding, AS 324	4	
Animal Science Seminar, AS 401	1	or 1
Communications Elective	2	or 2
Humanities Electives	2	2

Production Option

	Credits
Crop Production, Agron 103	3
Farm Management and Records, Econ 234	4

Soils, Agron 213	3
Mechanized Agriculture elective	2
College Algebra, Math 113 or Mathematical Analysis I, Math 145	3 or 5
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2
General Bacteriology, Bac 202-212	4
Livestock Evaluation, AS 212	2
Livestock Judging, AS 222	2
Carcass Evaluation, AS 232	2
Livestock Marketing, AS 312	2
AS Production Courses, AS 322, 323, 403, 413, 423	8 or 9
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 or General Physics I, Phy 205	4 or 5
Introduction to Entomology, Ent 102	2
Anatomy, Z 203	3
Elementary Physiology, Z 204 or Mammalian Physiology, Z 414	4
Social Science Elective	5
General Electives	---

Science Option

	Credits
Introduction to Entomology, Ent 102	2
Soils, Agron 213	3
Group I Electives	4
Inorganic Chemistry and Qualitative Analysis, Ch 115	5
College Algebra, Math 113, Plane Trigonometry, Math 133, Analytic Geometry, Math 143 or Mathematical Analysis I, II, Math 145, 155	9 or 10
Quantitative Analysis, Ch 214	4
General Bacteriology, Bac 202-212	4
Elementary Physics I, II, Phy 114-124 or General Physics I, II, Phy 205-215	8 or 10
Advanced Exposition, Engl 352	2
Anatomy, Z 203	3
Mammalian Physiology, Z 414	4
AS Production Courses, AS 322, 403, 413, 423	5 or 6
Social Science Elective	5
General Electives	---

Business Option

	Credits
Crop Production, Agron 103	3
Farm Management and Records, Econ 234	4
Group I Electives	2
College Algebra, Math 113 or Mathematical Analysis I, Math 145	5
Publicity Methods, J 322	2
Livestock Evaluation, AS 212	2
Livestock Marketing, AS 312	2
AS Production Courses, AS 322, 323, 403, 413, 423	8 or 9
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 or General Physics I, Phy 205	4 or 5
Communications Elective	3
Industrial Sociology, RS 382	2
Principles of Economics, Econ 213	3
Survey of Accounting, Econ 323	3
Business Law, Econ 303	3
Money and Banking, Econ 333	3
Business Management, Econ 343	3
Statistical Methods I, Econ 353	3
Business Finance, Econ 363	3
Anatomy, Z 203 or Elementary Physiology, Z 204	3 or 4
General Electives	---

Curriculum in Agriculture, Range Management Major

Freshman Year	F	S
Orientation, Or 100	1	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or PE 121-131	1	1
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
Elementary Organic Chemistry, Ch 134		4
Introduction to Animal Science, AS 103	3 or	3
General Botany: Seed Plants, Bot 104	4 or	4
College Algebra and Plane Trigonometry, Math 113-133 or Mathematical Analysis I, II, Math 145-155	3 or 5	3 or 5

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Agrostology, Bot 213		3
Basic Taxonomy, Bot 204	4	
General Zoology, Z 103-113	3	3
Animal Nutrition, AS 243	3	
Livestock Feeding, AS 251	1	
Geology, Agron 243		3
Soils, Agron 213	3 or	3
Crop Production, Agron 103	3 or	3
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114, or General Physics I, Phy 205	4 or 5 or	4 or 5
Fundamentals of Speech, Sp 103	3 or	3

Junior Year	F	S
Principles of Range Management, AS 323	3	
Range Ecosystem, AS 343		3
Plant Ecology, Bot 404	4	
Soil Genesis, Classification and Survey, Agron 414		4
Forage Crops and Pasture Management, Agron 313		3
Soil and Water Mechanics I, MA 342	2 or	2
Genetics, Z 303	3 or	3
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2 or	2
Principles of Economics, Econ 203	3 or	3
Humanities Electives	4 or	4
General Forestry, Ho 112 or Dendrology, Ho 213 or Forest Ecology, Ho 273	2 or 3 or	2 or 3

Special Summer Session	Su
Range Analysis, AS 333	3
Field Studies in Range Management, AS 352	2

Senior Year	F		S
Range Improvement, AS 442			2
Range Management Planning, AS 442			2
Beef Cattle Production, AS 423			3
Sheep and Wool Production, AS 413	3		
Farm Management and Records, Econ 234	4		
Plant Physiology, Bot 424	4		
Techniques in Wildlife Management, WL 202	2		
Introduction to Sociology, RS 153	3	or	3
National or State and Local Government, PolS 213 or 243	3	or	3
Social Science Elective	1	or	1

UNDERGRADUATE COURSES

103 Introduction to Animal Science 3(2,2) FS

General principles of livestock industry. Adaptation, breeding, feeding, marketing, classification, selection of market and breeding types of beef cattle, horses, sheep, and swine.

110 Livestock Management 1½(3,3) 6 wks.

Same as Livestock Management, AS 203 except that selected topics will be used and adjusted to fit a six-week class schedule arranged for Winter Term Short Course students.

111 Horsemanship 1(0,2) S

Types of breeds of riding horses, gaits, grooming, equipment, rations; basic riding instruction with English and Western type equipment.

202 Meat Selection and Utilization 2(1,2) S (Offered in 1965)

Not open to AS majors. Selection and identification of meat cuts for consumer. Palatability, grading, inspection and storage of meat products. Alternate years.

203 Livestock Management 3(2,2) F

Not open to AS majors. Principles of livestock management. Recommendations for feeding and breeding systems, disease and sanitation, housing, space requirements, and other practices. P, 103.

212 Livestock Evaluation 2(0,4) F

Evaluation of market classes of beef cattle, sheep and swine on foot and in the carcass. Judging and evaluating breeding animals, including horses; preparation for judging competition. P, 103.

213 Meat and Meat Processing 3(2,2) FS

Survey of meat industry. Composition of meat animals. Product identification, preservation, cooking, nutritive value, pricing, and curing.

222 Livestock Judging 2(0,4) S

Type studies and selection for individual excellence; judging and oral discussion of classes of beef cattle, horses, sheep, and swine. P, 212.

232 Carcass Evaluation 2(0,4) S

Techniques used in evaluating carcasses of meat animals. Meat grading and judging. P, 212.

243 Animal Nutrition 3(3,0) F

Principles of animal nutrition. Functions of various nutrients; digestion and metabolism of nutrients by different animal species. P, Ch 134.

251 Livestock Feeding 1(0,2) F

Classification of feeds; use and application of feeding standards; principles of ration formulation and balancing for large animal species. P, 243 or concurrently.

301 Advanced Livestock Judging 1 (0,2) F

Continuation of 222. Trips to purebred herds; participation in American Royal and International Livestock Judging Contests. P, 222.

311 Meat Grading and Selection 1(0,2) F

Identifying, judging and grading carcasses and cuts; training in writing reasons; participation in intercollegiate meat judging contests. P, 212, 232.

312 Livestock Marketing 2(2,0) S

Livestock marketing methods, involving problems of transportation; terminal market practices, methods of selling; factors determining livestock prices; selling purebred livestock. P, 103.

322 Horse Production 2(1,2) S

Feeding, breeding, and management principles for draft and light horses. P, 103, 243.

323 Principles of Range Management 3(3,0) F

Range management with the principles underlying science presented within framework of ecosystem. Desirable antecedents, Bot 204; Agron 213.

324 Principles of Animal Breeding 4(3,2) S

Application of genetics to improvement of farm animals. Emphasis on occurrence, origin, use and control of variation in economically important traits of farm livestock. P, Z 303.

333 Range Analysis 3(1,4) Summer Field Session (Offered in 1965)

Theory and practice of range surveys as used by various administrative and research organizations for determination of range conditions, trend, utilization and recommended stocking rate. Surveys will be conducted by students on various ranches in Western South Dakota. P, 323; Bot 204, 213. Alternate years.

343 Range Ecosystems 3(3,0) S (Offered in 1965)

Range management and ranching problems in different grazing regions of United States. Ecology, forage value, and grazing response of principle range plants of each region are studied. P, 323; Bot 204, 213. Alternate years.

352 Field Studies in Range Management 2(0,4) Summer Field Session (Offered in 1965)

Extended field trip for study of range sites and condition classes in different grazing regions and to examine range research projects and action programs. P, 343. Alternate years.

401 Animal Science Seminar 1(1,0) FS

Review of current research, discussions and reports. Limit 2 credits. P, senior standing.

403 Swine Production 3(2,2) S

Feeding, breeding, and management principles for swine production. Breeds of swine, production trends, and equipment for hog production. Student participation in management techniques. P, 103, 243, 251.

413 Sheep and Wool Production 3(2,2) F

Feeding, breeding, and management principles for maximum production of meat and wool in farm and range flocks. P, 103, 243, 251.

423 Beef Cattle Production 3(2,2) S

Feeding, breeding, and management principles for beef cattle production under farm and ranch conditions. P, 103, 243, 251.

432 Range Improvement 2(2,0) S

Methods of improving ranges: livestock control, mechanical treatments, reseeding, range plant control, and related topics. Field examination of range improvement programs. P, 323.

442 Range Management Planning 2(1,2) S

Planning problems and student preparation of plans for cattle and sheep ranches with emphasis on comparison of alternative range improvement practices. P, 323 and senior standing.

GRADUATE COURSES

600 Research Problems 1-3 FSSu

Investigation of problems in following areas with results submitted as technical paper:
(1) Animal breeding
(2) Livestock production
(3) Meats
(4) Nutrition
(5) Range management

601 Wild Lands Seminar 1(1,0) S

Guest lectures and review of current research and action programs in use of wild lands. P, 323 and senior standing. Limit 2 credits.

602 Wool Technology 2(1,2) S (Offered in 1965)

Factors relating to wool production and marketing. Grading wool, properties of wool and wool technology. P, 413. Alternate years.

612 Advanced Livestock Feeding 2(2,0) F (Offered in 1963)

Application of recent research findings in feeding of swine, cattle, and sheep. P, 243, 251. Alternate years.

613 Reproductive Physiology 3(2,2) S (Offered in 1964)

Anatomical and physiological bases of reproductive phenomena of domestic animals; factors influencing and methods of improving reproductive efficiency. P, Z 203, 303, 204 or 414, or consent of instructor. Alternate years.

614 Meat Technology 4(2,4) S (Offered in 1964)

Basic physical, chemical, microbiological, and histological characteristics of meat and effects of various processing methods on meat products and by-products. P, 213. Alternate years.

702 Experimental Procedure 2(2,0) S

Research methods and planning of experimental work, necessary records, interpretation of results, and presentation of material. P, Agron 613 or equivalent.

703 Animal Nutrition 3(3,0) S (Offered in 1965)

Principles of nutrition in relation to growth, reproduction, lactation, fattening, and work. Alternate years.

712 Advanced Animal Breeding 2(1,2) S (Offered in 1964)

Methods of data analysis for developing efficient breeding plans. Calculation and use of correction factors, heritability estimates, genetic correlations, selection indices, and inbreedng charts. P, 324, Agron 613 or equivalent courses. Alternate years .

713 Population Genetics 3(3,0) S (Offered in 1965)

Genetic structure of populations and forces affecting this structure. P, 324 or equivalent. Alternate years.

722 Animal Nutrition Laboratory 2(0,6) S (Offered in 1965)

Laboratory methods course involving demonstration and practical work in techniques used in animal nutrition research. Alternate years.

751 Graduate Seminar 1(1,0) FS

Reports and discussion of current research in animal science. Maximum of 2 credits for M.S. and 4 credits for Ph.D.

761 Nutrition Seminar 1(1,0) FS

Reports and discussion of current research in nutrition. Maximum of 2 credits.

790 Thesis in Animal Husbandry 5-8 as arranged

Bacteriology (Bac)

Professors Berry, Baker; Associate Professors Calkin, Pengra

Bacteriology courses offered fulfill the requirements of those students who are preparing for professional work in bacteriology or supplementing the needs of those related curricula for their special fields.

Bacteriology majors who wish to start work with a Bachelor's Degree will find opportunities in the Bureau of Animal Industry, as technicians and serologists, Public Health Laboratories of the various states and cities, chemical companies concerned with agricultural applications, dairy inspectors,

Pure Food and Drug Authority, and the medical and sanitary sections of the Army and Navy. Majors who wish to do research will want to continue their training to the Master's Degree and beyond. They will find in the courses and equipment of the department a program which will allow sufficient choice to select the field of their particular interest. The particular need today is for research work in bacteriology with a broad agricultural background to aid in solving the problems of agriculture and the related industries of food processing and the utilization of waste products.

Curriculum in Agriculture, Bacteriology Major

Freshman Year	**F**	**S**
English, Engl 113-123 or 143-153	3	3
College Algebra, Math 113	3	
Plane Trigonometry, Math 133		3
Inorganic Chemistry, Ch 110-115	5	5
Introduction to Animal Science, AS 103		3
General Zoology, Z 103-113	3	3
Orientation, Or 100	1	
Physical Education, PE 101-111 or 121-131	1	1
Military, Mil 111-121 or 151-161	1	1
Sophomore Year	**F**	**S**
Animal Nutrition, AS 243	3	
Crop Production, Agron 103	3	
General Bacteriology, Bac 202-212		4
Principles of Economics, Econ 203	3	
Introduction to Sociology, RS 153		3
Fundamentals of Speech, Sp 103		3
Elements of Dairying, DS 103	3	
General Botany, Bot 103		3
Elementary Physics I-II, Phy 114-124	4	4
Military, Mil 211-221 or 251-261	1	1
Junior Year	**F**	**S**
Soils, Agron 213	3	
Bacterial Cytology and Function, Bac 304		4
Organic Chemistry, Ch 310-320	5	5
Survey of World Affairs, PolS 222		2
Advanced Exposition, Engl 352	2	
General Anthropology, RS 213	3	
National Government, PolS 213		3
Dairy Microbiology, DS 314	4	
Microbiology of Water and Sewage, Bac 303		3
Senior Year	**F**	**S**
Principles of Infection and Immunity, Bac 403	3	
Seminar, Bac 431	1	1
Soil Microbiology, Bac 444		4
*Systematic Bacteriology, Bac 623	3	
*Food Bacteriology, Bac 353	3	
*Mycology, Path 424		4
Electives	6	8

Required: Sufficient courses in Bacteriology must be taken to provide 24 approved credits. Those students anticipating graduate work should elect two years of German and further mathematics.

*Not required but strongly recommended.

UNDERGRADUATE COURSES

202 General Bacteriology 2(2,0) FSSu

General principles of basic and applied microbiology. P, Ch 110.

212 Laboratory Techniques in General Bacteriology 2(0,4) FSSu

Basic concepts of microbiology and development of microbiological techniques. P, concurrrent registration in Bac 202.

303 Microbiology of Water and Sewage 3(2,2) S

Microorganisms associated with water supplies, stream pollution, and sewage disposal. P, Bac 212.

304 Bacterial Cytology and Function 4(2,4) S

Anatomy and morphology of bacterial cell and its appendages. Strict anaerobic studies, determination of thermal death point for both vegetative and endospore forms. P, Bac 212.

353 Food Bacteriology 3(2,2) F

Bacteriological aspects of food processing, preservation, and storage. P, Bac 212.

403 Principles of Infection and Immunity 3(2,2) F

Bacterial infection, antibiotics, vaccines. P, Bac 212.

413 Pathogenic Microbiology 3(2,2) S

Morphological and cultural characteristics of bacterial organisms which cause man's more important diseases. P, Bac 212.

431 Seminar 1(1,0) FSSu

Presentation of topics based on bacteriological literature in scientific journals. Open to advanced students in bacteriology and related sciences. P, senior standing. Maximum 2 credits.

444 Soil Microbiology 4(2,4) S

Microbial flora of agricultural soils, and biochemical changes brought about by this flora. P, Bac 212 and Agron 213.

GRADUATE COURSES

603 Virology 3(2,2) F

Nature and behavior of viruses, animals, and bacteria. P, advanced courses in bacteriology.

623 Systematic Bacteriology 3(2,2) S

Lectures on nomenclature, Bergey's Manual, monographs on special groups and laboratory demonstration. Family, generic, and species characters. P, advanced courses in Bacteriology and senior rank.

701 Graduate Seminar 1(1,0) FSSu

P, graduate student. Two credits maximum.

702 Bacteriological Problem 2(0,2) FSSu

Problem is to be a research type of investigation of some microbiological phenomenon. Available only to M.Ed. biological science majors.

704 Bacterial Metabolism 4(2,4) SSu

Biological oxidations, bacterial fermentation mechanisms, metabolism of nitrogenous compounds, aerobic respirations, enzyme inductions, and laboratory techniques involved in the study of these processes. P, Bac 212 and Ch 615.

714 Industrial Microbiology 4(2,4) S

Fermentations of industrial significance, including some common spoilage epidemics in industrial processes. Pilot plant studies of solvent, alcohol, and antibiotic production.

790 Thesis in Bacteriology 8 FSSu

Botany (Bot)

Professor Miller; Associate Professors Holden and Taylor; Assistant Professor Olson; Instructor Myers

The recognition of two kinds of human interest in the field of science has determined the content and method of courses offered by the department. One of these interests, which is cultural in nature, is non-technical; the other, professional and necessarily technical.

The needs of both interests are met by the department's introductory courses; for these are of the survey type, broad in scope and varied in application. Advanced courses, however, are all technical. They lay the foundation for the teaching of botany in the secondary schools, for advancement into the field of botanical research, for direct application to the variety of fields represented in the vocational divisions of the college, and for certain technical services in industry.

Curriculum in Agriculture, Botany Major

Freshman Year	F	S
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
Orientation, Or 100	1	
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110, 124	4	4
College Algebra, Math 113	3	
Plane Trigonometry, Math 133		3
General Botany, Bot 103-104	3	4
	16	16

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203	3	
National Government, PolS 213 or State and Local Government, PolS 243	3	
Introduction to Sociology, RS 153	3	
Fundamentals of Speech, Sp 103		3
Basic Taxonomy, Bot 204		4
Elementary Organic Chemistry, Ch 134	4	
Humanities Elective		4
Group I Electives	4	5
	18	17

Junior Year	F	S
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2	
Plant Physiology, Bot 424	4	
Plant Anatomy, Bot 413		3
Botanical Techniques, Bot 303		3
Zoology, Z 103-113	3	3
Genetics, Z 303	3	
Social Science Electives		5
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 or General Physics I, Phy 205	4–5	
Group I Electives		3
Electives*	2	
	18	17

Senior Year	F	S
General Bacteriology, Bac 202-212	4	
Elective in Botany	4	
Seminar, Bot 401		1
Electives*	9	16
	17	17

Major in Botany—103, 104, 204, 303, 413, 424, 401, and botany electives to make 24 credits.

Minor in Botany—103, 104, and 204 plus enough electives to make 16 credits.

*Students who expect to continue their study at the graduate level should include among their electives a foreign language, together with additional mathematics and science courses. Those who expect to teach in high school should consult with the head of the Education Department before registering for the first term of their junior year.

UNDERGRADUATE COURSES

103 General Botany: Plant Kingdom 3(2,2) FSSu

Survey of great plant groups, their respective origins, evolutionary contributions, and relative importance in present day vegetation. Open to all students.

104 General Botany: Seed Plants 4(2,4) FSSu

Problems of development, adjustment, and function which plants must solve if they are to live successfully. Importance of plants to man's economy. Open to all students.

113 Biology 3(2,2) F

Concepts of modern biology as they are related to living organisms. Emphasis on molecular and cellular organization of living organisms.

123 Biology 3(2,2) S

Concepts of modern biology as they are related

to living organisms. Emphasis on organism and interrelation of organisms.

204 Basic Taxonomy 4(3,2) FSSu

Principles of phylogeny, classification and nomenclature; demonstrations, field study and laboratory practice in collecting, preserving and identifying plants. Open to all students.

213 Agrostology 3(2,2) S

Systematic study of grasses, their phylogeny, classification and nomenclature; laboratory practice in recognition and identification of grasses. P, 103, 104.

303 Botanical Techniques 3(0,6) S

Preparation of plant organs and tissues for critical study; production of visual aids; biological photography. P, 104.

323 Aquatic Seed Plants 3(2,2) F

Systematic study of aquatic seed-plants, their classification and nomenclature; laboratory and field practice in identification and recognition of common aquatic plants. P, 103, 104.

401 Seminar 1(1,0) FS

Review of literature and/or original investigations on various botanical problems. P, two years of course work in botany.

404-414 Plant Ecology 4(3,2) FS

Analysis of environments of seed-plants; dynamics of succession and community-formation; laboratory and field study of ecologic factors. P, 104.

413 Plant Anatomy 3(0,6) S

Developmental anatomy of seed plant axis and its appendages. Emphasis on structural fitness of tissues and organs for functions they perform. P, 104.

420 Botanical Problems 2-4 cr* FS

Solution of individually assigned investigative problems in botany, making use of techniques acquired in foundation courses. Individual conferences and laboratory, greenhouse, or field work. P, adequate background for assigned problem.

424 Plant Physiology 4(2,4) FSu

Fundamental plant functions and adjustments. P, 104, desirable antecedent Ch 115, 134.

*Time and/or credit to be arranged.

GRADUATE COURSES

604 Growth and Development 4(1,6) S
(Offered in 1964)

Relation of light, temperature, water, wind, growth regulators, nutrients and other factors to various stages of plant growth and development. P, 424, Ch 134. Alternate years.

614 Advanced Plant Physiology 4(1,6) S
(Offered in 1965)

Role of organic and inorganic compounds in plant nutrition. Emphasis on photosynthesis, respiration, metabolism, and other cellular processes. P, 424, Ch 134. Alternate years.

624 Morphology of Non-vascular Plants 4(2,4) F

Life histories and evolutionary relationships of principle orders of lower plants. P, 103.

634 Morphology of Vascular Plants 4(2,4) S

Life histories and evolutionary relationships of principle orders of vascular plants. P, 103, 104.

653 Aspects of Morphogenesis 3(0,6) S

Determinative differentiation in growing points of plant axis. P, 413 or 634.

701 Graduate Seminar 1(1,0) FS

Reports and discussions of original and contemporary research. P, graduate standing.

703-713 Advanced Taxonomy 3(2,2) FS

Detailed study of families of higher plants; professional methods of taxonomic research and publication. P, consent of instructor.

790 Thesis in Botany 5-8 as arranged FS

Dairy Science (DS)

Professors Breazeale, Baker, Dracy, Totman (Emeritus); Associate Professors Bartle, Spurgeon, Voelker; Assistant Professors Seas, Stoll

Dairy Science students may choose a major in Dairy Manufacturing or in Dairy Production. Each of these offers a general technical course, with several electives in fields of the student's choice. In addition, an option in Science or Business is available with either of the majors; the Dairy Manufacturing major also offers an option in Equipment Maintenance. By proper choice of major and option, the student should be able to prepare himself for the kind of work in the dairy industry or related field that is most interesting to him and for which his individual talents are best suited. The demand for well trained dairy graduates is increasing. Faculty members in this department welcome the opportunity to discuss these options and job opportunities with students.

The new Dairy and Bacteriology building provides excellent facilities such as classrooms, laboratories, and a reading room for students. A well equipped modern dairy processing plant and sales room make it possible for students to obtain a considerable amount of practical experience while they are learning the principles of dairy processing

and manufacturing methods. Several students have opportunities to work in the processing plant and thus earn part of their college expenses. These new facilities should be most helpful in keeping abreast of the rapidly changing dairy industry and its expansion in South Dakota.

The dairy herd consists of adequate numbers of the Holstein, Brown Swiss, and Guernsey breeds for basic student training and for research in feeding, breeding, and management of a dairy herd. The milk produced at the College dairy farm is hauled in a bulk tank to the dairy processing plant to be pasteurized and sold as fluid milk or to be manufactured into ice cream, butter, or cheese. Like the processing plant, the dairy farm offers opportunities for students to work part time and gain practical experience while earning part of their expenses.

Curriculum in Agriculture, Dairy Manufacturing Major

Freshman Year	F	S
Orientation, Or 100	1	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
College Algebra, Math 113	3	or 3
or Mathematical Analysis I, Math 145	5	or 5
Introduction to Sociology, RS 153	3	
Elements of Dairying, DS 103	3	
Group I electives to make normal semester load		

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203-213	3	3
Fundamentals of Speech, Sp 103	3	or 3
National Government, PolS 213 or		
State and Local Government, PolS 243	3	or 3
General Botany: Plant Kingdom, Bot 103		
General Botany: Seed Plants, Bot 104		
General Zoology, Z 103-113		
Biology, Bot 113-123		
(A minimum of six hours from this group)	3–4	3–4
Elementary Organic Chemistry, Ch 134	4	or 4
or Organic Chemistry Ch 310-320	3	3
General Bacteriology, Bac 202	2	or 2
General Bacteriology Lab, Bac 212	2	or 2
Dairy Processing Methods, DS 211	1	1
Group I elective		

Junior and Senior Years	F	S
Advanced Exposition, Engl 352 or		
Publicity Methods, J 322	2	or 2
Microbiology of Water and Sewage, Bac 303		3
Food Processing Equipment, MA 472	2	
Introductory Physics, Phy 104 or		
Elementary Physics I, Phy 114 or		
General Physics I, Phy 205	4–5	or 4–5
Survey of Accounting, Econ 323,		
or equivalent	3	or 3
Dairy Products Judging, DS 201		1
Technical Control of Dairy Products,		
DS 305	5	
Dairy Microbiology, DS 314	4	
Dairy Product Processing, DS 324		4
Dairy Product Processing, DS 424	4	
Dairy Plant Management, DS 443		3
Dairy Seminar, DS 401	1	
Group I electives to complete 12 hours from this group		
Humanities electives	4	
Electives to complete 136 semester hours		

Curriculum in Agriculture, Dairy Production Major

Freshman Year	F	S
Orientation, Or 100	1	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
College Algebra, Math 113 or	3	or 3
Mathematical Analysis I, Math 145	5	or 5
Introduction to Sociology, RS 153		3
Elements of Dairying, DS 103	3	
Crop Production, Agron 103	3	or 3
Introduction to Animal Science, AS 103	3	or 3
Elective to complete normal semester load		

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203-213	3	3
Fundamentals of Speech, Sp 103	3	or 3
National Government, PolS 213 or		
State and Local Government, PolS 243	3	or 3
General Zoology, Z 103-113		
General Botany: Plant Kingdom, Bot 103		
General Botany: Seed Plants, Bot 104		
Biology, Bot 113-123		
(Six hours to be elected from this group)	3–4	3–4
Elementary Organic Chemistry, Ch 134 or	4	or 4
Organic Chemistry, Ch 310-320	3	3
Soils, Agron 213	3	or 3
Animal Nutrition, AS 243	3	
Fitting, Showing, and Judging Dairy Cattle, DS 112		2

Junior and Senior Years	F	S
Farm Management and Records, Econ 234	4	or 4
Advanced Exposition, Engl 352 or		
Publicity Methods, J 322	2	or 2
Genetics, Z 303	3	or 3
General Bacteriology, Bac 202	2	or 2
General Bacteriology Lab, Bac 212	2	or 2
Introductory Physics, Phy 104 or		
Elementary Physics I, Phy 114 or		
General Physics I, Phy 205	4–5	or 4–5
Dairy Products Judging, DS 201		1
Dairy Breeds, DS 303	3	
Technical Control of Dairy Products,		
DS 305	5	

Dairy Microbiology, DS 314	4
Dairy Seminar, DS 401	1
Dairy Cattle Feeding, DS 432	2
Dairy Farm Management, DS 433	3
Humanities Electives	4
Electivees to complete 136 semester hours	

The three options, or areas of specialization, have the following respective requirements in addition to those listed above.

Business Option

Survey of Accounting, Econ 323 or equivalent	3
Business Law, Econ 303	3
Money and Banking, Econ 333	3
Business Management, Econ 343	3
Statistical Methods I, Econ 353 or equivalent	3
Business Finance, Econ 363	3

Science Option

Chemistry	6
Mathematics and/or Physics	6
Biological Science to be selected from the following areas: Botany, Entomology-Zoology or Plant Pathology	2

Equipment Maintenance Options

(Available with Dairy Manufacturing Major, Only)

Plane Trigonometry, Math 133	3
Analytic Geometry, Math 143	3
Farm Mechanics, MA 202	2
Electricity for Farm and Home, MA 222	2
Farm Building Mechanization, MA 423	3
Machine Shop, ES 121	1
Welding, ES 131	1
Engineering Graphics I, GE 103	3

UNDERGRADUATE COURSES

103 Elements of Dairying 3(2,2) F

General scope of dairy industry. Essentials of successful dairy farm operation, production testing, feeding, and management of dairy herd. Composition of milk, testing of milk for butterfat, milk solids and sanitary quality, and an examination of nutritive value of dairy products.

112 Fitting, Showing, and Judging Dairy Cattle 2(0,4) S

Fitting dairy cattle for shows and sales; methods of showing these animals; judging major breeds of dairy cattle for type. May include participation in Little International Show.

201 Dairy Products Judging 1(0,3) S

Judging quality of milk, butter, cheese, ice cream, and cottage cheese.

211 Dairy Processing Methods 1(0,3) FS

Principles in operation of dairy processing plants, including procedures for sanitizing equipment, keeping of records, and preparation of reports. Maximum of two credits will be allowed for course.

303 Dairy Breeds 3(2,2) F

Origin, genetics, characteristics, and development of major breeds of dairy cattle. Breeding and selection based on pedigrees, production records, type classification, and sire analysis. P, 103.

305 Technical Control of Dairy Products 5(3,4) F

Fundamental physical and chemical properties and nutritional value of milk and its products. Organization of dairy laboratory and maintenance of equipment. Common field and plant tests for procurement and grading of milk. Laboratory tests for control of dairy products during processing. P, 103, Ch 134 or equivalent.

314 Dairy Microbiology 4(2,4) F

Cultural activities of common dairy organisms. Microbiology of milk production and processing. P, Bac 212.

321 Dairy Cattle Judging 1(0,2) F

Judging major breeds of dairy cattle. Type classification. May include participation in International Intercollegiate Dairy Cattle Judging Contest or National Collegiate Cattle Judging Contest. Maximum of two credits will be allowed for course. P, 112.

324 Dairy Product Processing 4(4,0) S

Principles and practices in assembling, receiving, processing, and packaging milk and cream for beverage use; cultured milk and cream; frozen milk and cream; concentrated milks; and ice cream. Sanitation procedures in dairy processing plant. P, 103, credit or registration in 211.

401 Dairy Seminar 1(1,0) F

Review of scientific literature and other items of special interest to dairy majors. P, senior standing.

414 Microbiology of Manufactured Dairy Products 4(2,4) S

Role of microorganisms in manufacture and spoilage of manufactured dairy products. P, 314.

421 Advanced Dairy Products Judging 1(0,3) F

Quality evaluation of dairy products. Usually includes participation in National Collegiate Dairy Products Contest. P, 201.

424 Dairy Product Processing 4(4,0) S

Principles and practices in processing or manufacture of relatively nonperishable dairy products such as butter, cheese, dried milk, casein, lactose, and butter oil. P, 324, credit or registration in 211 (second semester).

432 Dairy Cattle Feeding 2(2,0) S

Practical considerations involved in feeding dairy cattle, P, 103, AS 243.

433 Dairy Farm Management 3(3,0) S

Dairy herd management practices, production testing, labor requirements, maintenance of buildings and equipment, crop systems, merchandising cattle and milk. Dairy farm capital, budgets, and credits; and factors affecting economic returns of dairy farming. P, senior standing or consent of instructor.

443 Dairy Plant Management 3(3,0) S

Problems relating to general costs, buildings, equipment, merchandising, and other management factors of dairy processing plants. P, senior standing or consent of instructor.

GRADUATE COURSES

613 Advanced Dairy Processing Methods 3(0,6) S (Offered in 1964)

Operations in ultra-high temperature processing of dairy products; manufacture of special types of cheese; preparation of dairy spreads; process cheese making; and other specialized dairy processing. P, consent of instructor. Alternate years.

614 Advanced Technical Control of Dairy Products 4(2,4) S (Offered in 1965)

Chemical changes that occur during manufacture and storage of dairy products; specialized tests to detect these changes and degree thereof; significance of such changes. P, consent of instructor. Alternate years.

623 Physiology of Lactation 3(3,0) S

Anatomy and physiology of mammary glands. Factors affecting quality and quantity of milk. P, Z 414.

624 Microbiology of Cultured Dairy Products 4(2,6) S (Offered in 1964)

Role of microorganisms in manufacture of lactic acid cultures, cheese and butter. P, 414. Alternate years.

701 Seminar 1(1,0) S

Problems in dairy production, dairy manufacturing, and related sciences.

761 Nutrition Seminar 1(1,0) FS

Reports and discussion of current research in nutrition. Limited to 2 credits.

790 Thesis in Dairy Science 5-8 as arranged

Economics (Econ)

Emeritus Professors Lundy and Pengra; Professors Glover, Helfinstine, Myers, Smythe; Associate Professors Antonides, Berry, Johnson, Leonard, Nelson, Railing, R. Schultz, Ullman, Van Vlack; Assistant Professors Felberg (on leave), Greenbaum, Matson, W. Schultz

Studies and research in economics at South Dakota State College are intimately connected with agricultural economics. Effective work in agricultural economics necessarily involves thorough preparation in economics. On the other hand, work in economics is invigorated by the practical applications at hand in marketing, farm management, agricultural finance, and other agricultural economic fields. The work of the department must go beyond the field of agriculture in order to give training for effective citizenship as well as effective management.

The Economics Department offers two curricula in the Division of Agriculture. The curriculum in Agricultural Business is for the student who is planning a career in agriculture or in agriculturally related industries. The curriculum in Agricultural Economics prepares students for professional careers in agricultural economics. Such careers usually call for continued preparation through graduate study, and this curriculum provides a firm foundation for such study.

Reasonable substitutions within the spirit of these curricula may be made at the student's request by the Economics Department with the approval of the dean. Application should be supported by evidence on vocational plans and needs.

For students requiring little emphasis upon technical agriculture, an Economics curriculum is also presented in the division of Science and Applied Arts.

Curriculum in Agricultural Economics and Curriculum in Agricultural Business

(See also curriculum in Economics in Science and Applied Arts Division)

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100	1	
Physical Education, PE 101-111 or 121-131	1	1
Introduction to Sociology, RS 153	3	or 3
Inorganic Chemistry, Ch 110	4	or 4
College Algebra, Math 113 or Mathematical Analysis I, Math 145	3 or 5	or 3 or 5
Group I Electives	3–4	8–9

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203, 213	3	3
Biology, Bot 113-123 or General Botany, Bot 103-104 or General Zoology, Z 103-113	3	3
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2	or 2
Introduction to Literature, Engl 203	3	or 3
Fundamentals of Speech, Sp 103	3	or 3

General Psychology, Psy 203	3 or 3	
National Government, PolS 213	3 or 3	
Natural Science Elective	2 or 3 or 2 or 3	
Group I Elective	3–4 or 3–4	

Junior and Senior Years	**F**	**S**
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114	4	
Statistical Methods I, Econ 353	3 or 3	
Money and Banking, Econ 333	3 or 3	
Economics Seminar, Econ 401	1 or 1	
Public Finance, Econ 413		3
Intermediate Macroeconomics, Econ 423	3 or 3	
Intermediate Economics Analysis, Econ 433	3 or 3	
Agricultural Policy, Econ 453	3 or 3	
Philosophic Inquiry, GS 303	3 or 3	
Humanities Elective	2 or 2	
Social Science Elective	2 or 2	
History Elective	4 or 4	
Political Science Elective, PolS 312 or 322 or 613 or 623	2–3	2–3

In addition to the above courses which are required by every student in Agricultural Economics, the following courses are required under the respective curricula.

Economics Curriculum

	Credits
Survey of Accounting, Econ 323	3
Statistical Methods II, Econ 443	3
General Electives	26–27

Business Curriculum

	Credits
Principles of Accounting, Econ 223	3
Principles of Accounting, Econ 233	3
Business Management, Econ 343 or Advanced Farm Management, Econ 623	3
Public Administration, PolS 333	3
Business Law, Econ 303-313	6
Business Finance, Econ 363	3
Industrial Sociology, RS 382 or Rural Sociology, RS 202	2
General Electives	9–10

UNDERGRADUATE COURSES

110 Farm Management and Records 1½ (3,3) 6 weeks

Same as Farm Management and Records, Econ 234 except that selected topics will be used and adjusted to fit six-week class schedule arranged for Winter Term short course students.

203 Principles of Economics 3(3,0) FS

Analysis of U. S. economy. Emphasis on money and banking, Federal Reserve policy, national income, government spending, taxation, business fluctuations, and levels of employment and prices. Introduction to supply and demand, business organization, world trade, economic growth, and economic systems.

213 Principles of Economics 3(3,0) FS

Analysis of price as it allocates resources and distributes income. Theory of firm, supply and demand, economic efficiency, types of competition in markets, marginal productivity and wage determination; public interest in industry, agriculture, labor, and individual welfare. P, 203.

222 Introduction to Marketing 2(2,0) FS

Consumption patterns; market organization; marketing functions; pricing practices; location of market activities; and marketing efficiency and control. P, 213.

223 Principles of Accounting 3(3,0) FS

223, 233 series is intended for those who expect to do accounting or continue in field of accountancy. This course covers basic accounting cycle; accounting statements, adjustments, special ledgers, asset valuation and accrued and deferred items.

233 Principles of Accounting 3(3,0) S

Accounting for partnerships and corporations, structure and analysis of summary statements of financial condition, net worth, profit and loss. Simple cost accounts and accounting for tax purposes are introduced. P, 223.

234 Farm Management and Records 4(3,2) FS

Farm or ranch business from viewpoint of continuous profit and efficiency. Basic principles of farm management applied to selection and combination of enterprises, level of production, size of business, labor efficiency, and machinery efficiency. Types of farming, tenure and leasing, risk, prices, credit and starting farming. Business and production records, their analysis and use in budgeting and planning future operations. Field trips.

302 Personal Finance 2(2,0) FS

Survey of personal budgets; uses of consumer credit; savings institutions; protective aspects of property and life insurance; home ownership; investment programs. P, 203.

303 Business Law 3(3,0) FS

Nature and classification of law, courts, court procedure, personal property, contracts, agency and wills. Practical application of law of negotiable instrument.

313 Business Law 3(3,0) FS

Legal aspects of individual proprietorship, partnership and corporation. Major emphasis on corporate form of business organization. P, 303.

322 Agricultural Cooperatives 2(2,0) FS (Offered in 1964-65)

Development of agricultural cooperatives in U. S. and economic problems which arise in agricultural cooperatives. P, 202. Alternate years.

323 Survey of Accounting 3(3,0) FS

Comprehensive view of field of accounting. Most of items under the 223, 233 series are considered but in less depth. Course is intended for those who expect to have duties which require an understanding of general accounting principles but for which techniques are of minor consideration. When demand warrants, special section may be provided which will emphasize particular areas.

333 Money and Banking 3(3,0) FS

Principles of money, banking, and credit, major types of financial institutions and their significant functions and policies. P, 203.

343 Business Management 3(3,0) FS

Management function in business with emphasis on small independent manufacturing, wholesaling, merchandising and service businesses. Planning future operations, organizing and financing business, directing and supervising current operations, controlling operations and finances and coordinating all aspects of the firm to insure continued operations and profitability. P, 213.

353 Statistical Methods I 3(2,3) FS

Elementary statistical concepts, index numbers, tabular and graphical presentation, frequency distributions, measures of central tendency and variability, introduction to sampling error theory, time series, and simple regression and correlation. P, College Algebra.

363 Business Finance 3(3,0) F

Capital and credit needs of business firms; principles and problems in extending and using business credit; analysis of financial statements; financial management; planning and financing capital structure; market for and investing in debt and equity securities. P, 213, 333 and 223 recommended or consent.

401 Economics Seminar 1(1,0) FS

Economic problems of agriculture and related industries, with written or oral reports. At least one quarter required of all economics majors. P, consent of instructor. Limited to 3 credits.

402 Real Estate 2(2,0) S

Legal and economic aspects of real estate market; real estate ownership, interests, and financing; title transfer; agent-client relationships; appraisal; property management and trends in real property utilization, ownership, and financing. P, 303 recommended.

403 Agricultural Finance and Appraisal 3(3,0) S

Capital and credit needs in agriculture; principles and problems in extending and using credit; analysis of financial statements; survey of agricultural credit institutions; valuation of agricultural land and buildings for loan and sales purposes. Field trips are required. P, 204, 213, 223 and 333 recommended or consent.

412 Agricultural Economics 2(2,0) S

Attention to application of economic analysis to agriculture, and to current economic problems facing farm families. (Primarily for other than Ag Econ majors.) P, 213.

413 Public Finance 3(3,0) S

Principles, problems and history of public revenues, public expenditures and public debt management. In addition, consideration will be given to problems of attaining an equitable distribution of burdens and benefits.

422 Managerial Cost Accounting 2(2,0) S

Methods of cost accounting and their significance for management. Job order, process, and standard cost accounting are included. P, 233 or 323.

423 Intermediate Macroeconomics 3(3,0) FS

Determinants of national income, employment and price level in free enterprise system with particular attention to aggregate consumption, investment and government spending. In addition, there will be brief consideration of methods of maintaining a high level of employment and income and related aspects of economic policy.

433 Intermediate Economic Analysis 3(3,0) FS

Introduction to scope and method of economic analysis. Analysis of pricing process under varying degrees of competitive conditions and role of price in allocation of resources. Introduction to theory of income distribution. P, 213.

443 Statistical Methods II 3(2,3) F

Probability, point and internal estimation, tests of hypotheses, multiple regression and correlation, Chi-square analysis, and analysis of variance. P, 353.

453 Agricultural Policy 3(3,0) S

Economic policies affecting agricultural prosperity; suggested means of improvement. Emphasis on national and regional problems and interrelationships affecting rural and national welfare. P, consent.

GRADUATE COURSES

602 Economic Ethics 2(2,0) S (Offered in 1964)

Current economic practices examined in light of basic ethical principles. P, 6 hours in economics with one course in philosophy preferably ethics, recommended. Alternate years.

603 Production Economics 3(3,0) F
(Offered in 1963)

Theory of the firm and industry, with applications in agriculture, manufacturing, and trade. Input-output relations for economic decision-making using continuous models (marginal analysis) and discontinuous models (linear programming). P, 433 or equivalent, consent. Alternate years.

604 Introduction to Econometrics 4(4,0) S
(Offered in 1964)

Application of mathematical economic theory and statistical procedures to economic data; empirical testing of economic theorems. Alternate years.

612 Resource Economics 2(2,0) F

Economic analysis applied to problems in conservation and development of natural resources. Effect of programs on land-use. Land institutions, tenure, administration of public lands, water allocation, zoning, and alternative resource philosophies and policies.

613 Economics of Modern Capitalism 3(3,0) F

American economy as an organic entity; ownership and control of economic organizations; influence of power in economic groups; production,

merchandising, pricing and financial strategies of economic groups. Positive and negative roles of government in economic regulation. P, 213.

622 Statistical Methods III 2(2,3) S (Offered in 1965)

Sampling as technique in social science research, including history of sampling, design and planning of surveys, different types of sampling techniques and methods of estimation, precision of estimates, and efficiency of sampling designs. P, 353. Alternate years.

623 Advanced Farm Management 2(2,0) S

Review of management principles, including decision making and problem recognition; obtaining control of resources; organizing farm; obtaining and evaluating outlook information; administering farm or ranch; effects of income taxes; farm incorporation; father-son arrangements; field trips to well-organized farms and ranches. P, 204.

632 Advanced Economic Analysis 2(2,0) F (Offered in 1963)

Selected branches of microeconomics, including welfare theory and partial and general equilibrium. P, 433. Alternate years.

633 Pricing in Agriculture and Business 3(3,0) F

Principles of price determination with reference to special characteristics of agricultural products and markets; methods of price analysis and forecasting; theory of price stabilization and price discrimination and effect on income; analysis of programs and proposals to control agricultural prices by controlling production, market supplies, and foreign demands. P, 213.

643 International Trade 3(3,0) S (Offered in 1965)

Factors affecting international flow of trade and balance of payments; trade controls and their influence on agricultural and domestic economy; significant current developments in trade and finance. P, 213. Alternate years.

653 Comparative Economic Systems 3(3,0) F

Organization, operation, and comparison of various types of economic systems, such as free private enterprise system, socialism, communism, and fascism. P, 213.

663 National Income Accounts and Analysis 3(3,0) S (Offered in 1965)

Examination of common statistical measurements of general economic activity, and their significance in current business analysis and for economic forecasting and planning. Causes and control of business cycle. P, 203.

673 History of Economic Thought 3(3,0) S

Survey of economic theory; different schools of economic thought and economic environments which produced them. P, 423 or consent.

683 Agricultural Marketing 3(3,0) S (Offered in 1964)

Economic analysis of marketing problems, functions and institutions; costs and efficiency in processing and marketing; industrial structure and government roles in processing and marketing. P, 433 recommended. Alternate years.

690 Special Problems 1-3(1-3,0) FS

Advanced work or special problems in agricultural cooperation, agricultural finance, farm management, land economics, marketing, public finance, statistics. Open to qualified seniors and graduate students by consent.

693 Economic Development 3(3,0) F (Offered in 1963)

Conditions necessary for capital formation and economic development, with examination of development problem in selected area in U. S. and other countries. P, consent. Alternate years.

701 Seminar in Economics 1(1,0)

A maximum of 3 credits may be applied toward an advanced degree.

702 Research Methods 2(2,0) F

Methods, problems and principles involved in research work and sources of data for prospective research workers in economics.

703 Advanced Macroeconomics 3(3,0) S (Offered in 1964)

Modern and advanced macroeconomic models, with a view toward understanding of progress of economic growth and maintenance of high level of income and employment. Alternate years.

711 Current Theory 1(1,0) FS (Offered in 1964-65)

One outstanding book in current economic theory studied intensively each semester. Alternate years.

713 Market Structure Theory 3(3,0) S (Offered in 1965)

Marketing structures: locational cost, and institutional. How markets are related in form, time and place. Theoretical and statistical tools applicable to the analysis of marketing problems and situations. P, 433. Alternate years.

723 Economic Policy 3(3,0) F (Offered in 1964)

Relation of economic policies to basic values, technical and institutional limitational factors; role and limitations of expert and theoretical analysis. Alternate years.

790 Thesis in Economics as arranged

Entomology-Zoology (Ent, Z, WL)

Professor Spawn, Hartwig, Hugghins, Severin (Emeritus); Associate Professors Greb, Progulske, Walstrom; Assistant Professors Allum, Kantack; Instructor Hall

Subjects offered by the Entomology-Zoology Department are planned to meet the needs of four groups of students: (1) Those who wish to major or minor in entomology, zoology, physiology, genetics, wildlife techniques and conservation, or in any two of these fields; (2) those who feel the need for additional understanding of zoological science in connection with high school teaching; (3) those who must have a fundamental training in the work of this department in order that they may pursue certain branches of study, such as animal science, horticulture, veterinary medicine, home economics, pharmacy, medicine, dentistry, nursing, etc.; (4) those who desire merely to acquire knowledge of the fundamental facts and principles of entomology, zoology, or some phase of these branches of learning.

The work of this department is conducted by means of lectures, recitations, laboratory and field studies. The student is thus afforded not only an opportunity to gain familiarity with the principles and theories discussed in the classroom, but also is encouraged to put the theories to the test and verify the principles in the field.

The laboratories are well supplied with the usual modern scientific equipment. Teaching aids and demonstration materials include many representative specimens of birds, mammals, fish, an excellent insect collection, skeletons, charts, lantern slides, microscope slides, and a large collection of Riker mounts illustrating the life cycle of injurious insects.

The Northern Grain Insects Research Laboratory (Federal, and dedicated in 1962) is located about a mile north of the campus. It will afford to advanced undergraduate and graduate entomology students the opportunity to observe and in some instances to work with the most modern entomological research equipment available. The professional staff members of the laboratory hold faculty status at the college. Students majoring in entomology, especially those with graduate standing, are thus provided the opportunity to know and to work with an additional group of highly trained biological scientists in this important phase of zoology.

Curriculum in Technical Agriculture, Entomology Major

(Also see Entomology curriculum in Division of Science and Applied Arts)

Freshman Year	F	S
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	1	
English, Engl 113-123 or 143-153	3	3
General Zoology, Z 103-113	3	3
Inorganic Chemistry, Ch 110	4	
College Algebra, Math 113		3
Introduction to Sociology, RS 153		3
Crop Production, Agron 103	3	
Introduction to Entomology, Ent 102		2
Humanities elective		1 or 2
	16	17–18

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Horticultural Entomology, Ent 213	3	
General Botany, Bot 103-104	3	4
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 (114-124 recommended)	4	
Elementary Organic Chemistry, Ch 134		4
Soils, Agron 213		3
Group I courses (total minimum of 12 cr.)		4
Principles of Economics, Econ 203	3	
Fundamentals of Speech, Sp 103	3	
	17	16

Junior Year	F	S
Taxonomy of Insects, Ent 313	3	
Elementary Physiology, Z 204 or Mammalian Physiology, Z 414		4
Advanced Exposition, Engl 352 or Publicity Methods, J 322		2
Insects Affecting Livestock, Ent 203 or Field Crops Entomology, Ent 223		3
General Bacteriology, Bac 202-212	4	
National or State and Local Government, PolS 213 or 243	3	
Humanities electives (total minimum of 4 cr)		
Genetics, Z 303		3
300-400 series Entomology electives	3	3
Social Science electives	2–3	
Electives	2–3	2–3
	17–19	17–18

Senior Year	F	S
Immature Insects, Ent 413	3	
Entomology elective	3	
Course in Statistics		
Social Science electives (to total minimum of 5 cr.)		
Electives		
	17–18	17–18

MAJOR: (a) Must include minimum of: 12 credits of Group I courses; 5 credits of Social Science electives; 4 credits of Humanities electives.

(b) Must include: Z 103-113; Ent 102, Ent 313; Z 303 and sufficient Department-approved upper-level entomology courses to total a minimum of 26 semester hours.

MINOR: (a) As above.

(b) Must include: Z 103-113, Ent 102, Ent 313; Z 303 and sufficient Department approved upper - level entomology courses to total a minimum of 18 semester credits.

Students who expect to continue the study of Entomology, Zoology, or Wildlife on the graduate level should consider including, among their electives, at least a year of French or German; additional Math courses, and Statistical Methods, Econ 353 are also recommended.

Students who expect to teach in secondary schools should include such courses in the Department of Education as are required for teaching certification.

These curricula are designed to fit the needs of the average student. Where preparation for a special field is desired, substitutions may be made with the approval of the head of the department.

Students who expect to do Journalism work in the field of Wildlife following graduation should minor in Journalism. The following courses have been recommended by the Department of Journalism as a minimum for such a minor: J 202, 243*, 232, 302, 331-341, 422, 473.

*Prerequisite, no grade below "C" in English 113-123.

UNDERGRADUATE COURSES

102 Introduction to Entomology 2(1,3) FS

Generalized study of structure, development, classification, and control of insects. Basic entomological information prerequisite to further study in entomology.

203 Insects Affecting Livestock 3(2,2) S

Insects, mites and ticks affecting domesticated animals: life cycles, damage, and recommended controls. P, Ent 102.

213 Horticultural Entomology 3(2,2) F

Life cycles, types of damage, and control measures of insects and mites infesting vegetable and fruit producing plants. Insect problems peculiar to handling and processing of these crops. P, Ent 102.

223 Field Crop Entomology 3(2,2) S

Insects injurious to field crops: life cycles, types of damage, and control measures. P, Ent 102.

233 General Agricultural Entomology 3(2,2) S

Insects in relation to field crops, horticultural crops, livestock production, stored products, and other economic considerations; their life cycles, economic importance and control. P, Ent 102.

303 Medical Entomology 3(2,2) F (Offered in 1963)

Insects, mites and ticks which affect man; part they play in disease transmission; life cycles, habits, and control in relation to preventive medicine. P, Ent 102. Alternate years.

313 Taxonomy of Insects 3(1,4) F

Classification of insects. Emphasis on identification first to Order, then to Families. Each student makes insect collection, properly mounts, labels, and identifies specimens. P, Ent 102.

403 Beekeeping 3(1,4) S

Habits and life cycle of honey bee; care of apiary; production, grading and marketing of honey; artificial insemination of queen bees; pollen identification and importance of bees to modern agriculture.

413 Immature Insects 3(1,4) F

Taxonomy and habitat relationships of larval and nymphal stages of common insects of northern Great Plains area. Major emphasis is on those species of recognized economic importance, both beneficial and detrimental. P, Ent 102 and 313.

GRADUATE COURSES

600 Entomology Research Problems 1-2 credits

(Limit of 2 credits for B.S. degree; limit of 2 credits for M.S. degree)

Qualified students may investigate special entomological problems under supervision of members of departmental staff. Arrangements must be made with supervising staff member prior to registration. Undergraduate students limited to total of 2 credits, and graduate students to a total of 5 credits toward graduation in any combination of Ent 600, Z 600, WL 600, and Ent 700. P, cumulative grade point average of at least 2.75 plus permission of supervisor.

601 Entomology Seminar 1(1,0) FS

Reports and discussions of topics of entomological interest. Total of not more than 3 credits of seminars in this department may be counted toward meeting requirements for graduation for each degree.

602 Insecticides 2(1,2) F

Formulation, chemistry, toxicology and application of common insecticides and miticides. Residue tolerances and legal aspects of sale and use of insecticides. P, Ent 102, or permission of instructor.

613 Insect Anatomy 3(2,2) F (Offered in 1963)

Detailed anatomy of insects; integument, appendages, sense organs, and organ systems of representative larval, nymphal and adult forms. Consideration given to structural variation, embryology, and evolutionary relationships. P, Ent 102 or its equivalent. Alternate years.

623 Insect Physiology 3(2,2) S (Offered in 1964)

Fundamental physiological processes in insects. Normal and abnormal functioning of adult and immature stages, developmental physiology, physiology of behavior. P, Ent 102, Ent 613, Z 204 or equivalent. Alternate years.

700 Taxonomy of Insect Groups 2-4 credits FS

Taxonomic study of group of insects. Student

prepares report in which he gives technical description, and other information, of group under study. Total of not more than 5 credits in any combination of courses Ent 600, Z 600, WL 600 and Ent 700 may be counted toward requirement for the MS degree.

702 Insectary Methods 2(0,4) F (Offered in 1963) Methods of rearing insects under laboratory, greenhouse, and screenhouse or caged conditions; includes techniques of mass production of insects for use in biological control of insect pests. Alternate years.

790 Thesis in Entomology 5-8 credits as arranged FSSu

Curriculum in Technical Agriculture, Zoology Major

(Also see Zoology curriculum in Division of Science and Applied Arts)

Freshman Year	F	S
General Zoology, Z 103-113	3	3
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
Elementary Organic Chemistry, Ch 134		4
College Algebra, Math 113		3
Introduction to Entomology, Ent 102		2
Crop Production, Agron 103	3	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	1	
	16	17

Sophomore Year	F	S
General Botany, Bot 103-104	3	4
General Bacteriology, Bac 202-212	4	
Principles of Economics, Econ 203	3	
Fundamentals of Speech, Sp 103		3
Soils, Agron 213		3
Introduction to Sociology, RS 153	3	
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 (114, 124 recommended)	4	
Military, Mil 211-221 or 251-261	1	1
Humanities elective		2
Electives		3–5
	19	15–17

Junior Year	F	S
Approved electives in Zoology	4	4
Genetics, Z 303	3	
Mammalian Physiology, Z 414		4
Elective in Entomology	3	
National, or State and Local Government, PolS 213 or 243		3
Advanced Exposition, Engl 352 or Publicity Methods, J 322		2
Course in Statistics	3	
Social Science electives (to total minimum of 5)	2–3	2–3
Group 1 courses (to total minimum of 12 cr.)	2–3	2–3
	17–19	17–19

Senior Year	F	S
Approved electives in Zoology		
Social Science electives (to total minimum of 5)		
Humanities elective (to total minimum of 4)		
Electives		
	17–19	17–19

MAJOR: (a) Must include minimum of: 12 credits of Group 1 courses; 5 credits of Social Science electives, 4 credits of Humanities electives.
(b) Must also include Z 103-113; Ent 102; Z 303; Z 414; and sufficient Departmental-approved upper-level Zoology courses to total a minimum of 26 semester credits.

MINOR: (a) As above.
(b) Must include Z 103-113; Ent 102; Z 303; plus sufficient Department-approved upper-level Zoology courses to total a minimum of 18 semester credits.

Students who expect to continue the study of Entomology, Zoology, or Wildlife on the graduate level should consider including, among their electives, at least a year of French or German; additional Math courses, and Statistical Methods, Econ 353, are also recommended.

Students who expect to teach in secondary schools should include such courses in the Department of Education as are required for teaching certification.

These curricula are designed to fit the needs of the average student. Where preparation for a special field is desired, substitutions may be made with the approval of the head of the department.

Students who expect to do Journalism work in the field of wildlife following graduation should minor in Journalism. The following courses have been recommended by the Department of Journalism as a minimum for such a minor: J 202, 243*, 232, 302, 331-341, 422, 473.

*Prerequisite, no grade below "C" in English 113-123.

Zoology (Z)

UNDERGRADUATE COURSES

103-113 General Zoology 3(2,3) FS

Fundamental principles of science of animal life; morphology, physiology, reproduction, embryonic development, genetics, classification, ecology, geographic distribution, paleontology and evolution; limited study of life histories of various representative types of animals; basic animal science courses.

123 A Survey of Zoology 3(5,4) Su

Available only to Summer Science Institute students (those high school teachers selected for NSF Summer Science Institute grants). Credits will not be accepted toward fulfillment of requirements for graduation with major in Entomology-Zoology Department. Specifically for purpose of increasing scope of zoological background information, and thus im-

proving teaching proficiency of high school natural science teachers. Survey of Animal Phyla, fundamental zoological principles, trends in zoological concepts, and supervised laboratory dissections and demonstrations for practical use in teaching.

201 Zoological Literature 1(0,2) S

Literature sources used in various phases of zoological research; scientific journals, periodicals, indices, abstracting services; preparation and use of bibliographies.

203 Anatomy 3(1,4) FS

Structure of various systems of body, as basis for physiology for those students who do not take full year of general zoology. Models and charts are used, with references to skeletons; injected and embalmed rats are used for limited amount of dissection.

204 Elementary Physiology 4(3,3) FS

Survey of functional activities of organisms and basic knowledge of actions and reactions occurring in human body; of value and interest to those to whom more technical knowledge of subject is not essential. P, Z 103-113 or Z 203.

302 Principles of Animal Ecology 2(2,0) F

Animal ecology including succession, biomes, ecosystems, biotic communities, habitat types, energy flow in food chains, animal population dynamics and environmental factors affecting animals. Basic to many fields of animal sciences. P, Z 103, 113.

303 Genetics 3(3,0) FS Alternate Su

To acquaint the beginning student of heredity with facts and principles of heredity. Student is prepared for technical courses in agriculture.

312 Introduction to Medical Science 2(2,0) FS

For Nursing Division students, either at designated hospitals or on campus, as arranged. Pathology and clinical diagnosis measures in relation to causes of disease, diagnosis, treatment and control. P, Z 204.

403 Vertebrate Histology 3(1,6) F

Comprehensive and detailed microscopic study of cells and fundamental tissues. Structures of organs and systems are stressed to integrate structure and function. P, Z 103, 113.

413 Histological Techniques 3(1,6) S

Technique of preparing animal tissue sections and slides for microscopic study. Students prepare, by several different methods, a number of slides of various kinds of tissues and animals. This course need not be preceded by Z 403, above. P, Z 103, 113.

414 Mammalian Physiology 4(3,3) FS

More comprehensive study of function of organ-systems than is possible under Z 204; an explanation of physiological events in terms of physical and chemical processes that underlie them; for those students who need more intensive coverage of physiology in their major, and those who plan a professional career in this area or a related field. Organic chemistry and year of physics are desirable antecedents. P, Z 103, 113 or Z 203.

424 Invertebrate Zoology 4(3,2) S

Phyla of invertebrate animals; emphasis placed on taxonomy, morphology, ecology, phylogenetic relationships, and economic importance. Some time is devoted to field work. P, Z 103, 113.

GRADUATE COURSES

600 Zoological Research Problems 1-2 credits FS

(Limit of 2 credits for B.S. degree; limit of 2 credits for M.S. degree)

Qualified students may investigate special zoological problems under supervision of members of departmental staff. Arrangements must be made with supervising staff member prior to registration. Undergraduate students limited to total of 2 credits, and graduate students to total of 5 credits in any combination of Ent 600, Z 600, WL 600 and Ent 700. P, cumulative grade point average of at least 2.75 plus permission of supervisor.

601 Seminar in Zoology 1(1,0) FS

Reports and discussions of topics of zoological interest. A total of not more than 3 credits of seminars in this department may be counted toward meeting requirements for graduation for each degree.

602 Human Genetics 2(2,0) SSu (Offered in 1965)

Subject matter of fundamental human heredity; to serve the specialist; such as physician, nurse, public health worker, social worker, etc., and general student. Basic principles used as they pertain to genetics of man. P, Z 303. Alternate years.

604 Comparative Vertebrate Embryology 4(2,4) F

Development of germ cells, and fertilization. Early cleavage, segmentation and organogenesis in **Amphioxus,** frog, chick and pig. P, Z 103, 113.

612 History and Philosophy of Zoology 2(2,0) F (Offered in 1963)

Early zoologists and their contributions to science. Controversial theories of past and their influence on growth of science of zoology; their relationship to modern zoological concepts. Biographies and works of great zoologists. P, Z 103, 113. Alternate years.

614 Comparative Vertebrate Anatomy 4(2,4) S

Theories of origin of Chordates and Vertebrates. Comparative analysis of vertebrate systems as they occur in various groups. Early Chordates, lamprey, shark, **Necturus,** and cat comprise laboratory specimens. P, Z 103, 113.

623 Animal Ecology 3(1,6) S

Composition of environment and relationships of animals to their surroundings. Impact of ecological forces upon animals and responses elicited are examined in the field. P, Z 302.

624 Limnology 4(2,6) S

Analysis of physical, chemical, and biological characteristics of lakes, ponds, and streams and factors and processes that operate in fresh waters as dynamic systems. Methods of measuring and evaluating influences affecting aquatic life in fresh waters. P, Z 302.

633 Zoological Education 3(5,4) Su

Offered only for selected Summer Science Institute students (high school teachers selected for NSF Summer Science Institute grants). Collegiate students cannot receive credit for this course toward B.S. or the M.S. degrees. On approval of Education Department credits for this course may be counted toward Master of Education degree with a major in Biological Science area. Material covered is in nature of an "advanced refresher" and serves to bring previously qualified individual "up to date" in area of research advances and recent concepts in zoology. P, selection as student receiving grant in Summer Science Institute program.

643 General Parasitology 3(2,3) F

Survey is made of better known parasites belonging to various Phyla, their life histories, economic and medical importance. Laboratory work consists of study of morphology and life histories of representatives of each group, techniques of diagnosis of parasitic diseases, and methods of preparation of whole mounts of parasites for microscopic examination. P, Z 103, 113.

654 Mammalian Anatomy 4(2,6) F

Detailed dissection of cat as representative mammal. Comparisons with human body (skeleton, models, charts) given special attention. All systems are dissected and studied. For those students who need more comprehensive and detailed course in anatomy than is available in Z 203. P, Z 103, 113.

664 Advanced Systemic Physiology 4(3,3) F

Various systems of the animal body; coordination and inter-relationships of systems; circulation, temperature regulation, muscle, and respiration. P, Z 414.

674 Advanced Systemic Physiology 4(3,3) S

Physiology of digestion, rumination, urine formation, reproduction, nervous system, endocrine glands, and special senses. P, Z 664.

702 Helminthology 2(1,2) S (Offered in 1964)

Comprehensive study of worm parasites of vertebrate animals and of soil and plant nematodes. Morphology, taxonomy, life cycles, ecological relationships, and control methods are discussed. Techniques of collecting, preparation, and identification. P, Z 103, 113, 424. Alternate years.

703 Developmental Genetics 3(3,0) F (Offered in 1963)

Chemical nature of gene and its chemical and physical action in development. P, Z 103, 113, 303 and Ch 134. Alternate years.

790 Thesis in Zoology 5-8 credits, as arranged FSSu

Wildlife Techniques and Conservation (WL)

These courses, zoological in content, and the following curricula, give the student the opportunity to specialize in wildlife management and directly related subjects. Sufficient elective credits (more in the professional course) are included to enable the student to obtain broad training in basic agricultural subjects or to take a second major in some other phase of agriculture.

These curricula prepare the student for civil service positions under the U. S. Fish and Wildlife Service, State Conservation Commissions, and State Game and Fish Departments. Other employment outlets include the U. S. Soil Conservation Service, Extension Service in 4-H Club Wildlife work, and positions with wildlife organizations, both public and private. Chemical companies, the U. S. Pure Food and Drug Administration, the U. S. and State Public Health Services, and the U. S. Department of Agriculture are additional employers.

There is a steadily increasing demand for the introduction of nature study and natural resource conservation subjects into the curriculum of the public schools. The student preparing for high school teaching will find sufficient elective subjects, especially in the professional course, to enable him to meet the educational requirements for high school certification except in Smith-Hughes agricultural work.

In many states there is an increasing demand upon County Agents for a knowledge of wildlife management principles. For the prospective County Agent or Smith-Hughes agricultural teacher the subjects in the department may be taken as electives.

For the student who wishes to obtain a broad agricultural background, with specialization in the wildlife area, the course in Agriculture (Wildlife Major) is recommended.

For the student who plans to follow a career in the area of research, a Master of Science is now almost a minimum requirement (see catalog of the Graduate Division). The demonstration of high scholastic ability as an undergraduate student is essential in preparation for advanced (graduate) study, and for admission to the Graduate School.

Curriculum in Technical Agriculture, Wildlife Major

Freshman Year	F	S
General Zoology, Z 103-113	3	3
Ornithology, WL 103		3
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	5	
Elementary Organic Chemistry, Ch 134		4
Crop Production, Agron 103		3
Fundamentals of Speech, Sp 103	3	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	1	
	17	18

Sophomore Year	F	S
Techniques in Wildlife Management, WL 202	2	
Animal Control, WL 212	2	
General Botany, Bot 103-104	3	4
General Bacteriology, Bac 202-212	4	
Introduction to Entomology, Ent 102		2
Principles of Animal Ecology, Z 302	2	
Soils, Agron 213		3
College Algebra, Math 113		3
Zoological Literature, Z 201		1
Military, Mil 211-221 or 251-261	1	1
Electives	3–4	3–4
	17–18	17–18

Junior Year	F	S
Mammalogy, WL 303	3	
Principles of Economics, Econ 203		3
Ichthyology, WL 313		3
Game Birds, WL 323		3
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 (114, 124 recommended)	4	
Farm Forestry, Ho 313	3	
Advanced Exposition, Engl 352 or Publicity Methods, J 322		2
Soil Conservation, Agron 372 or Soil and Water Mechanics I, MA 342		2
Taxonomy course in Horticulture or Botany		
Social Science electives		
Humanities elective		
	17–18	17–18

Senior Year	F	S
Wildlife Management, WL 403	3	
Genetics, Z 303		3
Invertebrate Zoology, Z 424		4
Entomology elective		
National Government, PolS 213 or State and Local Government, PolS 243		3
Group 1 electives (to total minimum of 12 cr.)		
Social Science electives (to total minimum of 5 cr.)		
Humanities elective (to total minimum of 4 cr.)		
Electives		
	17–18	17–18

Students who expect to continue the study of Entomology, Zoology, or Wildlife on the graduate level should consider including, among their electives, at least a year of French or German; additional Math courses, and Statistical Methods, Econ 353, are also recommended.

Students who expect to teach in secondary schools should include such courses in the Department of Education as are required for teaching certification.

These curricula are designed to fit the needs of the average student. Where preparation for a special field is desired, substitutions may be made with the approval of the head of the department.

Students who expect to do Journalism work in the field of wildlife following graduation should minor in Journalism. The following courses have been recommended by the Department of Journalism as a minimum for such a minor: J 202, 243*, 232, 302, 331-341, 422, 473.

*Prerequisite, no grade below "C" in English 113-123.

Entomology-Zoology Department

Curriculum in Wildlife Techniques and Conservation (Professional Course)

Freshman Year	F	S
General Zoology, Z 103-113	3	3
English, Engl 113-123 or 143-153	3	3
Introduction to Sociology, RS 153	3	
*Inorganic Chemistry, Ch 110	4	
Elementary Organic Chemistry, Ch 134		4
Introduction to Entomology, Ent 102		2
Ornithology, WL 103		3
Physical Education, PE 101-111	1	1
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100	1	
	16	17

Sophomore Year	F	S
General Botany, Bot 103-104	3	4
Techniques in Wildlife Management, WL 202	2	
College Algebra, Math 113	3	
Soils, Agron 213	3	
Principles of Animal Ecology, Z 302	2	
Zoological Literature, Z 201		1
General Bacteriology, Bac 202-212		4
Fundamentals of Speech, Sp 103		3
Introduction to Literature, Engl 203		3
Military, Mil 211-221 or 251-261	1	1
Electives in Humanities	3	
Electives		1 or 2
	17	17 or 18

Junior Year	F	S
Genetics, Z 303	3	
Taxonomy of Insects, Ent 313	3	
Advanced Exposition, Engl 352	2	
Elementary Physics I, Phy 114-124	4	4
Ichthyology, WL 313		3
Options	6	11
	18	18

Senior Year	F	S
Wildlife Management, WL 403	3	
Principles of Economics, Econ 203	3	
Publicity Methods, J 322 or equivalent		2
Mammalian Physiology, Z 414		4
Electives in Social Science	3	3
Options	8 or 9	8 or 9
	17 or 18	17 or 18

*Ch 115 is also recommended under the Fisheries Option, in which case it would be taken in the freshman year in place of Elementary Organic Chemistry 134. Organic Chemistry 134 would then be taken later as 4 credits of required work.

Game Option

Junior Year	F	S
Mammology, WL 303	3	
Game Birds, WL 323		3
Dendrology, Ho 213, or equivalent		3
Plane Trigonometry, Math 133	3	
Elementary Surveying, CE 202		2
Electives		3
Senior Year	**F**	**S**
Statistics elective	3	
Soil Conservation, Agron 372, or equivalent		2
Electives	5 or 6	10

Fisheries Option

Junior Year	F	S
Microbiology Water and Sewage, Bac 303	3	
Invertebrate Zoology, Z 424		4
Soil Conservation, Agron 372, or equivalent		2
Aquatic Seed Plants, Bot 323	3	
Electives		5
Senior Year	**F**	**S**
Immature Insects, Ent 413	3	
Geology, Agron 243		3
Statistics	3	
Electives	3	9

Students who expect to continue the study of Entomology, Zoology, or Wildlife on the graduate level should consider including, among their electives, at least a year of French or German; additional Math courses, and Statistical Methods, Econ 353, are also recommended.

Students who expect to teach in secondary schools should include such courses in the Department of Education as are required for teaching certification.

These curricula are designed to fit the needs of the average student. Where preparation for a special field is desired, substitutions may be made with the approval of the head of the department.

Students who expect to do Journalism work in the field of wildlife following graduation should minor in Journalism. The following courses have been recommended by the Department of Journalism as a minimum for such a minor: J 202, 243*, 232, 302, 331-341, 422, 473.

*Prerequisite, no grade below "C" in English 113-123.

Wildlife Techniques and Conservation (WL)

UNDERGRADUATE COURSES

103 Ornithology 3(2,3) S

Identification of common song, game and non-game birds; life histories, habits, and special structural adaptations of various groups. Resident and migrating birds of eastern South Dakota.

202 Techniques in Wildlife Management 2(1,2) F

Biological principles, methods of habitat evaluation,management, food habits analysis, census methods, collection of data, cover-type mapping, and literature. P, Z 103-113.

212 Animal Control 2(1,3) F

Principles of control of rodents, other mammals, and birds, when they are detrimental to man's interests. Prevention of contamination of raw materials, grain, and of cereal and forage products by rodents and birds. Laboratory includes demonstrations and practical applications of control. P, Z 103-113.

303 Mammalogy 3(2,3) F

Identification of game, fur-bearing, and small mammals; taxonomy of these groups, life histories and habits, preparation of study skins and skeletons; special reference to those occurring in Northern Great Plains area. P, Z 103-113.

313 Ichthyology 3(2,3) S

Characteristics and relationships of fish and fish-like vertebrates; adaptations, modification, and life histories of major groups; identification of common species of game and forage fishes; economic and recreational importance of various groups. Special reference to fishes of North Central and Northern Great Plains States. P, Z 103-113.

323 Game Birds 3(2,2) S

Identification of native and introduced game birds of North America, their life histories, limiting factors, economic importance, recreational value, and management. P, Z 103-113 and WL 103.

403 Wildlife Management 3(2,2) F

Federal, state and private wildlife agencies and their function in wildlife management. Application of ecological principles to management of wild animals. Federal and state refuge systems. Philosophy of wildlife conservation and biopolitics. P, WL 202, Z 302.

GRADUATE COURSES

600 Wildlife Research Problems 1-2 credits, as arranged FS

(Limit of 2 credits for B.S. degree; limit of 2 credits for M.S. degree)

Qualified students may investigate special wildlife problems under supervision of departmental staff. Arrangements must be made with supervising staff member prior to registration. Undergraduate students limited to total of 2 credits, and graduate students to total of 5 credits toward graduation in any combination of Ent 600, Z 600, WL 600

and Ent 700. P, cumulative grade point average of at least 2.75 plus permission of supervisor.

603 Fisheries Science 3(2,3) F

Specific taxonomy and life histories, distribution, environmental requirements, habits, species interrelationships, population statistics, economic and recreational importance of species. P, WL 313, 403.

613 Advanced Wildlife Management 3(2,3) S
(Offered in 1964)

Taxonomy, life histories, distribution, environmental relationships, and management of big game and upland game species. Regional management practices of the major big game mammals of North America. P, WL 303, 323, 403. Alternate years.

703 Wetlands Management 3(2,3) F
(Offered in 1964)

Depletion and preservation of wetland areas during past and present years. Economic and recreational importance of wetlands. Need for coordinating land-use policies of various federal and state governmental agencies. Federal and state legislation as it relates to wetland management. Ecological analysis of wetland areas in eastern South Dakota. P, Z 302; WL 303, 323, 403. Alternate years.

790 Thesis in Wildlife 5-8 credits as arranged FSSu

Horticulture-Forestry (Ho)

Professor McCrory; Associate Professors Collins, Macksam, Peterson, Rawson; Assistant Professor Prashar

The Horticulture - Forestry Department offers training in crop production, business, science, landscaping and forestry. Those students interested in forestry should plan to transfer to another school after two years as pre-forestry students.

Students gain valuable experience in the departmental gardens and research program. Greenhouses provide additional experience in a year-round crop production program. An extensive research program in fruit and vegetable breeding, testing of woody and herbaceous plants, forestry and shelterbelts offer students an opportunity for field study. Students are encouraged to serve as assistants while in school and when possible during the summer season.

Graduates from this department hold responsible positions in many areas of the United States. More than 40 per cent of those graduating have remained in the state and 78 per cent of these are working in their field of college training. They hold responsible positions as city and state park employees and supervisors, farm managers, food processors, federal food and drug inspectors, and as owners and operators of greenhouses, nurseries, florist shops and garden centers.

Curriculum in Agriculture, Horticulture Major

Freshman Year	**F**	**S**
English, Engl 113-123 or 143-153	3	3
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	1	
Inorganic Chemistry, Ch 110	4(5)	
General Botany: Seed Plants, Bot 104	4	
General Horticulture, Ho 103	3	
Introduction to Sociology, RS 153		3
College Algebra, Math 113*		3
Natural Science Requirement†		3
Option and Elective Courses		3

Sophomore Year	**F**	**S**
Military, Mil 211-221 or 251-261	1	1
General Bacteriology, Bac 202-212	4	
Principles of Economics, Econ 203	3	
Soils, Agron 213	3	
Plant Pathology, Path 234	4	
Introduction to Entomology, Ent 102		2
Fundamentals of Speech, Sp 103		3
National Government, PolS 213 or State and Local Government, PolS 243		3
Introductory Physics, Phy 104‡		4
Option and Elective Courses	2	4

Junior and Senior Years	**F**	**S**
Horticultural Entomology, Ent 213	3	
Plant Propagation, Ho 363		3
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2	
Humanities Electives§	4	
Social Science Electives‖		5
Option and Elective Courses	25	26

*Students planning to follow the Science Option may choose Math 113, 133, 143, or the Mathematics Analysis sequence 145, 155.

†An additional course to be selected from the following group: Biology 113, 123, Botany 103, Zoology 103.

‡Elementary Physics 114 is recommended for the Science Option.

§Fields of Art, Drama, Foreign Languages, Literature, Music, Philosophy and Religion.

‖Fields of Economics, History, Political Science, Psychology, and Sociology.

In addition to the above courses which are required of all horticulture majors, the following are required under respective options.

Horticulture Production Option

Students who select this option should have a knowledge of related subjects such as botany, chemistry, entomology and soils. The program is designed

for those who plan to work in nurseries, fruit-vegetable-flower production, processing, and seed distribution.

	F	S
Soil Management, Fertility and Fertilizers, Agron 323	3	
Basic Taxonomy, Bot 204	4	or 4
Plant Physiology, Bot 424	4	
Elementary Organic Chemistry, Ch 134	4	or 4
Genetics, Z 303	3	or 3
Horticulture Courses¶	18	
General Electives	15	

Horticulture Business Option

Students who plan to enter a business and need some horticultural background may be interested in this option. Sales work, some federal and state services, private business and other similar services may be helped by workers who select this option.

	F	S
Principles of Economics, Econ 213	3	or 3
Business Law, Econ 303	3	or 3
Survey of Accounting, Econ 323 (or equivalent)	3	or 3
Money and Banking, Econ 333	3	or 3
Statistical Methods I, Econ 353	3	or 3
Business Finance, Econ 363	3	
General Psychology, Psy 203	3	or 3
Horticulture Courses¶	18	
General Electives	12	

Horticulture Science Option

Those who plan to do graduate work will find it advantageous to follow this option. Additional courses may be taken as electives according to the interests of the student.

	F	S
Plant Physiology, Bot 424	4	
Inorganic Chemistry, Ch 115 or Ch 124	4(5)	
Elementary Organic Chemistry, Ch 134	4	
Quantitative Analysis, Ch 214	4	
Genetics, Z 303	3	or 3
Horticultural Courses¶	18	
General Electives	14	

¶In each option a minimum of 24 credit hours in Horticulture is required. All courses in Horticulture are subject to approval by the student's advisor.

Curriculum in Agriculture, Horticulture Major

Landscape Design Option

This program is for students who may be self employed, enter a variety of commercial fields, serve as federal, state or municipal employees where landscaping or related types of ornamental horticultural training is needed.

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	1	
Inorganic Chemistry, Ch 110	4(5)	
General Botany: Seed Plants, Bot 104	4	
General Horticulture, Ho 103		3
College Algebra, Math 113		3
General Zoology, Z 103	3	
Crop Production, Agron 103		3
Introduction to Sociology, RS 153		3

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203		3
Fundamentals of Speech, Sp 103		3
National Government, PolS 213	3	
Soils, Agron 213	3	
Plant Pathology, Path 234	4	
Introduction to Entomology, Ent 102		2
Trigonometry, Math 133	3	
Engineering Graphics, EG 103		3
Woody Plant Materials, Ho 272	2	
Design, Art 103		3
Basic Photography, J 231	1	
Electives		2

Junior Year	F	S
Horticultural Entomology, Ent 213	3	
Introductory Physics, Phy 104	4	
Advanced Exposition, Engl 352	2	
Elementary Surveying, CE 202		2
Urban Sociology, RS 373	3	
General Psychology, Psy 203		3
Introduction to Literature, Engl 203		3
Introduction to Landscape Design, Ho 113	3	
Floral Design, Ho 162	2	
Herbaceous Plant Materials, Ho 362		2
Electives		7

Senior Year	F	S
Architectural Drafting, GE 222		2
Landscape Construction, Ho 222	2	
Plant Propagation, Ho 363		3
Advanced Landscape Design, Ho 423		3
Plant Physiology, Bot 424	4	
Horticulture Seminar, Ho 431	1	
Electives	10	9

Curriculum in Agriculture, Pre-Forestry*

The two-year pre-forestry curriculum in forest management is offered for students who expect to enter a school of forestry to complete the Bachelor of Science degree. Advantage of in-state tuition fees is thus accorded to resident students for two of the four years required for a degree. For students

*This curriculum may be adjusted to better fit the requirements of the forestry school where the student intends to complete his degree program.

who are interested in other phases of forestry work such as wood technology, forest recreation, lumber merchandising, it may be necessary to revise the designated two-year curriculum to meet the requirements of the selected forestry school degree program.

With the ever increasing emphasis placed on forestry by private industry such as lumber, pulp and paper, veneer, wood preservation and others, a broad and varied field of employment has been opened to graduate foresters. Federal, state, city and county agencies offer employment opportunities in the fields of administration, education, research and technical services.

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	1	
Inorganic Chemistry, Ch 110	4(5)	
Elementary Organic Chemistry, Ch 134		4
General Botany, Bot 104	4	
Basic Taxonomy, Bot 204		4
General Forestry, Ho 112	2	
College Algebra, Math 113		3

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203		3
Soils, Agron 213	3	
Dendrology, Ho 213		3
Forest Ecology, Ho 273		3
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114	4	
Fundamentals of Speech, Sp 103	3	
Geology, Agron 243		3
Trigonometry, Math 133	3	
National Government, PolS 213	3	
Advanced Exposition, Engl 352		2
Elementary Surveying, CE 202		2

UNDERGRADUATE COURSES

103 General Horticulture 3(2,2) FS

General principles of fruit, vegetable and flower growing; planting and care of home grounds.

112 General Forestry 2(2,0) F

Introduction to forestry with main emphasis on American forestry. Brief description of forestry as profession.

113 Introduction to Landscape Design 3(1,4) F

Historical development, present trends and future possibilities of landscape design. Drawing techniques and small property designs are included as laboratory portion of course.

123 Home Building Site Planning 3(2,2) F

Problems confronting home builders with special emphasis on landscape potential. Factors of site selection such as topography, soil, exposure and architectural association are featured.

162 Floral Design 2(0,4) F

Principles and methods of cut flower arrangement; use of flowers and plants in home; exhibiting and judging flowers and plants.

213 Dendrology 3(2,3) S

Identification, classification and characteristics of commercial forest trees of United States. Laboratory identification of South Dakota trees and shrubs.

222 Landscape Construction 2(1,2) F

Design and construction of walks, terraces, fences, masonry walls, pool and landscape accessories. P, 113.

242 Small Fruit Culture 2(2,0) F (Offered in 1964)

Principles for successful culture of small fruits. Much consideration given to conditions peculiar to South Dakota. Alternate years.

253 Vegetable Growing 3(2,2) S (Offered in 1964)

Methods used by home gardeners and commercial growers in vegetable production. Alternate years.

272 Woody Plant Materials 2(0,4) F

Identification, classification and characteristics of hardy evergreens and deciduous trees, shrubs and woody vines. Ornamental plants are given major emphasis.

273 Forest Ecology 3(3,0) S

Basic factors controlling forest growth and development under natural conditions.

313 Farm Forestry 3(3,0) F

Brief history of U. S. Forestry; tree and its environment; farm woodland forestry with emphasis on windbreaks and shelterbelts.

323 Turf Management 3(2,2) S

Maintenance and culture of turfgrass for lawns, parks, golf courses, athletic fields and special purpose turf.

333 Planting Public Grounds 3(1,4) F

Landscape design and planting of areas for public use.

362 Herbaceous Plant Materials 2(2,0) S

Culture of bulbs, annuals and perennials used for landscaping and home grounds.

363 Plant Propagation 3(2,2) S

Commercial methods and theories of propagating plants by seeding, cuttings, layering and grafting.

403 Systematic Horticulture 3(2,2) F (Offered in 1963)

Origin, history and relationship of economic horticultural plants. Practice in description, identification and classification of economic plants. P, Bot 204 or consent of instructor. Alternate years.

422 Town and City Planning 2(1,2) S

Integration of residential areas, recreational facilities and other physical elements of Midwestern towns and cities. Field trips will be made.

423 Advanced Landscape Design 3(1,4) S

Special purpose planting. Modern trends and techniques. P, Ho 113.

431 Horticultural Seminar 1(1,0) FS

Scientific work pertaining to horticulture. Required of major students; each student limited to two credits.

433 Orcharding 3(3,0) F (Offered in 1963)

Principles of fruit production, soil, moisture, fertility, temperature, nursery stock, fruit formation, fruit setting and pruning. Alternate years.

442 Horticultural Crop Breeding 2(1,2) S (Offered in 1965)

Application of principles of genetics and cytology to improvement of horticultural crops. P, Bot 103, Z 303. Alternate years.

453 Environment and Vegetable Crops 3(3,0) S (Offered in 1965)

Influence of environmental factors on economic plants with special emphasis on vegetable crops. P, consent of instructor. Alternate years.

463 Greenhouse Management 3(2,2) F (Offered in 1964)

Construction, heating, and management of greenhouses. Laboratory work gives experience in greenhouse management. Field trips are made to commercial greenhouses. P, 103. Alternate years.

473 Arboriculture 3(1,4) S (Offered in 1965)

Shade and ornamental tree planting and care combined with dendrician practices. P, Bot 103, Ent 102. Alternate years.

GRADUATE COURSES

600 Horticulture Problems 1-2 FS

Special investigation for graduate students. Maximum of four hours credit. Open as elective to selected undergraduates.

732 Experimental Horticulture 2(2,0) S

Principles, methods, equipment, organization and application of horticultural research. P, graduate standing.

790 Thesis in Horticulture 5-8 FS

Journalism (J)

Professor Phillips; Associate Professors Blinn and Hvistendahl; Assistant Professor Jess; Instructor Stensaas

The curriculum in Agricultural Journalism is designed for students who wish training in journalism, with an agricultural background. This curriculum prepares students to become associated with agricultural magazines, farm papers, rural newspapers, college extension services, experiment stations, and with firms employing writers and journalists trained in agriculture. Many of the graduates go into public relations work.

For Journalism course descriptions see Journalism in the division of Science and Applied Arts.

Curriculum in Agricultural Journalism

(Also see Journalism curricula in Divisions of Home Economics and Science and Applied Arts)

Freshman Year	F	S
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100	1	
Physical Education, PE 101-111 or 121-131	1	1
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110		4
College Algebra, Math 113 or Mathematical Analysis I, Math 145	3–5	
Introduction to Sociology, RS 153	3	
General Botany, Bot 103-104 or Biology, Bot 113-123 or General Zoology, Z 103-113 (6 hours to be elected from this group)	3–4	3–4
Introductory Physics, Phy 104 or Elementary Physics I, Phy 114 or General Physics I, Phy 205		4–5
Electives		
	17	17

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203	3	
National Government, PolS 213	3	
State and Local Government, PolS 243		3
Fundamentals of Speech, Sp 103	3	
Crop Production, Agron 103	3	
Introduction to Animal Science, AS 103		3
Elements of Dairying, DS 103		3
Newswriting and Reporting, J 243		3
Typography, J 202	2	
Press Photography, J 232	2	
General Horticulture, Ho 103		3
Elective		
	17	17

Junior Year	F	S
Newspaper Editing, J 302	2	
Editing Laboratory, J 331-341	1	1
Magazine Editing, J 311-321	1	1
Newspaper Advertising, J 352		2
Poultry Production, PS 103 or Poultry Management, PS 303	3	
Introduction to Entomology, Ent 102		2
Broadcast Journalism, J 342	2	
Social Science Electives	2	3
Humanities Electives	4	
*Electives		
	17	17

Senior Year	F	S
Advanced Reporting, J 422	2	
Law of the Press, J 473	3	
Newspaper Publishing Practice, J 415	5 or 5	
Institutional Public Relations, J 432		2
Journalism Seminar, J 431		1
Problems and Methods, J 411	1	
*Electives		
	17	17

*Not more than 34 credits in journalism may be counted toward the degree, exclusive of J 362 and J 473.

Mechanized Agriculture (MA)

(Major offered in Agriculture by Agricultural Engineering Department)

Professors Moe, DeLong, Wiersma; Associate Professors Hinkle, Lembke, Lytle; Assistant Professors Larson, Young, Paine, Waelti

The Mechanized Agriculture Major is a four-year major developed around the general Agriculture core curriculum, designed to give broad training in both Agricultural sciences, and Farm Mechanization. It prepares the student for farming, farm management, extension work, farm machinery and equipment sales, sales or contracting enterprises, and other fields related to agriculture.

The department offers courses in Weather Science which may be elected by students in all divisions. These courses are Introductory Meteorology, AE 352 and Introductory Climatology, AE 362.

Curriculum in Agriculture, Mechanized Agriculture Major

Freshman Year	F	S
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
Orientation, Or 100	1	
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110		5
College Algebra, Math 113 or Mathematical Analysis I, Math 145	5	
Introduction to Rural Sociology, RS 153		3
Machine Shop, ES 121	1	
General Botany, Bot 103-104; or General Zoology, Z 103-113; Biology, Bot 113-123	3	3
Group I Elective*	3	
	18	16

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
National Government, PolS 213, or State and Local Government, PolS 243		3
Fundamentals of Speech, Sp 103	3	
Inorganic Chemistry and Qualitative Analysis, Ch 115	5	
Plane Trigonometry, Math 133	3	
Analytic Geometry, Math 143		3
Welding, ES 131 and 151	1	1
Engineering Graphics, EG 103		3
Soils, Agron 213		3
Farm Power and Machinery, MA 212	2	
Group I Electives	3	3
	18	17

Junior Year	F	S
Advanced Composition, Engl 352 or Publicity Methods, J 322	2	
Electricity for Farm and Home, MA 222	2	
Principles of Economics, Econ 203	3	
Soil and Water Mechanics I, MA 342		2
Social Science Electives†	6	
Humanities Electives†		6
Elementary Physics I and II, Phy 114-124	4	4
Electives		4
	17	16

Senior Year	F	S
Farm Building Mechanization, MA 423	3	
Food Processing Equipment, MA 472		2
Genetics, Z 303	3	
Business Law, Econ 303	3	
Survey of Accounting, Econ 323		3
Social Science Electives†	2	
Electives	6	12
	17	17

*Required from Group I electives for mechanized agriculture majors are a minimum of three credits in animal science and agronomy 213 with a minimum of 12 credits from Group I.

†At least 11 hours of non-technical electives required in social humanistic area.

Major (30 credit hours): MA 212, 222, 342, 423, 452, 472; EG 103; ES 121, 131, 151; Phy 114; Math 133, 143.

Suggested Electives: In addition to electives from Group I, Agron 312, 323, 313, 343, 372, 452; AS 243, 251; Bac 202, 212; Econ 333, 343, 353; DS 211, 305, 433; Path 373; PS 303; Ent 102, 233; RS 202, 332, 382.

In addition to the courses listed above, which are required by every student in Mechanized Agriculture, the courses listed below are required under the Business and Science Options.

Business Option

Course	Credits
Principles of Economics, Econ 213	3
Money and Banking, Econ 333	3
Business Management, Econ 343	3
Statistical Methods, Econ 353 or equivalent	3
Business Finance, Econ 363	3
Business or Economics Elective	3
	18

Science Option

Course	Credits
General Bacteriology, Bac 202-212	4
Biological Science Elective*	2
Chemistry	5
Mathematics and/or Physics	4

*Courses must be selected from the following areas: Botany, Entomology-Zoology, and Plant Pathology.

UNDERGRADUATE COURSES

110 Farm Mechanics 1½ (3,3)

Same as Farm Mechanics 202 except that selected topics will be used and adjusted to fit six-week schedule arranged for Winter Term short course students.

202 Farm Mechanics 2(1,2) FS

Practical instruction in farm shop management, to include: safety, shop layouts, selection care and use of hand and power farm shop tools and equipment.

212 Farm Power and Machinery 2(1,2) FS

Tractors and farm machinery from standpoint of operation, repair, preventative maintenance, safety, and cost operation.

222 Electricity for Farm and Home 2(1,2) FS

Application of electricity on farm, circuits, wiring, lighting, appliances, operating principles of electric motors, organization and financing of rural electric cooperatives, and distribution system plans.

342 Soil and Water Mechanics I 2(1,3) FS

Engineering phases of soil and water conservation; elementary measurements and surveying, and their application to field problems; design and layout of conservation and irrigation practices.

423 Farm Building Mechanization 3(2,2) FS

Building materials and construction techniques for farm buildings with special attention to planning mechanization of livestock housing facilities, feeding operations, and manure removal systems. P, MA 222.

452 Soil and Water Mechanics II 2(1,3) S

Principles of conservation, irrigation, and drainage practices and their relationship to farm practices. P, MA 342, senior standing.

472 Food Processing Equipment 2(1,2) F

Principles of refrigeration, heat transfer, power transmission, instrumentation and materials handling applied to dairy and food processing equipment. Selection, operation, and maintenance of equipment. P, Math 113, senior standing.

490 Special Problems 1-3

Special problems in Mechanized Agriculture with engineering implications for studying, investigating, and reporting where satisfactory solution must be written up in final report. Selection and completion of special problems does not require background of professional engineering courses and limited to non-engineering students. Must have approval of adviser and head of department.

GRADUATE COURSES

612 Advanced Farm Machinery 2(1,3) Su
(Offered in 1963)

Operation, care adjustment, new developments in farm machinery, with emphasis on field and farmstead machinery as related to needs of agricultural production. Alternate years.

632 Advanced Farm Motors 2(1,3) Su
(Offered in 1964)

Operations, selection, care, adjustment, and new developments of internal combustion engines as applied to farm power units. Alternate years.

652 Advanced Rural Electrification 2(1,3) Su
(Offered in 1963)

Operation, selection, care, adjustment, and new developments in rural electric equipment: motors, fans, controls, wiring, pumps, grain handling equipment, and home and classroom lighting. Alternate years.

672 Advanced Farm Structures 2(1,3) Su
(Offered in 1964)

Materials for farm construction; construction methods and techniques; new developments in farm building. Alternate years.

Courses for Bachelor of Science Degree in Agricultural Engineering

(For full description of course offerings see Engineering Division)

Plant Pathology (Path)

Professors Nagel, Semeniuk; Associate Professors Mankin, Wood; Assistant Professors Buchenau, Fisher, Jensen, McGuire, Orlob, Pederson; Assistant Kruse

Plant Pathology is the study of plant diseases. Courses offered teach the individual the recognition of symptoms, control and the identification of the micro-organisms that cause plant diseases in much the same way as the Medical and Veterinary Sciences deal with human and animal diseases. Each year approximately three billion dollars worth of agricultural crops are lost in the United States because of plant diseases. In South Dakota the annual loss frequently runs into the millions of dollars. Plant Pathology is an important science in agriculture; and there is need for skilled people in this field and especially for superior students who wish to con-

tinue their training beyond the four-year college level.

Students may choose any one of four options in plant pathology. These options include: (a) Business option, (b) double major with agricultural education, (c) agricultural Extension, and (d) Science option.

The curriculum in Plant Pathology includes a broad range of basic science and agricultural courses selected to aid the students who wish to prepare themselves in this field. The choice of electives will enable the student upon graduation either (1) to seek employment in a number of important positions such as a state or federal plant quarantine inspector, scientific aid, research assistant, teacher, extension worker, county agent, salesman for biological and chemical industries, technical assistant with a commercial, state, or federal organization, or (2) to proceed with graduate study toward professional standing. Individuals with advanced degrees are qualified for teaching, extension and research in Plant Pathology in colleges and universities in the United States as well as in foreign countries, for research positions in the biological and chemical industries and the United States Department of Agriculture.

A minor in Plant Pathology is open to students taking a major in other departments. Prospective majors (and minors) are advised to consult with members of the Plant Pathology staff in planning their programs.

Graduate programs leading to both the M.S. and Ph.D. degrees in various phases of Plant Pathology are offered by the Department.

Curriculum in Agriculture, Plant Pathology Major

Freshman Year	**F**	**S**
Orientation, Or 100	1	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	5	
Chemistry Elective		4
General Botany, Bot 103-104	3	4
Group I Courses: Agron 103, Ho 103, Ent 102, Path 102	4	6
Sophomore Year	**F**	**S**
Military, Mil 211-221 or 251-261	1	1
Mathematical Analysis I, Math 145	5	
Plant Pathology, Path 234	4	
General Bacteriology, Bac 202-212		4
Principles of Economics, Econ 203	3	
Introduction to Sociology, RS 153		3
Fundamentals of Speech, Sp 103	3	
National Government, PolS 213 or State and Local Government, PolS 243		3
Junior Year	**F**	**S**
Physics Elective	4	
Soils, Agron 213		3
Mycology, Path 424	4	
Plant Disease Control, Path 373		3
General Entomology, Ent 233		3
Advanced Exposition, Engl 352 or Publicity Methods, J 322		2
Group I Elective		2
Social Science Elective (5)*		
Humanities Elective (4)†		
General Electives‡		
Senior Year	**F**	**S**
Crop Diseases, Path 404	4	4
Plant Physiology, Bot 414	4	
Genetics, Z 303	3	
Social Science Elective*		
Humanities Elective†		
General Electives‡		

*These may be chosen from the fields of psychology, government, history, political science, sociology, and economics.

†These may be chosen from the fields of art, foreign language, history, literature, music, philosophy, religion, speech.

‡(a) **Business Option,** which must include Ch 134, Phy 104 or 114, Econ 213, 303, 323, 333, 343, 353 and 363.

(b) **Double major** with Agricultural Education in consultation with advisors in both areas; an extra semester of courses may be required (see curriculum requirements in Agricultural Education).

(c) **Agricultural Extension,** which must include course requirements in Agricultural Extension.

(d) **Science Option,** which must include Ch 115, 214, 310, 320, Phy 114, 124, Math 155, Z 103.

UNDERGRADUATE COURSES

102 Plant Pathology in Human Affairs 2(2,0) FS

Effect of plant diseases on crop production and human welfare; historical significance in man's progress and existence. General aspects of symptoms, cause and spread of plant disease organisms.

234 Plant Pathology 4(2,4) F

Principles underlying nature of causal agents and symptomology of plant diseases. Laboratory study and recognition of diseases. P, Bot 104, Bot 103 recommended.

373 Plant Disease Control 3(2,2) S

Emphasis placed on prevention and practical methods of control of important common diseases including market and storage troubles caused by fungi, bacteria, viruses, nematodes and physiological causes; also plant quarantine regulations, residue tolerance, etc. Laboratory devoted to types of equipment used in application of fungicides, specificity of fungicides, dosage, calibration of spray and dust applicators. P, 234.

404 Crop Diseases 4(3,2) F

Emphasis placed on symptomology, identification of causal agents and their life cycles principally

those caused by fungi of broad groups of plants primarily crop plants including diseases of tropical plants of major importance to man's needs. P, 234.

424 Mycology 4(2,6) F

Structures, life histories and classifications of fungi. P, Bot 104.

493 Disease Identification 3(1,6) Su

Field trips, recognition and identification of plant diseases. P, 234 or consent of instructor.

GRADUATE COURSES

603 Fungus Physiology 3(2,2) F (Offered in 1964)

Nutritional and other requirements of fungi, including plant pathogens, for growth and reproduction; their intermediate metabolism and elaboration of chemical by-products. P, 424, Bac 202-212 (on demand). Alternate years.

620 Special Problems 1-2 FS

Advanced work or special problems in plant pathology. Credit arranged but limited to total of 4 credits for three terms. Open to seniors and graduate students by permission.

691 Seminar 1(1,0) S

Discussion of current research topics in plant pathology. Limited to one credit for B.S. degree and three credits for graduate degree.

723 Bacterial Phytopathology 5(2,6) F (Offered in 1963)

Detailed study of etiology and epiphytology of representative bacterial diseases emphasizing biology and control of pathogen. Preparation and presentation of reports on pertinent topics. P, 404. Alternate years.

724 Plant Virology 4(2,4) S (Offered in 1964)

Virus diseases in plants with emphasis on nature and physical properties of virus, development of virus within host, symptom expression on plant, host range and variability between and within virus groups. Preparation and presentation of reports on pertinent topics. P, 404. Alternate years.

734 Plant Nematology 4(2,4) F (Offered in 1964)

Nematode diseases of plants with emphasis on collection, isolation, preservation, symptomology, life histories, identification and control of plant parasitic nematodes. P, 234, Z 103, 113. Alternate years.

745 Mycology 5(2,6) F (Offered in 1964)

Advanced taxonomy of fungi. P, 424. Alternate years.

755 Mycology 5(2,6) S (Offered in 1965)

Advanced taxonomy of fungi. P, 424. Alternate years.

772 Phytopathogenesis 2(2,0) F (Offered in 1963)

Fundamentals of infection and disease development, disease susceptibility or resistance of host, and how disease affects host development. Preparation and presentation of reports on pertinent topics. P, 404 and 424. Alternate years.

783 Phytopathogen Variability 3(3,0) S (Offered in 1964)

Variability in plant pathogens and related microorganisms as this contributes to our understanding of incidence of development of disease resistant strains of crop plants. Preparation and presentation of reports on pertinent topics. P, 404 and 424, Z 303.

790 Thesis as arranged

Poultry Science (PS)

Professors Kohlmeyer, Carlson, Morgan; Assistant Professor Plumart; Instructor Guenthner

Poultry Science deals with the application of scientific principles to problems encountered in the production, processing and marketing of poultry products. Students who are trained in the basic sciences and their relationship to the poultry industry find many and varied areas of employment. Other students may select one or more courses dealing with poultry to supplement their training in other departments.

As poultry enterprises become larger, they also become more specialized. This increases the need for trained persons who can deal effectively with the detailed problems that must be met. The number of inquiries for persons with such training has exceeded the available supply for many years.

Students who major in Poultry Science may select one of three different options. The technical option offers a broad type of training with flexibility provided by a number of elective credits. The business option calls for a concentration of training in such areas as business law, accounting, management, statistics, and finance. The science option emphasizes training in mathematics, physics, and chemistry, and is planned to prepare the able student for further study at the graduate level.

Chicken or turkey hatcheries, commercial egg production, poultry and egg processing and marketing, and the manufacture and distribution of feeds and equipment are some of the areas which provide opportunities for poultry graduates. Teaching and research agencies regularly recruit persons with such training. Government agencies concerned with inspection and market news services provide additional opportunities.

Curriculum in Agriculture, Poultry Science Major

Freshman Year	F	S
Orientation, Or 100	1	
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
Poultry Production, PS 103	3	
General Zoology, Z 103-113	3	3
Group I Courses		6
Elective and option courses		3
	16	17

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203	3	
National Government, PolS 213 or State and Local Government, PolS 243		3
Introduction to Sociology, RS 153		3
Fundamentals of Speech, Sp 103	3	
Animal Nutrition, AS 243	3	
Advanced Composition, Engl 352		2
General Bacteriology, Bac 202		2
Elementary Physiology, Z 204		4
Genetics, Z 303	3	
Elective and option courses	4	3
	17	18

Junior and Senior Years	F	S
Poultry Diseases, Vet 322		2
Poultry Products Technology, PS 312	2	
Poultry Breeding, PS 353	3	
Seminar, PS 401	1	
Poultry Physiology, PS 473	3	
Poultry Feeding, PS 483		3
Humanities Elective		4
Elective and option courses	25	25
	34	34

In addition to the above courses which are required for each student in Poultry Science, the following courses are required under the respective options:

Technical Option

	Credits
College Algebra, Math 113	3
Inorganic Chemistry, Ch 124	4
Elementary Organic Chemistry, Ch 134	4
Publicity Methods, J 322	2
Livestock Disease Control, Vet 313	3
Introductory Physics, Phy 104	4
Poultry Products Evaluation, PS 212	2
Hatchery Management, PS 363	3
Research Problems, PS 410	2
Social Science Electives	5
General Electives	28
	60

Business Option

	Credits
College Algebra, Math 113	3
Inorganic Chemistry, Ch 124	4
Elementary Organic Chemistry, Ch 134	4
Introductory Physics, Phy 104	4
Poultry Products Evaluation, PS 212	2
Hatchery Management, PS 363	3
Research Problems, PS 410	2
Principles of Economics, Econ 213	3
Business Law, Econ 303	3
Survey of Accounting, Econ 323	3
Money and Banking, Econ 333	3
Business Management, Econ 343	3
Statistical Methods, Econ 353	3
Business Finance, Econ 363	3
General Electives	17
	60

Science Option

	Credits F	Credits S
Inorganic Chemistry and Qualitative Analysis, Ch 115	5	
Organic Chemistry, Ch 310-320	3	or 5
Quantitative Analysis, Ch 214	4	
Plane Trigonometry or Mathematical Analysis I, Math 133 or 145	3	or 5
Analytic Geometry or Mathematical Analysis II, Math 143 or 155	3	or 5
Calculus I or Mathematical Analysis III, Math 223 or 245	3	or 5
Calculus II or Mathematical Analysis IV, Math 233 or 254	3	or 4
Elementary Physics I or General Physics I, Phy 114 or 205	4	or 5
Elementary Physics II or General Physics II, Phy 124 or 215	4	or 5
Social Science Electives	5	
General Electives	20	to 7
	60	

UNDERGRADUATE COURSES

103 Poultry Production 3(2,2) F

Development and organization of poultry industry; its economic importance, types of domestic fowl, buildings and equipment, feeds and feeding, management of chicks, layers, and breeders. Limited to freshman and sophomore students.

212 Poultry Products Evaluation 2(0,4) F

Basis of selecting poultry for egg production. Breed and variety characteristics. Market qualities and grades of eggs, live and dressed poultry. P, 103.

302 Turkey Production 2(2,0) S

Turkey industry, production, and marketing. Breeding, feeding, and management of turkeys. Incubation, brooding, disease prevention and control.

303 Poultry Management 3(2,2) S

Poultry as related to total agriculture. Types of poultry enterprises. Management practices with emphases upon genetic, nutritional, and bacteriological aspects. Disease and parasite problems. Limited to junior and senior students who do not have credit for 103.

312 Poultry Products Technology 2(1,2) F
(Offered in 1963)

Procurement, processing, packaging, and distribu-

tion of poultry products. Factors determining quality, their identification and control. Quality maintenance and storage. P, 103 or 303. Alternate years.

353 Poultry Breeding 3(2,2) F (Offered in 1963)

Applications of genetics in poultry breeding. Inbreeding, crossing, hybridizing, progeny testing, family selection. Performance records and testing methods. Limitations for breeder. Alternate years.

363 Hatchery Management 3(2,2) S (Offered in 1964)

Incubation principles and equipment. Embryonic development. Egg supply, sales, and related enterprises. Sexing, brooding, and disease control. Plant operation and management. P, 103 or 303. Alternate years.

401 Seminar 1(1,0) F

Review of literature and current problems of poultry industry.

410 Research Problems 1-3 FS

Undergraduate research in nutrition, breeding, management, or marketing. Problem adapted to interest of student and materials available.

473 Poultry Physiology 3(3,0) F (Offered in 1964)

Physiology of avian digestion; reproduction; endocrine, nervous, and circulatory systems; excretion and metabolic rate. P, 103 or 303, Z 204. Alternate years.

483 Poultry Feeding 3(2,2) S (Offered in 1965)

Nutritional requirements, deficiency diseases, formulation of diets, and effects of diets upon quantity, quality, and efficiency of poultry and egg production. P, 473, AS 243. Alternate years.

GRADUATE COURSES

610 Special Topics in Poultry Science 1-3 FS

Advanced study of one or more selected topics such as nutrition, physiology, research methodology, or marketing.

710 Graduate Research Problems 1-3 FS

Planning, conducting, summarizing, and reporting research in some phase of poultry science. P, graduate classification.

752 Poultry Genetics 2(2,0) S

Population studies in poultry breeding. Physiological expression of genetic characteristics. Heritability coefficients. Comparison of and theoretical bases for different breeding systems. P, 353, 473.

761 Nutrition Seminar 1(1,0) FS

Reports and discussion of current nutrition research.

772 Nutritional Interrelationships 2(2,0) F

Relationships between nutrients in metabolism. Substitution and sparing effects. Comparative metabolic significance of required nutrients for different animal species. P, Ch 763.

790 Thesis in Poultry Science FSSu

Rural Sociology (RS)

Professors Sauer, Chittick, Malan; Associate Professors Riley, Gorrow; Instructor Biggar

The courses offered by the Rural Sociology department have been organized with three definite objectives in mind: (1) to offer a sequence of courses for those in the Agricultural, Science and Applied Arts or other divisions who may wish to earn an undergraduate major or minor in sociology; (2) to meet the need for basic service courses that will be of interest and practical help to students in any division of the college; (3) to offer sufficient courses in sociology of an advanced nature to fulfill the requirements for a major or minor toward a Master's degree or a Doctor of Philosophy degree in the Social Sciences.

Completion of the sociology curriculum provides basic training for rural and urban leaders. A wide variety of fields such as Extension work, Social Welfare and Social Security, Care and Treatment of Delinquents, Teaching and Research, Industry, and Government Service are open to sociology majors. A sociology major is available in the Division of Science and Applied Arts for students wishing to major in that division.

Curriculum in Agriculture, Rural Sociology Major

(Also, see curriculum in Rural Sociology in Division of Science and Applied Arts)

Freshman Year	**F**	**S**
Orientation, Or 100	1	
Physical Education, PE 101-111 or 121-131	1	1
Military, Mil 111-121 or 151-161	1	1
English, Engl 113-123 or 143-153	3	3
Chemistry, Ch 110-124	4	4
Introduction to Sociology, RS 153		3
Group I, Ag Electives	3	3
Fundamentals of Speech, Sp 103	3	
Elective		3
	16	18

Sophomore Year	**F**	**S**
Military, Mil 211-221 or 251-261	1	1
College Algebra, Math 113 or 145	3–5	

General Botany, Bot 103-104 or General Zoology, Z 103-113; or Bot 103 and Z 103	3	3–4
Group I, Ag Electives	3	3
Rural Sociology, RS 202		2
Leadership, RS 262	2	
Principles of Economics, Econ 203		3
General Psychology, Psy 203	3	
General Anthropology, RS 213		3
Sociology Electives	2	2
	17–19	17–18

Junior Year	**F**	**S**
Urban Sociology, RS 373	3	
Intermediate Sociology, RS 393	3	
Principles of Economics, Econ 213		3
National Government, PolS 213		3
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2	
General Bacteriology, Bac 202-212		4
Statistical Methods I, Econ 353	3	
Group I, Ag Elective (Soils)		3
State and Local Government, PolS 243	3	
Introductory Physics, Phy 104		4
Philosophic Inquiry, GS 303	3	
	17	17

Senior Year	**F**	**S**
The Family, RS 433	3	
Genetics, Z 303	3	
Economics Elective		3
Humanities Electives	2	2
Sociology Electives, Upper Division	6	3
Electives, Upper Division	3	9
	17	17

Major in Sociology: RS 153, 202, 213, 262, 373, 433, 393, to total 24 credits.

Minor in Sociology: RS 153, 202 and sociology electives, to total 16 credits. Six credits must be numbered 300 or above. (Courses numbered 213 and 393 are recommended electives.)

UNDERGRADUATE COURSES

153 Introduction to Sociology 3(3,0) FSSu

Prerequisite to all other courses numbered above 153. Comprehensive study of society, with analysis of group life and other forces shaping human behavior.

202 Rural Sociology 2(2,0) FSSu

Rural society, rural communities, population composition and trends, social processes; social participation in rural organizations and agencies; and changing relationship between country and city in contemporary society. P, 153.

213 General Anthropology 3(3,0) S

Prehistoric and primitive peoples and cultures; primitive customs and institutions compared with those of modern man. P, 153.

222 Marriage 2(2,0) FSSu

Courtship and marriage period given special emphasis. Mate selection problems, adjustments in marriage, reproduction, child-parent relations, divorce, and later years of marriage.

232 Social Problems 2(2,0) F

Present day problems in American society, such as crime, divorce, alcoholism, drug addiction, old age, physical and mental health—their significance and current methods of prevention and treatment. P, 153.

243 Introduction to Social Work 3(3,0) F

Pre-professional course. Special emphasis directed to standard case work procedures, public and private agencies, group work, and community resources available for use in solving social problems. Rural emphasis. P, 153.

253 Social Legislation 3(3,0) S

Principles underlying past and present legislation concerning marriage and divorce, birth control, child welfare including adoption, illegitimacy, juvenile court and various classes of dependents provided for in Social Security Act. P, 153.

262 Leadership 2(2,0) F

Analysis of leadership including qualities of leader, art of influencing people, training, selection, and responsibilities of leaders in democratic society. P, 153.

312 Cultural Anthropology 2(2,0) F

Major theoretical viewpoints on meaning and significance of culture; diversity and interrelation of cultures; processes of cultural change. P, 153 and 213.

332 Extension Organization and Methods 2(2,0) F

Extension work in Agriculture and Home Economics. Legal basis, origin, objectives, organization, relationships to other educational and governmental agencies. Organization and methods at county level, including field trips to county offices. P, 153, 202 or consent of instructor.

342 Race and Nationality Problems 2(2,0) S

America's minority groups: inter-racial and intercultural conflicts, accommodation and assimilation. Sources of prejudice, current trends, and proposed solutions. P, 153.

352 Population Problems 2(2,0) SSu

Theories of population: factors involved in birth rate, death rate, and migrations. Social consequences of population change; problems of population quality and population policy. P, 153.

373 Urban Sociology 3(3,0) F

Patterns of urban growth, demographic and ecological processes, institutions, folkways, dynamics of social class, and social problems of modern city and urban fringe areas. P, 153.

382 Industrial Sociology 2(2,0) S

Human relations in industry; factory social tensions and conflict; problems of personal adjustment; labor organizations; relations between industry and community; patterns of authority and communication applicable to most forms of social organization. P, 153.

393 Intermediate Sociology 3(3,0) F

Analysis of structure and changes of society. Social relationship studied in terms of their specific forms,

varieties, patternings, and systems. Social organizations studied in terms of sustaining forces and change. P, 153.

403 The Rural Community 3(3,0) S

Structure, activities, problems, resources and functions of rural community; methods and techniques of community organization, institutional services and leadership together with economic and social relationships to both open country and urban centers. P, 153.

413 Criminology 3(3,0) F

Nature and causes of crime. Theories of punishment. Agencies and methods of arrest, conviction, and segregation of criminals. Jails, prisons and reformatories. Probation and parole. P, 153.

422 Sociology of Extension Work 2(2,0) S (Offered in 1965)

Extension program planning. Analysis of sociological principles which may be applied directly in execution of Extension programs. P, 153, 202 and consent of instructor. Alternate years.

433 The Family 3(3,0) F

Development of family as social institution. Main emphasis on contemporary American family under rural and urban conditions, and impact of urbanization and industrialization upon various facets of family life. P, 153.

442 Social Problems of the Aged 2(2,0) S

Role of old people in various societies with major emphasis on adjustment problems among aged in contemporary American society. P, 153 and consent of instructor.

GRADUATE COURSES

612 Social Thought 2(2,0) F (Offered in 1963)

Brief survey of history and development of world's most important social theories and schools of social thought, evaluated in light of present knowledge. P, 153, 393. Alternate years.

622 Social Disorganization 2(2,0) S (Offered in 1964)

Analysis of conditions and factors which result in personal and institutional disorganization, including mental disorders, suicide, alcoholism, delinquency, and disruption of family and community life. P, 153. Alternate years.

633 Leadership and Group Organization 3(3,0) S (Offered in 1964)

Emergence and types of leadership in group situations; analysis of leader-follower roles, functions and relationships in groups, and organizations. P, 153, and consent of instructor. Alternate years.

653 Rural Social Systems 3(3,0) F (Offered in 1964)

Rural organizations and institutions as systems of social interaction having common elements which permit analysis and understanding of structure and functioning of rural society. Relevant concepts from sociological theory will be introduced in building an analytical framework. P, 153, 202. Alternate years.

672 Social Institutions 2(2,0) F

Pivotal institutional fields with special reference to major social institutions such as: religious, economic, political, educational and familial. P, 153, 393. stages, cycles, and trends. P, 153, 393.

683 Social Change 3(3,0) S

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, 153, 393.

690 Special Problems in Sociology 1-3(1-3) FSSu

Advanced work or special problems in such areas as population, marriage and family, rural sociology, criminology, social disorganization or urban sociology. P, open to seniors and graduate students with sufficient background.

702 Research Methods in Rural Sociology 2(2,0) S (Offered in 1965)

Use of scientific method in sociological research; basic tools of research design; some special applications of statistical techniques to social data. P, 153, 393, and Econ 353 or Ed 613. Alternate years.

712 Development of Sociological Theory I 2(2,0) F (Offered in 1964)

Critical examination of principle sociological theories beginning with system of August Comte and ending with World War II. P, 153, 393. Alternate years.

713 Contemporary Sociological Theory II 3(3,0) S (Offered in 1965)

Sociological theories from World War II to present. P, 153, 393. Alternate years.

780 Seminars in Rural Sociology 1-4 as arranged

790 Thesis in Rural Sociology 5-8 as arranged

Veterinary (Vet)

Professor Harshfield; Associate Professor Dorsey

The development of our complex systems of livestock farming and transportation has greatly increased the chances of introduction of animal and poultry diseases into herds and flocks. Livestock and poultry raisers must give attention to disease prevention and control in their farming and ranching operations. The courses in this department are planned to meet the demand for information in this field.

A pre-veterinary curriculum is offered for superior students who plan to enter a school of veterinary medicine prior to completion of work for the Bachelor of Science degree.

Suggested Pre-Veterinary Curriculum*

Freshman Year	F	S
Orientation, Or 100	1	
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	5	
Inorganic Chemistry and Qualitative Analysis, Ch 115		5
General Zoology, Z 103-113	3	3
College Algebra, Math 113	3	
Plane Trigonometry, Math 133		3
Physical Education, PE 101-111	1	1
Military, Mil 111-121 or 151-161	1	1

Sophomore Year	F	S
Fundamentals of Speech, Sp 103	3	
Elements of Dairying, DS 103	3	
Introduction to Animal Science, AS 103		3
Organic Chemistry, Ch 310-320	3	3
Elementary Physics I-II, Phy 114-124	4	4
Poultry Production, PS 103	3	
General Botany, Bot 103		3
Principles of Economics, Econ 203		3
Military, Mil 211-221 or 251-261	1	1

Junior Year	F	S
Quantitative Analysis, Ch 214	4	
National Government, PolS 213		3
Introduction to Literature, Engl 203	3	
Humanities, GS 253		3
Introduction to Sociology, RS 153		3
Genetics, Z 303	3	
Animal Nutrition, AS 243	3	
Recent American History, Hist 214	4	
General Bacteriology, Bac 202-212		4
Business Law, Econ 303		3

*This curriculum does not meet the pre-veterinary requirements of all Colleges of Veterinary Medicine. The student, on advice of his counselor, may alter the pre-veterinary curriculum to meet specific requirements of certain colleges.

UNDERGRADUATE COURSES

313 Livestock Disease Control 3(3,0) F

Causes of disease, principles of livestock sanitation and accepted methods of prevention and control of more prevalent parasitic and infectious diseases.

322 Poultry Diseases 2(2,0) S (Offered in 1964)

Prevalent diseases in flocks in this area and sanitation practices in disease control. Alternate years.

The Agricultural Experiment Station

Orville G. Bentley, Director

The Agricultural Experiment Station conducts investigations through organized research in Agriculture and Home Economics to find new facts with which to solve the problems of the farm, ranch, home and related businesses.

Research workers probe the unknown to discover the nature of living organisms and inert materials and their relation to man and his environment. New facts discovered through research are the basis of the teaching and Extension programs and are therefore the basis of progress.

The application of new facts brings new wealth and therefore the results of research benefit all citizens.

The research program is carried out through planned projects in the several departments of Agriculture and Home Economics.

The following departments have active projects in progress: Agricultural Engineering, Agronomy, Animal Science, Bacteriology, Dairy Science, Economics, Entomology-Zoology, Horticulture, Plant Pathology, Poultry Science, Rural Sociology, Station Biochemistry, and Veterinary in Agriculture; and Food and Nutrition, and Textiles and Clothing in Home Economics.

Research work is in progress at the main station located at Brookings and at the five sub-stations located near Buffalo, Cottonwood, Eureka, Highmore, and Presho with cooperative work at the U. S. Field Station

at Newell. Other smaller research sites are scattered about the state.

The research program is supported with funds from State appropriations, Federal grants, Industrial grants, endowments and sale of products. Details of the source of funds and the projects will be found in the annual report of the Experiment Station.

The results of research are published in the "Farm and Home Research" quarterly, in bulletins, circulars, and the "Annual Report" all of which are available at the County Agents Office or by direct request.

The Agricultural Extension Service

John T. Stone, Director

The Smith-Lever Act passed by Congress in 1914 appropriated a sum of money to the various states for which extension work in agriculture and home economics should be established. The State Legislature of South Dakota at each session has appropriated funds to meet the requirements of the Smith-Lever Act. All extension work in South Dakota therefore is a cooperative enterprise participated in by the United States Department of Agriculture, the State College, and by various local and county organizations. The aim of this service is to carry education to the people of the state on the results of investigations of the Experiment Station and the State College.

Communities and counties in the state may secure the benefits of the extension work when the County Commissioners appoint a County Extension Board in accordance with the State Extension Law, and make the necessary appropriation. The assistance available through the Extension Service is in the form of County Agricultural Agents, Home Extension Specialists, Boy's and Girl's Club work, and the assistance of Extension Specialists in Animal Science, Dairy Science, Horticulture and Entomology, Animal Health, Field Crops and Soils, Poultry Science, Farm Management, Marketing, Food and Nutrition, Clothing and Health.

County Agricultural Agents are giving their efforts to the urgent agricultural problems of quality production, organization and marketing. They follow closely the counsel of the local advisory committees in the county. Home Extension Agents are serving from one to three counties each in the state and work with more than 18,000 Home Extension Club members giving demonstrations and instruction along lines of foods, clothing, health and home. Sixteen thousand farm boys and girls in South Dakota are assisted yearly through the Extension Service in obtaining instruction in better agricultural and marketing practices, in better home making, in improvement of health and in aspirations toward better citizenship. The 4-H Club Work is an active project of every extension worker in South Dakota.

As far as personnel and funds will permit, a program service is provided for the various Community Clubs; also assistance in securing speakers, demonstrators, and judges. Assistance is also given in the control of plant diseases, insect pests and animal diseases, by specialists from the Extension Service. Bulletins on timely and important subjects are written and available for distribution to the public. A news service on agriculture and home economics is also made available to the newspapers and to radio stations of the state.

Short courses, fairs and demonstrations are held each winter in a limited number of counties.

DIVISION OF ENGINEERING

M. L. MANNING, Dean

Four-year curricula leading to the Bachelor of Science degree are offered in:

Agricultural Engineering
Civil Engineering
Electrical Engineering
Engineering Physics
Mechanical Engineering

All of these curricula are accredited by the Engineer's Council for Professional Development (ECPD).

The first two years in each engineering curriculum are concerned primarily with the fundamental courses common to all branches of engineering. A student may delay his choice of a curriculum until he has learned by counsel, observation, and experience something about the various fields of engineering. During this period the student will have a counselor from one of the engineering departments who will assist him in planning his course work, and who will cooperate in the general counseling and orientation program provided by the Office of Student Personnel.

During the last two years, special courses offer opportunities for the student to (1) acquire an understanding of fundamental principles, and (2) become familiar with the applications of these principles to practical problems in his chosen field. Problem work and laboratory work are essential features of such courses.

Students will be introduced to computer techniques in engineering through the use of a new transistorized IBM 1620 computer in actual solution of problems.

Each curriculum devotes considerable time to English, public speaking, humanities, economics, and other social sciences which should broaden the student's interests and background and so prepare him for working with men as well as machines.

Students are encouraged to participate in the activities of the local student chapters of national professional engineering societies. Outstanding students are invited to join local chapters of national honor societies.

Refer to the section on "General Information" for information on credits and grade points.

Refer to the specific departmental curriculum to determine the credits and grade points required.

Each curriculum except that in Engineering Physics includes one industrial inspection trip arranged and supervised by the major department. Engineering Physics students usually make one or more trips to a research laboratory or similar facility as part of the activities of the student chapter of the Society of Engineering Physics. Each student bears his own expense.

Departments of Instruction

General Engineering (GE)

Administrative Committee: Professors Froslie, Gamble, Johnson, Moe, Sandfort; Associate Professor Skubic
Departmental Instructors: Associate Professors Skubic, Burris; Instructors Appelton, Johnson, and Engineering Staff

Several of the courses in the engineering curriculum are fundamental in the curricula of all the engineering departments. These courses are listed under General Engineering and are taught by members of the combined engineering staff.

UNDERGRADUATE COURSES

GE 101 Engineering Computations 1(0,3) FS

Development of systematic methods of analyzing and solving representative problems, with emphasis on orderly arrangement and accuracy. Introduction to the use of the slide rule, other calculating devices, and mathematical charts and tables. P, Math 145.

Engineering Graphics Section (EG)

EG 103 Engineering Graphics I 3(1,6) FS

Analysis of engineering graphics including the fundamentals of shape and size description. Engineering geometry, orthographic projection, pictorial drawings, charts and graphs. Conventional practices in engineering representation with instrument drawings and sketching. P, High school mathematics, plane geometry.

EG 112 Engineering Graphics II 2(0,6) FS

Graphic solution of space problems relating to points, lines, planes, and solids. Theory of graphics as applied to various types of engineering problems, vector analysis, revolutions, intersections, and developments. Engineering expression as developed through free-hand sketching of assemblies, exploded views, and design layouts. P, EG 103.

EG 222 Architectural Drafting 2(0,6) S

Drafting concerning all phases of frame building construction, including concrete, plumbing, and electrical details. Practice in modern drafting procedures. Student will be given opportunity to plan and design a building of his choice. P, EG 103, or consent of instructor.

EG 233 Machine and Tool Drawing 3(1,6) F

Preparation of working drawings of machine elements with emphasis on drafting simplification, functional dimensioning, assembly drawings, and detailing of machine parts such as gears and cams. Fundamental principles of tool and die design, including the use of jigs, milling, reaming and tapping fixtures. P, EG 103 or consent of instructor.

EG 242 Graphic Mechanisms 2(0,6) S

Definitions and review of fundamentals; linkages and displacements; cams, gears, and gear teeth; bevel, helical, and worm gearings; proportions of gears and manufacturing methods; gear trains; velocities in machines; accelerations in machines; inertia forces in machines. P, EG 103; Math 145 or Math 133.

Engineering Mechanics Section (EM)

EM 215 Analytical Mechanics 5(5,0) FS

Force systems, centroids, moment of inertia, friction, motion of solid body, work power, impulse, momentum, and impact. P, Math 245 and Phy 205.

EM 311 Mechanics of Materials Laboratory 1(0,3) FS

Laboratory verification of fundamental principles of structural and machine elements and tests of properties of materials. P, concurrent with 313.

EM 313 Mechanics of Materials 3(3,0) FS

Stresses and deformations in structural and machine elements. P, EM 215.

EM 323 Fluid Mechanics 3(3,0) FS

Fluid properties, statics, dynamics and thermodynamics of real and ideal fluids; laminar, turbulent, compressible and incompressible flows. Euler, Bernoulli and continuity equations flow in channels, conduits, and about immersed objects. P, EM 215.

Agricultural Engineering (AE)

Professors Moe, DeLong, Wiersma; Associate Professors Hinkle, Lytle, Lembke; Assistant Professors Young, Paine, Waelti

Agricultural Engineering is the science of engineering as applied to the agricultural industry. Students who take the four-year curriculum in Agricultural Engineering are trained in mathematics and the fundamental principles of engineering. They are also required to take many of the courses below emphasizing the application of the principles of engineering to the agricultural industry.

With this preparation students are fitted for the following lines of employment: land improvement, including drainage, irrigation, land clearing and soil conservation; positions with farm machinery and tractor companies; positions with building materials concerns; positions in rural electrification, land and building appraisal work. Courses are also offered in the field of meteorology, climatology, and microclimatology to engineers and students in other divisions who are interested. For Mechanized Agriculture Courses and Curriculum as offered by the Agricultural Engineering Department see Division of Agriculture for full description.

Curriculum in Agricultural Engineering

142 semester credits required for the Bachelor's Degree

Freshman Year	F	S
Mathematical Analysis I and II, Math 145-155	5	5
Inorganic Chemistry, Ch 110-124	4	4
English, Engl 113-123 or 143-153	3	3
Engineering Graphics I and II, EG 103-112	3	2
Physical Education, PE 101-111	1	1
Military, Mil 111-121 or 151-161	1	1
Orientation (for engineers), Or 100	0	
Engineering Computations, GE 101		1
	17	17

Sophomore Year	F	S
Mathematical Analysis III and IV, Math 245-254	5	4
General Physics I and II, Phy 205-215	5	5
Fundamentals of Speech, Sp 103	3	
Humanities, GS 253	3	
Analytical Mechanics, EM 215		5
Elementary Surveying, CE 202	2	
Rural Electrification, AE 212		2
Military, Mil 211-221 or 251-261	1	1
	19	17

Junior Year	F	S
Differential Equations, Math 333	3	
Principles of Economics, Econ 203		3
Thermodynamics, ME 303	3	
Fluid Mechanics, EM 323		3
Mechanics of Materials, EM 313	3	
Farm Structures, AE 304	4	
Farm Power and Machinery, AE 343	3	
Engineering Materials and Processes, ME 212	2	
Soils, Agron 213		3
Advanced Exposition, Engl 352		2
Non-technical Elective*		3
Technical Elective		4
	18	18

Senior Year	F	S
Crop Processing Machinery, AE 412	2	
Farm Land Engineering, AE 413	3	
Agricultural Power Units, AE 442	2	
Soil Physics, Agron 452	2	
Survey of Accounting, Econ 323	3	
Business Law, Econ 303		3
Agricultural Engineering Seminar, AE 491		1
Non-technical Elective*	2	9
Technical Electives	4	5
Inspection Trip, AE 400		0
	18	18

SUGGESTED TECHNICAL ELECTIVES

Farm Structure	Credits
Structural Design of Farm Buildings, AE 404	4
Heating and Air Conditioning Design, ME 452	2
Heat Transfer, ME 433	3
Design of Farm Electric Equipment, AE 422	2
Structures I, CE 425	5
Structures II, CE 445	5
Instrumentation, AE 613	3

Power and Machinery	
Agricultural Machinery Design, AE 452	2
Mechanisms, ME 314	4
Design of Machine Elements, ME 434	4
Heat Transfer, ME 433	3
Metallurgy, ME 453	3
Instrumentation, AE 613	3

Rural Electric and Crop Processing	
Design of Farm Electric Equipment, AE 422	2
Heating and Air Conditioning Design, ME 452	2
Electric Fields and Circuits, Circuits and Apparatus, EE 314-324	4
Heat Transfer, ME 433	3
Agricultural Cooperatives, Econ 312	2
Instrumentation, AE 613	3

Soil and Water Engineering	
Farm Land Engineering, AE 423	3
Irrigation Crop and Soil Practices, Agron 483	3
Hydrology, CE 332	2
Topographic and Route Surveying, CE 212	2
Soils Engineering, CE 444	4
Hydraulic Engineering, CE 423	3
Instrumentation, AE 613	3

*Elective courses are provided to permit the student to concentrate in the applied technical area of his particular interest, and to provide for further cultural growth and education in the humanistic-social sciences area.

Accordingly the elective program for each student must be planned with his counselor, and approved by the Head of the Agricultural Engineering Department. This will include at least 10 credit hours of technical electives and at least 10 credit hours of non-technical electives in the humanistic-social area selected from the representative list on page 17 of this section.

UNDERGRADUATE COURSES

212 Rural Electrification 2(1,2) S

Application of electrical power to farm and farm home uses: basic wiring, lighting, heating, motors, and controls. Rural electric rate structures, power distribution systems and areas of the region.

304 Farm Structures 4(3,2) F

Materials and application; heat and moisture transmission in farm buildings; functional requirements for animal shelters, crop storage units, farm home and farmstead; and economic considerations and cost estimating. P, Phy 215.

343 Farm Power and Machinery 3(2,2) F

Farm machinery features, field performance tests, power consumption and measurement, cost of operation, maintenance of machinery, hydraulic systems, power trains and motors. P, Phy 205.

352 Introductory Meteorology 2(1,2) F

Characteristics of atmosphere; interaction of land, sea, and air; measurement of meteorological elements; daily changes in atmosphere and forecasting.

362 Introductory Climatology 2(1,2) S

Circulatory systems; world distribution of precipitation, temperature and winds; long time series analysis of atmospheric elements; climatic classifications systems.

400 Inspection Trip (0) S

Provides the senior student with opportunity to observe operation of several industrial firms and duties of Agricultural Engineeers, and other engineering groups with these firms. P, senior standing.

404 Structural Design of Farm Buildings 4(2,6) S

Procedures for design of columns, beams, connection methods, and covering materials to form complete structure emphasizing structural design drawings, specifications, testing procedures, and design short cuts. P, 304; EM 313.

412 Crop Processing Machinery 2(1,3) F

Principles and applications of processing agricultural crops. Design, capacity, and operational characteristics of grain drying and aeration, hay and forage drying, wet storage, seed separation, grinding, mixing, pelleting, and handling of materials by conveyors, pumps and fans. P, 212, 343.

413 Farm Land Engineering 3(2,3) F

Runoff frequency, intensity, and prediction from small agricultural areas and its application to conservation practices. Wind and water erosion content practices. Design of erosion control structures and embankments. Flood routing techniques as applied to small dams. P, CE 202; EM 323; Agron 213.

422 Design of Farm Electric Equipment 2(1,3) S

Systematic procedures in design of cooling, drying and aeration equipment; sizing and combining conveyors with processing components; designing proper wiring and controls for same. P, 212; Phy 215.

423 Farm Land Engineering 3(2,3) S

Theory and design of agricultural drainage. Irrigation principles, land preparation, design of surface and sprinkler irrigation systems. P, 413.

442 Agricultural Power Units 2(1,3) F

Factors affecting gasoline and diesel engine operation and efficiency. Engine design features, transmissions, traction and hitches. Analysis of tractor chassis stability and tractor performance tests. P, 343.

452 Agricultural Machinery Design 2(1,3) S

Analysis of farm machine mechanisms, forces and actions, design, development and field testing. P, 442; ME 434.

472 Descriptive Micro-Climatology 2(2,0) S
(Offered 1965)

Micro-climate occupied by plants and animals; application of weather information to agricultural and conservation work. P, 352 or 362. Alternate years.

482 Climatological Methods 2(1,2) S
(Offered 1964)

Special methods of statistical analysis used with climatological data. Processing and analysis of data on digital computor. Use of climatological data in Agricultural Engineering and conservation fields. P, 362. Alternate years.

491 Agricultural Engineering Seminar 1(1,0) S

Review of current technical literature in Agricultural Engineering. Oral and written reports and discussion. P, senior standing.

GRADUATE COURSES

612 Engineering Phases of Crop Processing 2(2,0)
(Offered 1964)

Detailed analytical studies of cutting and shearing, collecting, packaging, size reduction, dehydrating, hauling, cleaning, and storing of agricultural crops. Includes one or more complete crop harvest and storage problems with reference to cost, labor, power requirements, and quality of finished product. P, 412, 422. Alternate years.

613 Instrumentation 3(2,3) S

Available instruments commonly used in Agricultural Engineering research. Principles and methods of measuring temperature, humidity, pressure, and flow with indicating and recording equipment. Application and instrumentation of SR-4 strain gage pressure and force transducers.

652 Theoretical Micro-Climatology 2(2,0) F
(On sufficient demand)

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 the ground. P, Calculus, Physics, AE 472.

702 Advanced Farm Buildings 2(2,0)
(Offered 1963)

Requirements of domestic animals for shelter and environment that shelter needs to provide for efficient and economical operation of animal enterprise; effect of total energy exchange on productivity of animals. P, 304, 404. Alternate years.

722 Advanced Farm Land Engineering 2(2,0)
(Offered 1963)

Selected topics from fundamental concepts of model analysis; specific application to problems involving viscous and gravitational phenomenon; varied flow equation applied to gravitational flow in drain lines, open ditches and terraces; use of tractive force theory in earth channel design; principles of irrotational flow and characteristics of potential fields; use of Laplace's Equation in solving saturated flow problems. P, 423, Agron 452. Alternate years.

742 Advanced Farm Power and Machinery 2(2,0)
(Offered 1964)

Presentation of typical farm machine mechanisms; instruction in selection, design, and application of various testing instruments for research and development; testing and evaluating machine components. P, 452. Alternate years.

750 Special Problems in Agricultural Engineering
(1-3 on demand)

Graduate students who wish to pursue detailed studies in one or several areas of the Agricultural Engineering field including meteorology and climatology.

790 Thesis in Agricultural Engineering
(5-8 as arranged)

Civil Engineering (CE)

Professor Johnson; Associate Professors Cheng, Dornbush, Hargett, Koepsell; Assistant Professors Abdul-Shafi, Andersen, Anderson, Larson, Shoukry; Instructors Rittershaus, Singer

Civil Engineering includes the location, design, construction, operation and maintenance of railways, highways, bridges, dams, water supply and distribution systems, sewage systems and sewage disposal plants, irrigation systems, river and harbor improvements and many other facilities essential in modern life.

The course in Civil Engineering is planned to give students a foundation in the exact

sciences—mathematics, physics, and chemistry; a thorough training in the technical phases of Civil Engineering—drawing, surveying, hydraulics, testing of construction materials, and principles of design involved in engineering work; and an introduction to the humanistic subjects in order to prepare them for responsible positions.

Curriculum in Civil Engineering

144 semester credits required for the Bachelor's Degree

Freshman Year	F	S
Mathematical Analysis I and II, Math 145-155	5	5
Inorganic Chemistry, Ch 110-124	4	4
English, Engl 113-123 or 143-153	3	3
Engineering Graphics I and II, EG 103-112	3	2
Engineering Computations, GE 101		1
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
Orientation (for Engineers) Or 100	0	
	17	17

Sophomore Year	F	S
Mathematical Analysis III and IV, Math 245-254	5	4
General Physics I and II, Phy 205-215	5	5
Analytical Mechanics, EM 215		5
Fundamentals of Speech, Sp 103	3	
Elementary Surveying, CE 202	2	
Engineering Surveys, CE 204		4
Humanities, GS 253	3	
Military, Mil 211-221 or 251-261	1	1
	19	19

Junior Year	F	S
Differential Equations, Math 333	3	
Principles of Economics, Econ 203	3	
Fluid Mechanics, EM 323	3	
Fluid Mechanics Laboratory, CE 321	1	
Materials, CE 303	3	
Mechanics of Materials, EM 313	3	
Structural Material Laboratory, CE 311	1	
Advanced Exposition, Engl 352		2
Structures I, CE 425		5
Geology, Agron 243		3
Thermodynamics, ME 303		3
Hydrology, CE 332	2	
*Soils Engineering, CE 444		4
Seminar, CE 300		0
	19	17

Senior Year	F	S
Structures II, CE 445	5	
Public Health Engineering, CE 465	5	
Transportation Engineering, CE 412	2	
Engineering Administration, CE 403		3
Inspection Trip, CE 400	0	
†Non-technical Elective	3	6
Hydraulic Engineering, CE 423	3	
Electric Circuits and Equipment, EE 303		3
Technical Electives		6
	18	18

Technical Electives	**Credits**
Structures III, CE 446	6
Highway Engineering, CE 453	3
Pavement Design, CE 683	3
Sanitary Engineering, CE 463	3
Bacteriology, Bac 202-212	4
Construction Engineering, CE 473	3
Survey of Accounting, Econ 323	3
Hydraulic Design, CE 433	3
Advanced Fluid Mechanics, CE 443	3

*Students planning to take technical electives in the sanitary area must take Bacteriology 202 and 212 during the junior year, and Soils Engineering, CE 444 in the senior year.

†Elective courses are provided to permit the student to concentrate in the applied technical area of his particular interest, and to provide for further cultural growth and education in the humanistic-social science area. Accordingly the elective program for each student must be planned with his counselor, and approved by the Head of the Civil Engineering Department. This will include at least 6 credit hours of technical electives and at least 9 credit hours of non-technical electives in the humanistic-social area selected from the representative list on page 17 of this section.

UNDERGRADUATE COURSES

202 Elementary Surveying 2(0,6) FS

Use, adjustment, and care of surveying instruments; analysis of errors in observation. P, Math 122 or 133 or 145 and EG 103.

204 Engineering Surveys 4(2,6) SSu

Topographic surveys and topographic mapping, elements of photogrammetry, land and construction surveys, principles of curve and earth work calculations and other advanced topics in surveying. P, 202.

212 Topographic and Route Surveying 2(0,6) S

(For non-civil engineering students.) Field and office work involved in topographic mapping, fundamentals of aerial photographs; elementary curve theory. P, 202.

222 Materials of Construction 2(0,6) F (even years)

(For non-civil engineering students.) Sources, applications, and properties of materials used in construction. Laboratory tests to determine these properties. P, sophomore standing.

300 Seminar 0(1,0) FS

Review of current technical literature on professional and technical aspects of Civil Engineering. P, junior standing.

303 Materials 3(2,3) F

433 Hydraulic Design 3(2,3) S

Irrigation structures, hydro-electric power facilities, flood control, and special hydraulic design topics. P, 423.

Basic structure of materials and its effect on material properties. Laboratory tests on materials, principles of concrete mix. P, Phy 205 and Ch 124.

311 Structural Materials Laboratory 1(0,3) FS

Laboratory tests on structural materials and elements, and interpretation of test results. Careful laboratory techniques are emphasized. P, with EM 313.

321 Fluid Mechanics Laboratory 1(0,3) FS

Measurement of properties of common fluids, and tests on fluids in motion. P, with EM 320.

332 Hydrology 2(2,0) S

Basic principles of precipitation, runoff, stream flow, and ground water. P, EM 323 or concurrent with 323.

400 Inspection Trip 0 F

Inspection trip to industrial plants, construction projects, and other engineering sites.

403 Engineering Administration 3(3,0) F

Law of contracts, agency, and other legal aspects of engineering. Preparation of specifications. Economic aspects of engineering. P, senior standing.

412 Transportation Engineering 2(2,0) F

Basic engineering principles involved in various common means of transportation. P, 204.

423 Hydraulic Engineering 3(3,0) S

Reservoirs, dams, irrigation, water power, drainage, hydraulic machinery. P, 345, 332; EM 323.

425 Structures I 5(4,3) S

Reactions, internal forces, use of influence lines, simple statically indeterminate structures, basic design concepts. P, 303, 311; EM 313.

443 Advanced Fluid Mechanics 3(2,3) S

Similitude and models, dimension analysis, flow in closed conduits and open channels, sediment transportation, and related laboratory topics. P, EM 323.

444 Soils Engineering 4(3,3) S

Basic soil principles, index properties, moisture density relations, compressibility, soil stresses, embankments, foundations, soil compaction and stabilization, laboratory tests on fundamental soil properties. P, 303; EM 313, 323.

445 Structures II 5(3,6) F

Design and detailing of steel, concrete, and timber structures. P, 344, 345.

446 Structures III 6(3,9) S

Energy, methods, deflection analysis, moment distribution, influence lines for continuous structures, matrix analysis of structures, shell structures, plastic design, prestressed concrete. P, 445; Math 333.

453 Highway Engineering 3(2,3) S

Highway administration and finance, traffic characteristics, highway standards, drainage, geometric design, construction methods. P, 412, 444.

463 Sanitary Engineering 3(1,6) S

Laboratory analysis of water and sewage, design problems in water and sewage facilities. P, 465.

465 Public Health Engineering 5(5,0) F

Communicable diseases, insects and rodents, milk and food sanitation, refuse disposal, water supplies collection and distribution, sewerage and sewage treatment, and other topics related to engineering aspects of public health.

473 Construction Engineering 3(2,3) S

Construction management, equipment, operation, and costs. P, 344, 403.

GRADUATE COURSES

610 Special Engineering Problems 1,3

Elective course for special or detailed study or investigation. P, senior standing in Civil Engineering.

642 Advanced Soils Engineering 2(1,3)

Application of basic soil mechanics to engineering problems. Stability, compaction, embankments, seepage, drainage, and stabilization. P, 444.

683 Pavement Design 3(3,0) S

Stresses in and design of flexible and rigid pavements including subgrades, bases and sub-bases. P, 453.

713 Advanced Hydraulic Engineering 3(3,0)

Multiple purpose river development, advanced topics in applied hydraulics. P, 423.

723 Prestressed Concrete 3(3,0)

Theory and design of prestressed concrete including pretension and post-tensioning. P, graduate standing.

733 Advanced Indeterminate Structures 3(3,0)

Analysis of structural members of non-uniform section. Arch analysis, multilevel frameworks, column analogy, moment distribution and energy methods. P, graduate standing.

734 Advanced Structural Design 4(2,6)

Design of rigid frames, effect of plastic behavior, details for complex structures, analysis of flat plate floor systems. Design comparisons. P, graduate standing.

742 Plastic Design 2(0,6)

Modes of failure, plastic hinges, design rules and applications. P, graduate standing.

743 Elastic Stability 3(3,0)

Buckling of columns and plates. Lateral buckling of beams; stability of rings. P, graduate standing.

752 Water Treatment Plant Design 2(0,6)

Water supply sources, design of treatment plants, cost estimates of water supply systems. P, graduate standing.

753 Waste Water Treatment Plant 3(1,6)

Design of waste collection and disposal facilities, waste treatment plants, cost estimates of waste disposal and treatment systems. P, graduate standing.

763 Advanced Sanitary Engineering 3(3,0)

Advanced engineering topics related to sanitary engineering and public health, including housing, air conditions and ventilation, air pollution, hospital and institutional sanitation, stream sanitation, waste disposal, radiological health and industrial hygiene.

773 Highway Administration and Economy 3(3,0)

Highway administration, highway and transportation costs, road user benefits, cost benefit ratio.

783 Advanced Transportation Engineering 3(2,3)

Planning and designing of railroads, highways, water and air transportation facilities and coordination of transportation facilities.

790 Thesis 5-8

Independent investigation of special problem and written thesis.

Electrical Engineering (EE)

Professors Gamble, Crothers (Emeritus), Cheadle, Lindley, Manning, Storry; Assistant Professors Bruce, Knabach, Ucer; Instructor Kurtenbach

The object of the work offered in the Electrical Engineering Department is to develop a thorough understanding of the laws and principles on which Electrical Engineering practice is based, and to introduce the student to present-day engineering practices in the fields of power and electronics.

In the Electrical Machinery laboratory, the student becomes familiar with the operation and analysis of modern electrical equipment such as generators, motors, transformers, magnetic control circuits, and instrumentation used in circuit measurements. This laboratory work supplements the classroom work and gives the student greater understanding of how the different kinds of equipment operate together in a system.

In the Electronics laboratories, the student works with electronic control equipment and communications equipment.

An A.C. system analyzer, a digital computer, and an analog computer are available for classroom work as well as for student research.

Curriculum in Electrical Engineering

142 semester credits required for the Bachelor's Degree

Freshman Year	F	S
Mathematical Analysis I and II, Math 145-155	5	5
Inorganic Chemistry, Ch 110-124	4	4
English, Engl 113-123, 143-153	3	3
Engineering Graphics I and II, EG 103-112	3	2
Engineering Computations, GE 101		1
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
Orientation for Engineers, Or 100	0	
	17	17

Sophomore Year	F	S
Mathematical Analysis III and IV, Math 245-254	5	4
General Physics I and II, Phy 205-215	5	5
Humanities, GS 253	3	
Principles of Economics, Econ 203	3	
Fundamentals of Speech, Sp 103		3
Advanced Exposition, Engl 352		2
Engineering Materials, EE 222		2
Metal Processing, ES 221-231	1	1
Military, Mil 211-221 or 251-261	1	1
	18	18

Junior Year	F	S
Fields and Circuits, EE 315	5	
Analytical Mechanics, EM 215	5	
Differential Equations, Math 333	3	
Electric Circuits I, EE 323		3
Advanced Engineering Mathematics, Math 393		3
Analysis of Electrical Apparatus I, EE 363		3
Atomic Physics, Phy 373		3
Electronics I, EE 342		2
Electronics Laboratory I, EE 341		1
Electrical Engineering Laboratory I, EE 361		1
Electives*	5	2
	18	18

Senior Year	F	S
Electrical Circuits II, EE 413	3	
Electronics II, EE 433	3	
Thermodynamics, ME 303	3	
Analysis of Electrical Apparatus II, EE 462		2
Mechanics of Materials, EM 313		3
Fluid Mechanics, EM 323		3
Engineering Economy, EE 402		2
Electrical Engineering Laboratory II and III, EE 471-481	1	1
Electronics Laboratory II, EE 431	1	
Technical Electives*	2	7
Electives†	3	2
Inspection Trip, EE 400	0	
	18	18

Technical Electives*	**Credits**
Special Electrical Problems, EE 410	1–2
Industrial Electronics, EE 422	2
Industrial Electronics Laboratory, EE 441	1
Computer Applications, EE 443	3
Electric Circuits III, EE 613	3
Electromagnetic Waves, EE 622	2
Electronics III, EE 644	4
Power System Analysis, EE 652	2
Servomechanisms, EE 682	2
Mathematical Statistics, Math 314	4
Laplace Transforms, Math 433	3
Complex Variables, Math 644	4
Partial Differential Equations, Math 643	3
Industrial Management, ME 403	3
Heat Transfer, ME 433	3
Reactor Physics, Phy 633	3

*Students will work with their adviser in selecting a minimum of nine credit hours of technical elective courses.

†Program of electives must be approved by the head of the Electrical Engineering Department. In general not more than 4 credit hours from any department may be counted toward graduation and at least 10 credit hours must be taken from the humanistic and social science course. See list which appears on page 17 of this section.

UNDERGRADUATE COURSES

222 Engineering Materials 2(2,0) S

Structure of matter—electrical, magnetic, mechanical, and thermal properties.

303 Electric Circuits and Equipment 3(2,3) S

Electric and magnetic circuits; electric equipment. For non-electrical engineering students. P, Math 254; Phy 215.

314-324 Electric Fields and Circuits I and II 4(3,3) FS

Laws of electric and magnetic fields and circuits. Measurements of electric and magnetic properties, electric circuit analysis, single and polyphase, A.C. circuits, network equations. Resonance and coupled circuits, Fourier series, characteristics of electric motor, generators and other equipment used in applying electric power to mechanical drive. Electronic tubes, transistors and the basic electronic circuits with emphasis on rectifiers and control devices. For non-electrical students. Math 254; Phy 215.

315 Fields and Circuits 5(4,3) F

Laws of electric and magnetic fields and circuits. Measurements of electric and magnetic properties. Effective A.C. voltages and current, and circuit constants. Analysis of steady state and transient circuits, network equations. P, Math 254; Phy 215.

323 Electric Circuits I 3(3,0) S

Mesh and node analysis, network theorems, coupled circuits, resonance, matrices, locus plots, polyphase circuits. P, 315.

341 Electronics Laboratory I 1(0,3) S

Experimental analysis of electron tubes, solid-state devices, direct-coupled amplifiers, audio amplifiers. Concurrent with 342.

342 Electronics I 2(2,0) S

Analysis of electron tubes and solid state devices. P, 315.

361 Electrical Engineering Laboratory I 1(0,3) S

Experimental work in instrumentation and application of theory to D.C. and to A.C. single phase and polyphase circuits and transformers. P, 315.

363 Analysis of Electrical Apparatus I 3(3,0) S

Application of basic engineering laws and concepts in analysis of electrical and electro-mechanical energy. Conversion analysis of transformers and rotating electro-mechanical machines. P, 315.

400 Inspection Trip 0(0,0) F

Trip of about one week to some industrial center such as Minneapolis, Milwaukee, or Chicago. P, senior standing.

402 Engineering Economy 2(2,0) FS

Economic aspects of engineering, cost estimating and financing. P, senior standing.

410 Special Electrical Problems 1-2 on demand

Special problems assigned in field of power or electronics. P, senior standing.

413 Electric Circuits II 3(3,0) F

Fourier series, complex frequency plane, Laplace transforms, two terminal pair network, electric filters. P, 323.

422 Industrial Electronics 2(2,0) S

Ignitron, thyratron, solid state rectifiers, high frequency induction and dielectric heating, photo tube and control devices, industrial X-ray and resistance welding. P, 342.

431 Electronics Laboratory II 1(0,3) F

Experimental analysis of modulators, detectors, oscillators, R.F. amplifiers, video amplifiers and electronic test equipment. Concurrent with 433.

433 Electronics II 3(3,0) F

Multi-element devices, amplifiers, detectors, modulators, controlled rectifiers, oscillators. P, 342.

441 Industrial Electronics Laboratory 1(0,3) S

Experimental analysis of ignitron, thyratron, and solid state rectifiers, high frequency induction and dielectric heaters, electronic voltage regulators, speed controls, magnetic amplifiers, industrial X-ray and resistance welding. Concurrent with 422.

443 Computer Applications 3(2,3) on demand

Analog computer problem planning and programming, digital computer applications and programming. P, 342.

462 Analysis of Electrical Apparatus II 2(2,0) F

Characteristics of D.C. and A.C. machines and analysis of response of machine to operating conditions. P, 363.

471 Electrical Engineering Laboratory II 3(0,3) F

Laboratory investigation of operation of D.C. and A.C. machines using generalized machines. Concurrent with 462.

481 Electrical Engineering Laboratory III 3(0,3) S

Starters, speed controls, network analyzer, parallel operation, and amplidyne. P, 471.

GRADUATE COURSES

613 Electric Circuits III 3(3,0) S

Distributed constants, transmission line theory, synthesis of L-C, R-C, and R-L circuits, approximations, transfer functions. P, 413.

622 Electromagnetic Waves 2(2,0) (On sufficient demand)

Application of vector analysis to electric and magnetic waves and high frequency radiation. P, 323; Math 393.

644 Electronics III 4(3,3) S

Wave shaping circuits, analog computer circuits, digital computer circuits. P, 433.

652 Power System Analysis 2(2,0) (On sufficient demand)

Methods of analysis of power system components operating together in a power system. Introduction to unbalanced system conditions. P, 462.

682 Servomechanisms 2(2,0)
(On sufficient demand)
Servomechanism principles, dynamics of servo systems, transient and frequency response, block diagram notation, requirements for stability. Nyquist stability criterion. P, 413 and consent of instructor.

710 Special Electrical Problems 1-3
(On sufficient demand)
Special problem assigned in field of power or electronics. P, graduate standing.

713 Advanced Circuit Theory I 3(3,0) F
Application of classical mathematics to circuit response with various driving functions. P, 413.

723 Advanced Circuit Theory II 3(3,0) S
Circuit and system response with emphasis on operational methods of analysis. Heaviside's method, Laplace Transforms, Analog computer as a tool in analysis of transients. P, 713.

733 Advanced Electronics I 3(3,0) F
Pulse, switching, and timing circuits; signal-flow graphs, negative feedback circuits, microwaves, electronics systems engineering. P, 433.

743 Advanced Electronics II 3(3,0) S
Molecular and plasma electronics masers and lasers, electronics systems engineering, communication theory. P, 733.

753-763 Advanced Machinery and System Analysis I and II 3(3,0) FS
Concise and detailed study of electric machinery, control systems and their transient responses. Load flow studies, stability studies, relaying, lightning phenomena, grounding.

762 Symmetrical Components
Application of symmetrical components to simple three phase circuit, unloaded systems, loaded systems. Symmetrical component impedances. Use of networks analyzer in analysis of symmetrical components.

790 Thesis in Electrical Engineering 5-8 as arranged

Engineering Shops (ES)

Professor Anderson; Assistant Professors Wakeman, Svec; Instructor Stratmoen; Assistant Jacobson

Engineering students are required to take certain courses in the Engineering Shops in order that they may have an opportunity to become acquainted with the various industrial processes which are closely associated with practical applications of the principles of engineering. In working with the machine tools and other equipment the student will acquire some understanding of the properties of materials, and various treatments of materials for specific operations and purposes.

The Engineering Shops are well equipped with precision measuring instruments, machine tools and welding equipment representing recent engineering developments in manufacturing processes.

Facilities for research are provided for in the metal processing field and for the construction of experimental equipment for other engineering departments.

UNDERGRADUATE COURSES

121 Machine Shop 1(0,3)
Machine tools and their use in industry, principles of operation, production methods and related equipment. Introduction to jigs and fixtures.

131 Welding 1(0,3)
Science of joining metals. Lectures, demonstrations and exercises. Gas and arc welding, cutting, heat treatment, spot welding and related information.

141 Machine Shop 1(0,3)
Closer study of more complicated processes involving operation of machine tools. Introduction to tool and die work and methods of inspection. P, 121.

151 Welding 1(0,3)
Lectures and exercises in practical application of arc and gas welding, position welding, pipe welding and joining of non-ferrous metals. Identification of metals. P, 131.

201 Machine Shop Problems 1(0,3)
Specialized study, particular problems with emphasis on tool making and solution of individual problems in set up work. P, 141 or 221.

221 Metal Processing 1(0,3)
Lecture and laboratory class to acquaint engineering student with metal processing in relation to engineering science. Problems and their solutions as related to industrial machine tools and other production equipment, automation, numerical control, and introduction to metal casting. P, engineer student.

231 Metal Processing 1(0,3)
Engineering approach to science of joining metals. Capabilities and limitations of present equipment. Brief introduction to metallurgy, heat treatment of steel and characteristics of other metals and alloys. Gas welding, arc welding and related equipment. P, engineer student.

241 Shop 1(0,3)
Use of sheet metals in manufacture of electrical equipment. Layout, punch press dies, spot welding, soldering and mechanical methods of fastening sheet metal. P, EG 112.

252 Welding and Metallurgy 2(1,3)

For technical students. Enough metallurgy is included to give student basis for determining whether or not welding can be applied, and to predict success or failure. Emphasis placed on practical application and laboratory time devoted to operation of welding equipment. P, 251.

263 Machine Shop Processes 3(1,6)

To acquaint student with management, machines, and methods of production. Designed to give clear picture of necessary operations from design to finished product. Laboratory time used for student operation of hand and machine tools. P, 201.

Mathematics (Math)

Professors Engebretson, MacDougal, Walder, Wente; Associate Professors Kranzler, Scholten, Richards; Assistant Professor Scribner; Instructors Ahmad, Bryn, Jacobson, Kundel, Monahan, Yocom

The work of the Mathematics Department is designed to meet both a cultural and vocational objective.

The Mathematics Major consists of 37 semester hours in mathematics. Courses in Physics, Chemistry, and technical electives have been chosen to provide a strong background for those students planning graduate study or industrial work.

In so far as it is practicable and possible, beginning courses are provided for students who do not enter at the fall semester.

Even though the student is not planning a major in Mathematics or is not in the Division of Engineering, if he has at least 1½ units of high school algebra and has better than average ability in mathematics, he should take the 145, 155 series rather than 113 and 133. However, those students in 145 who show insufficient knowledge of high school algebra may be required to take 113 before enrolling in 145.

The Major in Mathematics is offered in the Division of Science and Applied Arts. The curriculum for the mathematics major leads to the degree Bachelor of Science and Applied Arts and will be found in the Science and Applied Arts portion of the catalog.

UNDERGRADUATE COURSES

113 Algebra 3(3,0) FS

Review of fundamental operations, factoring, functions and graphs, solutions of systems of linear equations, exponents, radicals, quadratic equations, Binomial theorem, ratio, proportion, variation, permutations and combinations.

122 Plane Trigonometry 2(2,0) FS

Mainly a skills course involving principles of logarithms and trigonometry and their applications to solutions of triangles. This course intended as an optional course preparatory to Math 145 for those students who have no background in trigonometry. May also be elected by those departments requiring only a minimum of trigonometry.

133 Plane Trigonometry 3(3,0) FS

Functions of acute angle, solution of right and oblique triangles, general applications of trigonometry. P, 113 or equivalent.

143 Analytic Geometry 3(3,0) FS

Terminal course; co-ordinates, loci, straight line, circle, parabola, ellipse, hyperbola, space geometry. P, 113, 133 or equivalent.

145-155-245-254 Mathematical Analysis I, II, III and IV FS (Required in Freshman Engineering)

Real numbers and elementary properties, sets, functions and graphs, logarithms, quadratic functions, trigonometric functions, trigonometric equations, periodicity, inverse functions, mathematical induction, complex numbers, partial fractions, determinants, theory of equations, limits, differentiation, differentials, Mean Value Theorem, definite integrals, polar curves, conic sections, integration by standard forms and by special methods, topics in solid analytic geometry, partial derivatives, multiple integrals, series, hyperbolic functions, vectors and applications. P, 1-½ units of High School algebra.

203 Topics in School Mathematics 3(3,0) Su

For students in National Science Foundation only. Introduction to symbolic logic, elementary set theory, selected topics in modern mathematics. P, 143 or equivalent.

213 Descriptive Astronomy 3(3,0) S

Introductory course. P, knowledge of plane trigonometry.

223 Calculus I 3(3,0) F

Functions; limits; continuity; derivative of algebraic functions; applications of derivative to slope, time-rate, maxima, minima, graphs; differential; integration of algebraic functions, definite integral; applications of integration to areas. P, 143.

233 Calculus II 3(3,0) S

Discontinuities; curve tracing; exponential, logarithmic and trigonometric functions and their derivatives; additional integration and applications. P, 233.

303 Introduction to Abstract Algebra 3(3,0) Su

For students in National Science Foundation only. Introduction to number theory, groups, fields, matrices. P, 245 or equivalent.

312 Modern Algebra and Number Theory 2(0,4) FSSu

For the prospective high school teacher of mathe-

matics, to be taken before practice teaching. Some of foundations of algebra, sets, logic and consideration of modern algebra as it affects high school curriculum. P, 254.

314 Mathematical Statistics 4(4,0) S

Nature of statistical methods, probability, frequency distributions and sampling theory for one variable, correlation and regression, curve fitting, small sample distribution, statistical design in experiments.

323 Mathematics of Finance 3(0) S

Applications of algebra to problems in interest, annuities, amortization, valuation of bonds, sinking funds, and depreciation. P, 113, 133 or equivalent.

333 Differential Equations (3,0) FS

Differential equations with applications in fields of geometry, mechanics, and physics. P, 254.

343 College Geometry 3(3,0) F

Synthetic approach to plane geometry at college level. For teachers of high school mathematics. Open only to juniors or seniors. P, 254 or consent of instructor.

353-363 Higher Algebra I, II 3(3,0) FS

Properties of integral domain and ordered domain, number theory, theory of groups, rings, fields, vectors, matrices, systems of equations, and polynomials over a field. P, 254 or consent of instructor.

393 Advanced Engineering Mathematics 3(3,0) FS

Determinants, matrices, matrix algebra, complex variables, conformal mapping, integration in complex plane, Fourier series, elliptic integrals, Laplace transforms, vector algebra and applications. P, 333.

403 Advanced Analytic Geometry 3(3,0) F

Conic sections, invariants, transformation, poles and polars, duality, and application of coordinate systems to geometry of 3-space. P, 245.

433 Laplace Transforms 3(3,0)

(On sufficient demand)

Main features of Laplace transform theory. P, 393 or consent of instructor.

GRADUATE COURSES

623-633 Advanced Calculus 3(3,0) FS

Infinite series, elliptic integrals, Fourier series, multiple integrals; line, surface and space integrals, ordinary differential equations, Bessel functions, partial differential equations, vector analysis, and probability. P, 254.

643 Partial Differential Equations 3(3,0) S

Series solutions, total differential equations, simultaneous equations, approximate solutions, partial differential equations of first and second orders, applications. P, 333.

644 Complex Variables 4(4,0) F

Algebra of complex numbers, classification of functions, differentiation, integration, mapping, transformations, and infinite series. P, 254.

770-780 Advanced Topics in Mathematics

1-2(1-2,0) FS

Selected topics in mathematics to fit needs of graduate student. Limited to total of three credits. P, consent of staff.

790 Thesis in Mathematics 5-8 as arranged

Mechanical Engineering (ME)

Professor Sandfort; Associate Professors Ulmer, Huang; Assistant Professors Christianson, Lee, Paradise; Instructor Knofczynski

Mechanical Engineering may be classified into three major divisions. First the field of heat power which is concerned with the conversion of energy to perform useful work, and with the transfer and utilization of heat. Another division is that of machine design which involves the design and development of machines, products and their components. The third division encompasses the areas of production, manufacturing, and the accompanying problems and techniques of management.

Throughout all these fields the professional work of the mechanical engineer may vary from the scientific specialization of research and development, through the applied work of consulting, design, application or operation, and on to work in sales, production and management.

This curriculum is planned to give a thorough training in the basic sciences of mathematics, chemistry and physics, and a well balanced series of courses in mechanics, metallurgy, machine design, thermodynamics, electrical fields and circuits, and others. Opportunity is given in the senior year for considerable specialization in various technical option areas according to the interests and abilities of each student. These include aeronautics, heat power, industrial engineering, machine design, and nuclear engineering.

Throughout the curriculum, classroom theory is supplemented with experimental work in newly equipped laboratories. Design classes are provided, where engineering fundamentals are applied to the solution of engineering problems. Time is also provided for the inclusion of required courses in the humanities and social science areas so as to provide a well rounded education.

Curriculum in Mechanical Engineering

142 semester credits required for the Bachelor's Degree

Freshman Year	F	S
Mathematical Analysis I and II, Math 145-155	5	5
Inorganic Chemistry, Ch 110-124	4	4
English, Engl 113-123 or 143-153	3	3
Engineering Graphics I and II, EG 103-112	3	2
Physical Education, PE 101-111	1	1
Military, Mil 111-121 or 151-161	1	1
Orientation (for engineers), Or 100	0	
Engineering Computations, GE 101		1
	17	17

Sophomore Year	F	S
Mathematical Analysis III and IV, Math 245-254	5	4
General Physics I and II, Phy 205-215	5	5
Metal Processing, ES 221-231	1	1
Fundamentals of Speech, Sp 103	3	
Humanities, GS 253	3	
Analytical Mechanics, EM 215		5
Engineering Materials and Processes, ME 212		2
Military, Mil 211-221 or 251-261	1	1
	18	18

Junior Year	F	S
Differential Equations, Math 333	3	
Mechanisms, ME 314	4	
Principles of Economics, Econ 203	3	
Electric Fields and Circuits I and II, EE 314-324	4	4
Thermodynamics I and II, ME 324-333	4	3
Mechanics and Materials, EM 313		3
Fluid Mechanics, EM 323		3
Mechanical Engineering Laboratory I, ME 311		1
Advanced Exposition, Engl 352		2
Non-technical Elective*		2
	18	18

Senior Year	F	S
Design of Machine Elements, ME 434	4	
Heat Transfer, ME 433	3	
Atomic Physics, Phy 373	3	
Industrial Management, ME 403	3	
Mechanical Engineering Laboratory II, ME 421	1	
Technical Elective†	3	
Non-technical Elective*	2	
Inspection Trip, ME 400	0	
Machine Design, ME 442		2
Metallurgy, ME 453		3
Mechanical Engineering Laboratory III, ME 431		1
Technical Electives†		6
Non-technical Electives*		5
	19	17

*Non-technical electives are provided to strengthen cultural growth and education in the humanistic and social science areas. At least 9 credit hours must be selected from the representative list shown on page 17 of this section, and should be a logical and purposeful selection having the approval of the ME Department Head.

†Time for an optional technical elective program is provided which will be planned and coordinated according to the interest and aptitude of the student. Technical electives must be approved by the Department Head and will include at least 9 credit hours.

SUGGESTED TECHNICAL ELECTIVES

Aeronautics	Credits
Aerodynamics, ME 493	3
Vibrations, ME 323	3
Gas Dynamics, ME 663	3
Heat Power	
Refrigeration and Air Conditioning, ME 443	3
Heating and Air Conditioning Design, ME 452	3
Internal Combustion Engines, ME 463	3
Power Plant Engineering, ME 473	3
Steam and Gas Turbines, ME 483	3
Industrial Engineering	
Methods Engineering and Work Measurement, ME 413	3
Analysis and Design of Industrial Systems, ME 423	3
Quality Control and Reliability, ME 633	3
Introduction to Operations Research, ME 643	3
Machine Design	
Vibrations, ME 323	3
Automatic Controls, ME 462	2
Structures I, CE 425	5
Nuclear Engineering	
Modern Physics I, Phy 383	3
Modern Physics II, Phy 403	3
Reactor Physics, Phy 633	3

UNDERGRADUATE COURSES

212 Engineering Materials and Processes 2(2,0) S

Materials and processes used in manufacturing. Basic nature of materials, casting and forming processes, machining processes, welding and joining processes, modern manufacturing techniques. P, ES 221.

303 Thermodynamics 3(2,3) FS

Terminal course for nonmechanical engineering students. Properties and fundamental equations of gases and vapors. Thermodynamic cycles and their application. P, Phy 215; Math 254.

311 Mechanical Engineering Laboratory I 1(0,3) S

Instrumentation and its application to mechanical engineering field. (1) fuel testing and analysis (2) pressure temperature calibration, and measurements (3) application of calorimeters and Reynold's flow device. P, 324.

314 Mechanisms 4(2,4) F

Analysis of motion and design of linkages, cams, belts, gears, gear trains, and planetary gears. Graphical solution of velocities, accelerations, forces, inertia forces, and balancing of various machine elements. P, EM 215.

323 Vibrations 3(3,0) (On sufficient demand)

Harmonic motion, undamped vibration in one and two degrees of freedom, damped vibrations in single degree of freedom, forced vibration, multimass traverse and torsional systems and balancing. P, 314; Math 333; EM 215.

324-333 Thermodynamics I and II 4(4,0), 3(3,0) FS

Thermodynamic properties of gases, vapors, and mixtures. First and Second laws of Thermodynamics. Thermodynamics of steam power plants, internal combustion engines, refrigeration systems, compressors, nozzles, turbines, and air conditioning; fuels, combustion stoichiometry, and equilibrium. P, Phy 215.

400 Inspection Trip (0) F

Inspection trip of approximately one week is made to industrial area to observe and evaluate manufacturing and industrial processes, operations, and facilities of interest to mechanical engineers. P, senior standing.

401 Seminar 1(1,0)

Individual reports and group discussions on current events and developments in mechanical engineering and related fields. P, senior standing.

403 Industrial Management 3(3,0) F

General introduction to modern industrial management. Broad view presentation of planning, organizing, and directing of industrial enterprises. Principles of accepted management practice and new quantitative analysis techniques. Applications to concrete examples and situations. P, senior standing.

410 Special Mechanical Engineering Problems (1-5) FS

Elective course to provide opportunity for study or investigation of special problem. Problems chosen may be analytical, design, or laboratory studies.

413 Methods Engineering and Work Measurement 3(3,0) F

Design of work methods and measurement of work in industrial enterprises. Rigorous engineering approach to design of work methods. Methods of setting time standards including stop watch time study, work sampling, predetermined motion times, and standard data. P, 403 or consent of instructor.

421-431 Mechanical Engineering Laboratory II and III 1(0,3), 1(0,3) FS

Standard tests and analysis of boilers, steam pumps, condensers, engines, and turbines; internal combustion engines, including gas, gasoline, oil, automotive and aviation; tests and determination of characteristics of fans, steam, air, and hydraulic flow devices; heating, ventilation, air conditioning and refrigeration equipment. P, 311, 333.

423 Analysis and Design of Industrial Systems 3(3,0) S

Analysis of problems in product design and development, marketing, forecasting, capacity evaluation, plant layout and materials handling from standpoint of interrelated and integrated system. Design of control procedures in general with special treatment of production, inventory, quality and cost control systems. P, ME 403 or consent of instructor.

433 Heat Transfer 3(3,0) F

Theories of conduction, radiation, and convection and their utilization in engineering applications. Introduction to transient conduction and numerical analysis. P, Phy 215; Math 333.

434 Design of Machine Elements 4(4,0)F

Properties of materials, fundamental mechanics, working stresses, fabrication and proportioning of part sizes involved in design of fastenings, shafting, flywheels, gears, bearings, and other machine elements. P, 314; EM 313.

442 Machine Design 2(0,6) S

Actual stress analysis and design of complete machines, using basic engineering concepts and modern industrial practices. Emphasis on originality and creativity, with opportunity given to students to select projects of particular interest. P, 434.

443 Refrigeration and Air Conditioning 3(3,0) F

Principles of refrigeration, analysis of refrigeration cycles. Air conditioning analysis. Steady flow processes involving air-water vapor mixtures. P, 333 or 303. Concurrent registration in 433.

452 Heating and Air Conditioning Design 2(0,6) S

Principles of heating, ventilating and air conditioning systems in current use. Heat loss and gain computations. Design and layout of heating and air conditioning systems. P, 443.

453 Metallurgy 3(3,0) S

Crystalline structure and physical properties of metals, phase transformation diagrams, effect of mechanical or thermal treatment on grain structure of ferrous and nonferrous alloys. Experiment designed to show general fundamental principles and present necessary techniques of metallography. P, 212.

462 Automatic Controls 2(2,0) (On sufficient demand)

Principles of automatic control, beginning with process analysis and carrying on into generalized behavior of closed-loop systems. System problems are given great deal of study. P, senior standing.

463 Internal Combustion Engines 3(3,0) (On sufficient demand)

Theory, design and operation of spark ignition, and compresssion ignition engines, air-fuel analysis, combustion flames, knock phenomena, air flow and volumetric efficiencies and performance. P, 333 or 303.

473 Power Plant Engineering 3(3,0) (On sufficient demand)

Design and operation of modern power plants; power units and appurtenances; fuel handling and storage; power generation costs in steam and diesel plants, economics of design and operation. P, 333, concurrent registration in 433.

483 Steam and Gas Turbines 3(3,0) (On sufficient demand)

Theory, design, and operation of steam and gas turbines. P, 333.

493 Aerodynamics 3(3,0) (On sufficient demand)

Airfoil characteristics, wing shapes, static and dynamic forces, viscosity phenomena, boundary layer theory, flaps and slots, propellors, stability, control and performance. P, EM 215; Math 333.

GRADUATE COURSES

633 Quality Control and Reliability 3(3,0) S

Engineering and management essentials to produce or process any product in order to achieve maximum quality and reliability at given price. Analysis of design, material, and product control as measurable quality characteristics. Engineering and statistical techniques as applied to quality control and reliability. P, 403 or consent of instructor.

643 Introduction to Operations Research 3(3,0)
(On sufficient demand)

Methods and tools of industrial operations research. Development of scientific and mathematical ideas as applied to solution of operational, industrial and engineering problems, including experimental design and analysis. P, 403 or consent of instructor.

653 Advanced Metallurgy 3(3,0)
(On sufficient demand)

Continuation of Course 453. Methods of metallurgical examination and mechanical testing. Heat treating and surface hardening methods and techniques. Elasticity, plasticity, structure of alloys, high temperature metals. P, 453.

663 Gas Dynamics 3(3,0) (On sufficient demand)

Interaction of a body and a fluid for subsonic and supersonic flow, shock phenomena, use of Mach parameter, constant area ducts. P, 333; EM 323.

GRADUATE COURSES ONLY

710 Special Problems (1-5) (On sufficient demand)

Provides an opportunity for study or investigation of special problem or project at graduate level. P, graduate standing.

713-723 Systems Analysis 3(3,0)
(On sufficient demand)

Analysis of industrial problems as systems, having properties of input, processing, output, feedback and control. Application of systems techniques for isolating and identifying industrial problems in areas such as production, organization, engineering, and research. Case studies to illustrate use of modern electronic digital computers in design of systems. P, graduate standing.

733-743 Advanced Machine Design 3(3,0)
(On sufficient demand)

Stress analysis, elastic energy theory, photoelasticity curved beams, thin plates and shells, torsion, fatigue and stress concentration. P, 434; graduate standing.

753 Advanced Engineering Thermodynamics 3(3,0)
(On sufficient demand)

Fundamental concepts of thermodynamics general thermodynamic equations, Maxwell's and Clapeyron relations, thermodynamics of chemical reaction and thermoelectricity, availability, special topics. P, 333, graduate standng.

763 Advanced Heat Transfer 3(3,0)
(On sufficient demand)

Heat transfer by conduction, radiation and convection. Analytical, graphical and numerical evaluation of temperature fields, transient conduction, diffusion, and mass and momentum transfer. P, 433; graduate standing.

773 Advanced Refrigeration and Air Conditioning
2(2,0) (On sufficient demand)

Thermodynamic analysis and design of refrigeration and air conditioning processes, cycles and systems. Complex cycles. Energy transfers to air-water vapor mixtures. Special topics. P, 443; graduate standing.

790 Thesis in Mechanical Engineering
5-8 as arranged

Physics (Phy)

Professors Froslie, Duffey, Nickell; Associate Professors Graetzer, Miller, Williams; Assistant Professor Sippel

Two main objectives have been kept in mind in the organization of the course work of this department. First, it is intended that the courses should meet the needs of students in the various divisions of the College who need the basic subject matter of physics in their chosen fields. Second, the sequence of courses makes it possible for a student to complete a strong major in physics. The department is well supplied with laboratory and lecture demonstration equipment and other facilities in support of these objectives.

Two curricula in physics are offered, one in engineering physics and the other in the Division of Science and Applied Arts with the major in physics. Students expecting to enter a career in industrial work should consider the curriculum in engineering physics while those expecting to enter the teaching profession should consider the curriculum leading to a major in physics. The curriculum in engineering physics is listed immediately below. The curriculum in physics will be found in the Division of Science and Applied Arts portion of the catalog.

Curriculum in Engineering Physics

142 semester credits required for the Bachelor's Degree

Freshman Year	F	S
Mathematical Analysis I and II, Math 145-155	5	5
Inorganic Chemistry, Ch 110-124	4	4
English, Engl 113-123 or 143-153	3	3
Engineering Graphics I and II, EG 103-112	3	2
Engineering Computations, GE 101		1
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111	1	1
Orientation (For Engineers), Or 100	0	
	17	17

Sophomore Year	F	S
Mathematical Analysis III and IV, Math 245-254	5	4
General Physics I and II, Phy 205-215	5	5
Analytical Mechanics, EM 215		5
Principles of Economics, Econ 203	3	
Advanced Exposition, Engl 352		2
Humanities, GS 253	3	
Metal Processing, ES 221-231	1	1
Military, Mil 211-221 or 251-261	1	1
	18	18

Junior Year	F	S
Fields and Circuits, EE 315	5	
Classical Theoretical Physics, Phy 354	4	
Optics, Phy 313	3	
Differential Equations, Math 333	3	
Modern Theoretical Physics, Phy 364		4
Thermodynamics and Statistical Mechanics, Phy 323		3
Modern Physics I, Phy 383		3
Fundamentals of Speech, Sp 103		3
Introduction to Literature, Engl 203		3
Advanced Laboratory I and II, Phy 321-331	1	1
Electrical Measurements, Phy 341		1
Electives*	2	
	18	18

Senior Year	F	S
Modern Physics II, Phy 403	3	
Theory of Electricity, Phy 413	3	
Advanced Engineering Mathematics, Math 393	3	
Electronics I and II, EE 342-433	2	3
Advanced Laboratory III and IV, Phy 411-421	1	1
Special Projects, Phy 420		1
Electives*	6	13
	18	18

TECHNICAL ELECTIVES

Fluid Mechanics, EM 323
Heat Transfer, ME 433
Metallurgy, ME 453
Engineering Materials, EE 222
Electric Circuits I, EE 323
Electronics III, EE 644
Mathematical Statistics, Math 314
Higher Algebra I, II; Math 353-363
Laplace Transforms, Math 433
Partial Differential Equations, Math 643
Complex Variables, Math 644
Advanced Calculus I and II, Math 623-633
Reactor Physics, Phy 633
Physics of the Solid State, Phy 643
Physical Chemistry, Ch 410-420
Advanced Inorganic Chemistry, Ch 413

*Elective courses are provided to permit the student to concentrate in the applied technical area of his particular interest, and to provide for further growth and education in the humanistic-social science areas. The program of electives must be approved by the Head of the Physics Department. A minimum of 7 credit hours must be chosen from the listing in the Humanistic-Social area which appears on page 17 of this section. In general no more than 4 credit hours taken from any department or area may be counted in the Humanistic-Social requirement. Twelve hours must be chosen from the list of Technical Electives.

UNDERGRADUATE COURSES

104 Introductory Physics 4(3,2) FS

One term course including more important topics in physics. Emphasis on developing an appreciation for concepts, vocabulary, and methods of the science. P, high school algebra.

114 Elementary Physics I 4(3,2) F

Year course in fundamentals of physics for students with limited mathematical background, but emphasizing basic principles and quantitative approach to these principles. Generally meets needs of those outside physical sciences and engineering groups. Mechanics, heat, wave motion. P, high school algebra. (Credit will not be allowed in both 114, 124 and 205, 215.)

124 Elementary Physics II 4(3,2) S

Continuation of 114. Electricity, light, atomic and nuclear physics. P, 114.

133 Physics for Secondary School Teachers I 3(2,2) Su

Terminal course in traditional areas of physics intended primarily for secondary teachers with little or no previous training in physical sciences. No specific prerequisite but students should be well grounded in arithmetic, simple algebra, and geometry. Offered only in National Science Foundation Institute, and open only to students in the Institute.

205 General Physics I 5(4,2) FS

Fundamentals of physics for students in physical science and engineering. Mechanics, heat, and sound. P, concurrent registration in Math 245. (Credit will not be allowed in both 114-124 and 205-215.)

215 General Physics II 5(4,2) SF

Continuation of 205. Electricity, light with reference to influence of recent developments on these areas. P, 205.

303 Physics for Secondary School Teachers II 3(2,2) Su

Lectures, demonstrations, laboratory work on selected topics with emphasis on depth of understanding and broader appreciation for foundations of science of physics. Prerequisite is minimum of one year of general college physics and training in mathematics through calculus with several years experi-

ence teaching physics at secondary level. Offered only in National Science Foundation Institute and open only to students in the Institute.

307 PSSC Physics for Secondary Teachers 7(4,8) Su

Intensive course to familiarize experienced teachers of physics at secondary level with objectives, content, and laboratory experiments of course in physics at high school level proposed by Physical Science Study Committee. Offered only in National Science Foundation Institute and open only to students in the Institute.

313 Optics 3(3,0) F

Intermediate course in geometrical and physical optics with principal emphasis on physical optics. Analysis of refraction phenomena, thick lenses, wave nature of light, interference, diffraction, and polarization. P, 215 or 124 with consent of instructor.

321 Advanced Laboratory I 1(0,3) F

Selected experiments from various branches of physics. Emphasis on precision and analysis of experimental error. P, junior standing in physics.

323 Thermodynamics and Statistical Mechanics 3(3,0) S

Thermodynamic systems from macroscopic approach considering first and second laws of thermodynamics and their consequences, and from microscopic approach via kinetic theory of gases and statistical mechanics. P, 215 or 124 and Math 254.

331 Advanced Laboratory II 1(0,3) S

Continuation of 321. P, 321.

341 Electrical Measurements 1(0,3) S

D.C. and A.C. bridge measurements of resistance, inductance, and capacitance. Display and measurement of transients and magnetic effects. P, 215.

354 Classical Theoretical Physics 3(3,0) F

Vectors, generalized coordinates, Lagrangian and Hamiltonian mechanics; matrices and kinematics, calculus of variations; mathematics of continua, diffusion, wave motion. P, 215 and concurrent registration in Math 333.

364 Modern Theoretical Physics 3(3,0) S

Concepts of particles and waves, de Broglie's equation, Schrodinger's equation, quantum mechanical treatment of particle in a box, periodic lattice, field with spherical symmetry. Introduction to relativity principle, space-time continuum, covariance, relativistic quantum mechanics. P, 354 or consent of instructor.

373 Atomic Physics 3(3,0) FS

Evaluation of experimental evidence concerning atomic and nuclear structure with emphasis on impact of twentieth century developments on science and engineering. P, 215 or 124 and consent of instructor.

383 Modern Physics I 3(3,0) S

Systematic study of atomic and molecular structure in terms of vector model and quantum mechanics. P, concurrent registration in 364.

403 Modern Physics II 3(3,0) F

Radioactivity; properties of particle accelerators; interaction of nuclear particles with matter; nuclear forces and nuclear structure. P, 383 or consent of instructor.

411 Advanced Laboratory III 1(0,3) F

Selected experiments primarily in areas of modern physics. Measurement of electronic charge, charge to mass ratio, atomic energy levels and analysis of simple spectra. P, 383.

413 Theory of Electricity 3(3,0) F

Treatment of fundamentals of electricity and magnetism in terms of Maxwell's equations. P, 354.

420 Special Projects 1-3 FS

Study and investigation of special problems either from theoretical or experimental approach. P, consent of department head.

421 Advanced Laboratory IV 1(0,3) S

Continuation of 411 into area of nuclear radiations and selected experiments on subcritical nuclear reactor. P, 411.

GRADUATE COURSES

633 Reactor Physics 3(3,0) S

Fission process: moderation and diffusion of neutrons; critical equation for homogenous and heterogenous reactors; reactor control and reactivity changes. Pertinent demonstrations using subcritical reactor. P, 403 or 373, Math 333 and consent of instructor.

643 Physics of the Solid State 3(3,0) S

Electronic processes with reference to electrical properties of metals, semiconductors and insulators. P, 383 or 373, Math 333 and consent of instructor.

650 Physics Colloquium 1(1,0) 0(1,0) FS

Reports and discussions of current research within department and in field of physics. Participation primarily by staff and graduate majors. Open for undergraduate credit by special arrangement.

703 Theoretical Mechanics 3(3,0) F

Further development of Lagrangian and Hamiltonian methods, canonical transformations, rigid body motion, relativistic mechanics. P, 354.

723 Electrodynamics 3(3,0) S

Complex quantities, circuits, Maxwell's equations, waves in general, planar, cylindrical, and spherical waves, approximation methods, plasmas. P, 413.

763 Advanced Quantum Mechanics 3(3,0) F

Hermitian operators, matrix methods, perturbation theory, Dirac wave equation, four-fermion interactions. P, 354, 364.

783 Group Theory in Quantum Mechanics 3(3,0) S

Symmetry transformations, continuous groups, finite groups, applications to valence theory, Lorentz group, fundamental particles. P, 763.

790 Thesis in Physics 5-8 as arranged FS

Approved Humanities and Social Science Electives for Students Enrolled in the Division of Engineering

Humanities and Social Science electives must be selected from two or more of the following areas: Art, Economics, History, Languages, Literature, Music, Philosophy and Religion, Political Science, Psychology, Sociology, and Speech.

Credit earned in advanced ROTC courses may not be substituted for required electives in the humanistic-social science areas.

ELECTIVES

Art
Related Art, Art 112
Art Appreciation, Art 212
History of American Art, Art 231
History of Art, Art 343-353

Economics
Money and Banking, Econ 333
Public Finance, Econ 413
Macroeconomics, Econ 423
Intermediate Economic Analysis, Econ 433
Economic Ethics, Econ 602
Production Economics, Econ 603
Resource Economics, Econ 612
Economics of Modern Capitalism, Econ 613
International Trade, Econ 643
Comparative Economic Systems, Econ 653
National Income Analysis, Econ 663
History of Economic Thought, Econ 673
Economic Development, Econ 693

History
World History, Hist 103-113
Reading in Current Affairs, Hist 201
Recent American History, Hist 214
U. S. History Survey, Hist 224
South Dakota History, Hist 231
English History, Hist 303-313
Economic History of the U. S., Hist 324
History of Costume, TC 342
History of the South, Hist 343
Contemporary World, Hist 404-414
Methods and Philosophy of History, Hist 462
Cultural History of the U. S.,, Hist 473-483
Modern Europe, Hist 603-613
History of Russia, Hist 622
Intellectual History, Hist 623
American Diplomatic History, Hist 653-663

Languages
Languages in Everyday Living, GS 131
Foreign Language Department courses numbered 200 or higher (second year)

Literature
Introduction to Literature, Engl 203
Fiction, Engl 213
Poetry, Engl 242
Biography, Engl 252
Drama, Engl 262
Literature of the American West, Engl 272
Creative Writing, Engl 302
Shakespeare, Engl 422
Modern Drama, Engl 442
Recent American and British Literature, Engl 452
Comparative Novel, Engl 633

Music
Music Appreciation, Mu 102-112
Music History, Mu 303-313

Philosophy and Religion
Old Testament Survey, GS 132
New Testament Life and Times, GS 133
Significant Books, GS 201
Introductory Religious Philosophy, GS 222
Religion in American Life, GS 241
Religious Heritages, GS 242
Philosophic Inquiry, GS 303
Principles of Ethics, GS 312
Logic and Scientific Reasoning, GS 342
Psychology in Religion, GS 352
World Religions, GS 362
Philosophy of Science, GS 462
Philosophy of Education, GS 472

Political Science
National Government, PolS 213
Survey of World Affairs, PolS 222
Political Geography, PolS 232
State and Local Government, PolS 243
Public Administration, PolS 333
International Politics, PolS 613

Psychology
General Psychology, Psy 203
Business and Industrial Psychology, Psy 303
Child Psychology, Psy 302
Learning Theory, Psy 403
Social Psychology, Psy 422
Adolescent Psychology, Psy 603

Sociology
Introduction to Social Science, GS 103-113
Individual and the Family, CD 122
Introduction to Sociology, RS 153
Introduction to Family Living, HE 212
General Anthropology, RS 213
Marriage, RS 222
Human Development and Personality, CD 223
Dynamics of Family Development, CD 322
Race and Nationality Problems, RS 342
Population Problems, RS 352
Urban Sociology, RS 373
Industrial Sociology, RS 382

Speech
Stage Craft, Sp 143-153
Speech Activities, Sp 251
Argumentation and Debate, Sp 302
Discussion, Sp 312
Public Speaking, Sp 323
Oral Interpretation, Sp 353
Play Writing, Sp 472
Development of the Theater, Sp 482

Two-Degree Plan

This joint statement of policy on a two-degree plan is made by the South Dakota State College Division of Engineering and the South Dakota School of Mines and Technology in response to the urgent request by liberal arts colleges in South Dakota:

"The two-degree plan involves the awarding of an arts degree by the liberal arts college and an engineering degree by the engineering school upon the satisfactory completion of requirements established by each respectively. The usual requirements by the college are (1) the satisfactory completion of a three year curriculum combining pre-engineering and liberal arts studies, and (2) the completion of the engineering degree requirements of the engineering school.

"The usual requirements on the part of the engineering school are (1) the satisfactory completion of a program of studies in the social sciences and humanities, (2) the satisfactory completion of studies in the liberal arts, and (3) the satisfactory completion of studies, as specified in the curriculum of the engineering school, in the engineering sciences and engineering.

"It shall be the common policy of these two institutions: South Dakota School of Mines and Technology and South Dakota State College:

(1) To work cooperatively with any liberal arts college, seeking the opportunity, in advising the college on the courses that a two-degree candidate should take at the liberal arts college, their content, and the level of attainment expected.

(2) To acccept as a candidate for an engineering degree any student who has completed the liberal arts college requirements satisfactorily, granting transfer credit to the student for all work acceptably completed by him at the liberal arts college which is required in the curriculum of his choice at the engineering school.

(3) To inform the registrar at the liberal arts college of the anticipated date of graduation of any student for whom the liberal arts college has notified the engineering school that he is a two-degree candidate during the semester that he expects to complete his engineering degree requirements.

"Nothing in this policy shall be interpreted to imply that either engineering school is obligated to accept any student, under this two-degree plan, whose record of work completed at the liberal arts college is unacceptable to the Director of Admissions of the engineering school."

DIVISION OF HOME ECONOMICS

FRANCES M. HETTLER, Dean

Students may obtain broad general education in home economics and specialize in Child Development and Family Relations, Food and Nutrition, Home Economics Education, Restaurant Management, Home Economics and Journalism, or Textiles and Clothing.

The aims of the division are to guide each student (1) in the use of educational opportunities made available by the division, the college, and the community for effective and satisfying modern living as based upon an understanding of the changing social, biological and physical sciences and the humanities; (2) in becoming an intelligent homemaker, responsible citizen, and in choosing a gainful occupation; (3) in developing a wholesome personality; (4) in maintaining optimum physical and mental health; (5) in developing a capacity for enriching her own life and the lives of others through an appreciation of the arts; and (6) in the interpretation and use of research findings.

In homemaking, graduates should be able to deal successfully with those experiences which make up family life, and to use the resources available for the welfare of the family and its individual members. They should be aware of the responsibilities of the family and the individual in a democratic way of life in a world community.

In a profession, graduates should be able to find and give satisfaction through an understanding of the technical aspects and social significance of their work.

The requirements in the first two years, except for Restaurant Management and Home Economics and Journalism majors, are essentially the same for all students.

Non-majors, both men and women, are encouraged to elect courses in the division of home economics. Courses contributing to general education include the following: CD 122, 223, 322; FN 102, 113, 222; HE 212; HM 372, 383; TC 102, 113, 203. A minor in home economics may be obtained by completing 16 semester credits including at least one course from each department.

CORE CURRICULUM IN HOME ECONOMICS

Required of all Home Economics students

A. HOME ECONOMICS		**33**
1. Child Development and Family Relations		7
CD 122 Individual and the Family	2	
CD 223 Human Development and Personality	3	
CD 322 Dynamics of Family Development	2	
2. Food and Nutrition		8
FN 113 Foods	3	
FN 213 Meal Management	3	
FN 222 Human Nutrition I	2	
3. Home Economics		2
HE 100 Orientation to Home Economics	1	
HE 401 Senior Seminar	1	
4. Home Management and Equipment		10
HM 372 Home Management	2	
HM 383 Family Housing	3	

HM 452 Home Equipment	2		
HM 483 Home Management House	3		
5. Textiles and Clothing		6	
TC 113 Clothing I	3		
TC 203 Textiles	3		
B. COMMUNICATIONS			9
1. English		6	
Engl 113 English	3		
Engl 123 English	3		
2. Speech		3	
Sp 103 Fundamentals of Speech	3		
C. HUMANITIES			12
*Art 112 Related Art	2		
*Art 212 Art Appreciation	2		
*Engl 203 Introduction to Literature	3		
Remainder from Humanities list			
D. NATURAL SCIENCE			20
*Ch 124 Inorganic Chemistry	4		
*Ch 134 Elementary Organic Chemistry	4		
*Phy 104 Introductory Physics	4		
Math 113 College Algebra	3		
Bot 103 General Botany: Plant Kingdom	3		
Bot 104 General Botany: Seed Plants	4		
Bac 202 General Bacteriology	2		
Bac 212 Laboratory Techniques	2		
Z 103 General Zoology	3		
Z 113 General Zoology	3		
Z 204 Elementary Physiology	4		
Bot 113 Biology	3		
Bot 123 Biology	3		
E. SOCIAL SCIENCES			12
*Econ 203 Principles of Economics	3		
*Hist 103 World History or	3		
Hist 113 World History or	3		
Hist 214 Recent American History or	4		
Hist 224 U. S. History Survey or	4		
PolS 213 National Government	3		
*Psy 203 General Psychology	3		
*RS 153 Introduction to Sociology	3		
F. PHYSICAL EDUCATION			2
PE 121 General Physical Education	1		
PE 131 General Physical Education	1		
TOTAL			88

*Required courses.

SUGGESTED ARRANGEMENT OF COURSES IN THE CORE CURRICULUM

Students will work out schedules each semester with help of their counselor

Freshman Year	**Credits**
CD 122 Individual and the Family	2
FN 113 Foods	3
HE 100 Orientation to Home Economics	1
TC 113 Clothing I	3
Engl 113, 123 English	6
Sp 103 Fundamentals of Speech	3
Art 112 Related Art	2
Ch 124 Inorganic Chemistry	4
Ch 134 Elementary Organic Chemistry	4
RS 153 Introduction to Sociology	3
PE 121, 131 General Physical Education	2

Sophomore Year	
CD 223 Human Development and Personality	3
FN 213 Meal Management	3
FN 222 Human Nutrition I	2
TC 203 Textiles	3
Art 212 Art Appreciation	2
Engl 203 Introduction to Literature	3
Phy 104 Introductory Physics	4
Econ 203 Principles of Economics	3
Psy 203 General Psychology	3
Natural Science	4–6
Humanities and/or Social Sciences	4–6

Junior Year	
CD 322 Dynamics of Family Development	2
HM 372 Home Management	2
HM 383 Family Housing	3
Natural Sciences	4
Social Sciences	3
Humanities	3

Senior Year	
HE 401 Senior Seminar	1
HM 452 Home Equipment	2
HM 483 Home Management House	3

Departmental Curricula in Home Economics

Student to select major curriculum by the end of the sophomore year

Child Development and Family Relations

Home Economics Courses	Credits
CD 302 History, Philosophy and Planning of Early Childhood Education	2
CD 312 Parent Education and Family Counseling	2
CD 333 Methods and Materials in Creative Expression	3
CD 343 Experience in Human Relations	3
CD 408 Child Development Practicum	8
CD 432 Problems in Family Relations and Child Development	2
CD 422 Advanced Human Development and Personality	2
FN 312 Human Nutrition II	2
	24

Other Required Courses

RS 433 The Family	3
RS 213 General Anthropology or Sociology Elective	3
Psychology Electives	6
	12
Total	36
Core	88
Electives	12
Total for Graduation	136

Food and Nutrition

Home Economics Courses	Credits
FN 312 Human Nutrition II	2
FN 313 Quantity Food Production and Service	3
FN 323 Institution Organization and Management	3
FN 342 Experimental Cookery	2
FN 413 Advanced Human Nutrition	3
FN 422 Diet Therapy	2
HEd 322 Philosophy and Methods	2
	17

Other Required Courses

Bac 353 Food Bacteriology	3
Ch 212 Food Analysis	2
Ch 324 Physiological Chemistry	4
Econ 223 Principles of Accounting	3
Ed 312 Educational Psychology	2
Z 204 Elementary Physiology	4
AS 202 Meat Selection and Utilization	2
	20
Total	37
Core	88
Electives	11
Total for Graduation	136

Home Economics Education

Home Economics Courses	Credits
CD 343 Experience in Human Relations	3
FN 312 Human Nutrition II	2
HEd 322 Philosophy and Methods	2
HEd 432 Curriculum and Evaluation in Home Economics	2
HEd 442 Adult Education and Community Relations	2
HEd 452 Observation and Special Needs in Home Economics Education	2
HEd 458 Supervised Student Teaching in Home Economics	8
TC 213 Clothing II	3
Electives	3
	27

Other Required Courses

Art 222 Related Art	2
Ed 302 Introduction to American Education	2
Ed 312 Educational Psychology	2
Ed 412 Principles of Guidance or Ed 422 Audio-Visual Methods and Materials	2
GN 301 Family Health	1
Social Science Electives	3
	12
Total	39
Core	88
Electives	9
Total for Graduation	136

Home Economics and Journalism

Home Economics Courses	Credits
FN 342 Experimental Cookery	2
TC 353 Fashion Economics	3
Electives	5
	10

Journalism Courses

J 202 Typography	2
J 232 Press Photography	2
J 243 Newswriting and Reporting	3
J 302 Newspaper Editing	2
J 311 Magazine Editing	1
J 331 Editing Lab	1
J 342 Broadcast Journalism	2
J 352 Newspaper Advertising	2
J 415 Newspaper Publishing Practicum	5
J 431 Journalism Seminar	1
J 473 Law of the Press	3
	24
Total	34
Core	88
Electives	14
Total for Graduation	136

Textiles and Clothing

Home Economics Courses	Credits
HE 448 Practicum in Business	8
TC 213 Clothing II	3
TC 312 Tailoring	2
or	
TC 332 Draping	2
TC 342 History of Costume	2
TC 353 Fashion Economics	3
TC 403 Advanced Textiles	3
	23
Electives from Suggested List	12
Core	88
Electives	13
Total for Graduation	136

Suggested Electives

Art 132 Figure Drawing 2
Art 322 Weaving 2
Econ 223 Principles of Accounting 3
J 231 Basic Photography 1
J 322 Publicity Methods 2
Psy 303 Business and Industrial Psychology 3
Psy 422 Social Psychology 2
TC 232 Fashion Design 2

Restaurant Management

A. HOME ECONOMICS **25**

1. Child Development and Family Relations **2**
CD 122 Individual and the Family 2

2. Food and Nutrition **16**
FN 113 Foods 3
FN 213 Meal Management 3
FN 222 Human Nutrition I 2
FN 313 Quantity Food Production and Service 3
FN 342 Experimental Cookery I 2
FN 323 Institution Organization and Management 3

3. Home Economics **2**
HE 100 Orientation to Home Economics 1
HE 401 Senior Seminar 1

4. Home Management and Equipment **2**
HM 452 Home Equipment 2

5. Textiles and Clothing **3**
TC 203 Textiles 3

B. COMMUNICATIONS **9**

1. English **6**
Engl 113 English 3
Engl 123 English 3

2. Speech **3**
Sp 103 Fundamentals of Speech 3

C. HUMANITIES **12**

*Art 112 Related Art 2
*Art 212 Art Appreciation 2
*Engl 203 Introduction to Literature 3
Remainder from Humanities list

D. NATURAL SCIENCE **20**

*Ch 124 Inorganic Chemistry 4
*Ch 134 Elementary Organic Chemistry 4
*Phy 104 Introductory Physics 4
*Bac 202 General Bacteriology 2
*Bac 212 Laboratory Techniques 2
Bot 103 General Botany: Plant Kingdom 3
Bot 104 General Botany: Seed Plants 4
Math 113 College Algebra 3
Bot 113 Biology 3
Z 103 General Zoology 3
Z 113 General Zoology 3
Z 204 Elementary Physiology 4

E. SOCIAL SCIENCES **12**

*Econ 203 Principles of Economics 3
*Psy 203 General Psychology 3
*RS 153 Introduction to Sociology 3
Hist 103 World History or 3
Hist 214 Recent American History or 4
Hist 224 U. S. History Survey or 4
PolS 213 National Government 3

F. PHYSICAL EDUCATION **2**

PE 121 General Physical Education 1
PE 131 General Physical Education 1

G. OTHER REQUIRED COURSES **23**

AS 202 Meat Selection and Utilization 2
Bac 353 Food Bacteriology 3
Ch 212 Food Analysis 2
Econ 223 Principles of Accounting 3

H. SUGGESTED ELECTIVES **20**

CD 223 Human Development and Personality 3
CD 322 Dynamics of Family Development 2
FN 312 Human Nutrition II 2
FN 612 Experimental Cookery 2
HE 448 Practicum in Business 8
HEd 322 Philosophy and Methods 2
HM 372 Home Management 2
HM 383 Family Housing 3
Ch 324 Physiological Chemistry 4
Econ 213 Principles of Economics 3
Econ 412 Managerial Cost Accounting 2
Econ 202 Introduction to Marketing 2
Econ 302 Personal Finance 2
Ed 422 Audio-Visual Methods and Materials 2
Psy 303 Business and Industrial Psychology 3
SecS 161 Calculating Machines 1

I. OTHER ELECTIVES **13**

Total Credits for Graduation 136

Required Experience:

1. Summer work in an approved resort or practicum in business
2. One semester in College Food Service

*Required courses

Departments of Instruction

Home Economics (HE)

Professor Hettler

UNDERGRADUATE COURSES

100 Orientation to Home Economics 1(1,0)F

Philosophy and objectives of home economics, scope of professional opportunities and planning of educational programs and experiences. Open to all students.

212 Introduction to Family Living 2(2,0)FS

Use of case studies to study problems concerning consumption of goods and services, management of resources, interpersonal relationships and maintenance of good health. Not open to students majoring in home economics.

401 Senior Seminar 1(1,0) F

Contributions of land-grant institutions to education, development of home economics, evaluation of educational objectives, factors of success and adjustment in professional work.

422 Demonstration Techniques 2(1,3) S

Experience in procedures for demonstrations, illustrated talks, and television. Study of radio interview. Open to students of all divisions who may be interested in these media of communication. P, junior standing or consent of instructor.

448 Practicum in Business FS

Working under supervision with business concern. Role of home economist in business, company organization and ethics, public relations, use of mass media, special aspects of particular business. Full-time one-half semester with residence in city where business is located.

GRADUATE COURSES

701 Seminar in General Home Economics 1(1,0)
(On sufficient demand)

Reports and discussions of contribution of land-grant institutions to higher education and development of home economics.

Child Development and Family Relations (CD)

Professor Young; Associate Professor Richardson; Assistant Professor Kranzler

Marriage and Family Counseling Center

Marriage and Family Counseling Center, located in East Men's Dormitory in Department of Child Development and Family Relations, deals with premarital, marital and family adjustment problems. Clients are assisted in gaining insight into problems and in weighing advantages and disadvantages of alternative adjustments. College students will find understanding and help in solution of their premarital and marital problems.

Family Life Laboratory

Department of Child Development and Family Relations through its Family Life Laboratory provides opportunities for both study and experiences in area of human development and family relationships from infancy through parenthood. In the Family Life Laboratory the student has an opportunity to work with nursery school children and their parents.

Merrill-Palmer Institute Affiliation

Division of Home Economics and Department of Child Development and Family Relations is affiliated with the Merrill-Palmer Institute, Detroit, Michigan. Students interested in various phases of child development and personality, parent education, family life education, or extension work in family relations, may apply and be selected to study at Merrill-Palmer during one semester of their senior year.

UNDERGRADUATE COURSES

122 Individual and the Family 2(2,0) FS

Human development, behavior and relationships with emphasis on social and emotional needs of individual and his family. Open to men and women from all divisions. Personal consultation service is available.

223 Human Development and Personality 3(3,0) FS

Knowledge and understanding of human being through study of development beginning at conception continuing through adolescence. Consideration given to biological growth, social, emotional and intellectual development as it changes behavior and shapes the individual. Observation in Family Life Laboratory and in school age groups. P, Psy 203.

302 History, Philosophy and Planning of Early Childhood Education 2(2,0) S
(Offered in 1963)

History of early childhood education. Consideration given to views of social philosophers and prob-

lems in education of young children, educational position of young children in twentieth century America and organizing, planning, and administering various types of preschool and kindergarten programs—observations in nursery school and kindergarten. Alternate years.

312 Parent Education and Family Counseling 2(2,0) F (Offered in 1964)

Principles of parent education and family counseling intended to meet needs of students interested both in preparing for their own role as parents and for professional role that will include work with parents. Opportunity for formulation and presentation of program for nursery school parents. Emphasis on various types of parent-teacher conferences and literature related to pre-school education. Alternate years.

322 Dynamics of Family Development 2(2,0) FS

Developmental growth of parents and children in various stages of family life cycle. Emphasis on achieving adequate interpersonal relationships in family group and on accomplishment of family developmental tasks. P, 122 or 223 or Psy 203.

333 Methods and Materials and Literature in Creative Expression 3(2,3) F (Offered in 1963)

Creativity in language, graphic arts, music, dance, physical, and natural science aimed at appreciation, understanding and evaluation of creative production of children in relation to their developmental stages. Alternate years.

343 Experience in Human Relations 3(1,6) FS

Opportunity to more fully understand children as well as oneself and other adults while observing and working with children in Family Life Laboratory. P, 223.

408 Child Development Practicum 8(1,21) FS

Planning and conducting various phases of early childhood programs with possibility for growth and finally taking complete charge—weekly conferences. P, 223, 333, and 343.

422 Advanced Human Development and Personality 2(2,0) F (Offered in 1964)

Intensive study of varying topics in human development. Topics include current theories, methods and problems in child-rearing learning, self concept and socialization with special emphasis on adolescent. P, 223 or equivalent. Alternate years.

432 Problems in Family Relations and Child Development 2(2,0) S (Offered in 1963)

Problem areas in modern family living. Integrating and disorganizing factors affecting marital relationships, parent-child relationships and adequate functioning of family as a whole. Consideration of current findings on such topics as working mothers, young marriages, divorce and remarriage, exceptional children in the home. Open to men and women from all divisions. Alternate years.

GRADUATE COURSES

612 American Woman 2(2,0) S (Offered in 1964)

Recent literature regarding changing role of woman, her developmental tasks and unique contribution she has to make in dynamic 20th century America. P, 323 or equivalent. Alternate years.

630 Seminar in Human Development and Family Relations 1-2(1-2,0) (On sufficient demand)

Reports and discusssions of current literature, including research methodology in area of human development, personality, family relations, marriage and family counseling. Maximum of 4 seminar credits may be applied on advanced degree. P, consent of instructor.

680 Special Problems in Human Development and Family Relations 2-4 credits as arranged (On sufficient demand)

Individual study for qualified students. P, consent of instructor.

760 Early Childhood Education, Administration and Practicum 2-4 credits as arranged (On sufficient demand)

Practical experience in administration of preschool, kindergarten program. P, 223, 302, 312, 323, 333.

790 Thesis in Human Development and Family Relations 5-8 credits as arranged

Food and Nutrition (FN)

Professors Hollen, Burrill, Schuck; Associate Professors Colburn, Wills; Assistant Professor Little; Assistant Howard

Food and nutrition department offers three curricula as follows:

1. Master's degree program in graduate division.
2. Bachelor's degree program in food and nutrition.
3. Bachelor's degree program in restaurant management.

Students receiving degrees in either restaurant management or food and nutrition meet academic requirements for Executive Apprenticeship Training Program sponsored by the National Restaurant Association. Students receiving degrees in food and nutrition also meet standards for entering dietetic internships in hospitals approved by the American Dietetic Association.

UNDERGRADUATE COURSES

102 Nutrition for Health 2(2,0) S

Basic principles of nutrition and applications to everyday living. (Not open to students in home economics or nursing.)

113 Foods 3(1,4) FS

Principles of preparation and use of basic foods to maintain optimum nutrition. P, Ch 124.

213 Meal Management 3(1,6) FS

Principles of selection and preparation of meats; planning, purchasing, preparation, and serving of family meals; and case study analysis involving management at specific income levels. P, 113.

222 Human Nutrition I 2(2,0) FS

Principles of nutrition and application to human dietary needs with major emphasis on young adult. P, Ch 134.

312 Human Nutrition II 2(2,0) F

Application of principles of nutrition to people of different ages and under various conditions. P, 222.

313 Quantity Food Production and Service 3(1,6) F

Principles of cookery applied to quantity preparation; experience in planning and preparing meals for college food service; food purchasing. P, 113, junior standing.

323 Institution Organization and Management 3(1,4) S

Study and experience in managing food service in college cafeteria, work on personnel policies including position descriptions, job analysis, employee training, kitchen lay out, and purchasing of equipment. P, 313.

342 Experimental Cookery I 2(1,3) F

Investigation of cookery principles from chemical and physical standpoint with emphasis on egg cookery, emulsions, batters and doughs. P, 113.

413 Advanced Human Nutrition 3(3,0) S

Intermediary metabolism; evaluation of dietaries, of food supply and of nutritional status. P, 312 and Ch 324 or concurrent.

422 Diet Therapy 2(2,0) F

Role of diet in prevention and treatment of disease. P, 312.

GRADUATE COURSES

612 Experimental Cookery II 2(1,3) S

Investigation of cookery principles from chemical and physical standpoint with emphasis on fats and meats; development of special problem. P, 342.

630 Special Problem in Food and Nutrition 2-4 credits as arranged

Special study in food and nutrition. P, consent of instructor.

700 Seminar in Food and Nutrition (On sufficient demand)

Reports and discussions of current literature in various areas of food and nutrition. P, consent of instructor.

703 Recent Advances in Nutrition 3(3,0) (On sufficient demand)

Critical analysis of recent developments in nutrition. P, 4 hours of nutrition or consent of instructor.

723 Techniques in Nutrition Research 3(1,6) (On sufficient demand)

Laboratory experience using methods, measurements and instruments for obtaining nutritional data. P, 615 or Ch 324 or consent of instructor.

790 Thesis in Food and Nutrition 5-8 credits as arranged

Home Economics Education (HEd)

Professors Galbraith, McArthur (Emeritus); Associate Professor Johnston; Instructors in High Schools Gilbert, Kurtz, MacLean, Neilson, Ostraat, Smith, Westby

Home Economics Education Department is approved by the Vocational Division of United States Office of Education. Seniors participate in an off-campus teaching program in which they live in the community, teach homemaking in high school and take part in school and community activities for a period of one-half semester.

They qualify as teachers of homemaking in vocationally approved departments in South Dakota and other states.

Students entering the teacher education program must meet requirements "Admission and Quality of Work" of the Department of Education, Psychology, and Industrial Arts. Entrance to any education course requires 2.2 GPA.

UNDERGRADUATE COURSES

322 Philosophy and Methods 2(2,0) FS

Philosophy and objectives in home economics as they relate to those of general education and are specific to home economics. Methods of classroom teaching suited to adolescent. Selection and use of resource materials. High School observation. P, admission to professional courses in education.

432 Curriculum and Evaluation 2(2,0) FS First half semester

Adapting curriculum to needs of adolescents. Unit planning and evaluation for family centered homemaking programs. P, 322 and Ed 312.

442 Adult Education and Community Relations 2(2,0) FS First half semester

Background and trends in teaching out-of-school groups. Opportunity provided for observing, organizing and teaching adult classes in home economics or related areas. Planning and operating homemaking departments suited to community. P, 322 and Ed 312.

452 Observation and Special Needs in Home Economics Education 2(2,0) FS First half semester

Background and trends in homemaking education. Problems of classroom teaching as they relate to pupil needs, home visits and home experiences in family centered program. High school observation. Opportunities in and obligation to profession. Preparation for student teaching. P, 322 and Ed 312.

458 Supervised Student Teaching in Home Economics 8 FS Second half semester

Teaching under supervision in at least two phases of home economics. Group and individual conferences. Home experience programs and FHA included. Evaluation of student teaching experience. P, 432, a 2.2 grade point average and senior standing in home economics.

GRADUATE COURSES

612 Trends in Home Economics Education 2(2,0) (On sufficient demand)

Trends in family life education, with emphasis on their effect on teaching in high school classes or youth groups, such as 4-H clubs. P, 432 and CD 322 or equivalent.

630 Problems in Home Economics Education 1-4 (On sufficient demand)

Investigation of problems selected from Home Economics Education fields, such as adult education, evaluation, space and equipment and trends in home economics. P, open to students with qualifications for problem.

700 Seminar in Home Economics Education 1-2 (On sufficient demand)

Review and discussion of current literature in home economics education. Required of all graduate students.

702 Supervision in Home Economics Education 2(2,0) (On sufficient demand)

Programs in home economics studies with special emphasis on supervised student teaching: Roles of state supervisor, city supervisor, student teaching supervisor, and student teachers analyzed. Opportunity to work on individual problems. P, teaching experience and consent of staff.

712 Curriculum in Home Economics Education 2(2,0) (On sufficient demand)

Curriculum in secondary schools of South Dakota and other states. New ideas developed. P, 432 or equivalent.

722 Evaluation in Home Economics Education 2(2,0) (On sufficient demand)

Methods and techniques used in evaluating programs in homemaking. Evaluation instruments developed. P, 432 or equivalent.

740 Research Problems in Home Economics Education 2-3 as arranged

Required of graduate students qualifying for master's degree without writing thesis. (See procedure in Graduate Bulletin.) Problem selected in some area of Home Economics Education. Problem analyzed, data gathered, treated statistically and reported in approved form.

790 Thesis in Home Economics Education 5-8 as arranged

Home Management and Equipment (HM)

Associate Professors Luchsinger, Herold

UNDERGRADUATE COURSES

372 Home Management 2(2,0) FS

Applications of principles of scientific management to budgeting time, energy, and money. P, Econ 203.

383 Family Housing 3(2,3) FS

Consideration of planning, financing, building, and furnishing home in relation to varied family situations with emphasis on function, beauty, suitability and cost. P, Art 112.

452 Home Equipment 2(1,3) FS

Selection and operation of certain home equipment through application of the principles of physics. Kitchen planning. Time and energy management in arrangement, use and care of equipment. Home lighting. P, Phy 104.

483 Home Management House 3(3,12) FS

One-half semester residence in home management house with experience in problems that arise in a home. P, 372, FN 213, senior standing in home economics.

GRADUATE COURSES

600 Seminar in Home Management 1(1,0) (On sufficient demand)

Review and discussion of current literature in various areas of home management.

612 America's Housing 2(2,0) F (Offered in 1963)

America's housing as affected by following factors: history; philosophy; tradition; climate; geographical area; population; local, state, and federal laws; and financing. P, 372 and consent of instructor. Alternate years.

630 Special Problems 1-4 (On sufficient demand)

Opportunity offered for special study in Home Management and Equipment. P, consent of instructor.

Textiles and Clothing (TC)

Associate Professor Snellman; Professors Lund, Rosenberger (Emeritus); Instructor Semeniuk

UNDERGRADUATE COURSES

102 Costume Selection 2(2,0) F

Factors which influence planning, selecting, purchasing, and care of clothing for the individual. Open only to non-home economics students.

113 Clothing I 3(0,6) FS

Aesthetic and economic factors in planning, purchase, care and management of wardrobe as related to individual needs. Experience in use of commercial patterns and techniques of basic clothing construction and fitting with emphasis on time management.

203 Textiles 3(2,2) FS

Textile fibers, yarns, fabrics and finishes; their selections, use and care.

213 Clothing II 3(0,6) FS

Flat pattern designing, fitting techniques, creation and adaptation of basic pattern to a wool garment; commercial pattern altered and garment made from silk-like fabric. P, 113.

232 Apparel Design 2(0,4) F

Techniques in fashion designing and costume illustration. P, 113, Art 132.

312 Tailoring 2(0,4) F

Application of modern tailoring techniques in construction of coat or suit using commercial pattern. P, 213.

332 Draping 2(0,4) S

Application of dress design principles through draping techniques and analysis of current fashion trends. P, 213.

342 History of Costume 2(2,0) F (Offered in 1964)

Development of costumes of important periods as means for better understanding of contemporary dress. P, history course. Alternate years.

353 Fashion Economics 3(3,0) S (Offered in 1965)

Economic aspects of clothing which directly or indirectly affect consumer; legislation, standards, labels and other related factors. Alternate years.

403 Advanced Textiles 3(3,0) S (Offered in 1965)

Intensive study of fibers and properties; laboratory problem using modern testing equipment. P, 203. Alternate years.

GRADUATE COURSES

610 Special Problems in Textiles and Clothing 1-4 credits

Problems for advanced study selected from any field of textiles and clothing. Credit arranged by professor in charge of field of investigation chosen.

700 Seminar in Textiles and Clothing 1-2 credits

Reports and discussion of current literature in various areas of textiles and clothing.

703 New Developments in Textiles 3(3,0) Su (Offered in 1965)

Recent developments in fibers and textile products. Chemical and physical properties of fibers, yarns, fabric structures and finishes. P, consent of instructor. Alternate years.

712 Costumes and Textiles Through the Ages 3(3,0) (On sufficient demand)

Analysis of development of modern dress from primitive textiles as influenced by modes of living throughout world down to modern times. Also includes art influences in each period as it affected textiles and dress. P, 342.

790 Thesis in Textiles and Clothing 5-8 as arranged

DIVISION OF NURSING

INEZ G. HINSVARK, Dean

This Division offers a program leading to the Bachelor of Science Degree in Nursing for two groups of students (1) the high school graduate and (2) the licensed professional nurse. The program is accredited by the South Dakota Board of Nursing, the North Central Association of Colleges and Secondary Schools, and the National League for Nursing. Candidates for graduation in the basic curriculum are eligible to write the State Board Examinations for licensure. The professional program is four academic years of nine months each.

There are four departments offering courses: (1) General Nursing, (2) Clinical Nursing, (3) Rural Nursing, and (4) Public Health Nursing.

The Division is a member agency in the National League for Nursing Department of Baccalaureate and Higher Degree Programs. Graduates are eligible for membership in The American Association of University Women.

Upon graduation, the nurse has access to the many positions available through the College Placement Office. She is qualified to accept first level staff positions in hospitals, clinics, and health agencies.

The Aims of the Division Are:

1. To prepare selected college women and men:
   a. To engage cooperatively in any aspect of community or institutional nursing service.
   b. To have a broad understanding of the basic principles involved, and to have knowledge of the techniques and skills required in the care of the sick, in the prevention of disease, and in the promotion of health.
2. To stimulate the growth of young women and men as individuals so they may contribute to society, culturally and socially, as professional workers and good citizens.
3. To provide the type of preparation that will be a good foundation for further study in advanced programs of nursing.

Laboratory Facilities

The students who major in nursing have clinical experience in hospitals and health agencies which are chosen by the college on the recommendation of the Division of Nursing.

In these hospitals, students are taught principles of professional nursing care under the supervision of the South Dakota State College faculty. All students have an opportunity to participate in patient care through:

1. Rural and urban hospitals.
2. Out-patient clinics.
3. Public health agencies.
4. General and specialized hospitals.

They learn the concepts of long-term and short-term patient care in the fields of Maternal-Child Health, Medical-Surgical Nursing, Communicable Diseases, Public Health and Psychiatric Nursing. Social and cultural concepts are integrated throughout all areas of instruction.

The hospitals, clinics, and health agencies currently used for student experiences are:

1. Memorial Hospital, Watertown, South Dakota
2. Charles T. Miller Hospital, St. Paul, Minnesota
3. Brookings Municipal Hospital, Brookings, South Dakota
4. Bartron Clinic, Watertown, South Dakota
5. Brown Clinic, Watertown, South Dakota
6. Sioux Sanatorium, Rapid City, South Dakota

7. Crippled Children's School and Hospital, Sioux Falls, South Dakota
8. Ellsworth Air Force Base, Rapid City, South Dakota
9. Health Agencies through:
   a. South Dakota State Department of Health
   b. Pennington County Health Department
   c. Meade County Health Department
   d. United States Public Health Service (USPHS), Division of Indian Affairs
10. Rural Hospitals arranged individually to meet students' needs.

Requirements

In order to progress into any clinical area, students must have a 1.8 overall grade point average in required pre-clinic courses and a 2.0 grade point average in the semester preceding clinical progression.

The sequence of courses is designed to cover the regular four-year (36-month) college program. The college calendar (see page ii general information) is followed except where distances prevent classes from beginning on the day following registration.

Students preparing for the field of professional nursing must show a reasonably stable personality and demonstrate ability to meet the demands of the profession. In addition to meeting the required grade point average a student must be ecceptable in character to the Committee on Scholastic Standards of the Division of Nursing. This is in accordance with the South Dakota State Law governing the licensing of all who nurse for compensation.

Section 4. (1) Registered Nurses

Qualifications of applicants. An applicant for a license to practice professional nursing shall be a citizen of the United States, or have declared intention of becoming a citizen, excepting in the case of students from foreign countries who have come here for training and intend to return to their native countries upon completion of their courses, shall submit to the board a verified written application that such applicant is of good moral character, has graduated from an approved four-year high school course or the equivalent thereof as determined by an appropriate educational agency, and has completed requirements of an accredited professional nursing educational program and holds a diploma.

Registered professional nurses who are graduates from a hospital school of nursing have an opportunity to complete course requirements leading to a Bachelor of Science Degree in Nursing. The length of time required to complete this program is based upon an individual evaluation of student's transcript of record and college entrance tests. The Graduate Nurse Examination* prepared by the National League for Nursing is required prior to or during the first semester of college work.

*The Graduate Nurse Examination will be administered on designated dates during the 1963-64 college year. Write to the Dean of Student Personnel for application and information.

Curriculum in Nursing

Freshman Year	F	S
Orientation, N 100	0	
English, Engl 113-123 or 143-153	3	3
Chemistry, Ch 110-134 or 154	4	4
Physical Education, PE 121-131	1	1
Survey of Nursing, N 102	2	
Sociology, RS 153	3	
Introductory Physics, Phy 104	4	
Anatomy, Z 203		3
Psychology, Psy 203		3
Introduction to Nursing, N 103		3
Basic Civil Defense, N 201		1

Sophomore Year	F	S
Physiology, Z 204 or 414	4	
Fundamentals of Speech, Sp 103	3	
Human Nutrition I, FN 222	2	
General Bacteriology, Bac 202-212	4	
Pharmacology, Pha 202	2	
Marriage, RS 222	2	
(or elective in other Family courses)		
Administration of Medications, N 211		1
Introduction to Medical Science, Z 312		2
Team Nursing, N 231		1
Interpersonal Relations in Nursing, N 203		3
Nursing I, N 221		1
Nursing II, N 223		3
Nursing III, N 224		4
Psychology, Elective		2

Junior Year	F	S
Maternal-Child Health I, N 305	5	
Maternal-Child Health II, N 309	9	
Electives	3	
Principles of Public Health Nursing, N 312		2
Public Health Nursing, N 314		4
Communicable Diseases, N 334		4
Electives		7

Senior Year	F	S
Psychiatric Nursing I, N 403	3	
Medical-Surgical Nursing I, N 405	5	
Psychiatric Nursing II, N 406	6	
Medical-Surgical Nursing II, N 413	3	

Senior Seminar, N 432	2
Principles of Supervision, N 423	3
Public Health Administration, N 433	3
Nursing History and Trends, N 422	2
Electives	7–8

Six semester hours required in Humanities.

Six semester hours required in Social Science including elements of Government, History, Economics, and Sociology. May elect to meet this requirement by Introduction to Social Science, GS 103 and 113 or may select from the following: Hist 214, 224; Econ 203, 213, 302; PolS 213, 222, 243.

Required pre-clinical courses: Z 203, 204; Ch 110, 134 or 154; Phy 104; Bac 202, 212; FN 222; Pha 202; Psy 203 and elective; RS 153, 222; N 103, 203, 211.

Major: N 103, 203, 221, 211, 223, 224, 231, 305-309, 312-314, 334, 403-405, 406-413, 422, 432, 433.

Departments of Instruction

General Nursing (N)

Assistant Professor Swanson; Professors Erickson, Hinsvark, Hubbs; Assistant Professors Miller, Peterson, Wittkopf; Assistant Hardin

UNDERGRADUATE COURSES

100 Orientation

102 Survey of Nursing 2(2,0) FS

Development of concepts basic to professional nursing—including those of science, art, nursing, philosophy, and professionalism. Society's need for nursing services, professional nursing organization and nurse practice laws. Agencies of employment and job opportunities. Open to all students.

103 Introduction to Nursing 3(2,4) FS

Principles which underlie all good nursing. Special emphasis on basic supportive care. Open to basic nursing students.

200 Nursing Workshops

Workshop and special sessions in specific areas of nursing. Approximately 20 hours of work required for each credit, including lecture, conference, committee and group activity, and outside assignments. Workshops in nursing may range from 1 to 3 weeks. P, consent of instructor. Students limited to 4 credits to apply toward degree.

202 Contemporary Health Problems 2(2,0) FS

Health problems which adult will encounter as a family and community member. Open to all students.

203 Interpersonal Relationships in Nursing 3(3,0) FS

The development of understanding of psychological and sociological concepts inherent in the process of human interaction with emphasis on underlying causes of individual patterns of mental and emotional reactions.

301 Family Health 1(0,2) FS

Taught first half of each semester. Understanding of community and family health practices and development of principles involved in prevention of accidents, control of disease and care of the sick in the home. Open to junior and senior Home Economics students. Special arrangements for others desiring course.

400 Special Problems in Nursing 1-3 credits (On sufficient demand)

Individual study of special problems in fields of Medical-Surgical, psychiatric or public health nursing and in maternal-child health. Open to upper division nursing students by permission. Limited to 4 credits to apply toward degree.

401 Instructors Course in Home Nursing 1 credit Su

Thirty-six hour workshop which includes lecture and laboratory for teachers and graduate nurses who will be teaching classes of community groups. Offers special training in effective methods of teaching home care of the sick. Limited to 14 students. P, consent of instructor.

422 Nursing History and Trends 2(2,0) FS

Development of nursing under religious, military, and secular control from ancient to modern times. Stresses movements and change affecting professional practice of nursing. Considers nursing in its relation to legislation, education, patient care programs and nursing organizations. P, senior in nursing.

423 Principles of Supervision 3(2,4) FS

Supervision as a service. Identifies essential elements of supervisory process, and promotes understanding of group work as an important aspect of supervision.

432 Senior Seminar 2(2,0)

Senior students study the modern period and present trends in nursing (with emphasis on American nursing). Present and future problems in professional organizations; legal aspects of nursing; nursing education and service. P, 422 or concurrent.

Clinical Nursing (N)

Assistant Professor Peterson; Professor Dodds; Associate Professor Boekelheide; Assistant Professors Kilander, Miller, Wittkopf; Instructors Becker, Mihelcic, Raymond, Rishoi, Rowe, Witt

UNDERGRADUATE COURSES

211 Administration of Medications 1(0,2) FS

Systems of weights and measures; problems in preparing solutions, computing dosage, and administering drugs. Hospital practice. P, sophomore standing; Pha 202 or concurrent. Open to basic students.

221 Nursing I 1(0,4) FS

Application of scientific principles in development of aseptic techniques basic to patient care. P, N 103

223 Nursing II 3(2,4) FS

Nursing care needs of patient with medical or surgical condition. P, Z 312 or concurrent.

224 Nursing III 4(2,8) FS

Planned experience in therapeutic care of patient in the home, hospital and out-patient clinic. Observation of diagnostic examinations and tests. Health teaching and use of community resources are stressed.

231 Team Nursing 1(1,0) FS

Nursing service personnel organized on team basis to achieve most effective patient-centered nursing care. Observe and participate as a team member.

300 Comprehensive Nursing 1-6 credits

(On sufficient demand)

Application of scientific principles from biological, physical, and medical sciences in planning comprehensive nursing care. Public health aspects of each illness will be integrated in respective units. For registered nurses. P, Ch 134 or 154.

305 Maternal-Child Health I 5(5,0) FS

Family-centered approach to expectant mother, and child from conception through adolescence. N 309 concurrent. P, Marriage and Family Living courses.

309 Maternal-Child Health II 9(4,15) FS

Laboratory practice in pediatric and obstetric hospital wards, out-patient departments, and nursery school. Family teaching stressed and accomplished through informal visits in hospital and clinic, organized classes for expectant parents, and home visits to the family.

403 Psychiatric Nursing I 3(0,9) FS

Clinical experience in recognizing, planning for, and meeting nursing needs of psychiatric patient. P, 406 or concurrent.

405 Medical-Surgical Nursing I 5(5,0) FS

Lecture, discussion, field trips to include: nurse-patient relationship and its use in promoting adjustment to illness and hospitalization, understanding of nurse's role in contributing to care of, recovery, and rehabilitation of patient and in contributing to the total efforts of the health team. P, 413 concurrent.

406 Psychiatric Nursing II 6(6,0) FS

Examination of deviant patterns of adjustment and recognition of how nurse-patient relationship can be developed and utilized to help mentally ill patient make more comfortable adjustment. N 403 concurrent. P, 6 credits of Psychology, N 203, N 305, N 309.

413 Medical-Surgical Nursing II 3(0,9) FS

Supervised lab practice in care of patient whose hospitalization is due to medical and surgical conditions. During course student will have contact with patients on medical-surgical unit, in Special Care Unit, in emergency room, and will function and participate in team nursing. P, 405 or concurrent.

Public Health Nursing (N)

Associate Professors Johnson, Lautzenheiser; Assistant Professors Holter, Rea

UNDERGRADUATE COURSES

302 Public Health Nursing 2(0,8)

(On sufficient demand)

Lectures, demonstrations and supervised practice in a public health agency carrying generalized public health nursing program. Practice through clinics, conferences and home services; including maternity, infant, preschool, school, noncommunicable and communicable diseases. Emphasis on family health and health education. By arrangement with instructor.

312 Principles of Public Health Nursing 2(2,0) FS

Basic philosophies underlying development of public health programs on local, state, national and international levels. Public health nursing principles and practices as applied to meeting family health services and community needs. P, N 305, N 309.

314 Public Health Nursing 4(1,12) FS

Lectures, demonstrations and supervised practice in a public health agency carrying generalized public health nursing program. Practice through clinics, conferences and home services; including maternity, infant, preschool, school, noncommunicable, and communicable diseases. Emphasis on family health and health education. P, N 312 or concurrent.

332 Rehabilitation Nursing 2(1,4)

(On sufficient demand)

Nursing procedures applied to patient who needs rehabilitation. Emphasis on relation of nurse to professional workers in fields other than nursing.

334 Communicable Diseases 4(2,8) FS

Present day communicable disease problems including venereal diseases and tuberculosis. Guided practice in caring for adults and children with communicable diseases and in instructing patients in

disease control. Emphasis on caring for tuberculosis patients and family health teaching. Group conferences and demonstration.

433 Public Health Administration 3(3,0) FSSu

Organization and administration of public and voluntary health agencies. Principles, functions, and program development in vital statistics, maternal-child health, adult health, sanitation, health education, and special health programs. Methods of solving problems in fields of public health. Junior or senior standing in nursing. Open to students with other upper division professional majors with consent of instructor.

442 Industrial Health 2(2,0) Su

(On sufficient demand)

Industrial hygiene and environment sanitation; influence of occupation upon health, legal regulation, inspection and control, union health services, size and scope of modern industrial health program, application of public health principles and medical nursing and engineering practice to places of employment, relationship to community health program. P, junior or senior.

Rural Nursing (N)

Professor Hubbs

This department provides state-wide service in three areas, (1) hospital schools of nursing, (2) rural hospitals in South Dakota, and (3) Civil Defense teaching program. These programs have been developed in response to expressed needs of hospitals, schools of nursing, and persons working for preservation of health and prevention of disease. Purpose of these programs is to raise the level of patient care in rural areas of the state.

The department plans and conducts an educational program in rural nursing, with or without college credit, for students in hospital schools of nursing in South Dakota, using selected rural hospitals where both hospital and community provide a teaching situation. A local Citizens Advisory Committee assists and provides counsel in developing concepts of community health activities.

The department also offers rural hospitals a statewide program for inservice staff education. This service is available to any rural hospital in South Dakota within the limits of personnel and funds of the Division of Nursing. Faculty of the department will cooperate with hospitals in planning inservice educational programs for nursing service personnel that will fit local needs; assist with securing materials and resource persons, and provide guidance in implementing programs.

A 200-bed Civil Defense Emergency Hospital is located on campus. Part of it is set up to provide for classes and practice for nurses and other health personnel in South Dakota.

Requests for these services should be made to the Department of Rural Nursing, Division of Nursing, South Dakota State College, Brookings, South Dakota.

UNDERGRADUATE COURSES

201 Basic Civil Defense 1(0,2) FS

Basic philosophy and fundamental principles of Civil Defense; citizen's role in emergency planning for non-military National Defense. Open to all students.

304 Rural Nursing 4(4,32) FSSu

Experience in a rural hospital with a health program. Problems involved in meeting needs of rural community for health care. P, senior in Nursing. Six weeks course.

322 Nursing in Disaster 2(1,2) SSu

Principles of disaster nursing; role of the nurse in disaster forces. Senior in nursing or registered professional nurse.

DIVISION OF PHARMACY

FLOYD J. LEBLANC, Dean

In 1887 the Board of Regents of the Territory of Dakota authorized the teaching of a course in Pharmacy at South Dakota State College. The first students were enrolled in 1889 and the first degrees were granted in 1891.

The Division of Pharmacy has been a member of the American Association of Colleges of Pharmacy since 1908 and is accredited by the American Council on Pharmaceutical Education.

The curriculum in Pharmacy leads to the degree Bachelor of Science in Pharmacy. All accredited colleges of pharmacy discontinued the four-year course in 1960. Five years are now required to complete the work for this degree. A total of 164 credits and 328 grade points must be earned for graduation. All courses in the curriculum are required.

The division offers advanced courses leading to the Master of Science degree. See the Graduate Bulletin.

The staff of the division is primarily interested in the scientific and professional training of its students, but faculty interest extends over a much wider field. It is the objective of the division that its students develop, not only scientifically and professionally, but that they are also provided with a general education for complete living, including full adjustment to the responsibilities of citizenship.

For information concerning other requirements for the degree, see Academic Information under General Information.

The Course in Pharmacy

Pharmacy offers many opportunities to young men and women. The requests of the pharmacists of our state and of other states for our graduates have always exceeded the supply. Many of our graduates are successful drugstore owners and managers. Additional fields of endeavor such as employment in hospital pharmacies, as medical representatives for large pharmaceutical houses, as narcotic agents, as teachers of pharmacy and allied sciences, and many other positions connected with the profession are open to our graduates.

Applicants for licensure to practice in South Dakota must meet the standards established by the State Board of Pharmacy. In order to qualify for registration by examination each candidate will be required to obtain an average rating of 75 per cent and not less than 60 per cent in any one subject. A grade of 75 per cent must be obtained in Practical Pharmacy. The subjects upon which the candidates will be examined are: (1) Pharmacy, (2) Pharmacology-Materia Medica, (3) Chemistry, (4) Pharmaceutical and Chemical Mathematics, (5) Practical Pharmacy—Laboratory and Written, (6) Toxicology and Jurisprudence, and (7) such oral examination as each Board member may see fit to give.

In order to harmonize the work of the division with these standards, the completion of four years of high school is required for admission.

Our graduates have been uniformly successful in passing their State Board of Pharmacy examinations.

Below is a brief outline of the courses and the credit required for each of the five years.

Curriculum in Pharmacy

The courses listed below are required courses.

First Year	F	S
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	1	
English, Engl 113-123	3	3
Inorganic Chemistry, Ch 110	4	
Inorganic Chemistry and Qualitative Analysis, Ch 115		5
General Zoology, Z 103	3	
College Algebra, Math 113	3	
Plane Trigonometry, Math 122 or 133		2–3
Introduction to Sociology, RS 153		3
Elective*	1–2	2
	17–18	17–18

Second Year	F	S
Military, Mil 211-221 or 251-261	1	1
Elementary Physics, Phy 114-124	4	4
Organic Chemistry, Ch 310-320	5	3
Introduction to Literature, Engl 203		3
Commercial Correspondence, SecS 332		2
National or State and Local Government, PolS 213 or 243	3	
Fundamentals of Speech, Sp 103	3	
Principles of Economics, Econ 203		3
History of Pharmacy, Pha 302		2
	16	18

Third Year	F	S
Pharmaceutical Calculations, Pha 303	3	
Pharmacy, Pha 305		5
Anatomy, Z 203	3	
Mammalian Physiology, Z 414		4
Pharmaceutical Botany, Pha 304	4	
Pharmacognosy, Pha 314		4
General Bacteriology, Bac 202-212	4	
Survey of Accounting, Econ 323	3	
Elective*		4
	17	17

Fourth Year	F	S
Pharmacy, Pha 406	6	
Physical Pharmacy, Pha 444		4
Quantitative Pharmaceutical Analysis, Pha 413-423	3	3
Chemistry and Pharmacy of Organic Medicinals, Pha 414-424	4	4
Pharmaceutical Biochemistry, Pha 434		4
Principles of Infection and Immunity, Bac 404	4	
Elective*		2
	17	17

Fifth Year	F	S
Dispensing, Pha 504-514	4	4
Pharmacology, Pha 524-534	4	4
Agricultural Pharmacy, Pha 544	4	
Store Management, Pha 522	2	
Pharmaceutical Jurisprudence, Pha 532		2
Business Law, Econ 303	3	
Electives*		6
	17	16

*Electives are to be chosen subject to the approval of the Dean of the Division with at least 4 hours from the list of approved Social Science or Humanities courses under Academic Requirements in General Information section.

Departments of Instruction

Pharmacy (Pha)

Professors Eidsmoe, LeBlanc; Assistant Professor Omodt

UNDERGRADUATE COURSES

302 History of Pharmacy 2(2,0) S

Pharmacy in ancient civilizations, and in Europe and America. Development of pharmaceutical education, literature, and ethics. Establishment of pharmaceutical associations, and regulation of the practice of pharmacy.

303 Pharmaceutical Calculations 3(3,0) F

Systems of weights and measures and of calculations used in pharmaceutical practice. P, junior standing.

305 Pharmacy I 5(4,3) S

Application of chemical, physical, and biological sciences to pharmacy, and various classes of official pharmaceutical preparations. Laboratory exercises in weighing and measuring, specific gravity determinations, other pharmaceutical techniques, and preparation of selected simple galenicals. P, 303.

312 Pharmaceutical Photography 2(1,2) S

Photographic techniques to acquaint students with operation and use of various types of photographic equipment.

406 Pharmacy II 6(5,3) F

Galenicals and inorganic substances used in pharmacy and preparation of pharmaceutical products. Laboratory compounding of selected official and extemporaneous formulas. P, 305.

444 Physical Pharmacy 4(3,3) S

Physicochemical principles and laws as applied to pharmaceutical systems. P, 406.

504-514 Dispensing 4(2,4) FS

Extemporaneous compounding of medicines with particular emphasis on incompatibilities and their possible correction in prescription filling. P, 424, 444.

522 Store Management 2(2,0) F

Student is given practical knowledge in operation of drugstore. P, 444.

532 Pharmaceutical Jurisprudence 2(2,0) S

State and Federal laws and regulations concerned with practice of pharmacy. P, 504.

570 Pharmaceutical Research 1-3(0,3 per credit)

Undergraduate students of superior ability may elect research problems in any of the following areas: manufacturing pharmacy, dispensing pharmacy, development of new products, improvement of existing products, and stabilization and preservation of medicinal items.

GRADUATE COURSES

612 Manufacturing Pharmacy 2(1,3)FS

Use of equipment similar, on a pilot plant scale, to that used in industry and to give experience in quantity production of formulations. P, 444.

733 Product Formulation 3(0,9) F or S

All dosage forms of medication with emphasis on formulation of preparations suitable for quantity production in Manufacturing Pharmacy 612. P, 612.

741-751 Seminar 1(1,0) FS

Required of all graduate students taking majors in the Division of Pharmacy. Offered on alternate years as required.

790 Thesis in Pharmacy 5-8 as arranged

Pharmaceutical Chemistry (Pha)

Professors LeBlanc, Bailey; Assistant Professor Omodt

UNDERGRADUATE COURSES

413-423 Quantitative Pharmaceutical Analysis 3(2,3) FS

Quantitative analyses and their application to analysis of drugs and pharmaceutical preparations. P, Ch 320.

414-424 Chemistry and Pharmacy of Organic Medicinals 4(4,0) FS

Classes of organic compounds having pharmaceutical or medicinal value stressing synthesis, chemical properties, structure-activity relationships, physical properties, incompatibilities, use and dose. P, Ch 320.

434 Pharmaceutical Biochemistry 4(3,3) S

Chemistry of living organisms as basis for understanding metabolism and pharmacological action of medicinal preparations. P, Ch 320.

570 Pharmaceutical Research 1-3(0,3 per credit)

Undergraduate students of superior ability may elect research problems in any of the following areas: pharmaceutical analysis, organic medicinal chemistry, pharmaceutical biochemistry or bionucleonics.

GRADUATE COURSES

603 Bionucleonics 3(3,0) FS

Theory and techniques for application of radioactive and stable isotopes to biological research.

611 Bionucleonics Laboratory 1(0,3) FS

Laboratory application of isotope technique to biological research. P, 603 which may be taken concurrently.

704 Advanced Drug Analysis 4(2,6) F

Drug analysis employing various types of industrial laboratory apparatus. Offered on sufficient demand.

712 Advanced Drug Analysis 2(1,3) S

Continuation of course 704. Offered on sufficient demand.

714 Advanced Pharmaceutical Chemistry 4(3,3) F

Chemistry of organic compounds used as therapeutic agents with emphasis on synthesis and structure-activity relationships. Laboratory synthesis of organic medicinals. Offered on sufficient demand.

715 Advanced Pharmaceutical Chemistry 5(3,6) S

Continuation of course 714. Offered on sufficient demand.

741-751 Seminar 1(1,0) FS

Required of all graduate students taking majors in the Division of Pharmacy. Offered on alternate years as required.

790 Thesis in Pharmaceutical Chemistry 5-8 as arranged

Pharmacology (Pha)

Professor Gross

UNDERGRADUATE COURSES

202 Pharmacology 2(2,0) F

Basic principles of pharmacology and therapeutics for students in Nursing. P, sophomore standing.

524 Pharmacology 4(4,0) F

Basic principles of pharmacology and therapeutics for students in Pharmacy. P, fifth year standing.

534 Pharmacology 4(3,3) S

Continuation of 524. Laboratory illustration of drug action. P, 524.

552 Toxicology 2(2,0) F

Toxicology and medicolegal aspects of poisonings. Common poisons with emphasis on antidotal measures. P, fifth year standing.

554 Toxicology 4(2,4) S
Continuation of 552. P, 552.

570 Pharmaceutical Research 1-3(0,3 per credit)
Undergraduate students of superior ability may elect a research problem in pharmacology or toxicology.

GRADUATE COURSES

713-723 Pharmacology 3(1,6)
Theories of drug action and techniques used in pharmacological research and testing. P, 534. Offered on sufficient demand.

741-751 Seminar 1(1,0) FS
Required of all graduate students taking majors in the Division of Pharmacy. Offered on alternate years as required.

790 Thesis in Pharmacology 5-8 as arranged

Pharmacognosy (Pha)

Professor Redman

UNDERGRADUATE COURSES

304 Pharmaceutical Botany 4(3,3) F
Plant morphology, physiology, reproduction, cell chemistry and taxonomy; limited study of life histories of plants, with special reference to those of medicinal importance. Introduction to pharmacognosy.

314 Pharmacognosy 4(3,3) S
Source, characteristics, chemistry of constituents, and uses of crude plant and animal drugs. P, 304.

322 Cultivation of Medicinal Plants 2(0,6) SSu
Cultivation of medicinal and poisonous plants with emphasis on plants adapted to South Dakota.

544 Agricultural Pharmacy 4(3,2) F
Biologicals, rodenticides, fungicides, weedicides, insecticides, fumigants, local and systemic anti-infectives. P, 314.

570 Pharmaceutical Research 1-3(0,3 per credit)
Undergraduate students of superior ability may elect a research problem on products from the medicinal and poisonous plant garden or on other drugs from natural sources.

GRADUATE COURSES

703 Microscopy of Foods and Drugs 3(2,3)
Microscopic structure and characteristics of powdered drugs and foods with methods of identification of adulterants. Offered on sufficient demand.

741-751 Seminar 1(1,0) FS
Required of all graduate students taking majors in the Division of Pharmacy. Offered on alternate years as required.

790 Thesis in Pharmacognosy 5-8 as arranged

DIVISION OF SCIENCE AND APPLIED ARTS

FRANK G. SCHULTZ, Dean

The Division of Science and Applied Arts is one of the seven academic units which provide the instructional programs of South Dakota State College. It subscribes to the institutional aims and objectives found expressed in the general information section of this catalog.

In addition to offering work leading to the Bachelor of Science degree in a number of academic and professional fields, the division is charged with the function of providing a wide range of "service" courses for students enrolled in Agriculture, Engineering, Home Economics, Nursing, and Pharmacy. These courses provide the educational prerequisites to the more technical curricula as well as the general and cultural background for leadership in all fields. It is a matter of record that professional groups are placing more emphasis on cultural subjects than has been the case in former years. Hence it is becoming increasingly important that a well-balanced program of general and liberal education be made available to technical students.

1. Degrees Offered in Science and Applied Arts

The Division offers work leading to the Bachelor of Science degree in the following major fields:

Art
Bacteriology
Botany
Chemistry, General
Chemistry, Professional
Clinical Laboratory (Medical) Technology
Economics
English
Entomology
Foreign Languages
History
Industrial Arts
Journalism
Mathematics
Music
Physical Education (Men)
Physical Education (Women)
Physical Therapy (Option under Physical Education)
Physics
Plant Pathology
Political Science
Printing-Education
Printing Management
Psychology
Science Writing
Sociology
Speech
Zoology

Minimum requirements for the Bachelor of Science degree are:

	Semester Hours
English 113-123 or 143-153	6
Fundamentals of Speech 103	3
Military Science (men only) 111-121 and 211-221 or 151-161 and 251-261	4
Orientation 100	0
Humanities (from Approved List page xxxi)	8
College Algebra, Math 113	3
Biological Science	6–7
Biology, Bot 113-123 or Botany 103-104 or Zoology 103-113	
Note: Bacteriology 202-212 may be substituted for one course in Botany or Zoology	
Physical Education 101-111 or 121-131	2
Physical Science	8–9
Introductory Physics 104 and Introductory Chemistry 104, or Inorganic Chemistry 110 and either Chemistry 115 or Chemistry 124, or Elementary Physics 114-124	
Social Science selected from following list	12
Introduction to Social Science, GS 103-113	
World History 103-113	
Recent American History 214	
U. S. History Survey 224	
National Government 213	
State and Local Government 243	
Principles of Economics 203-213	
Introduction to Sociology 153	
General Psychology 203	
Total Required	48–54
Major (Minimum)	24
*Education, Electives	64–58
Total	136

*Persons expecting to teach in high school must complete a minimum of 20 semester credits in approved courses in Professional Education.

2. Two-Year Terminal Curricula Leading to the Certificate of Completion

Two-year curricula in a number of Science and Applied Arts fields have been worked out to accommodate students who cannot devote sufficient time to their education to qualify for the bachelor of science degree. Upon satisfactory completion of one of these programs of study the student will be granted the Certificate of Completion.

Specific fields in which this certificate may be taken include industrial arts, printing, and secretarial science. Students wishing to complete one of these programs should consult with the Dean of Student Personnel who also serves as Director of Terminal Curricula.

3. Pre-Professional Curricula (Dentistry, Law, Medicine, etc.)

Persons wishing to qualify for admission to the professional schools of medicine, dentistry, law and other schools which require pre-professional education ordinarily register in the Division of Science and Applied Arts. Since State College is accredited by the North Central Association of Colleges and Secondary Schools, transfer credits are accepted at face value.

Since the requirements for admission to the professional schools tend to vary somewhat, no special curricula are outlined in this catalog. Courses required by practically all of these schools are, however, available on this campus and every assistance will be given to the student to assure him that he will meet the course requirements of the professional school he may select. The Dental Aptitude test is administered on this campus each year and arrangements are made for the student to take the professional aptitude tests in Law and in Medicine.

Divisional Requirements

All general college-wide requirements must be met to qualify for the Bachelor of Science degree in the Division of Science and Applied Arts. In addition the following special requirements have been established.

A. Major Fields:

Subject to the approval of the dean and the head of the department concerned, the student must select a field of concentration (major) early in his junior year. With few exceptions the major requires 24 semester hours in the field of concentration. A minor is not required for graduation. It is recommended, however, that persons wishing to teach in the secondary schools prepare themselves to meet the teacher certification requirements in one or two related fields.

After the choice of a major has been approved, the student should refer to the curriculum concerned and follow that program as closely as possible. The curriculum printed in the catalog at the time the student enrolls in the Division will normally be the curriculum required for graduation. Students transferring from other Divisions of the College must complete the curriculum in force at the time of transfer.

B. Quality of Work

Upon the recommendation of the dean and the department head, a student may be required to change his major if the quality of work in this field is considered unsatisfactory. For purposes of interpreting this regulation, less than a "C" average in courses in the major will be regarded as unsatisfactory.

C. Elective Courses

Elective courses completed in the junior and senior years should normally be selected from those numbered 300 or above.

All Science and Applied Arts students must have completed a minimum of 40 semester hours credit in courses numbered 300 or above. Mathematics 245 and 255 may be counted toward the 40 semester credits required. Military Science (Army) 312-323, 412-423, and Military Science (Air) 353-363, 452-462-472, will not count toward the 40 semester credits, however.

In the curricula outlined in the following pages there are frequently found statements

such as "Elective in Economics" or "Elective in Humanities." Although the student may select from a wide range of courses he **must** select as many credits in the field as is indicated.

D. Preparation for High School Teaching

Students who plan to teach in high school should start taking professional Education courses in the first semester of their junior year if they expect to complete the teacher certification requirements by the time degree requirements are met.

Before being admitted to the Education sequence the student must apply for admission to the Head of the Education Department or to a staff member designated by him. To be admitted to the Education sequence students must have a 2.0 grade-point average as well as meet certain other requirements stipulated by the department. (See Education Department for further details.)

General Studies (GS)

In this section are listed courses in fields in which the college does not offer a major and courses which are offered cooperatively by two or more departments.

These courses all carry regular college credit and will count toward the degree if approved by the student's dean and counselor. In some instances these courses are required for the completion of the curriculum.

For further information see the Dean of the Division of Science and Applied Arts.

UNDERGRADUATE COURSES

103-113 Introduction to Social Science 3(3,0) FS

Integrated study of man's social life and problems with special attention to the help social science can give in understanding and finding solutions to these problems. Taught by History-Political Science department.

123 English for Foreign Students 3(3,0) F

Designed for students who use English as second language. Open only to students who have difficulty in understanding and using English. P, consent of instructor. Taught by Foreign Languages department.

131 Languages in Everyday Living 1(1,0) S

For students in any field. Descriptive, consisting primarily of lectures and reading. Language families and individual languages are considered from standpoint of their history, relationships, form, development, and social aspects. Passing grade reported as "E" (satisfactory). Taught by Foreign Languages department.

132 Old Testament Survey 2(2,0) F

Comprehensive study of content, history, and people of Old Testament; special attention given to prophets and their messengers.

133 New Testament Life and Times 3(3,0) S

Survey of content of New Testament in light of first-century times; historical, political, social, etc.; life and major teachings of early leaders.

161 Reading Improvement 1(1,2) SSu

Attempts to increase reading efficiency by improving comprehension and by developing motor skills involved in reading speed. Motivates reading interest through films, slides, and papers. Passing grade reported as "E" (satisfactory). Taught by English department.

201 Significant Books 1(1,0) FS

Reading of significant books selected with students' interests and needs in view. Short oral reports and class discussions of reading required. May be used as humanities elective.

222 Introductory Religious Philosophy 2(2,0) S

Meaning of religion, major concepts, problems of religious thought, and their significance for philosophy of life.

241 Religion in American Life 1(1,0) S

Influence of religion in various areas of current American life; problems raised and contributions made by religion and religious ideals.

242 U. S. Religious Heritages 2(2,0) F

Immediate background of various churches in early United States; development of denominations during different periods of U. S. History, and their impacts upon life and culture of the nation.

253 Humanities 3(3,0) FS

Gives an insight into man's intellectual and artistic heritage, and an understanding of its applicability to life today. In treatment of art, literature, music, philosophy and religion, course seeks to (1) arouse student interest in these fields, (2) stress relationship between arts and sciences.

262 Introduction to Aviation 2(2,0) FS

Aerodynamics; principles of flying; civil air regulations, meteorology, radio and navigation. Administered by Physical Education department.

272 Basic Flight Training 2(2,0) FS

Ten hours of actual flying time. Approximately eight hours of dual instruction and two hours of solo flight including pre-flight and post-flight briefings before and after each flight. P, 262 or concurrent and consent of instructor. Fee $85. Administered by Physical Education department.

282 Flight Training 2 credits FS

Cross-country phase of flying; designed to advance student toward private license. Cross-country dual and solo flying with pre-flight and post-flight briefings before and after each flight. P, 272 or equivalent and consent of instructor. Fee $100. Administered by Physical Education department.

303 Philosophic Inquiry 3(3,0) FS

Survey of nature of philosophy and characteristics of philosophic method, crucial issues in various types of philosophy, significance and achievements in relation to life philosophy.

312 Principles of Ethics 2(2,0) S

Major types of ethical theories; analysis of ethical factors in various individual and social problems, and application of ethical theories to concrete problems of conduct.

342 Logic and Scientific Reasoning 2(2,0) F

Examination of use of language in argument and application of arguments in empirical investigations and scientific method.

352 Psychology in Religion 2(2,0) S

Description of psychological factors in religious beliefs and practices; analysis of stages and varieties of religious development; investigation of religion in psychic health and social maturity. P, at least one course in psychology.

362 World Religions 2(2,0) S

Comparative study of the world's great religions; Hinduism, Buddhism, Confucianism, Taoism, Shinto, Islam, Judaism, and Christianity (brief survey of the latter). P, at least one course in world history and junior standing.

401-411-421-431 Divisional Honors Seminar 1(1,0)*

401 Social Science

411 Humanities

421 Physical Science

431 Biological Science

An intensive and extensive study of scope and philosophy of selected area of knowledge. P, Honor student, non-major, approval of Honors Council.

442 Divisional Honors Project 2 credits

Individual research report in an honors area of knowledge. P, senior honors program student.

462 Philosophy of Science 2(2,0) S

Analysis of nature and goals of scientific knowledge and logical structure of physical, biological, and social sciences in terms of natural law, scientific theories, and explanations.

472 Philosophy of Education 2(2,0) F

Comparison of historic and current philosophies of education, major emphasis of each, their effects upon educational goals and practices today. (May count as Education credit.)

GRADUATE COURSES

672 Improvement of Reading 2(2,0) SSu

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 and for undergraduates who plan to teach. Administered by English department.

682 Diagnosis and Remediation of Reading Problems 2(3,0) Su

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, Ed Psy 312. Administered by English department.

692 Clinical Practice in Reading 2(1,4) Su

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. P, 682 or concurrent. Administered by English department.

702 Modern American Thought 2(2,0) F
(Offered in 1963)

Analysis of selected economic, social, and philosophical ideas of late 19th and 20th centuries, their relationship to selected segments of American life and their reflection in American literature. P, consent of instructor. Offered alternate years. Taught by English department.

Departments of Instruction

Department of Art

Professors Ritz, Moore; Assistant Professors Cole, Edie (on leave), Ober (Emeritus)

The courses offered in this department are intended to stimulate an interest in and an appreciation of the Fine and Applied Arts. They are designed to develop knowledge and skill in design, drawing, painting, art education, history of art and crafts.

Curriculum in Science and Applied Arts, Art Major

Freshman Year	F	S
English, Engl 113-123	3	3
Algebra, Math 113		3
Introduction to Social Science, GS 103-113	3	3
General Biology, Bot 113-123	3	3
Design, Art 103	3	
Drawing and Composition, Art 122	2	
Figure Drawing, Art 132		2
Military, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Introduction to Literature, Engl 203		3
Inorganic Chemistry, Ch 110-124 or Inorganic Chemistry, Ch 104 and Introductory Physics, Phy 104 or Elementary Physics, Phy 114-124	4	4
National Government, PolS 213		3
Fundamentals of Speech, Sp 103	3	
Introduction to Sociology, RS 153	3	
Composition, Art 242	2	
Ceramics, Art 272	2	
Graphics, Art 252 or		2
Commercial Art, Art 262		2
Art Appreciation, Art 212	2	
Music Appreciation, Mus 102		2
Military, Mil 211-221 or 251-261	1	1

Junior Year	F	S
Principles of Economics, Econ 203-213	3	3
General Psychology, Psy 203		3
Drama, Engl 312	2	
World History, Hist 103-113	3	3
Screen Printing, Art 312 or	2	
Water Color Painting, Art 362	2	
Graphics, Art 252 or		2
Commercial Art, Art 262		2
Oil Painting, Art 342-352 or	2	2
History of Art, Art 343-353	3	3
History of American Art, Art 231	1	

Senior Year	F	S
History of Art, Art 343-353 or	3	3
Oil Painting, Art 342-352	2	2
Philosophic Inquiry, GS 303	3	
Stagecraft, Sp 143		3
Sculpture, Art 382	2	
Problems in Applied Design, Art 402-412	2	2
Seminar, Art 431		1
Electives in Art	2	2
Electives	2	3

Majors specializing in Art Education must include 22 hours of prescribed courses in education in their curriculum.

MAJOR: Art 103, 112, 122, 132, 212, 231, 242, 252, 262, 272, 312, 362, 342-352, 382, 402, 431+2 elective hours=35 hours.

MINOR: Art 103, 112, 122, 212, 242, 342 or 363+ 2 elective hours=18 hours.

SUGGESTED ELECTIVES: Art 322, 332, Fr 104-114, 203-213.

UNDERGRADUATE COURSES

103 Design 3(0,6) FS

Fundamentals of design. Two and three dimensional experiments in line, form and color.

112 Related Art 2(1,4) FS

Principles of design and color with emphasis on their application to the area of homemaking.

122 Drawing and Composition 2(0,6) FS

Experience in drawing in line and dark and light in various media.

132 Figure Drawing 2(0,6) S

Experience in drawing from the draped model.

212 Art Appreciation 2(2,0) FS

Place of visual arts in development of civilization and as part of our cultural heritage. Major emphasis on pleasurable and intellectual appreciation of artistic achievements.

222 Related Art 2(1,3) FS

Further study and experience in application of principles of design as they are related to area of art in home economics education. P, 112.

231 History of American Art 1(1,0) FS

Survey of development of arts in America from colonial to present times.

242 Composition 2(0,6) F

Design experience related to composition for graphics and painting. P, 112-132.

252 Graphics 2(0,6) S (Offered in 1964)

Print making with experience in printing from plastic, linoleum and metal plates. P, 242 or consent of instructor, 103, 242. Alternate years.

262 Commercial Art 2(0,6) S (Offered in 1965)

Problems pertaining to advertising and illustration with practice in use of tools in development of calligraphic forms. P, 103, 242. Alternate years.

272 Ceramics 2(0,6) F

Experience in design and execution of ceramic objects. Throwing, glazing. P, 103.

312 Screen Printing 2(0,6) F (Offered in 1963)

Experience in use of screen printing as graphic medium and textile decoration. P, 103 or 122. Alternate years.

322 Weaving 2(0,6) S (Offered in 1965)

Design and execution of hand woven fabrics. Experience with various types of looms. P, 103 or 112. Alternate years.

332 Jewelry 2(0,6) F (Offered in 1963)

Design and execution of jewelry with experience in manipulation of metals, casting, soldering and stone setting. P, 103 or 112. Alternate years.

342-352 Oil Painting 2(3,0) FS

Color and its properties, emphasis on problems of composition in oil. P, 242 or consent of instructor.

343-353 History of Art 3(3,0) FS
(Offered in 1963-64)
Chronological presentation of principle periods in history of art that have contributed to Western culture. Alternate years.

362 Water Color Painting 2(0,6) F
(Offered in 1964)
Still life, landscape and abstract painting in transparent water color and gauche. P, 242 or consent of instructor. Alternate years.

382 Sculpture 2(0,6) S (Offered in 1965)
Three dimensional design executed in clay, plaster and metals. P, 272. Alternate years.

402-412 Problems in Applied Design 2(0,6) FS
Individualized courses permitting advanced work in chosen areas of art expression. Open only to juniors and seniors. P, consent of instructor.

431 Seminar 1(1,0) S (Offered in 1965)
For juniors and seniors in art. GS 303 recommended as prerequisite. Alternate years.

442 Methods of Teaching Arts and Crafts 2(2,2) F
(Offered in 1964)
Methods and materials for teaching arts and crafts at various levels. P, 18 hours of art. Alternate years.

452 Interior Design 2(1,3) S (Offered in 1964)
Comprehensive study of problems of interior design of domestic structures with emphasis on the contemporary. P, 112, 222, 242; HE 383 or equivalent. Alternate years.

Department of Bacteriology (Bac)

Those individuals wishing to become professional workers and research workers in bacteriology will find the curriculum provides ample training with sufficient diversity to provide a broad background of scientific development. Bacteriology is fortunate in providing ample opportunity for an individual to work with varying levels of training beginning with that of Bachelor of Science. Positions available are Public Health Laboratory, food inspector for the Department of Agriculture, technicians and inspectors for the Pure Food and Drug Authority, sanitary inspectors for the Dairy industry, research with the food industries, technical assistants and research workers in the pharmaceutical companies. Bacteriology has in the past offered a very fine opportunity for young women in all phases of its activities.

Curriculum in Science and Applied Arts, Bacteriology Major

(See Bacteriology Major Curriculum in Technical Agriculture under Division of Agriculture)

Freshman Year	F	S
College Algebra, Math 113	3	
Trigonometry, Math 133		3
Inorganic Chemistry, Ch 110-124	4	4
English, Engl 113-123 or 143-153	3	3
Fundamentals of Speech, Sp 103		3
Orientation, Or 100	0	
General Zoology, Z 103-113	3	3
Physical Education, PE 101-111 or 121-131	1	1
Military, Mil 111-121 or 151-161	1	1

Sophomore Year	F	S
Elementary Physics, Phy 114-124	4	4
General Bacteriology, Bac 202-212		4
National Government, PolS 213	3	
Introduction to Sociology, RS 153		3
Introduction to Literature, Engl 203		3
General Psychology, Psy 203	3	
Principles of Economics, Econ 203	3	
General Botany, Bot 103-104	3	4
Military, Mil 211-221 or 251-261	1	1

Junior Year	F	S
Advanced Exposition, Engl 352	2	
Organic Chemistry, Ch 310-320	5	5
Bacterial Cytology and Function, Bac 304		4
Genetics, Z 303		3
Social Science Elective	2	3
Humanities Elective	2	3

Senior Year	F	S
Infection and Immunity, Bac 404	4	
Seminar, Bac 431	1	1
Mammalian Physiology, Z 414	4	
*Electives	6	9

MAJOR: Sufficient courses in Bacteriology must be taken to provide 24 approved credits. Those students anticipating graduate work should elect two years of German and further mathematics.

SUGGESTED ELECTIVES: Bac 303, 353, 414, 623, Math 143.

*All students must complete 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

Department of Botany (Bot)

Curriculum in Science and Applied Arts, Botany Major

(See Botany Major Curriculum under Division of Agriculture)

Freshman Year	F	S
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100		
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110-124	4	4
College Algebra, Math 113	3	
Trigonometry, Math 133		3
General Botany, Bot 103-104	3	4
	16	16

Sophomore Year	F	S
Military, Mil 211-221 or 251-261	1	1
Principles of Economics, Econ 203	3	
National Government, PolS 213 or		
State and Local Government, PolS 243	3	
Fundamentals of Speech, Sp 103		3
Basic Taxonomy, Bot 204		4
Organic Chemistry, Ch 134	4	
Introductory Physics, Phy 104 or		
Elementary Physics, Phy 114 or		
General Physics, Phy 205		4–5
General Psychology, Psy 203		3
Humanities Elective	4	
Introduction to Sociology, RS 153	3	
	18	16

Junior Year	F	S
Advanced Exposition, Engl 352 or		
Publicity Methods, J 322	2	
Plant Physiology, Bot 424	4	
Plant Anatomy, Bot 413		3
Botanical Techniques, Bot 303		3
Zoology, Z 103-113	3	3
Genetics, Z 303	3	
Humanities Elective		4
Electives*	6	4
	18	17

Senior Year	F	S
Bacteriology, Bac 202-212	4	
Elective in Botany	4	
Seminar, Bot 401		1
Electives*	10	16
	18	17

MAJOR IN BOTANY: 103, 104, 204, 303, 413, 424, 401, and botany electives to make 24 credits.
MINOR IN BOTANY: 103, 104, and 204 plus enough electives to make 16 credits.

*Students who expect to continue their study at the graduate level should include among their electives a foreign language, together with additional mathematics and science courses. Those who expect to teach in high school should consult with the head of the Education Department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

Department of Chemistry (Ch)

Professors Webster, Johnson, Klug; Professor Emeritus Binnewies; Associate Professors Brandwein, Greb, Tanaka; Assistant Professors Howard, McRoberts, Rue; Instructors Allcott, Travis

This department is on the approved list of the American Chemical Society for training professional chemists. Graduates of this curriculum will be certified to the American Chemical Society as being eligible for full membership following two years of graduate work or other experience in chemistry and will receive a certificate from the society.

Chemistry department courses are organized to serve three purposes: First, since chemistry is so closely related to other fields of study, a number of courses are offered to give the student sufficient training to meet the needs of chemistry in his profession.

Second, a general chemistry major is available to students who wish to take additional work in chemistry, but who do not care for the curriculum in professional chemistry or clinical laboratory technology.

Third, a professional major is offered to those students who intend to pursue the profession of chemistry.

General Chemistry

The general chemistry curriculum is designed for those students who have more than a passing interest in chemistry but who are not necessarily interested in chemistry as a profession. It is especially adapted to those interested in teaching chemistry and other sciences in the secondary schools and junior colleges. Students who have this in mind should begin taking courses in education at the start of the junior year in order to meet the requirements of the State Department for teachers. The requirements of the professional major must be satisfied, however, before the students may be recommended for graduate work in chemistry.

Clinical Laboratory Technology

Those who are interested in the laboratory work connected with physicians' offices, hospitals and clinics should select the curriculum in Clinical Laboratory Technology. Fol-

lowing three years of regular college work the student must complete twelve to eighteen months training in a clinical or hospital laboratory approved by the Council on Medical Education and Hospitals of the American Medical Association in order to qualify for the B.S. degree. Graduates of this curriculum will be eligible to take the examination for registry as a Clinical Laboratory Technician. There are many opportunities in this field for both men and women.

Professional Chemistry

Those students who intend to pursue the profession of chemistry should select this curriculum. Only those students who demonstrate definite ability in chemistry, however, will be permitted to continue toward the professional major. Graduates of this curriculum will be certified to the American Chemical Society as being eligible for full membership following two years of graduate work or other professional experience in chemistry and will receive a certificate from the society.

Credit by Examination

All entering students who have completed high school chemistry will be required to take an examination in chemistry prepared by the staff of South Dakota State College covering Chemistry 110 and including a portion on laboratory technique. Students who score sufficiently high in the examination may be excused from Chemistry 110. Those excused will be given credit for Chemistry 110 only after the completion of a course for which Chemistry 110 is prerequisite.

Graduate Study

Facilities are available in this department for graduate study leading to the degree Master of Science with a major in any of the branches of chemistry. On completion of this graduate work, capable students are usually able to obtain fellowships or assistantships from one of the larger institutions where study toward the doctorate may be continued. Work leading to the degree Doctor of Philosophy with a major in biochemistry is offered.

Curriculum in Science and Applied Arts, Professional Chemistry Major

Freshman Year	F	S
Inorganic Chemistry, Ch 110	5	
Inorganic Chemistry and Qualitative Analysis, Ch 115		5
Mathematical Analysis I-II, Math 145-155	5	5
English, Engl 113-123 or 143-153	3	3
Social Science elective	3	3
Physical Education, PE 101-111 or 121-131	1	1
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Quantitative Analysis, Ch 214-424	4	4
Analytical Calculations, Ch 211	1	
Mathematical Analysis III-IV, Math 245-254	5	4
General Physics I-II, Phy 205-215	5	5
Military, Mil 211-221 or 251-261	1	1
Fundamentals of Speech, Sp 103		3
	16	17

Junior Year	F	S
Organic Chemistry, Ch 310-320	5	5
Physical Chemistry, Ch 410-420	5	5
Advanced Physics elective	3	
First year German, Ger 124-134	4	4
Introduction to Literature, Engl 203		3
	17	17

Senior	F	S
Social Science elective	3	3
Advanced Inorganic Chemistry, Ch 413	3	
Advanced Chemistry elective	3	3
Biological Science elective		4
Advanced Mathematics elective		3
Second year Scientific German, Ger 283-293	3	3
Elective	5	
	17	16

MAJOR: Ch 110, 115, 211, 214-424, 310-320, 410-420, 413 and 6 hours of elective.
MINOR: No professional minor is available.

Curriculum in Science and Applied Arts, General Chemistry Major

Freshman Year	F	S
Inorganic Chemistry, Ch 110	5	
Inorganic Chemistry and Qualitative Analysis, Ch 115		5
English, Engl 113-123 or 143-153	3	3
Mathematical Analysis I-II, Math 145-155	5	5
Social Science elective	3	3
Physical Education, PE 101-111 or 121-131	1	1
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Introduction to Literature, Engl 203	3	
English elective		3
Quantitative Analysis, Ch 214	4	
Elementary Organic Chemistry, Ch 134		4
Biological Science elective	4	4
General Psychology, Psy 203	3	
Fundamentals of Speech, Sp 103		3
National Government, PolS 213	3	

Military, Mil 211-221 or 251-261	1	1
Elective*		2
	18	17

Junior Year	**F**	**S**
Elementary Physics I-II, Phy 114-124	4	4
Biological Science elective	4–5	4–5
Elective*	9	9
	17–18	17–18

Senior	**F**	**S**
Elective*	15–16	15–16

MAJOR: Ch 110, 115, 134, 214 and 6 hours of elective.

MINOR: Ch 110, 115, 134, 214 (Ch 212 may substitute for Ch 214).

*6 hours of chemistry elective, and 2 hours of humanities elective are required. Prospective teachers should consult with the head of the Education Department before registering for the junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

Curriculum in Science and Applied Arts, Clinical Laboratory Technology Major

Freshman Year	**F**	**S**
Inorganic Chemistry, Ch 110	5	
Inorganic Chemistry and Qualitative Analysis, Ch 115		5
English, Engl 113-123 or 143-153	3	3
College Algebra, Math 113	3	
General Zoology, Z 103-113	3	3
National Government, PolS 213		3
Military, Mil 111-121 or 151-161	1	1
Physical Education, 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	**F**	**S**
Quantitative Analysis, Ch 214	4	
Elementary Organic Chemistry, Ch 134		4
Elementary Physics I-II, Phy 114-124	4	4
Introduction to Literature, Engl 203 and elective	3	3
Elementary Physiology, Z 204		4
Anatomy, Z 203	3	
Elective*	3	2
Military, Mil 211-221 or 251-261	1	1

Junior Year	**F**	**S**
General Bacteriology, Bac 202-212	4	
Pathogenic Microbiology, Bac 414		4
Physiological Chemistry, Ch 324		4
Vertebrate Histology, Z 403	3	
Histological Techniques, Z 413		3
Fundamentals of Speech, Sp 103	3	
General Psychology, Psy 203		3
Elective*	8	4

Senior

Twelve months training in a school of Clinical Laboratory Technology approved by the Council on Medical Education and Hospitals of the American Medical Association for which 32 semester hours credit will be granted.

*Six hours of social science and two hours of humanities elective are required.

UNDERGRADUATE COURSES

104 Introductory Chemistry 4(3,3) S

Introduction to chemistry for non-science major. May not be used as prerequisite for other courses in chemistry.

110 Inorganic Chemistry 4-5(3,3 or 3,6) FS

Introductory college chemistry.

115 Inorganic Chemistry and Qualitative Analysis 5(3,6) FS

Principles of solution chemistry, analysis of inorganic compounds using semimicro techniques. P, 110.

124 Inorganic Chemistry 4(3,3) FS

Continuation of Chemistry 110. P, 110.

134 Elementary Organic Chemistry 4(3,3) FS

Compounds of carbon with emphasis on those of interest to students of Agriculture, Applied Science, Home Economics and Nursing. P, 110.

154 Biochemistry for Nurses 4(3,3) S

Survey of biochemistry with special emphasis on chemistry of biological materials. P, 110 with a B average.

211 Analytical Calculations 1(1,0) F

Advanced problems to supplement elementary problems in Chemistry 214. P, 115 or 124, registration in 214.

212 Food Analysis 2(1,3) F (Offered in 1964)

Quantitative analysis of food materials. P, 134.

214 Quantitative Analysis 4(2,6) F

Fundamental principles and laboratory practice in gravimetric analysis; introduction to volumetric analysis. P, 115 or 124.

233 Chemistry Refresher for High School Teachers 3(5,4) Su (8 weeks)

General survey of modern atomic theory and kinetic molecular theory including an introduction to organic chemistry. Students presenting a year of college chemistry as background will receive grade of "E" (satisfactory) for acceptable performance. P, 124 or equivalent.

310-320 Organic Chemistry 3-5(3,0 or 3,6) FS

Compounds of carbon in aliphatic and aromatic series. P, 115 or 124.

324 Physiological Chemistry 4(3,3) S

Especially suited for clinical technology, premedic and advanced students in Home Economics and Nursing. P, 212 or 214 and 134 or 310.

410-420 Physical Chemistry 3-5(3,0 or 3,6) FS

An introductory course. P, 214, one year physics, one year calculus.

413 Advanced Inorganic Chemistry 3(2,3) F

Theoretical aspects of inorganic chemistry. P, 410.

424 Quantitative Analysis 4(3,3) S

Principles and laboratory practice in volumetric analysis; introduction to instrumental analysis. P, 214.

GRADUATE COURSES

610 Special Problems *(0,*) FS

Research problems in chemistry. P, consent of instructor. Limited to a total of 4 credits.

613 Organic Analysis 3(1,6) F (Offered in 1964)

Separation of mixtures, identification of organic compounds and quantitative analysis of common elements found in organic compounds. P, 320, 420. Alternate years.

615 Principles of Biochemistry 5(3,6) F

Chemistry of biological processes of plants and animals. P, 134.

623 Organic Preparations 3(1,6) F (Offered in 1963)

Preparation of typical organic compounds with emphasis on yield and purity of product. P, 320, 420. Alternate years.

633 Modern Chemistry for High School Teachers 3(5,4) Su (8 weeks)

Review of modern concepts of chemistry. P, 115, 134, 214 or equivalent.

642 Instrumental Analysis 2(1,3) F

Operation and use of instruments in analysis. P, 320, 420.

643 Advanced Inorganic Chemistry 3(3,0) S (Offered in 1965)

Continuation of chemistry 413. P, 413, registration in 420. Alternate years.

653 Descriptive Inorganic Chemistry 3(2,3) F (Offered in 1964)

Laboratory work will include preparation and purification of typical inorganic compounds. P, 115 or 124. Alternate years.

711-721 Seminar 1(1,0) FS

Required of all graduate majors in chemistry.

713-723 Advanced Physical Chemistry 3(3,0) FS (Offered in 1963-64)

Selected topics in physical chemistry. P, 420. Alternate years.

714 Vitamins and Hormones 4(4,0) F (Offered in 1963)

Chemical structure and functions of vitamins and hormones in living organisms. P, 615. Alternate years.

722 Stereochemistry of Carbon Compounds 2(2,0) S (Offered in 1964)

Isomerism due to spatial arrangement of atoms or groups. P, 320. Alternate years.

725 Advanced Biochemistry 5(5,0) S (Offered in 1965)

Selected topics on carbohydrates, lipids and proteins. P, 615. Alternate years.

732 Biochemical Techniques 2(0,6) S

Research techniques of modern biochemistry pertaining to separation, isolation, purification and measurement of compounds of biological importance. P, 615.

733-743 Advanced Organic Chemistry 3(3,0) FS (Offered in 1964)

Selected topics in organic chemistry. P, 320. Alternate years.

742 Plant Biochemistry 2(2,0) S (Offered in 1964)

Biochemistry of plant life processes, structural materials and growth regulating substances. P, 615. Alternate years.

753 Chemistry of Enzymes 3(2,3) F

Kinetics, modes of action and properties of enzymes and enzyme systems. P, 615.

763 Intermediary Metabolism 3(3,0) S

Intermediary metabolism of carbohydrates, proteins and fats in animals, plants and micro-organisms. P, 615.

790 Thesis in Chemistry credit as arranged FS

*Time and/or credit to be arranged.

Department of Economics (Econ)

Curriculum in Science and Applied Arts, Economics Major

(See also Curriculum in Economics under Division of Agriculture)

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Introduction to Social Science, GS 113-123	3	3
Fundamentals of Speech, Sp 103	3	or 3
Biology 111-123, Botany 103-104, or Zoology 103-113, or Botany 103 and Zoology 103	3	3–4
College Algebra, Math 113 or Mathematics Analysis, Math 145	3–5	or 3–5
Military, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	
Elective	2–3	3

Sophomore Year	F	S
Principles of Economics, Econ 203-213	3	3
Introduction to Literature, Engl 203	3	or 3
English Elective (200 series)	2	or 2
Advanced Exposition, Engl 352 or Publicity Methods, J 322	2	or 2
General Psychology, Psy 203	3	or 3
Introduction to Sociology, RS 153	3	or 3
Inorganic Chemistry, Ch 104 or 110	4	or 4
Physics, 104 or 114	4	or 4
Military, Mil 211-221 or 251-261	1	1
Elective	2–3	2–3

Junior Year	F	S
Introduction to Marketing, Econ 222	2	or 2
Money and Banking, Econ 333	3	or 3

Statistical Methods I, Econ 353	3	or 3
Intermediate Economic Analysis, Econ 433	3	or 3
National Government, PolS 213	3	or 3
Public Finance, Econ 413	3	or 3
Economic History of the U. S., Hist 324	4	or 4
Sociology Elective	2–3	or 2–3
Elective*	5–6	4–5

Senior	F	S
State and Local Government, PolS 243	3	or 3
Intermediate Macroeconomics, Econ 423	3	or 3
Public Administration, PolS 333		3
Economics Seminar, Econ 401	1	or 1
Economics Elective	3	or 3
Humanities Elective	2	2
Political Science elective, PolS 312, or 322, or 613, or 623	2–3	or 2–3
Electives	6–7	6–7

Students wishing to take a major in Economics with emphasis on mathematics and statistics should consult adviser.

MAJOR: Econ 203, 213, 222, 333, 353, 401, 413, 423, 433 and 5 elective credits.

MINOR: Econ 203, 213, 222, 333, 353 and 4 elective credits.

*Students wishing to prepare for high school teaching should consult with the head of the Education Department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above.

Department of Education, Psychology and Industrial Arts (Ed, Psy, IAE)

Professors Sundet, Puttmann; Professor Emeritus Wiseman; Associate Professors Foreman, Gadda, Herold, Johnston, Scholten, Whitmore; Assistant Professor Williams

Administration of Teacher Education

The Teacher Education program, at South Dakota State College, is administered and coordinated by a Teacher Education Committee appointed by the President. The committee chairman is the head of the Education Department, and the other members represent Agriculture, Home Economics, and Physical Education. The committee administers teacher education and is concerned with policy and the over-all coordination of the program.

The Department

The department of Education, Psychology, and Industrial Arts has for its chief purpose the training of teachers of agriculture, homemaking, industrial arts, physical education, secretarial science, music and the academic areas. Certain of the psychology courses are service courses for students who are enrolled in the several divisions of the college but who do not wish to teach. There is a special program for those who wish to prepare for counseling and guidance work in schools or industry.

State College has been approved for training teachers of vocational agriculture and vocational homemaking by the State Board of Education and by the Division of Vocational Education of the United States Office of Education. The latter office administers vocational education under the Smith-Hughes Act and subsequent acts providing for federal aid for such work.

The curricula for the training of high school teachers at State College have been approved by the State Department of Education. By an early action of the Board of Regents, students who are not above freshmen rank are not permitted to enroll in professional education courses.

South Dakota State College is accredited by the National Council for the Accreditation of Teacher Education (NCATE), an independent, autonomous, voluntary accrediting body devoted exclusively to the evaluation and accreditation of teacher education programs.

Admission and Quality of Work

Students desiring admission into professional courses in education for the purpose of earning a teaching certificate must file an application in the Department of Education prior to enrolling in education courses. A Teacher Selection and Admission Committee will have the responsibility of selection for admission and retention.

Staff members outside of the Department of Education who are in departments in which the student is majoring (or minoring) may be asked to serve on the Teacher Selection and Admission Committee.

Credits of transfer students from other institutions and of those with degrees in other areas will likewise be evaluated by the committee. Students entering the teacher education program must meet the following qualifications:

1. Minimum all-college G.P.A. of 2.0 for admission to the education curriculum. (Stu-

dents enrolling in a student teaching course must have an all-college G.P.A. of 2.2.)

2. Acceptable college entrance test scores.
3. Must possess satisfactory personal, moral, psychological and physical qualifications.
4. Recommended by department in which the student is majoring.

Preparation for Teaching

For teaching, the candidate should have good personal qualities that fit in with such work, and a good general education background usually attained in the first two years at college. He should have the required training in the subject areas he expects to teach and have completed the necessary education and psychology courses. The State Department of Public Instruction in issuing the teacher certificates makes particular note of subject matter background and professional education courses taken.

Students in Science and Applied Arts Division have their major and minors. From these they can make up their teaching major and minors. The education and psychology courses do not count as a major or minor but they are one of the requirements for the teaching certificate. Because of the nature of the work of the high school curricula in our small and medium sized high schools in South Dakota a more general preparation of teachers seems desirable. Teachers may expect to teach in more than one area of specialization. Their electives in college beyond their major and minors can serve this purpose. In science they should plan their preparation for all usual subjects in science rather than in just one special science or in Social Studies they should plan their preparation for various areas in Social Studies rather than just one special area of history or sociology. The requests for teachers usually specify directing some one or several extra class activities.

Fields—Teachers prepare in different combinations of these fields: Science, Mathematics, Social Studies, English, Foreign Languages, Secretarial Sciences, Physical Education, Music, Art, and Industrial Arts.

High School teachers are permitted to teach subjects for which their preparation is adequate according to the State Department standards.

Standards—To teach in most subject matter areas the student must have completed 15 semester hours of academic preparation. The amount of preparation in any particular subject varies from 6 to 9 semester hours. In the field of Language Arts the student must have completed 24 semester hours of preparation with a minimum of 6 semester hours preparation in any specific subject matter field except English, in which the academic preparation must total 15 semester hours.

Some schools hiring teachers place their local requirements above the minimum set by the State Department of Public Instruction.

Students planning to teach should consult the Education Department and college major and minor departments early in the junior year for more detailed interpretations of these regulations.

Teaching Certificates

Teaching certificates in South Dakota are issued by the State Department of Public Instruction. The Secondary Certificate qualifies the holder to teach subjects in grades 7-12. The certificate states the major and minor subjects and subject groups which the teacher may teach.

Placement Service

A placement service for graduates and former students of the College who are prepared to teach is provided in the Educational Placement Bureau in the Department of Education. The Bureau also serves local school officers by helping them find qualified teachers. The annual fee is $3.00 for registration in the Bureau.

Graduate Study in Education

There is a strong trend toward higher certificates which require graduate work in professional education. The Education Department is well prepared to provide such graduate training in certain areas, for teachers, principals, and other school personnel. Superintendents and principals in South Dakota must hold the respective administrator's certificate. The State Department of Public Instruction specifies certain courses in Administration, Supervision, Curriculum, and Guidance, as well as certain

minimum years of teaching experience for the administrator's certificates. The Educational Department offers, usually through summer session work, all the graduate-level courses required by the State Department.

A graduate program of courses is available for teachers which is specially designed to be of benefit to their classroom teaching. This program is such that, upon completion, only a few extra courses will be necessary for a major in guidance, or a major in administration on the master's degree level to qualify for guidance work or for administrative positions. This teacher's major has as its primary emphasis, however, the improvement of classroom teaching and is available to those who wish to up-grade their professional training to meet the requirements of advanced training established by certain local schools, or to meet certification requirements in other states. This course sequence is available to be used as a major toward the master's degree.

A separate graduate major is available in Education for those who wish to become school counselors. Courses required correspond to certification requirements in most states, and are especially applicable to South Dakota.

Special graduate courses have been set up to enable the student to qualify for the Master's degree in Agricultural Education, Home Economics Education, and Physical Education. Specific course descriptions can be found under these department headings, while the general requirements for the Master's degree are outlined in the Graduate Bulletin. With careful planning of the graduate program it is possible to qualify for the Administrative Certificate while meeting the requirements for the graduate degree in Agricultural Education, Home Economics Education, and Physical Education.

A superintendent must have a Master's degree to qualify for the Superintendent's Administrative Certificate.

In order to qualify for a Principal's Administrative Certificate at either the elementary school or high school level, the individual must have completed a certain amount of specified professional education courses at the graduate level. The Master's degree is required for the Secondary Principal's Administrative Certificate.

For a statement of specific requirements for the different Administrator's Certificates the student should write the State Department of Public Instruction or consult with the Head of the Education Department.

Education Curriculum for Teachers of Academic Subjects

Sophomore Year	**F**	**S**
General Psychology, Psy 203*	3	or 3
Junior Year	**F**	**S**
Practicum and Professional Laboratory Experiences, Ed 301	1	or 1
Introduction to American Education, Ed 302	2	or 2
Educational Psychology, Ed 312	2	or 2
Senior	**F**	**S**
First Half of Semester:		
Educational Measurements, Ed 402	2	or 2
Methods of Teaching in High School, Ed 403	3	or 3
Principles of Guidance, Ed 412	2	or 2
Audio Visual Methods and Materials, Ed 422	2	or 2
Second Half of Semester:		
Supervised Student Teaching in Secondary Schools, Ed 408	8	or 8

*General Psychology is a prerequisite to education courses but does not count as education credits for the teaching certificate. In order to complete the Education Curriculum as outlined above, the prospective teacher should take Psychology 203 in the sophomore year. Then he should start the education courses in the fall semester of his junior year. Students failing to do this are irregular and run into problems of prerequisites and scheduling difficulties.

Curricula for Teachers of Special Areas

The curricula for special groups such as agricultural education, home economics education, industrial arts and physical education are found elsewhere in this bulletin (see index).

Inasmuch as requests for teachers of these special areas frequently specify that candidates must also be prepared to teach in some academic area as well as in the specialty, it is recommended that the student prepare himself in one or two minor fields. Frequently such teachers are also called upon to direct some extraclass activity.

EDUCATION (Ed)

UNDERGRADUATE COURSES

301 Practicum and Professional Laboratory Experiences 1(0,1) FS

Practicum in study of desirable classroom practices; observation in junior and senior high schools; identification and correction of deficiencies in basic competencies prior to advanced standing in teacher education.

302 Introduction to American Education 2(2,0) FS

Historical, philosophical, psychological, and sociological backgrounds for education in America. Aims and functions of American education. Organization and administration on federal, state, and local levels in America. Teaching profession. An overview of education in American society for classroom teachers. P, Psy 203, junior standing.

312 Educational Psychology 2(2,0) FSSu

Nature of the learner, physical, emotional, mental, social growth and development, nature of learning in man, learning theories, learning curves, retention, memory, individual differences, transfer of training and rates and limits of improving learning. Required for certification. P, junior standing, Psy 203.

Engl 362 The Teaching of English 2(2,0) F

Techniques, materials, and resources for teaching high school students in language arts. Required of English majors. Taught by the English Department.

402 Educational Measurements 2(2,0) FS

Measurements and evaluation applied largely to achievement in secondary school subjects. Underlying principles and best practices. Functional in emphasizing best and newest in teacher-made tests and understanding and some usage of standardized tests. Emphasis on interpretation of results. P, senior in education.

403 Methods of Teaching in Secondary Schools 3(3,0) FS

Combination of general and special methods. Taken first half of semester in which student does his student teaching. Required for certification. P, 301, 302, 312.

408 Supervised Student Teaching in Secondary Schools 8(0,8) FS

Assignment in student's teaching major, or sometimes in teaching minor. Must have a 2.0 GPA in Education courses, including Psychology 203 and in courses in which student is qualified to teach. Offered last half of semester. Application for courses must be made by student in second semester of junior year on proper application form.

412 Principles of Guidance 2(2,0) FS

Purpose and scope of guidance services, including meanings, philosophy and concepts, basic elements of such service, personnel involved and organization and evaluation of guidance programs. P, senior in education.

422 Audio-Visual Methods and Materials 2(1,2) FSSu

Characteristics and practical use of visual aids of projection and non-projection types. Specific laboratory practices in operation of usual projection machines. Sources of supply, acquisition and organization of audio-visual materials in school library.

Mus 423 Teaching Music in Secondary Schools 3(3,0) F

(See Music Section.)

IAE 432 Methods of Teaching Industrial Arts 2(2,0) F

(See Industrial Arts Education Section.)

Ed 442 Driver Education 2(2,0) FSu

Basic course for preparation of driver education teachers in secondary schools. Techniques, materials, equipment and facilities. Organization, administration, public relations. Classroom instruction and road practice. P, Ed 312 and consent of instructor.

GS 472 Philosophy of Education 2(2,0) F

(See General Studies Section.)

PE 482 Methods in Teaching Physical Education 2(2,0) FS

(See Physical Education Section.)

FL 491 Special Problems in Teaching Foreign Languages 1(1,0) S

(See Foreign Language Section.)

GRADUATE COURSES

602 Principles of Vocational Education and Practical Arts 2(2,0) SSu

Overview of vocational and practical arts education, their place in community school; organization and characteristics of instructional programs in agricultural, homemaking, business and industrial education. For teachers, administrators and guidance personnel. P, senior in education.

613 Educational Statistics 3(3,0) FSu

Emphasis on meanings and interpretations and applications. Deals with data from educational and psychological measures. Exercises on tabulating and calculating various statistical measurements and graphic representations. Required of most candidates for graduate major in education. P, graduate standing. Open to seniors.

630 Workshop in Education 1-3 Su

Workshop sessions, in several areas of education: Methods, curriculum, guidance, administration, supervision and others. Generally requires 30 hours of work per credit in workshop sessions, lectures, and outside assignments. Concentrated course. Credit at rate of one credit per week. No more than 4 credits may be earned in workshop. P, experienced teachers, consent of instructor.

640 Education Seminar 1-3(1-3,0)

Review of scientific investigations of problems of education. Problems for investigation and research assigned to students. P, open to seniors and graduate students in education by permission of instructor.

J 642 Institutional Public Relations 2(2,0) SSu
(See Journalism Section.)

650 Problems in Education 1-3
Selected studies to meet needs of advanced students. P, senior standing, for seniors and graduate students desiring to do individual studies. Limited to 3 credits in graduate program. Consent of instructor.

651 Advanced Driver Education 1(1,0) Su
Traffic accident problems; survey of research studies in driver education and protection; sources of materials; measurement of driver attitudes. May be conducted as regular course or as short course involving full week (40 hours) of instruction. P, 442.

GS 672 Improvement of Reading 2(2,0) SSu
(See General Studies Section.)

702 Research Methods in Education 2(2,0) FSu
Main objectives are: (a) understanding standard and new research procedures in education (b) acquaintance with up-to-date research on present-day educational problems (c) understanding and using evaluation standards for education research. Required of most graduate majors in education.

712 School Supervision 2(2,0) FSu
Required of School Superintendents and School Principals by State Department of Education for respective administrative certificates. Procedure for improvement of instruction in secondary and elementary school subjects.

722 Organization and Administration of Elementary Education 2(2,0) SSu
Principles and modern practices of organizing and administering work of elementary schools. Required by State Department of Public Instruction of school superintendents and elementary school principals. P, Ed 752.

732 Elementary School Curriculum 2(2,0) SSu
Nature and principles of curriculum in elementary schools. Newer trends and modern curriculum development procedures.

742 Secondary School Curriculum 2(2,0) SSu
Nature and principles of curriculum in secondary schools. Newer trends and modern curriculum development procedures.

752 Public School Administration 2(2,0) FSu
Organization, administration and services of school systems in state, county, and local districts. Constitutional and statutory provisions. Work and responsibilities of State Board of Education, State Department of Public Instruction, County and Local Boards, and of superintendents and principals. Some attention to financial matters.

762 School Law 2(2,0) FSu
Legal character of Public Schools; legal powers of school boards, administrators, and teachers; legal aspects of parent-child-school relationships. Emphasis will be placed on South Dakota School Law. Alternates with Ed 772. P, Ed 752.

772 School Buildings and Grounds 2(2,0) SSu
Managements, core and operation of school plant. Needs and evaluation of existing facilities, new buildings and remodeling. Not a technical course in design and materials. Alternates with Ed 762.

782 School Finance 2(2,0) SSu
Business aspects of school administration. Organization and work of school board, equipment and supplies, janitor service, and school finances including budgeting procedure and insurance. P, 752.

790 Thesis in Education 5-8 as arranged

792 Research Problems in Education and Agricultural Education 2(2,0)
Individual work. Problem selected, analyzed and data gathered and tested statistically. Reported in approved research form. Required of all graduate students in education qualifying for Master of Education degree under Option "A." P, graduate standing in education. Ed 613, 702, and 10 graduate education credits.

GUIDANCE AND COUNSELING (GC)

602 Guidance and Counseling Workshop 3 credits Su
Selected problem areas in counseling and guidance. Needs and interests of class members will determine, to an extent, course content. Case study and case conference techniques will be included. Nationally known guidance authority will be scheduled as speaker. Outstanding guest speakers and consultants will participate in general sessions.

702 Administration of School Guidance 2(2,0) FSu
Principles of guidance; organizing school guidance program, tests and testing; guidance library and materials; interviewing and counseling. For those seeking administrative certificate.

703 Group Testing 3(3,0) FSu
Standardized and informal instruments commonly used for measurement and evaluation in elementary and secondary schools. Theory and practice of administration, scoring and interpretation. P, Ed 613 or consent of instructor.

712 Occupational and Education Information 2(2,0) SSu
Using, reviewing, and evaluating occupational information. Sources and types of materials and occupational filing plans. Securing occupational information. P, Ed 412.

722 Mental Health and Personality Development 2(2,0) SSu
Nature of personality; mental and emotional health and recognition of deviations in children and adults. Emphasis on mental health problems and positive program for personal mental health.

732 The Exceptional Child 2(2,0) FSu

Critical consideration of physical, social, emotional, and intellectual qualities which characterize children who deviate from normal to such an extent as to require special educational consideration. Special attention given to study of desirable provisions in educational program of gifted children.

743 Counseling Theory and Practice 3(3,0) FSu

Theories, methods, and application of the counseling process at all levels. P, 15 semester credits in guidance and counseling and consent of instructor.

752 Seminar in Guidance and Counseling 2(3,0) SSu

Research relating to guidance and counseling. Students will investigate specific problems. P, 20 semester credits in guidance and counseling and consent of instructor.

763 Counseling Laboratory and Supervised Practice 3(3,0) SSu

Counseling interviews and activities under supervision of one or more members of college staff will be conducted in counseling laboratory and field. In addition to laboratory and field experience, typewritten report analyzing experience must be submitted to supervisor. P, advanced graduate majors in guidance and counseling and consent of Director of Counselor Education.

AGRICULTURAL EDUCATION (AgEd)

UNDERGRADUATE COURSES

202 Teaching Farm Mechanics 2(3,2) FS

[Same as MA 202 Farm Mechanics 2(1,2) FS]

Methods of teaching farm mechanics, including shop management, safety, shop plans, selection, care, and use of hand and power tools and equipment, to be taken as part of student teaching block in Agricultural Education. P, senior in agricultural education.

351 Seminar in Agricultural Education 1(1,0) FS

Introduction to vocational education in agriculture. Teaching high school vocational agriculture as profession. Required of agricultural education juniors. P, junior standing.

453 Special Methods in Vocational Agriculture 3(3,0) FS

Aims, course of study, selection and organization of subject matter, methods in field, laboratory, classroom, and supervised farming. Taken first half of semester in which student does his student teaching, and resumed following student teaching. P, AgEd 351, Ed 312.

454 Program Planning in Vocational Agriculture 4(4,0) FS

Future Farmers of America Program, Adult Education, and Supervised Farming; policy development. Offered first half of semester in which student does his student teaching and resumes following student teaching. P, senior standing in agricultural education.

458 Student Teaching in Vocational Agriculture 8 credits FS

Required of seniors in agricultural education for certification. Student must have completed at least 40 credits in technical agriculture. Must have GPA of 2.2 or better. Offered last half of semester in which student is qualified to teach. Application for course must be made by students in spring semester of junior year.

GRADUATE COURSES

600 Seminar in Agricultural Education 1-2(1,0) or (2,0)

Specific problems dealing with instruction in vocational agriculture, project work, course of study, farm enterprise analysis, local survey. Reading and problem work. P, 453, 454, 458.

702 Adult Education in Vocational Agriculture 2(2,0) Su

Young farmer and adult farmer work. Emphasizes needs and techniques in administering and conducting adult education programs in vocational agriculture; course planning, instructional procedures, followup and evaluation of adult classes. P, graduate student in agricultural education.

712 FFA and Supervised Farming Programs 2(2,0)Su

Emphasizes needs, scope, and techniques in building supervised farming and Future Farmer programs. Stresses integration of these programs with high school vocational agriculture curriculum. P, graduate student in agricultural education.

722 Curriculum in Vocational Agriculture 2(2,0) Su

For teachers and administrators of vocational agriculture. Survey of scientific studies and literature in field; principles and procedures in course building as applied to vocational agriculture. P, graduate student in agricultural education.

INDUSTRIAL ARTS EDUCATION (IAE)

Students completing this curriculum will find their chief opportunity for employment in the field of teaching industrial arts in high school.

To qualify for the teaching certificate the student must complete twenty-two semester hours in Education as indicated in the Education curriculum. Students who are definitely not planning to teach may be excused from some or all of the Education courses but anyone planning to eliminate the Education courses from this curriculum should do so only after considerable thought. Permission of the dean and

the department head will be required if the Education work is to be waived. Electives replacing the Education courses must be taken in courses numbered 300 or above.

Opportunities for employment in fields other than Education will present themselves, such as semi-professional engineering jobs, and employment in the building trades and industry. Persons going into these fields usually will find it necessary to start relatively near the bottom but because of the training received in the college program they will usually be able to progress much more rapidly in securing positions of responsibility than without such training.

Students who expect to enter the teaching profession should prepare themselves to teach in one or more academic fields since not all high schools require a full-time industrial arts instructor.

Curriculum in Science and Applied Arts, Industrial Arts Major

Freshman Year	F	S
English, Engl 113-123	3	3
Chemistry, Ch 110	4	
Engineering Graphics, EG 103-112	3	2
Machine Shop, ES 121		1
Woodworking, IAE 153	3	
Fundamentals of Speech, Sp 103		3
Algebra, Trigonometry, Math 113 and 133	3	3
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100		
Physical Education, PE 101-111	1	1
Electives		3
Total	18	17

Sophomore Year	F	S
Welding, ES 131	1	
Welding, ES 151		1
Carpentry, IAE 253		3
Introduction to Printing, IAE 322	2	
General Psychology, Psy 203	3	
Drawing and Composition, IAE 122		2
Botany, Bot 103 and 113	3	3
Elementary Physics, Phy 114 and 124	4	4
Introduction to Social Science, GS 103-113	3	3
Military, Mil 211-221 or 251-261	1	1
Elective		2
Total	17	19

Junior Year	F	S
Auto Mechanics, IAE 262		2
Architectural Drafting, EG 222	2	
Principles of Economics, Econ 203		3
Introduction to Sociology, RS 153	3	
Advanced Exposition, Engl 352	2	
Woodturning, IAE 241		1
Introduction to American Education, Ed 302		2
Educational Psychology, Ed 312		2
Methods of Teaching Industrial Arts, IAE 432		2
Building Materials, CE 222	2	
Practicum and Professional Laboratory, Ed 301	1	
Cabinetmaking, IAE 452	2	
Sheet Metal, IAE 412		2
First Aid, PE 171	1	
Patternmaking, IAE 421	1	
Elective	2	2

Senior	F	S
Educational Measurements, Ed 301	2 or 2	
Methods of Teaching in Secondary Schools, Ed 403	3 or 3	
Principles of Guidance, Ed 412	2 or 2	
Supervised Student Teaching in Secondary Schools, Ed 408	8 or 8	
Humanities Elective	5 or 5	
Elective	12 or 12	
Total	32	32

MAJOR: IAE 122, 153, 241, 252, 253, 262, 412, 421, 432, 452, CE 222, EG 103, 112, 222, ES 121, 131, 151.

MINOR: A minor consisting of a total of 16 semester hours of the courses required for the major may be arranged.

UNDERGRADUATE COURSES

153 Woodworking 3(2,4) FS

Proper use and care of woodworking tools and machines. Use of new equipment and methods of machine adjustment. Elementary finishing of common woods used in building construction. Basic information in sill and roof construction. Special emphasis on fundamental joints.

241 Wood Turning 1(4) FS

Use of wood lathe in production of patterns. Use of drive chuck, face plate, templates, and boring jigs in production. Knowledge applicable to construction of patterns for castings. Use of soft and hard lathes with variable speed control as well as rheostat control. P, 153.

253 Carpentry 3(2,4) S

Special instruction in use of radial and cut off saws in building construction. Advanced study and testing of sills and rafters. Scientific approach to building construction in all its phases from forming of concrete to painting and decorating exterior. Construction of a building. P, 153.

262 Auto Mechanics 2(1,2) S

Tune up, servicing and repairing engine accessories; testing valves, carburetors; ignition system; installing new rings; valves; and general work required of mechanics.

322 Introduction to Printing 2(1,2) F

Emphasis on press work and basic skills involved in printing operations. Hot and cold composition, book and display typography, letter press, offset press

work. Survey of required skills and opportunities in field of printing. Taught by Printing and Journalism Department.

412 Sheet Metal 2(1,2,0) S

Operations in raising and forming, bending, spinning, chasing, seaming and piercing of metals. Work in copper, brass, aluminum, stainless steel, and sheet metal. Practice in layout. P, Advanced Engineering Shop and Descriptive Geometry. Senior standing or permission of instructor.

421 Elementary Patternmaking 1(3,0) F

Making of patterns of single parting line and solid. Metal shrinkage and expansion by use of shrinkage rule. Working to very close tolerance in wood with machines and hand tools.

432 Methods of Teaching Industrial Arts 2(2,0) F

Methods in teaching that apply only to field of Industrial Arts: Sale of materials, trading systems, testing, inventories, discipline, teaching aids, cardinal principles of Industrial Arts teaching, purchasing new and used machinery. Organization aims and values of shop activities. Senior standing.

452 Cabinetmaking 2(0,6) F

Study of furniture design, period to modern. Criticism of structure. Use of all machines in furniture construction by machine alteration. Use of jigs. Finishing of common furniture woods. Production line methods by construction of like products. Testing glues in relation to various woods. P, 153, 241.

GRADUATE COURSES

612 Metal and Wood Finishing 2(2,0) Su

Use of lacquers, varnishes, paints, synthetic finishes for wood and metal. Finishing of metal through machining and heating. Applicators such as brushes, air guns, and compressed containers. Use of all types of stains, solvents, fillers and sealers. P, minor in IAE.

622 History of Industrial Arts 2(2,0) Su

Development of industrial arts from Russian Military Craft School through fireside crafts of the Scandinavian countries. Introduction of manual training into curriculum of education in United States and changes that resulted in our present course of exploration in various trades of today. P, minor in industrial arts.

PSYCHOLOGY (Psy)

The Psychology offerings are intended to provide a basic foundation in the science of psychology for those students intending to major in psychology. The courses are also designed to acquaint non-psychology majors with the field of scientific psychology.

The psychology curriculum is designed to give psychology majors a sound background in the humanities and in the social and natural sciences in addition to providing them with the skills considered essential for the scientific study of human behavior.

Students majoring in psychology will be expected to maintain a high standard of scholarship in all of their fields of study. Those who intend to make a career in psychology should plan to carry on their studies to the Masters degree level and beyond.

Curriculum in Science and Applied Arts, Psychology Major

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Oral Communication, Sp 103		3
General Zoology, Z 103-113	3	3
Introduction to Sociology, RS 153	3	
Algebra, Math 113; Trigonometry, Math 133, or Mathematical Analysis, Math 145-155	3–5	3–5
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	
Electives*		

Sophomore Year	F	S
General Psychology, Psy 203	3	
Principles of Economics, Econ 203-213	3	3
Inorganic Chemistry, Ch 115, 124 or Elementary Physics, Phy 114-124	4–5	4
Humanities, GS 253		3
Elementary Physiology, Z 204		4
Military Science, Mil 211-221 or 251-261	1	1
Electives*		

Junior Year	F	S
Experimental Psychology, Psy 313		3
Learning Theory, Psy 403	3	
Statistical Methods, Econ 353	3	
Cultural Anthropology, RS 302		2
Genetics, Z 303		3
Logic and Scientific Reasoning, GS 342	2	
Philosophy of Science, GS 462		2
National Government, PolS 213		3
Mammalian Anatomy, Z 414	4	
History Sequence	3–4	3–4
Electives*		

Senior Year	F	S
Social Psychology, Psy 422	2	
Abnormal Psychology, Psy 423	3	
Personality, Psy 433		3
Seminar, Psy 412		2
Theory of Political Control, PolS 442		2
Electives*		

*Electives to be chosen in consultation with major adviser from Psychology department.

Students intending to work toward a teacher's certificate must consult the psychology department adviser for upper division requirements at the beginning of their junior year. A modified upper division curriculum is available to such students.

All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the Bachelor of Science Degree.

MAJOR: Psy 203, 313, 403, 412, 422, 423, 433, Econ 353, and RS 302. Students majoring in psychology will be expected to follow the above curriculum. Appropriate course substitutions will be made and approved only upon consultation with the psychology department adviser.

MINOR: Psy 203, 313, 403, 433, and Econ 353.

UNDERGRADUATE COURSES

203 General Psychology 3(3,0) FS

Introduction to psychology as a science. Exposes student to psychological concepts of maturation, motivation, learning, perception, individual differences, and personality. Prerequisite for all courses in psychology. Required of all students in education. P, sophomore standing.

302 Child Psychology 2(2,0) FSu

Physical, social, emotional, and intellectual changes which take place in children at different stages of chronological maturation. Emphasis will be placed on an interpretation of child's behavior in terms of his environment. Educational significance of growth, personality patterns, and adjustment mechanisms will be considered. May be counted as an educational elective. P, Psy 203.

303 Business and Industrial Psychology 3(3,0) S

Application of psychological principles to business and industry problems of employee selection, supervision, job satisfaction, work efficiency, effects of fatigue, human engineering. P, Psy 203.

313 Experimental Psychology 3(3,0) F

Methodology of psychology; experimental approach to and results of experimental studies in reaction time, attention, emotion, psychophysics, and perception. Required of all psychology majors. P, Psy 203.

403 Learning Theory 3(3,0) F

Major learning theories are explored: connectionism, classical and operant conditioning, Hullian theory, gestalt and field theory, functionalism. P, Psy 203 and consent of instructor.

412 Seminar in Psychology 2(2,0) S

For psychology majors only. P, senior standing. Schedule arranged.

422 Social Psychology 2(2,0) FSu

Basic principles, concepts and methods utilized in analyzing interaction of individual and group. P, 6 credits in psychology and consent of instructor.

423 Abnormal Psychology 3(3,0) FSu

In order to understand both normal and abnormal and their relation to each other, emphasis is upon unity and interrelativeness of biological, psychological, and sociological factors involved. Personality and behavior pattern development is stressed for purpose of identifying syndrome of student in need of referral.

433 Personality 3(3,0) S

Systematic study of major personality theories: Freudian, Jungian, neo-Freudian, behavioristic, and field theories will be emphasized. P, 8 hours in psychology; senior standing; consent of instructor.

GRADUATE COURSES

603 Adolescent Psychology 2(3,0) FSu

Physical, intellectual, emotional, and social development of adolescents and their adjustment in home, school and community. P, four credits in psychology, and consent of instructor. (May be counted as education credit.)

703 Individual Mental Testing 3(3,0) SSu

Intensive training in administration and scoring of individual mental tests: Stanford-Binet and Wechsler scales. P, Ed 613, GC 703; consent of instructor. Master's degree candidate in GC. Class limited.

Department of English (Engl)

Professors Giddings, Fox (on leave); Associate Professors Hinck, Nagle, Nelson; Assistant Professors Alexander, Brown, Morgan, Willowby, Wright; Instructors Carroll, Johnston, Sheimo, Walz

The required courses in English aim to give the student a command of the English language and literature which every educated person should have. All freshmen are required to take 113-123 or 143-153. Sophomores in the Divisions of Home Economics, Pharmacy, and Science and Applied Arts must take 203 and this course may be taken as a Humanities elective in the other divisions. The types courses numbered from 213 to 272 are recommended to students as satisfying the Humanities requirement. Students in the Division of Engineering must take 352 and the course is open to other students desiring an advanced course in expository writing.

Freshmen are assigned to English 113-123 or 143-153 on the basis of their scores on the English placement examination. Students may not change from one series to the other without permission of the English Department, and completion of a series is required for graduation. If a student falls below college standards on the examination,

he is required to complete 12 (High School English Review) before registering for 113. Likewise a student who falls below college standards on the entrance examination in reading is required to complete 22 (Developmental Reading Laboratory) before he may register for 113. Both 12 and 22 may be taken concurrently if examinations show the need and if the student's load is sufficiently adjusted.

Courses 213, 242, 252, 262, and 272 will not all be offered any one semester. From this group those courses will be scheduled for which a sufficient number of students have expressed a preference.

The English Major and Minor

A major in English is offered and is outlined to meet South Dakota requirements for preparation of high school teachers of English. However, English majors who do not contemplate high school teaching may make substitutions for courses in Education and certain other required courses, and by taking additional electives in English prepare themselves for graduate study in the subject.

English majors must take 203, 302, 313-323, 333-343, 412, 422, and electives to total twenty-five semester hours. They must complete the second year of college work in a modern foreign language. For those who expect to teach in high school, 362 is required and 203 and 242 are especially recommended as electives.

English minors must take 203, 313-323 or 333-343, 302, and electives to total eighteen semester hours.

Master of Science in Language Skills

Graduate students who wish to improve themselves to teach lower division composition-literature or communication courses may work toward the Master of Science degree in Language Skills. This is essentially a teaching program for graduate assistants in English. Course offerings are arranged to permit graduate assistants to complete degree requirements in two academic years. Further information about this program may be found in the Graduate Bulletin. This program is also excellent preparation for further graduate study towards the Ph.D. degree.

Master of Education with Communication Major

Secondary school teachers of English who wish to prepare themselves more broadly in the language arts may elect the Master of Education curriculum with a major in Communication with emphasis on English. This curriculum requires at least four semester hours in Journalism, four in speech, and twelve in English. The minor is Education, with a minimum of ten hours required. This program is especially adapted to summer school attendance. See the Graduate Bulletin for details and see or write the head of the English Department.

Curriculum in Science and Applied Arts, English Major

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Introduction to Social Science, GS 103-113	3	3
Fundamentals of Speech, Sp 103	3	
Biology, Bot 113-123 or Botany, Bot 103-104 or Zoology, Z 103-113	3	3–4
Algebra, Math 113		3
Foreign Language	4	4
Physical Education, PE 101-111 or 121-131	1	1
Military, Mil 111-121 or 151-161	1	1
Orientation, Or 100	0	
	18	18–19

Sophomore Year	F	S
English Literature, Engl 313-323	3	3
General Psychology, Psy 203	3	
Chemistry, Ch 104 and Physics, Phy 104, or Chemistry, Ch 110-115 or Ch 110-124, or Physics, Phy 114-124	4–5	4–5
Foreign Language	3	3
World History, Hist 103-113 or substitute	3	3
Social Science elective		3
Military, Mil 211-221 or 251-261	1	1
	17–18	17–18

Junior Year	F	S
American Literature, Engl 333-343	3	3
Creative Writing, Engl 302	2	
Social Science elective		3
The Structure of English, Engl 412		2
Shakespeare, Engl 422	2	
Humanities elective	4	
*English elective		2
General elective	3	3
For Prospective Teachers		
The Teaching of English, Engl 362	2	
Practicum and Professional Laboratory Experiences, Ed 301		1
Introduction to American Education,		

Ed 302		2
Educational Psychology, Ed 312		2
	16	18

Senior Year	**F**	**S**
(Semesters may be reversed in order)		
English electives		5
Humanities electives		4
*General electives		8
For Prospective Teachers		
Educational Measurements, Ed 402	2	
Methods of Teaching in Secondary Schools, Ed 403	3	
Principles of Guidance, Ed 412	2	
Supervised Student Teaching in Secondary Schools, Ed 408	8	
	15	17

*Students who wish to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B. S. degree.

UNDERGRADUATE COURSES

12 High School English Review 2(2,0) FS

Intensive review of high school work in grammar, usage, and writing. Required before English 113 for students whose English placement scores are below college standards. May be taken concurrently with English 22. Credit will not count toward degree.

22 Developmental Reading Laboratory 2(1,4) FS

Remedial and developmental laboratory work in reading. Open to anyone. Required before English 113 for students whose English reading placement scores are below college standards. May be taken concurrently with English 12. Credit will not count toward degree. Sections limited to 20.

113-123 English 3(3,0) FSSu

Provides training in efficient, accurate reading; in clear, effective writing, and in vocabulary building. Includes instruction in conventions of standard English usage, grammar, and punctuation.

143-153 English 3(3,0) FS

Equivalent to 113-123, but with less emphasis on reading as a skill and more on literature and effective writing style.

GS 161 Reading Improvement 1(1,2) SSu

Attempts to increase reading efficiency by improving comprehension and by developing motor skills involved in reading speed. Motivates reading interest through use of films, slides, and papers. Passing grade reported as "E" (satisfactory).

GS 201 Significant Books 1(1,0) FS

Reading of significant books selected with students' interests and needs in view. Short oral reports and class discussions of reading required. May not be substituted for courses required for major or minor. May be used as humanities elective.

203 Introduction to Literature 3(3,0) FSSu

Principal literary types—fiction, drama, essay, biography, and poetry. Designed to acquaint students with rewards of reading significant literature. May be used as humanities elective; required in some curricula. P, 113-123 or 143-153. Open to students exempt from 143.

213 Fiction 3(3,0) SSu

Narrative prose (novel, novelette, short story). May be used as humanities elective. P, 203.

242 Poetry 2(2,0) SSu

Selected poems, English and American. May be used as humanities elective. P, 203.

252 Biography 2(2,0) SSu

Reading from great biographies from past and present. May be used as humanities elective. P, 203.

262 Drama 2(2,0) FSu

Selected plays, ancient and modern. May be used as humanities elective. P, 203.

272 Literature of the American West 2(2,0) F

Literature of the frontier; attention to various concepts of the West. May be used as humanities elective. Open to students exempt from 143.

302 Creative Writing 2(2,0) FS

Writing of fiction, drama, biography, or poetry. Required of English majors and minors. P, 12 hours of English.

313-323 English Literature 3(3,0) FS

Historical survey from *Beowulf* to modern times. Required of majors. P, minor or GPA of 3.00.

333-343 American Literature 3(3,0) FS

From its beginnings to present day. Required of majors. P, minor or GPA of 3.00.

352 Advanced Exposition 2(2,0) FSSu

Advanced course in writing. Required of juniors in Division of Engineering and open to other students majoring in technical fields. P, 113-123 or 143-153.

362 The Teaching of English 2(2,0) F

Techniques, materials, and resources for teaching high school student in language arts. Required of majors.

412 The Structure of English 2(2,0) SSu
(Offered in 1964)

Basic English grammar with emphasis on modern American usage. Language as dynamic, evolving phenomenon. Required of majors. P, minor or consent. Alternate years.

422 Shakespeare 2(2,0) F

Representative comedies, tragedies, and chronicle-histories. P, 262 or 313 or consent.

432 Advanced Shakespeare 2(2,0) S
(Offered in 1964)

Intensive study of selected plays with reference to significant Shakespearean criticism. Alternate years.

442 Modern Drama 2(2,0) S (Offered in 1965)

Beginning with Ibsen, but concerned chiefly with significant dramatists since his time. Alternate years.

452 Recent British and American Literature 2(2,0) S (Offered in 1964)

American and British literature from 1900 to present. P, 16 hours of English or 20 hours in combination of language arts or consent. Alternate years.

GRADUATE COURSES

LS 602 Research Tools in the Humanities 2(2,0) F

Survey of research and reference materials of special value and interest to students of Humanities.

622 Development of English 2(2,0) SSu (Offered in 1965)

Development and structure of language. Special emphasis placed on grammar, treated with historical perspective. Attention also given to etymology and semantics. Alternate years.

633 Comparative Novel 3(3,0) F (Offered in 1964)

Selected European novels from Fielding to Camus. P, 16 hours of English or consent. Alternate years.

642 Milton and the Classicists 2(2,0) S (Offered in 1964)

Selected poems and prose of Milton, Dryden, Pope, Swift, Johnson, and Boswell, with some attention to lesser figures in the period 1725-1784. P, 16 hours in English or 20 hours in combination of language arts or consent. Alternate years.

652 The Romantic Movement 2(2,0) S (Offered in 1965)

Chief writers in English romantic poetry and prose from 1740-1832, with emphasis on intellectual trends. P, 16 hours in English or 20 hours in combination of language arts or consent. Alternate years.

662 American Renaissance 2(2,0) S (Offered in 1964)

Hawthorne, Emerson, Thoreau, and Whitman. P, 16 hours in English or 20 hours in combination of language arts or consent. Alternate years.

672 Realists and Early Naturalists 2(2,0) S (Offered in 1965)

From quest of Melville through realistic and naturalistic young writers at end of 19th century. P, 16 hours in English or 20 hours in combination of language arts or consent. Alternate years.

GS 672 Improvement of Reading in the School 2(2,0) SSu

Description of normal process of development in reading skills and techniques which may be employed in remedying deviations which hinder readers in speed or comprehension. Recommended for graduate students in Language Skills and Communications programs and for undergraduate majors who plan to teach. May count as education credit.

GS 682 Diagnosis and Remediation of Reading Problems 2(2,0) Su

Causes of reading deficiencies, principles and instruments of diagnosis, techniques of and materials for remediation, individually and in groups; remediation for specially handicapped child; individual case studies. Recommended for teachers and administrators. May count as education credit.

GS 692 Clinical Practices in Reading 2(1,3) Su

Supervised practice in planning and tutoring pupils having reading disability, including case study and use of diagnosis of difficulty; review of principles, materials, and techniques to be used for pupils having other reading disability. P, GS 682. May be repeated for 2 additional credits. May count as Education credit.

710 Special Problems in Composition-Literature 1-3 credits

Special problems in several areas: writing, grammar, reading, and testing. May be repeated to total of 4 credits.

721-731 Problems of Teaching Composition 1(1,0) FS

Analysis of problems encountered in teaching composition; evaluation of techniques in teaching writing skills. Required in Composition-Literature option of Language Skills program.

GS 702 Modern American Thought 2(2,0) F (Offered in 1963)

Analysis of selected economic, social, and philosophical ideas of late 19th and 20th centuries, their relationship to selected segments of American life, and their reflection in American Literature. P, consent. Alternate years.

773 Literature: Criticism and Teaching 2(2,0) F (Offered in 1963)

Tradition of literary criticism from Plato to New Criticism and application of modern principles of criticism to teaching. Required in Composition-Literature option of Language Skills program. Alternate years.

790 Thesis in Language Skills 5-8 credits

Department of Entomology-Zoology (Ent-Z)

Curriculum in Science and Applied Arts, Entomology Major

(See Entomology Major under Division of Agriculture)

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	5	
College Algebra, Math 113	3	
Trigonometry, Math 133		3
Fundamentals of Speech, Sp 103		3
General Zoology, Z 103-113	3	3
Introduction to Entomology, Ent 102		2
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	
Sophomore Year	**F**	**S**
Taxonomy of Insects, Ent 313	3	

Introduction to Literature, Engl 203	3	
English elective (200 series)		2–3
Introduction to Social Science, GS 103-113	3	3
Elementary Organic Chemistry, Ch 134		4
General Psychology, Psy 203		3
General Botany, Bot 103-104	3	4
General Bacteriology, Bac 202-212	4	
Military Science, Mil 211-221 or 251-261	1	1
Junior Year	**F**	**S**
Genetics, Z 303	3	
Principles of Economics, Econ 203-213	3	3
Introduction to Sociology, RS 153	3	
National Government, PolS 213		3
Elementary Physics, Phy 114-124	4	4
Approved electives in Entomology	6	6
Senior Year	**F**	**S**
Approved electives in Entomology	3	3
Mammalian Physiology, Z 414	4	
Humanities elective		4
*Electives	10	10

*Students who wish to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree. Students planning to study entomology at the graduate level should include among their electives courses in French or German.

Curriculum in Science and Applied Arts, Zoology Major

(See Zoology Major under Division of Agriculture)

Freshman Year	**F**	**S**
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110	4	
Elementary Organic Chemistry, Ch 134		4
College Algebra, Math 113	3	
General Zoology, Z 103-113	3	3
Introduction to Entomology, Ent 102		2
Fundamentals of Speech, Sp 103		3
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	
Elective	2	
Sophomore Year	**F**	**S**
Introduction to Social Science, GS 103-113	3	3
Introduction to Literature, Engl 203	3	
English elective (200 series)		2–3
General Botany, Bot 103-104	3	4
Introduction to Sociology, RS 153		3
General Psychology, Psy 203	3	
National Government, PolS 213		3
General Bacteriology, Bac 202-212	4	
Military Science, Mil 211-221 or 251-261	1	1
Junior Year	**F**	**S**
Genetics, Z 303	3	
Elementary Physics, Phy 114-124	4	4
Principles of Economics, Econ 203-213	3	3
Approved electives in Zoology, numbered 300 or above	3–4	3–4
Electives	3–4	2–3
Senior Year	**F**	**S**
Mammalian Physiology, Z 414	4	
Approved electives in Zoology	2–3	2–3
Humanities elective	2	2
*General electives	8–9	11–12

MAJOR: Must include Z 103, Ent 102, Z 113, Z 303, Z 414 and sufficient department-approved upper-division courses to total a minimum of 26 semester credits.

MINOR: Must include Z 103, Z 104, Ent 102, Z 303, Z 414 and sufficient department-approved upper-division courses to total 18 semester credits.

*Students who plan to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

Department of Foreign Languages (FL)

Associate Professors Barnes, Hasslinger; Professor Emeritus MacLaggan; Assistant Professor Dahl; Instructor Redhead

The department offers a composite major in foreign languages in which the student completes approximately three years of work in one language and two years of work in a second language. *On all levels the oral-aural approach prevails.*

The department maintains a language laboratory and each student, as part of the work of the course, devotes a specific amount of time each week to individual practice and recording.

The first-year courses are basic, non-specialized courses. Those beyond the first year are designed to meet the needs of students. Courses including literary readings, conversation, and composition for students wishing to develop skills in a foreign language; and second-year technical courses for students in the sciences.

All entering freshmen who have studied a foreign language in high school will be required to take an examination in the foreign language including a portion on oral-aural skills. Students will be assigned to the college course in language according to their score on the examination. Those excused from any part of a course sequence will be granted equivalent credit of that part upon

satisfactory completion of the next course. Transfer students may be required to take placement examinations. Credit toward graduation will not be allowed for less than a full year of the first course in any one language.

The Foreign Languages Major

The foreign languages major is a composite major requiring the study of at least two foreign languages. In the curriculum outlined below Foreign Languages (1) refers to the language of first choice and requires four sequence courses for a total of 24 semester credits; Foreign Languages (2) refers to the language of second choice and requires three sequence courses for a total of 18 semester credits in that language.

Specific courses required for first or second choice language, indicated by course numbers are as follows:

	First Language	Second Language
French	104-114	104-114
	203-213	203-213
	302-312	302-312
	403-413	
German	124-134	124-134
	223-233	223-233
	322-332	322-332
	423-433	
Russian	144-154	144-154
	243-253	243-253
	342-352	342-352
	443-453	
Spanish	164-174	164-174
	263-273	263-273
	362-372	362-372
	463-473	

Students who wish to qualify for secondary school teaching must complete FL 491, Special Problems in Teaching Foreign Languages, and Education courses numbered 301, 302, 312, 402, 403, 408, 412, and 422 in the junior and senior years. Formal application must be made to the Education department to gain entrance into the teacher-education program.

Curriculum in Science and Applied Arts, Foreign Languages Major

Freshman Year	**F**	**S**
Foreign Languages (1) First Year Language	4	4
English, Engl 113-123 or 143-153	3	3
World History, Hist 103-113 or	3	3
Recent American History, Hist 214	4	
Biological Science, Bot 103-113 or Botany, Bot 103-104 or Zoology, Z 103-113	3	3–4
General Physical Education, PE 101-111 or 121-131	1	1
Military Science, Mil 111-121 or 151-161	1	1
Orientation, Or 100	0	
Fundamentals of Speech, Sp 103		3
Phonetics, Sp 262	2	
Sophomore Year	**F**	**S**
Foreign Languages (1) Second Year Language	3	3
Foreign Languages (2) First Year Language	4	4
Foreign Languages (1) Composition and Conversation	2	2
College Algebra, Math 113	3	
Introduction to Literature, Engl 203		3
General Psychology, Psy 203	3	
Introduction to Sociology, RS 153		3
Principles of Economics, Econ 203	3	
National Government, PolS 213		3
Junior Year	**F**	**S**
Foreign Languages (1) Literature	3	3
Foreign Languages (2) Second Year Language	3	3
Chemistry 104 and Physics 104, or Chemistry 110 and 115 or 124 or Physics 114-124	4	4–5
Humanities elective	2–3	2–3
*Elective	4–5	4–5
Senior Year	**F**	**S**
Foreign Languages (2)	2	2
*Elective	15	15

MAJOR: First language courses include first and second year courses, one-year course in composition and conversation and one year in literature. Second language courses including the first two years of the second language plus a one-year course in composition and conversation.

MINOR: First and second-year courses in any one language plus 6 additional semester credits in the same language.

*Students who plan to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

UNDERGRADUATE COURSES

FL 491 Special Problems in Teaching Foreign Languages 1(1,0) S

Seminar dealing with particular problems encountered in teaching modern foreign languages. Discussion of textbook selection, subject matter presentation, testing, realia and laboratory techniques. Participation of entire foreign language staff. Student should consult with head of department during year previous to taking this course. Required course for all graduating foreign languages majors who plan to teach.

FRENCH (Fr)

104-114 First Year French 4(4,0) FS

Fundamentals of language enabling student to understand, speak, read, and write simple French. Classwork supplemented with foreign language laboratory.

203-213 Second Year French 3(3,0) FS

Aims of first year French continued. Reading of works of well-known modern authors, practice in conversing and writing in French. Classwork supplemented with outside reading and foreign language laboratory. Students enrolling in this course are urged to study concomitantly Fr 302-312. P, 104-114 or equivalent.

302-312 French Composition and Conversation 2(2,0) FS

Development of ability in composition and conversation. Language laboratory required.

400-410 Directed Individual Study 1-3 (1-3,0) FS

Individual reading and study on assigned topics. Meeting with instructor bi-weekly. P, 413 or consent.

402-412 French Reading for Advanced Degrees 2(2,0) FS (Offered in 1964-65)

Fundamental course for graduate students interested in meeting language requirements for advanced degrees. Basic grammar with intensive study of essentials for reading knowledge. Credit may not be counted toward Bachelor of Science degree. No prerequisites. Auditing not permitted. Open to students preparing for FL graduate exam. Alternate years. Note: will not be offered unless minimum of ten students enrolled.

403-413 French Literature 3(3,0) FS

Period and type of literature may vary from year to year. Further development of language skills. Outside reading and reports. P, 203-213 or consent.

GERMAN (Ger)

124-134 First Year German 4(4,0) FS

Fundamentals of language, enabling student to understand, speak, read, and write simple German. Classwork supplemented with foreign language laboratory.

223-233 Second Year German 3(3,0) FS

Aims of first year German continued. Reading of works of well-known modern authors, practice in conversing and writing in German. Classwork supplemented with outside reading and foreign language laboratory. Students enrolling in this course are urged to study concomitantly Ger 322-332. P, 124-134 or its equivalent.

283-293 Second Year Scientific German 3(3,0) FS

Primary emphasis on reading and translation of scientific German; continued practice in understanding German. Outside reading chosen from field in which student is majoring. P, 124-134 or its equivalent.

322-332 German Composition and Conversation 2(2,0) FS

Development of ability in composition and conversation. Language laboratory required.

420-430 Directed Individual Study 1-3(1-3,0) FS

Individual reading and study on assigned topics. Meeting with instructor biweekly. P, 433 or consent.

422-432 German Reading for Advanced Degrees 2(2,0) FS (Offered in 1963-64)

Fundamental course for graduate students interested in meeting language requirements for advanced degrees. Basic grammar with intensive study of essentials for reading knowledge. Credit may not be counted toward Bachelor of Science degree. No prerequisites. Auditing not permitted. Open to students preparing for FL graduate exam. Alternate years. Note: will not be offered unless minimum of ten students enrolled.

423-433 German Literature 3(3,0) FS

Period and type of literature may vary from year to year. Further development of language skills. Outside reading and reports. P, 223-233 or consent.

RUSSIAN (Rus)

144-154 First Year Russian 4(4,0) FS

Fundamentals of language enabling student to understand, speak, read, and write simple Russian. Classwork supplemented with foreign language laboratory.

243-253 Second Year Russian 3(3,0) FS

Aims of first year Russian continued. Reading of works of well-known authors, practice in conversing and writing in Russian. Classwork supplemented with outside reading and foreign language laboratory. Students enrolling in this course are urged to study concomitantly Rus 342-352. P, 144-154 or its equivalent.

283-293 Second Year Scientific Russian 3(3,0) FS

Primary emphasis on reading and translation of scientific Russian; continued practice in understanding Russian. Outside reading chosen from field in which student is majoring. P, 144-154 or its equivalent.

342-352 Russian Composition and Conversation 2(2,0) FS

Development of ability in composition and conversation. Language laboratory required.

440-450 Directed Individual Study 1-3(1-3,0) FS

Individual reading and study on assigned topics. Meeting with instructor biweekly. P, 453 or consent.

442-452 Russian Reading for Advanced Degrees 2(2,0) FS (Offered in 1964-65)

Fundamental course for graduate students interested in meeting language requirements for advanced degrees. Basic grammar with intensive study of essentials for reading knowledge. Credit may not be counted toward Bachelor of Science degree. No prerequisite. Auditing not permitted. Open to students preparing for FL graduate exam. Alternate years. Note: will not be offered unless minimum of ten students enrolled.

443-453 Russian Literature 3(3,0) FS

Period and type of literature may vary from year to year. Further development of language skills. Outside reading and reports. P, 243-253 or consent.

SPANISH (Span)

164-174 First Year Spanish 4(4,0) FS

Fundamentals of language enabling student to understand, write, read, and speak simple Spanish. Classwork supplemented with foreign language laboratory.

263-273 Second Year Spanish 3(3,0) FS

Aims of first year Spanish continued. Reading of works of well-known modern authors, practice in conversing and writing in Spanish. Classwork supplemented with outside reading and foreign language laboratory. Students enrolling in this course are urged to study concomitantly Span 362-372. P, 164-174 or its equivalent.

362-372 Spanish Composition and Conversation 2(2,0) FS

Development of ability in composition and conversation. Language laboratory required.

460-470 Directed Individual Study 1-3(1-3,0) FS

Individual reading and study on assigned topics. Meetings with instructor biweekly. P, 473 or consent.

462-472 Spanish Reading for Advanced Degrees 2(2,0) FS (Offered in 1963-64)

Fundamental course for graduate students interested in meeting language requirements for advanced degrees. Basic grammar with intensive study of essentials for reading knowledge. Credit may not be counted toward Bachelor of Science degree. No prerequisites. Auditing not permitted. Open to students preparing for FL graduate examination. Alternate years. Note: will not be offered unless minimum of ten students enrolled.

463-473 Spanish Literature 3(3,0) FS

Spanish and Latin American literature. Period and type of literature may vary from year to year. Further development of language skills. Outside reading and reports. P, 263-273 or consent.

Department of History and Political Science (Hist, PolS)

Professors Parker, Engberg, Hendrickson, Sewrey, Volstorff, Young (Emeritus); Assistant Professor Janisch

The courses in this department, in addition to their cultural values, are designed to serve as a necessary background for intelligent citizenship. They aim to meet the needs of the following groups of students: (1) students in the Division of Science and Applied Arts who are majoring in any of the social sciences; (2) those majoring in History and Political Science; and (3) those in the Division of Science and Applied Arts or other divisions not majoring in this department.

The courses in Political Science are designed to introduce the student to the political institutions, practical politics and international relations of the United States and leading foreign nations.

All students majoring in either history or political science should pay careful attention to sequences, and build a program based on continuity and development.

Students who expect to teach American History, in order to qualify for the South Dakota teaching certificate, must take 8 hours of American History, namely 214 and 224.

Curriculum in Science and Applied Arts, History Major

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Introduction to Social Science, GS 103-113	3	3
World History, Hist 103-113	3	3
Fundamentals of Speech, Sp 103	3	
Biology, Bot 103-123 or Botany, Bot 103-104 or Zoology, Z 103-113	3	3–4
College Algebra, Math 113		3
Orientation, Or 100	0	
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1

Sophomore Year	F	S
Introduction to Literature, Engl 203	3	
English elective (200 series)		2–3

United States History Survey, Hist 224	4	
General Psychology, Psy 203		3
Principles of Economics, Econ 203-213	3	3
Introduction to Sociology, RS 153	3	
National Government, PolS 213		3
Introductory Chemistry, Ch 104 and Introductory Physics, Phy 104, or Elementary Physics, Phy 114-124, or Chemistry, Ch 110 and 115 or 124	4	4–5
Military Science, Mil 211-221 or 251-261	1	1

Junior Year	**F**	**S**
Recent American History, Hist 214	4	
Contemporary World, Hist 404	4	
Statistical Methods, Econ 353		3
Methods and Philosophy of History, Hist 462		2
State and Local Government, PolS 243		3
Humanities elective from approved list		
Contemporary World, Hist 414		4
Philosophic Inquiry, GS 303	3	
*Electives		

Senior Year	**F**	**S**
Public Speaking, Sp 323	3	
The Family, RS 433	3	
Population Problems, RS 312		2
Research Tools in Humanities, LS 602	2	
International Politics, PolS 613	3	
Political Geography, PolS 232	2	
Political Parties, PolS 252	2	
Public Finance, Econ 413		3
*Education Block or electives		13

*Students preparing to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbering 300 or above to qualify for the B.S. degree.

MAJOR: Hist 103-113, 214, 224, 462, 404, plus 4 credits numbered 300 or above to total 24 semester credits.

MINOR: Hist 103-113, 214, 224 plus 2 additional credits to total 16.

Research Tools in the Humanities, LS 602, and History of Economic Thought, Econ 673, and History of Social Thought, RS 612, may be counted as history courses for the major.

Curriculum in Science and Applied Arts, Political Science Major

Freshman Year	**F**	**S**
English, Engl 113-123 or 143-153	3	3
Introduction to Social Science, GS 103-113 or World History, Hist 103-113	3	3
National Government, PolS 213		3
Introduction to Sociology, RS 153		3
Fundamentals of Speech, Sp 103	3	
College Algebra, Math 113	3	
Biology, Bot 103-113 or Botany, Bot 103-104 or Zoology, Z 103-113 or Bacteriology, Bac 202-212	3	3–4
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	**F**	**S**
State and Local Government, PolS 243	3	
Principles of Economics, Econ 203-213	3	3
Introduction to Literature, Engl 203	3	
Political Parties, PolS 252	2	
Recent American History, Hist 214		4
*Philosophic Inquiry, GS 303		3
General Psychology, Psy 203		3
Introductory Chemistry, Ch 104 and Introductory Physics, Phy 104, or Chemistry, Ch 110 and 115 or 124, or Elementary Physics, Phy 114-124	4	4
Military Science, Mil 211-221 or 251-261	1	1

Junior Year	**F**	**S**
*Public Speaking, Sp 323	3	
Constitutional Law, PolS 344	4	
Methods and Philosophy of History, Hist 462		2
History elective	2–4	
Statistical Methods I, Econ 353		3
Humanities elective from approved list		2–3
†Education or free electives		

Senior Year	**F**	**S**
Sociology electives	3	
Economics electives	3	
American Political Theory, PolS 662	2	
Special Problems in Political Science, PolS 670	2	
†Electives		

*Courses which may be selected or substituted in the same area with departmental approval depending upon high school record and program intent. Not more than 5 semester credits in PolS 670 may be counted toward the major.

†Students planning to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. All students must complete 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

MAJOR: Hist 214, and 24 semester credits in Political Science, including PolS 213, 243, 252, 244, 8 credits numbered 300 or above, plus 4 optional credits of PolS (Hist 201 may count at Political Science course in meeting the above requirement.)

MINOR: Hist 214, plus 16 semester credits in Political Science including PolS 213, 243, 252 and 8 optional credits.

Suggested Electives: PolS 232, 333, 623.

HISTORY (Hist)

UNDERGRADUATE COURSES

103-113 World History 3(3,0) FS
Major emphasis on European culture, but civilization and culture of India, China, Japan, Egypt, Arabia, and the New World receive considerable attention. Periods covered: 5000 B.C. to 1650 A.D., and 1650 to present.

201 Reading in Current Affairs 1(1,0) FS
To introduce students to more consistent and selective reading of better newspapers and periodicals.

214 Recent American History 4(4,0) F
Political, social, and economic developments, 1913 to present.

224 United States History Survey 4(4,0) FS
Brief account of all aspects of American history, political, diplomatic, and social, from 1492 to present.

231 South Dakota History 1(1,0) F
Primarily for prospective teachers who may teach state history. Early explorations, fur trade, settlement, transportation, territorial government, main developments since statehood in 1889. P, 224.

233 History of the West 3(3,0) F (Offered in 1963)
Westward movement of United States, 1790 to 1900. Stress on Midwest, Dakotas and Minnesota. Roles of government and individual enterprise in development of West are appraised. Contribution of frontier to American folkways and institutions. Alternate years. P, 224.

243 Latin American History 3(3,0)
(Offered in 1964-65)
National development of Mexico, Argentina, Chile, and Brazil from 1750 to present, with special emphasis placed on political and economic trends. Alternate years. P, 103.

303-313 English History 3(3,0) FS
(Offered in 1963-64)
Main currents of political and cultural events in British Isles as basis for better understanding our common inheritance in literature, government, and social outlook. May be counted toward English major. Periods covered: earliest times to 1660; 1660 to present. P, 103 for 303, 113 for 313.

324 Economic History of the United States 4(4,0) F
Main emphasis is economic but with study of correlated political and social developments, 1492 to present.

333 History of Canada 3(3,0) S (Offered in 1965)
Colonization, French and British struggle and rule, immigration, position in Empire, achieving dominion status, economic, cultural, and social developments, minority problems. Alternate years. P, 224 or PolS 213.

343 History of the South 3(3,0) S
(Offered in 1964)
Colonization, sectional strife, slavery, plantation system, impact of soil and climate, Civil War and reconstruction, agriculture and industry, society and culture, segregation. P, 224.

404-414 Contemporary World 4(4,0) FS
Course 404 (1919-1941): comparative forms of government, domestic and foreign affairs, national leaders and ideologies, failures of League of Nations, and crises leading to World War II and American entry into it. Course 414 (1942-to-date): fundamental causes, theatres of operation, United Nations in theory, important international conferences on war goals, recent and profound developments since 1945, unfinished peace settlements, Cold War, Soviet Russia and her satellites; European, Near East, African, and Asian problems of nationalism, collective action to restrain aggression in Korea and elsewhere. P, 103-113, 224 recommended.

462 Methods and Philosophy of History 2(2,0) S
How historians gather and write history. Also an account of attempts to explain larger meaning and directions of history. P, junior standing, required by majors.

473-483 Cultural History of the United States
3(3,0) FS (Offered in 1964-65)
Main American social and intellectual currents since Civil War. Alternate years. P, 103-113 or 224, or 603-613.

GRADUATE COURSES

LS 602 Research Tools in the Humanities 2(2,0)
(See Library Study 602.) Credited toward major in department.

603-613 Modern Europe 3(3,0) FS
(Offered in 1964-65)
Survey of the political, cultural, and intellectual development of Europe, 1450-1815; detailed survey of period 1815-1919. Alternate years. P, 103.

RS 612 Social Thought (History)
(See Rural Sociology 612.) Credited toward major in department.

622 History of Russia 2(2,0) S (Offered in 1964)
From earliest times to present, with special emphasis on background and history of communist regime; treats cultural and social as well as political aspects. Alternate years. P, 103.

623 Intellectual History 3(3,0) F (Offered in 1964)
Leading cultural and ideological movements of Western man. Alternate years. P, 103.

653-663 American Diplomatic History 3(3,0) FS
(Offered in 1963-64)
Rapid survey of period to 1898; more comprehensive treatment of present century of American diplomacy. Alternate years. P, 224.

670 Special Problems in History 2-3-4 credits FSSu
Selected studies to meet needs of advanced students. P, junior standing, minoring or majoring in history, and consent of instructor. May be repeated, but limit is 4 credits.

Econ 693 History of Economic Thought 3(3,0)
(See Economics 693.) Credited toward major in department.

710 Seminar in History 1-2 credits
Studies in selected history fields, arranged according to demand.

POLITICAL SCIENCE (PolS)

UNDERGRADUATE COURSES

213 National Government 3(3,0) FSSu

Organizational fact and constitutional theory as a basis for understanding current problems and future developments. Offered each semester. P, none.

222 Survey of World Affairs 2(2,0) S

Forces that shape relations between nation-states in today's world; national interests, national power, nationalism, colonialism, imperialism, communism vs. democracy, U. S., U. N., and regional organizations. Special emphasis on current problems. Not open for political science major or minor credit. Offered each year. P, none.

232 Political Geography 2(2,0) F

Geographical factors in national power and international relations. P, 213 or consent.

243 State and Local Government 3(3,0) FSSu

Organization, functions and problems studied as to structure and democratic philosophy. Offered each semester. P, none.

252 Political Parties 2(2,0) F

Development, characteristics and functions of political parties. Offered each year. P, 213.

312 European Democratic Government 2(2,0) F (Offered in 1965)

Governments of Great Britain, West Germany, France and smaller democracies in Western Europe. Alternate years. P, 213 or consent.

333 Public Administration 3(3,0)S

Theory and practical organization of responsibility in government as it pertains to public servant and technical expert. Offered each year. P, none, recommend 213 or 243.

344 Constitutional Law 4(4,0) F

Analysis of government as determined by prevailing court decisions. Offered each year. P, 213.

352 Government and Public Policy 2(2,0) S (Offered in 1964)

Practical application of national government to American industry and agriculture. P, 213.

413 Politics of Middle East and Africa 3(3,0) F (Offered in 1964)

Background and current national and international problems in area. Alternate years. P, 213 or consent.

423 Politics of Eastern and Southern Asia 3(3,0) S (Offered in 1965)

Background and current national and international problems in area. Alternate years. P, 213 or consent.

432 Municipal Government and Administration 2(2,0) S (Offered in 1965)

Analysis of governmental and administrative problems of Municipalities. Alternate years. P, 213, 243.

442 Theory of Political Control 2(2,0) S (Offered in 1964)

Selected studies in philosophy and methods involved in maintaining democratic organization and administration. Alternate years. P, 213 or 243 and 333 or consent.

GRADUATE COURSES

613 International Politics 3(3,0) F (Offered in 1963)

How nation states behave and why they behave as they do in their relations with each other. Attention is given to contemporary U. S. foreign policy. Alternate years. P, 213 or consent.

623 International Law and Organization 3(3,0) S (Offered in 1964)

System of rules purporting to regulate conduct of nation-states and development of machinery of international cooperation with particular reference to United Nations. Alternate years. P, 213 or consent.

632 Administrative Law 2(2,0) S (Offered in 1966)

Judicial control of administrative activity. Case method. Alternate years. P, 213 and 333.

642 Administrative Principles and Practices 2(2,0) S (Offered in 1965)

Critical analysis of administrative principles and practices as they pertain to government and business. Alternate years. P, 213 and 333 or consent.

662 American Political Theory 2(2,0) F (Offered in 1963)

Development of American Political thought in relation to changing problems of democracy. Alternate years. P, junior standing and five hours of political science, or graduate standing, or consent.

670 Special Problems in Political Science (1-2-3,0) FSSu

Selected studies of individual guided research and reading culminating in formal research paper. P, junior standing and political science minor or major, or graduate standing, or consent. Not over total of 5 hours may be taken under PolS 670 toward PolS major or minor. Offered each year.

710 Seminar in Political Science (1-2-3,0)

Studies in selected Political Science fields. P, graduate standing and consent based upon undergraduate record. Arranged according to demand.

Department of Library Study (LS)

Professor and Director of the Library, Trump

While the instruction in librarianship is not organized into a major department, the following courses are offered in this field.

402 Library Administration 2(2,0) FSu

Stating problem of school libraries. Objectives and methods of service in small high school libraries, organization, budget, and ordering, student library club, housing and equipment, records to be kept, reports to make, and methods of publicity.

412 Book Selection and Reference 2(2,0) SSu

Standards and criteria which may be used in appraising books for school libraries and use of basic reference books.

422 Cataloging and Classification 2(2,0) SSu

Underlying theory and its practical application in classification and cataloging of books for small school library.

602 Research Tools in the Humanities 2(2,0) F

Survey of research and reference materials of special value and interest to students of Humanities. Acceptable for major or minor credit in Economics, English, History, Political Science and Rural Sociology.

Department of Mathematics (Math)

See Department of Mathematics under Division of Engineering for Mathematics course descriptions

The work of the Mathematics department is designed to meet both a cultural and vocational objective.

The mathematics major consists of 37 semester credits in mathematics. Courses in physics, chemistry, and technical electives have been chosen to provide a strong background for those students planning graduate study or industrial work.

In so far as it is practicable and possible, beginning courses are provided for students who enter at times other than in the fall semester.

Even though the student is not planning to major in mathematics or is not in the Division of Engineering, if he has at least 1½ units of high school algebra and has better than average ability in mathematics, he should take the 145-155 series rather than 113 and 133. However, those students in Math 145 who show insufficient knowledge of high school algebra may be required to take 113 before enrolling in 145.

Students who plan to teach in the secondary school should choose the course (s) in parenthesis instead of the course immediately above it, wherever a choice is provided. In the senior year such students will take the Education block in either the Fall or Spring semester. This will necessitate an interchange of course work and the Education block in the two semesters of the senior year.

Curriculum in Science and Applied Arts, Mathematics Major

Freshman Year	F	S
Mathematical Analysis I-II, Math 145-155	5	5
English, Engl 113-123 or 143-153	3	3
Chemistry, Ch 110-124	4	4
Introduction to Social Science, GS 103-113 or Biology, Bot 113-123	3	3
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Mathematical Analysis III-IV, Math 245-254	5	4
General Physics, Phy 205-215	5	5
Introduction to Social Science, GS 103-113 or Biology, Bot 113-123	3	3
Fundamentals of Speech, Sp 103		3
Military Science, Mil 211-221 or 251-261	1	1
Electives		

Junior Year	F	S
Advanced Analytical Geometry, Math 403	3	
(College Geometry, Math 343)		
Differential Equations, Math 333		3
(Modern Algebra and Number Theory, Math 312)		
Higher Algebra, I-II, Math 353-363	3	3
Principles of Economics, Econ 203-213	3	3
Psychology, Psy 203	3	
Advanced Exposition, Engl 352		2
French, German, or Russian	4	4
(Introduction to American Education, Ed 302, Educational Psychology, Ed 312 and Ed 301)		

Senior Year	F	S
National Government, PolS 213	3	or 3
Humanities elective	3	or 3
Mathematics elective	3	or 3
(Differential Equations, Math 333)		

*Electives or .....

Education Block

Principles of Guidance, Ed 412	2 or 2
Audio-Visual Methods and Materials, Ed 422	2 or 2
Educational Measurements, Ed 402	2 or 2
Methods of Teaching in Secondary Schools, Ed 403	3 or 3
Supervised Student Teaching in Secondary Schools, Ed 408	8 or 8

*Students who plan to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to meet the requirements for the B.S. degree.

Students not planning to teach in the secondary schools must take at least 9 semester credits from the list of technical courses given below:

Thermodynamics and Statistical Mechanics, Phy 323
Classical Theoretical Physics, Phy 354
Electrical Measurements, Phy 341
Atomic Physics, Phy 373
Fields and Circuits, EM 313
Electric Circuits, EE 323
Electronics, EE 342
Statistical Methods I, Econ 353
Statistical Methods II, Econ 443
Quantitative Analysis, Ch 214-224
Organic Chemistry, Ch 310-320
Scientific German, Ger 283-293
Scientific Russian, Rus 283-293
Biometry, Agron 613

MAJOR: Math 145, 155, 245, 254, 333, 353, 363, 403, plus 6 credits of elective in mathematics.

MINOR: 145-155, 245, 254, 312.

Department of Military (Mil)

Frank G. Schultz, Co-ordinator, ROTC Affairs

Under the provisions of the Act of Congress approved July 2, 1862, usually referred to as the Morrill Act, the State of South Dakota designated South Dakota State College as a Land-Grant College. The act requires that the College maintain military training in its curriculum as its contribution toward national defense, in return for which instruction, equipment, uniforms and funds are furnished to the College by the United States.

Military training is offered through a Reserve Officers' Training Program in both Army and Air Force categories. Basic military has been offered since the beginning of the College in 1884. A Senior Infantry Unit was established in 1920. The Air Force Unit was established on September 1, 1946.

The ROTC programs are planned with a view to enrich the educational resources of the institution by supplying additional equipment and emphasizing civic responsibility. Its aims are to coordinate discipline of mind and body, and development of character, initiative, all vital elements of executive leadership; and to furnish Reserve and Career Officers to the Armed Forces.

Basic and Advanced Phases

The program is organized into two phases. The basic phase consists of two years of Military or Air Science, which is required of all male students except as otherwise indicated below. The Advanced phase is open to qualified juniors and seniors upon the successful completion of which (including the required attendance of an ROTC Summer Camp) the student is eligible for a commission as second lieutenant in his respective branch of service, provided that he meets all other requirements for the Bachelor of Science degree.

Basic Military Requirements

In fulfillment of the requirements of the Morrill Act referred to above, enrollment in and successful completion of two years of basic military training is required of all male students, unless excused for previous military service, physical disability, or disqualified by reason of age, citizenship, or exempt under transfer student regulations. All ROTC enrollees must sign a loyalty oath upon enrollment in the basic course. Unless excused for reasons given below, each male student must enroll in a basic military science course each term until the requirement is met.

The requirement can be met by enrolling in either Basic Air or Army ROTC. The specific bases for exemption are indicated as follows:

A. Exemptions for previous military service* (These are College requirements

*Credit may be allowed for advanced ROTC (junior and senior years) for service in the Armed Forces as a commissioned officer if recommended by the ROTC PMS or PAS and validated by examination.

for Basic and not Army or Air Force.)

(a) For six continuous months or more of active service in the Armed Forces, including six months continuous service under the Reserve Force Act of 1955, credits not to exceed that of the active basic courses in ROTC (freshman and sophomore years) will be allowed for a total of four semester credits. No duplication of credit will be allowed. No credit allowed for active service of less than six months. (Note: this will not, however, meet the prerequisite for Advanced ROTC.)

B. Exemption because of physical disability.

(a) Certificates of disability must be procured from the College Physician and must be signed by the College President. This does not waive the requirement when disability is only temporary.

C. Exemption because of age.

(a) Students who are less than 14 years of age or who have reached 23 years of age at the time of initial enrollment are not required to take military science, except that students who do not have continuous enrollment at South Dakota State College and who have reached 23 years of age at the time of re-enrollment are not required to take military science.

D. Persons who are not citizens of the United States are not admitted to the ROTC program unless they have applied for their first papers.

E. Military requirements for transfer students:

(a) Students transferring to State College with 45 acceptable semester credits and 90 grade points, or higher standing, will not be required to take any military work.

(b) Students transferring to State College with 30 acceptable semester credits and 60 grade points to 45 acceptable semester credits and 90 grade points will be required to enroll in and successfully complete a minimum of one school year of Basic ROTC training.

(c) Students transferring to State College with less than 30 acceptable semester credits and 60 grade points will be required to enroll in and satisfactorily complete two years (freshman and sophomore courses) of Basic ROTC.

Uniforms

Students enrolled in the Basic ROTC courses are furnished a complete government issue, officer-type uniform for use while pursuing the course.

Students enrolled in the Advanced course are furnished an officer-type uniform individually tailored. This uniform is given to the students upon successful completion of the Advanced course.

A deposit of $20.00 with the cashier of the College is required of each Basic ROTC student prior to enrollment. The deposit will be returned to the student at the end of the first year, or upon withdrawal from the College, upon the return of all items of the uniform.

Monetary Allowance

Formally enrolled students of the Advanced course are paid a monetary allowance in lieu of subsistence at a daily rate specified by the Department of Defense (presently $0.90) for a total period not in excess of 595 days Army; 609 days Air Force. Payments are made monthly in the case of the Army and every three months by the Air Force. This allowance will not be paid during the period of the Advanced ROTC Camp or Summer Training Units whether or not attended by the student.

For unauthorized absences from Advanced instruction, two days pay ($1.80) will be deducted from the student's pay.

Any emoluments mentioned for the Advanced course are in addition to benefits received through the "G. I. Bill of Rights."

Department of Military Science and Tactics

Lieutenant Colonel Dwight L. Adams, PMS; Major R. R. Werner; Major J. T. Dotson; Captain R. C. Moir; Captain N. R. Anderson; SFC D. D. George; SFC E. W. Lindsey; SSgt A. L. Telgren

Basic Army ROTC Course

The basic course consists of formal instruction for a minimum of three hours per week for two academic years of 32 weeks each. This instruction will be of a general type.

Advanced Army ROTC Course

All students accepted for formal enrollment in the advanced course must:

(1) Be a citizen of the United States and must be able to complete the advanced course, graduate and be commissioned prior to attaining the age of 28 years.

(2) Be physically qualified under standards prescribed by the Department of the Army.

(3) Successfully complete such survey and general screening tests as may be prescribed.

(4) Be selected by the Professor of Military Science and the President of the institution.

(5) Execute a written agreement with the Government, in consideration of commutation of subsistence to be furnished in accordance with law, agreeing to complete the advanced course, to devote five hours per week (minimum of 150 hours per year) during such period to military training prescribed, and to pursue the courses of summer camp training during such period as prescribed by the Secretary of the Army. This contract remains in force as long as the student is enrolled in this institution or any other institution where such course is given until the advanced course is completed.

(6) Have completed the basic course, Senior Division ROTC, or received credits for honorable active service as indicated above.

Advanced Army ROTC Camp

Attendance at Summer Training Camp is required of students enrolled in the advanced course, normally upon the completion of the first year of the advanced course. Camp will ordinarily open in June of each year and will continue for a period of six weeks.

ROTC students attending training camp are paid for attendance at such camps at the rate prescribed for soldiers of the first grade of the Regular Army, $78.00 per month. Students are also paid travel allowance at the rate of five cents per mile for the distance by the shortest usually travelled route from the places from which they are authorized to proceed to the camp and for the return travel thereto.

Requirement for Commission

Upon successful completion of the advanced military course, including attendance at a six-weeks summer camp, and four years of education at a college or university level, a candidate is eligible to be tendered a commission in the Officer's Reserve Corps in the grade of second lieutenant. Students who have more than twelve months honorable active service in the Army, Navy, Marine Corps, Coast Guard or Air Force are required to successfully complete all academic subjects during the two years of college concurrent with their training in the advanced course only.

Regular Army Appointments

The Secretary of the Army now appoints second lieutenants from among persons designated as distinguished military students. A distinguished military student is one who has been so designated by the Professor of Military Science on the basis of the following criteria:

(1) Possesses outstanding qualities of military leadership, high moral character and definite aptitude for the Military service.

(2) Has distinguished himself either academically or by demonstrated leadership through his accomplishments while participating in recognized campus activities.

(3) Is scheduled to complete the advanced course, senior division, ROTC, within one school year, and whose current standing in military subjects is among the upper third of his ROTC class.

General Objective

The general objective of the course of instruction is to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in the United States Army. Instruction will cover military fundamentals common to all branches of the service. The aim is to provide a basic military education, and, in conjunction with other college disciplines, to develop individual character and attributes essential to an officer.

111-121 Military Science 1(1,0*) FS

Organization of Army and its role in national defense. Weapons fundamentals and rifle marksmanship.

211-221 Military Science 1(2,0*) FS

Military topography, basic tactics and American military history.

312-323 Military Science 2(2,0*) F 3(3,0*) S

Military leadership, methods of instruction, branches of Army, orientation, small unit tactics, and communications.

412-423 Military Science 2(2,0*) F 3(3,0*) S

Military justice, operations, logistics, administration, and role of United States in world affairs.

*Leadership Laboratory as required.

Department of Air Science

Lieutenant Colonel Leon R. Clark, PAS; Major Melvin R. Scott; Captain F. L. Graber; Captain J. A. Herriott; T/Sgt M. V. Himley; S/Sgt J. Harceg, Jr.; S/Sgt L. E. Rehder; A/1C G. F. Casady

Basic Air ROTC

The Basic Cadet must:

(1) Be physically qualified under the standards as prescribed by the Air Force.
2) At the time of enrollment be not less than 14 years of age and have at least two academic years left before graduation or completion of graduate work.
(3) Sign a loyalty certificate, certifying that he has never been a member of a subversive organization.

Advanced Air ROTC

The Advanced Cadet must:

(1) Be a citizen of the United States and of good moral character.
(2) Be physically qualified under standards prescribed by the Air Force.
(3) Be accepted by the College as a regularly enrolled student.
(4) At the time of enrollment be not less than 16 years of age and not of such age that he will be unable to complete all requirements for appointment as an Air Force reserve officer in a non-flying capacity before reaching his 28th birthday. Applicants for flying training must be of such age as to be commissioned before they are 26½ years old.
(5) Successfully complete a qualification test.
(6) Have an overall academic grade-point average of 2.000.
(7) Have completed the basic phase or have credit given in lieu thereof.
(8) Sign the advanced course contract and other documents.

Summer Training Units

Attendance at summer training units is required of all students enrolled in the advanced course, upon completion of the first year of the advanced course, i.e., junior year.

Length of time spent at a summer training unit will be from four to six weeks and will take place during the months of June, July and August.

During the time spent at a summer training unit, the cadet will be paid at the rate of $78.00 per month. Each cadet will be furnished food, clothing, shelter and round trip mileage at the rate of five cents per mile.

Requirements for Commission

Upon successful completion of the advanced course and the Summer Training Unit, the cadet will be commissioned a second lieutenant in the United States Air Force Reserve. Upon commissioning and entry upon active duty the second lieutenant is eligible for pilot training or observer training in officer grade provided he is physically and otherwise qualified.

Regular Air Force Appointments

Students who, upon graduation and commissioning, are designated Distinguished AFROTC Graduate by the Professor of Air Science, are eligible to make application for a regular commission in the United States Air Force.

Mission of Air Force ROTC

The mission of the Air Force ROTC is to develop in selected college students, through a permanent program of instruction at designated civilian educational institutions, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force.

Purpose and Objectives of Air Force ROTC

The purpose and specific objectives of the program are:

a. To select and motivate cadets to serve as career Air Force officers in fields as specifically required by the United States Air Force.

b. To develop in cadets by precept, example, and participation the attributes of character, personality, and attitudes essential for leadership.

c. To develop in cadets an interest in, and understanding of the Air Force mission, organization, operations, problems, and techniques.

d. To provide that military education and training which will give cadets a general background and sound foundation on which to build an officer career.

e. To select and motivate cadets for career fields as specifically required by the United States Air Force.

The Purpose of Leadership Laboratory

The leadership laboratory program is intended to provide the Air Force ROTC cadet opportunities for leadership training and experience in a supervised environment. It involves an organized cadet corps run by a Cadet Commander and his staff under general policies prescribed by the Professor of Air Science.

151-161 Air Science I 1(*,1) F; 1(2,1) S

Foundations of Aerospace Power: An introductory examination of factors of aerospace power; major ideological conflicts, requirements for military forces in being; responsibilities of citizenship, development and traditions of military profession; role and attributes of professional officer in American democracy; organization of armed forces as factors in preservation of national security, and United States Air Force as major factor in security of free world.

251-261 Air Science II 1(2,1) F; 1(*,1) S

Fundamentals of Aerospace Weapons Systems: An introductory survey of aerospace missiles and crafts, and their propulsion and guidance systems; target intelligence and electronic warfare; nuclear, chemical, and biological warhead agents; defensive, strategic, and tactical operations; problems, mechanics, and military implications of space operations, and survey of contemporary military thought.

353-363 Air Science III 3(4,1) FS

Air Force Officer Development: Staff organization and functions; skills required for effective staff work, to include oral and written communication and problem solving; basic psychological and sociological principles of leadership and their application to leadership practices and problems; introduction to military justice.

452 Air Science IV 2(2,1) F**

Same as Air Science 462 plus additional work in weather and navigation. For Flight Instruction Program students only.

462-472 Air Science IV 2(1,1) F** 2(1,1) S†

Global Relations: An intensive study of global relations of specific concern to Air Force officer, with emphasis on international relations and political geography; briefing for commissioned service.

*Accept two or three semester hour college course approved by Air Science department which contributes to professional education of an Air Force Officer.

**Political Geography, PolS 232 will be taken during fall semester.

†Survey of World Affairs, PolS 222 will be taken during spring semester.

Department of Music (Mus)

Professors Rezatto, Theman; Professors Emeriti Christensen, Peterson; Associate Professor Whitcomb; Assistant Professors Hatfield, Orvis

The study of music is an important factor in the cultural and intellectual development of a well-rounded personality. Our curriculum is planned to afford not only a sound musical education but also a liberal education as well. Therefore music students are required to include courses in natural sciences, mathematics, humanities, social sciences, and related fields.

For students who wish to earn a music major or minor, the department offers instruction in the disciplines of music theory, critical analysis, conducting, and all phases of applied music. By participating in the various musical organizations — College Chorus, Orchestra, Marching and Concert Band, the Statesmen, and the Pasquettes —students have unusual opportunities for personal enjoyment and practical experience.

The Chorus annually presents two outstanding choral works and a Broadway musical production. The Statesmen, an all male chorus, perform for various college and off-campus events throughout the year. The combined Community and College Symphony gives several concerts annually. The famous State College Marching Band is featured at all football games and is well known for its musicianship and colorful formations. The Concert Band appears in concerts on campus and on tours. The Pasquettes are open to talented women students in the field of vocal music. The Music department sponsors two clinics annually for music teachers in South Dakota and adjoining states. In conjunction with the South Dakota Bandmasters Association a band clinic is held usually during the winter months. Early in the Fall a vocal clinic is held in association with the South Dakota members of Music Educators National Conference.

Curriculum in Science and Applied Arts, Music Major

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Basic Music Theory and Ear Training, Mus 103-113	3	3
Applied Music	1	1
Music Organization	½	½
Class Music	1	1
Introduction to Social Science, GS 103-113	3	3
General Biology, Bot 113-123 or Botany, Bot 103-104 or Zoology, Z 103-113 or Bacteriology, Bac 202-212	3	3–4
College Algebra, Math 103		3
Humanities elective from approved list	2	
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Advanced Music Theory, Mus 203-213	3	3
Applied Music	1	1
Class Music	1	1
Music Organization	½	½
Humanities elective from approved list		3
Fundamentals of Speech, Sp 103	3	
Introductory Chemistry, Ch 104 and Introductory Physics, Phy 104, or Chemistry, Ch 110 and 115 or 124, or Elementary Physics, Phy 114-124	4	4–5
General Psychology, Psy 203		3
Social Science	3	
Military Science, Mil 211-221 or 251-261	1	1

Junior Year	F	S
History of Music, Mus 303-313	3	3
Applied Music	1	1
Conducting, Mus 302 or 312	2	or 2
Humanities elective from approved list	2	2
Social Science		3
*Education or Foreign Languages	3–4	3–4
†Electives		

Senior Year	F	S
Applied Music (Recital)	1	1
Music Organization	½	½
Teaching Music in Secondary Schools, Mus 423	3	
*Education or Foreign Languages		
†Electives		

*Students who are not planning to teach in high school must complete two years of foreign languages. Those who plan to teach in high school should consult with the head of the Education department before registering for the first term of their junior year. A minimum of 20 semester credits of approved courses in Education plus Mus 423 is required to qualify for the teaching certificate.

†All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

UNDERGRADUATE COURSES

101 Class Voice 1(1,1) FS

Beginning course in vocal music for students without previous vocal background.

102-112 Music Appreciation 2(2,0) FS

An introduction to understanding of music for

those students without an extensive background in music. Not open to students majoring or minoring in music.

103-113 Basic Music Theory and Ear Training 3(3,0) FS

Basic music fundamentals with ear training, sightsinging and keyboard application.

111 Class Piano 1(1,1) FS

Beginning course in piano for students without previous piano background.

121 Class Strings 1(1,1) FS

Practical class experience in learning to play various string instruments of symphony orchestra.

131 Class Woodwinds 1(1,1) FS

Practical class experience in learning to play woodwind instruments.

141 Class Brass 1(1,1) FS

Practical class experience in learning to play brass instruments.

151 Class Percussion 1(1,1) FS

Practical class experience in learning to play percussion instruments.

203-213 Advance Music Theory 3(3,0) FS

Advance and chromatic harmony with ear training, sightsinging and dictation. Introduction to compositions. P, 113.

302 Choral Conducting and Materials 2(2,0) F

Development of basic choral conduction techniques. Reading of choral literature. P, 113.

303-313 Music History 3(3,0) FS

Intensive study of rise and growth of music from primitive music to present.

312 Instrumental Conducting and Materials 2(2,0) S

Development of basic instrumental conducting techniques. Reading of instrumental scores. P, 113.

323 Composition-Counterpoint 3(3,0) F

Original composition in small forms with analysis and construction of basic counterpoint. P, 213.

333 Composition-Form and Analysis 3(3,0) S

Original composition with analysis of principle forms of musical composition. P, 323.

413 Orchestration and Arranging 3(3,0) S

Scoring for band and orchestra, and for smaller instrumental combinations.

423 Teaching Music in Secondary Schools 3(3,0) F

Philosophy, objectives and administration of public school music. P, Ed 302.

Applied Music

Individual private lessons for all College students are available in piano, strings, brass, organ, voice and woodwind instruments. No student may register for junior-senior level courses in applied music without passing a qualifying examination before the music faculty.

During the senior year all music majors are required to present a public recital in their major applied area.

201-301-401 Voice 1(1,0) FS

211-311-411 Piano 1(1,0) FS

221-321-421 Strings 1(1,0) FS

231-331-431 Reeds 1(1,0) FS

241-341-441 Brass 1(1,0) FS

251-351-451 Organ 1(1,0) FS

261-361-461 Percussion 1(1,0) FS

Fees

One half-hour lesson per week	$24.00 per semester
Two half-hour lessons per week	$45.00 per semester
Practice Piano, one hour per day	$4.00 per semester
Practice Piano, two hours per day	$6.00 per semester
Organ practice	$10.00 per semester

Music Organizations

All music majors and minors are required to participate in one or more music organizations during the four years of college. All music organizations are open, however, to all students with or without credit.

110 Orchestra ½(0,½) FS

120 Band ½(0,½) FS

130 Chorus ½(0,½) FS

140 Pasquettes ½(0,½) FS

A maximum of eight credits in ensembles may be applied toward graduation.

Department of Physical Education and Athletics (PE)

Professors Bundgaard, Ginn; Professor Emeritus Kendall; Associate Professors Huether, Robinson; Assistant Professors Crabbs, Forsyth, Iverson, Marking, Marshall (on leave), Williamson, Woodall; Instructor Kerns

Courses in physical education are designed to accomplish objectives which are essential for the individual to live a full and enriched life. To accomplish this aim the program embraces four closely related categories.

1. The required or service program. This program of classwork is designed to increase physical fitness and to teach skills. For men the following activities are offered:

Archery	Swimming (Su)
Badminton	Tennis
Basketball	Touch Football
Bowling	Track and Field
Golf	Trampoline
Gymnastics	Tumbling
Handball	Volleyball
Soccer	Weight Training
Softball	Wrestling
Speedball	

General Physical Education (Men 101-111, Women 121-131) is required of all students entering with less than junior standing. These courses are preferably taken in the freshman year.

2. Major and minor program. This is designed to train teachers to direct physical education activities in their communities.

3. The intramural program. The student has the opportunity to use the skills learned in competition with others. Women students find opportunities for intramurals through the activities of the Women's Recreation Association.

4. The intercollegiate athletic program. The participant learns habits of activity and recreation and receives educational value from competing and from traveling. South Dakota State College is a member of the North Central Intercollegiate Athletic Conference and sponsors eight varsity and freshmen sports. SDSC is also a member of the National Collegiate Athletic Association.

Uniforms

Men in required physical education are supplied physical education costumes. Women are required to provide a standard costume. Both men and women must provide gym shoes.

Physical Education Major and Minor for Men

Men students who wish to qualify for the physical education major may do so by completing the curriculum outlined on the following pages. Since this curriculum is largely for persons who expect to enter the secondary school teaching field, the student is urged to choose elective courses which will qualify him or her to teach high school courses in academic fields as well as in physical education. (See list of suggested teaching minors under the Education Department.)

The minor in physical education for men may be obtained by completing 18 hours of physical education work which shall include courses 151, 191, 221, 222, 333, 342, 343, 473. Health courses must be included in the minor program. Minors in physical education must be approved by department head.

Physical Education Major and Minor for Women

Women students may qualify for a major in physical education by completing the curriculum outlined.

A minor for women may be obtained by completing a total of 18 hours in physical education including courses 201-211, 151, 161, 171, 181, N 202, PE 291, 331, 341, 412, 473, plus 3 hours of electives from the following courses, PE 261, 271, 281, 301, 482. All minors must consult head of the department of physical education for women for approval of curriculum.

Physical Therapy Option

Students may qualify for a physical therapy option by completing three years of the physical education major and earning a physical therapy certificate or diploma from an approved school of physical therapy.

Students selecting this option will not be required to take the professional education courses, nor will they be required to take certain physical education courses.

Graduate Major in Physical Education

A graduate major leading to either the Master of Science degree or the Master of Education degree has been established. See section under Graduate Study for general requirements.

Curriculum in Science and Applied Arts, Physical Education Major (Men)

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Zoology, Z 103-113 or Botany, Bot 103-104	4	3–4
Fundamentals of Speech, Sp 103	3	
World History, Hist 103-113	3	3
Introduction to Physical Education, PE 151	1	
Gymnastics and Tumbling, PE 191	1	
College Algebra, Math 113		3
Introduction to Sociology, RS 153		3
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Introduction to Literature, Engl 203	3	
General Psychology, Psy 203		3
Officiating of Football and Basketball, PE 231	1	
Contemporary Health Problems, N 202	2	
Anatomy, Z 203	3	
Prevention and Care of Injuries, PE 221	1	
Principles and History of Physical Education, PE 293		3
Rhythmic Fundamentals, PE 161		1
Individual and Team Games, PE 222	2	
Intermediate Golf, PE 241; Intermediate Tennis, PE 251; or Archery, PE 261 (Select two of three)		2
Introductory Chemistry 104 and Introductory Physics 104, or Chemistry 110-124, or Elementary Physics 114-124	4	4
Military Science, Mil 211-221 or 251-261	1	1
Humanities elective from approved list		2–3

Junior Year	F	S
Educational Psychology, Ed 312	2	
Introduction to American Education, Ed 302		2
Kinesiology, PE 313		3
Tests and Measurements in Physical Education, PE 312	2	
Coaching of Basketball and Football, PE 333	3	
Coaching of Wrestling, Track, and Baseball, PE 343		3
Practicum and Professional Laboratory Experience, Ed 301	1	
Health and Safety Education, PE 412		2
Adaptive Physical Education, PE 422		2
Community Recreation, PE 442		2
Organization and Administration of Health, Physical Education, and Recreation, PE 473		3
Elementary Physiology, Z 204	4	
*Elective	5–6	

Senior Year

The following courses make up the "Block Program" for the Department of Education requirements, and may be taken during the Fall or Spring semesters. Students expecting to teach in high school are to apply for admission to teacher education some time during the second semester of the sophomore year. Applications may be obtained from the head of the Education department.

Methods in Teaching Physical Education, PE 482	2	
Principles of Guidance, Ed 412	2	
Methods of Teaching in Secondary Schools, Ed 403		3
Educational Measurements, Ed 402		2
Supervised Teaching in Secondary Schools, Ed 408		8

If the "Block Program" is taken in the Fall semester of the senior year, all courses listed for Fall semester in the 300 to 400 series must be taken in the first semester of the junior year. The same plan applies if the "Block Program" is taken during Spring semester of the senior year.

The above outline completes three of the four semesters of the junior and senior year. The remaining semester may be used to fulfill minor and graduation requirements, professional physical education courses, and electives.

Physical Therapy Option (Men and Women)

Junior Year	F	S
Mammalian Anatomy, Z 654	4	
Elementary Physics, Phy 114-124	4	4
Psychology elective	3	3
*General Bacteriology, Bac 202		4
Community Recreation, PE 442		2
Kinesiology, PE 313		3
Tests and Measurements in Physical Education, PE 312	2	
Humanities elective	2	2
*Human Physiology, Z 204	4	

*Bacteriology 202 and Physiology 204 should be taken sophomore year if possible.

Senior Year

The fourth year will be spent in an accredited school of physical therapy. Upon completion of the requirements for a certificate recognized by the American Physical Therapy Association the student will receive the appropriate hours of credit toward the degree.

Curriculum in Science and Applied Arts, Physical Education Major (Women)

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Zoology, Z 103-113	3	3
Fundamentals of Speech, Sp 103	3	
World History, Hist 103-113	3	3
Introduction to Physical Education, PE 151	1	
College Algebra, Math 113		3
First Aid, PE 171		1
Rhythmic Fundamentals, PE 161	1	
General Physical Education, PE 121-131	1	1
Introduction to Sociology, RS 153		3
Orientation, Or 100	0	
Elective	2	

Sophomore Year	F	S
Introduction to Literature, Engl 203	3	
General Psychology, Psy 203		3

Contemporary Health Problems, N 202	2	
Anatomy, Z 203	3	
Principles and History of Physical Education, PE 293		3
Modern Dance, PE 271	1	
Theory of Dance, PE 272 (alternate years)		2
Games of Low Organization, PE 181 (alternate years)	1	
Singing Games and Elementary Folk Dancing, PE 301 (alternate years)	1	
Archery, PE 261		1
Intermediate Tennis, PE 251		1
Introductory Chemistry, Ch 104 and Introductory Physics, Phy 104; or Chemistry, Ch 110-124, or Elementary Physics, Phy 114-124	4	4
Social Games and Activities, PE 281 (alternate years)	1	
Sophomore Physical Education, PE 201-211	1	1
Humanities elective from approved list		2–3

Junior Year	**F**	**S**
Educational Psychology, Ed 312	2	
Introduction to American Education, Ed 302		2
Kinesiology, PE 313		3
Tests and Measurements in Physical Education, PE 312	2	
Health and Safety Education, PE 412		2
Adaptive Physical Education, PE 422		2
Organization and Administration of Health, Physical Education and Recreation, PE 473		3
Community Recreation, PE 442		2
Team Sports I, PE 331 (alternate years)	1	
Team Sports II, PE 341 (alternate years)		1
Practicum and Professional Laboratory Experience, Ed 301	1	
Elementary Physiology, Z 204	4	
Gymnastics and Tumbling, PE 291 (alternate years)	1	
Advanced Folk and Social Dancing, PE 321 (alternate years)	1	
Electives (minor field)	5	2

Senior Year

The following courses make up the "Block Program" for the Department of Education requirements, and may be taken during the Fall or Spring semesters. Students expecting to teach in high school are to apply for admission to teacher education some time during the second semester of the sophomore year. Application forms may be obtained from the head of the Education department.

Methods in Teaching Physical Education, PE 482	2
Principles of Guidance, Ed 412	2
Methods of Teaching in Secondary Schools, Ed 403	3
Educational Measurements, Ed 402	2
Supervised Student Teaching in Secondary Schools, Ed 408	8
Electives	17

UNDERGRADUATE COURSES

MEN

101-111 General Physical Education 1(0,2) FS

A variety of activities stressing individual, team and physical fitness activities. Student has the opportunity to select these activities according to his needs and interests. Required of all men students of less than junior standing.

191 Gymnastics and Tumbling 1(0,2) S

Theory and practice in conditioning exercises, elementary apparatus and tumbling exercises.

222 Individual and Team Games 2(1,2) F

Knowledge of and practice in skills, theory and strategy of individual and team games. Stress is placed on importance of organizing groups for participation. P, sophomore standing.

231 Officiating of Football and Basketball 1(1,1) F

Techniques of officiating football and basketball. Practice in officiating intramural sports is required.

333 Coaching of Basketball and Football 3(3,0) F

Theory and practice of individual and team play. Textbook work, lectures, visual aids and demonstrations. P, junior standing.

343 Coaching of Wrestling, Track and Baseball 3(3,0) S

Theory and practice of individual and team play. Textbook work, lectures, visual aids and demonstrations. P, junior standing.

WOMEN

121-131 General Physical Education 1(0,2) FS

Required of all women students. Activities include: field sports, body conditioning, tumbling and stunts, volleyball, basketball, rhythms, and tennis.

201-211 Sophomore Physical Education 1(0,2) FS

Required course for all women physical education majors. Course includes: field hockey, body mechanics and conditioning exercises, gymnastics, and individual activities with special emphasis on badminton, bowling, and golf. P, 121-131.

271 Modern Dance 1(0,2) F

Elements, techniques, and composition of modern dance.

291 Gymnastics and Tumbling 1(0,2) F (Offered in 1964)

Theory and practice of elementary gymnastics, pyramid building, and tumbling. Alternate years.

331 Team Sports I 1(0,2) F (Offered in 1963)

Theory and skills involved in teaching and officiating field sports and volleyball. Alternate years.

341 Team Sports II 1(0,2) S (Offered in 1964)

Theory and skills involved in teaching and officiating basketball and softball. Alternate years.

MEN AND WOMEN

141 Swimming 1(0,2) Su

Various types of strokes and elementary water safety. May be substituted for 1 credit of required physical education.

151 Introduction to Physical Education 1(1,0) F

Orientation to field of physical education. Designed to acquaint beginning major student with field of physical education.

161 Rhythmic Fundamentals 1(0,2) F

Basic course in dance for men and women. Includes basic elements of rhythm and movement.

171 First Aid 1(1,0) S

Includes material specified by Red Cross for standard and advanced courses. Satisfactory completion of course will qualify student for Red Cross certificate.

181 Games of Low Organization 1(0,2) F (Offered in 1964)

Gives prospective teacher or recreation leader an understanding of many active games and teaching techniques involved. Alternate years.

221 Prevention and Care of Injuries 1(1,1) F

General care and treatment of athletic injuries, conditioning and training, equipment of training room, taping for athletic injuries. Minimum of ten hours of laboratory required. Essential for men going into coaching field.

241 Intermediate Golf 1(0,2) S

For those students who have completed a unit or course in basic golf. Physical education elective.

251 Intermediate Tennis 1(0,2) S

For those students who have completed a unit or course in basic tennis. Physical education elective.

261 Archery 1(0,2) Su

Theory and practice in archery target shooting.

272 Theory of Dance 2(2,0) S (Offered in 1964)

History and appreciation of dance. Alternate years.

281 Social Games and Activities 1(0,2) F (Offered in 1963)

Materials and methods used in conduct of social recreation. For camp, school, or community leaders in recreation. Alternate years.

293 Principles and History of Physical Education 3(3,0) S

Aims and objectives of physical education. Biological, sociological, psychological, mechanical, and historical foundations. P, 151 and sophomore standing.

301 Singing Games and Elementary Folk Dance 1(0,2) F (Offered in 1963)

Theory and practice in singing games and elementary folk dances. Alternate years.

312 Tests and Measurements in Physical Education 2(2,0) F

Place of measurement in physical education. Analytical survey of tests and measures now available; technique and procedure in planning and administering tests and measurements. P, junior standing.

313 Kinesiology 3(3,0) S

Location and movement of various muscles of body. P, Z 203-204, junior standing.

321 Advanced Folk and Social Dance 1(0,2) F (Offered in 1964)

Theory and practice in advanced folk and social dancing. Alternate years. P, 201, 161.

412 Health and Safety Education 2(2,0) S

Curriculum content at elementary and secondary levels. Methods of presentation including direct, correlated, and integrated health instruction. Organization of health and safety education. P, junior standing.

422 Adaptive Physical Education 2(2,0) S

Principles and techniques involved in use of exercise for prevention and amelioration of functional defects. P, 313, junior standing.

442 Community Recreation 2(2,0) S

Organization and administration of recreational departments, legal aspects, budgeting; relation to community, state, and national agencies. P, junior standing.

473 Organization and Administration of Health, Physical Education and Recreation 3(3,0) S

Organization of physical education curricula, intramural and athletic programs. Administration of facilities, equipment and budgets.

482 Methods in Teaching Physcial Education 2(2,0) FS

Methods used in teaching various activities in physical education. P, approved for student teaching.

GRADUATE COURSES

603 Physical Education for the Elementary School 2(2,0) Su

Analysis of activities, materials, techniques, and methods used in conduct of physical education for elementary grades. Progression in curriculum planning in areas of rhythm, games, self-testing, and tumbling. P, permission of department head. Graduate or undergraduate credit.

651-661-671 Workshop in Health, Physical Education, and Recreation 1 credit Su

Workshop sesssions in specific areas taught by department. Lectures, conferences, committee work and outside assignments. P, permisssion of Department Head. Graduate or undergraduate credit.

651 Health Education

661 Dance Education

671 Outdoor Education Alternate years. (Offered in 1963)

702 Advanced Problems in Administration of Interschool Athletics 2(2,0 Su

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

703 Advanced Evaluation in Health, Physical Education, and Recreation 3(3,0) FSu

Advanced techniques for evaluating outcomes of physical education. Practice in test performance and administration. Some laboratory work may be required. P, graduate standing, permission of staff.

713 Philosophy of Physical Education 3(3,0) SSu

Discussion and analysis of major philosophic contributions to physical education. Formation and evaluating one's beliefs concerning physical education. P, graduate standing, permission of staff.

722 Problems in Health and Safety Education 2(2,0) FSu

Methods of health instruction; problems of health service; problems in supervision of health environment; recent trends and problems in safety education. P, graduate standing. Permission of staff.

723 Analysis of Methods of Teaching Physical Education and Athletics 3(2,2) FSu

Analysis of natural and formal methods. Demonstrations and study of methods applied to various activities. P, graduate standing, permission of staff.

732 Psychology of Physical Education and Athletics 2(2,0) SSu

Psychological principles, theories, and laws applied to physical education and athletic situations. Interpretation of behavior in sports. P, graduate standing, permission of staff.

733 Physiology of Exercise 3(3,0) SSu

Body processes as they relate to exercise; efficiency of muscular work; fatigue and exercise; age, sex, and body type as related to exercise; nervous control of muscular activity; effect of exercise on the circulatory system. P, graduate standing, permission of staff.

742 Advanced Problems in Organization and Administration of Community Recreation 2(2,0) SSu

Problems related to equipment; establishing programs; budget and finance; selecting and supervising staff; public relations activities. P, graduate standing, permisssion of staff.

752 Supervision of Health and Physical Education 2(2,0) Su

Techniques, principles, organization and philosophy of supervision in this field. P, graduate standing, permission of staff.

762 Basic Issues in Health, Physical Education and Recreation 2(2,0) Su

Directed reading of recent literature in field; discussion of current problems; critical analysis of recent research. P, graduate standing, permission of staff.

Seminar in Health, Physical Education and Recreation 2(2,0) Su

Courses designed to offer current information on subjects of interest in field.

712 Advanced Physiology of Exercise 2(2,0) Su

772 Scientific Basis of Physical Education 2(2,0) Su

782 Mechanical Analysis of Motor Skills 2(2,0) Su

792 History of Physical Education 2(2,0) Su

783 Research Methods in Health, Physical Education and Recreation 3(3,0) FSu

Methods and techniques of research in field, critical analysis of master's and doctor's theses; practice of research techniques. P, graduate standing, permission of staff.

790 Thesis in Physical Education 5-8 as arranged

793 Individual Research and Study in Health Education, Physical Education and Recreation 3 credits FSSu

Special problems by individuals. Results of study presented in special reports and term papers. P, major in this field.

Department of Physics (Phy)

Two main objectives have been kept in mind in the organization of the course work of this department. First, it is intended that the courses should meet the needs of students in the various divisions of the College who need the basic subject matter of physics in their chosen fields. Second, the sequence of courses makes it possible for a student to complete a strong major in physics. The department is well supplied with laboratory and lecture demonstration equipment and other facilities in support of these objectives.

Two curricula in physics are offered. The one listed below leads to a Bachelor of Science degree with the major in physics. Another curriculum listed in the Division of Engineering along with the course descriptions leads to a Bachelor of Science degree in engineering physics.

Curriculum in Science and Applied Arts, Physics Major

(See Engineering Physics Curriculum and course descriptions in the Division of Engineering)

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Mathematical Analysis I-II, Math 145-155	5	5
Introduction to Social Science, GS 103-113	3	3
Inorganic Chemistry, Ch 110-124	4	4
Military, Mil 111-121 or 151-161	1	1
Physical Education, PE 101-111 or 121-131	1	1
Orientation (for SAA), Or 100	0	
Sophomore Year	**F**	**S**
Mathematical Analysis III-IV, Math 245-254	5	4
General Physics I-II, Phy 205-215	5	5

Introduction to Literature, Engl 203	3	
General Psychology, Psy 203		3
General Botany, Bot 103-104	3	4
Military, Mil 211-221 or 251-261	1	1
Junior Year	**F**	**S**
Classical Theoretical Physics, Phy 354	4	
Optics, Phy 313	3	
Differential Equations, Math 333	3	
Advanced Laboratory I-II, Phy 321-331	1	1
Modern Theoretical Physics, Phy 364		4
Thermodynamics and Statistical Mechanics, Phy 323		3
Modern Physics I, Phy 383		3
Electrical Measurements, Phy 301		1
Fundamentals of Speech, Sp 103	3	
Principles of Economics, Econ 203	3	
Humanities elective		2
Electives		
Senior Year	**F**	**S**
Modern Physics II, Phy 403	3	
Theory of Electricity, Phy 413		3
Advanced Laboratory III-IV, Phy 411-421	1	1
General Zoology, Z 103-113	3	3
National Government, PolS 213	3	
Humanities elective		3
Electives		

MINOR: Phy 205, 215, 354, 364, 373.

Department of Plant Pathology (Path)

The department of Plant Pathology is administered through the Division of Agriculture but also offers a major in the Division of Science and Applied Arts.

Students in plant pathology study the nature, causes, and control of plant diseases in much the same way that those in medical and veterinary sciences study human and animal diseases. They may qualify for various types of employment depending on their choice of electives in consultation with the head of the department. Those wishing to make a professional career in plant pathology should plan to carry their studies to the Master of Science or to the Doctor of Philosophy level.

By meeting the requirement in professional Education courses and with a careful selection of electives it is possible for a plant pathology major to qualify for secondary school teaching certificate in South Dakota.

Curriculum in Science and Applied Arts, Plant Pathology Major

See Plant Pathology Major in Curriculum in Technical Agriculture under Division of Agriculture

Freshman Year	**F**	**S**
English, Engl 113-123 or 143-153	3	3
Inorganic Chemistry, Ch 110-115	5	5
General Botany, Bot 103-104	3	4
College Algebra, Math 113	3	
Trigonometry, Math 133		3
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	
Sophomore Year	**F**	**S**
Introduction to Literature, Engl 203	3	
Fundamentals of Speech, Sp 103		3
Quantitative Analysis, Ch 214	4	
General Zoology, Z 203	3	
General Bacteriology, Bac 202-212		4
Introduction to Entomology, Ent 102		2
Principles of Economics, Econ 203-213	3	3
General Psychology, Psy 203		3
Soils, Agron 213	3	
Military Science, Mil 211-221 or 251-261	1	1
Junior Year	**F**	**S**
Organic Chemistry, Ch 310-320	5	5
Elementary Physics, Phy 114-124	4	4
Plant Pathology, Path 234	4	
Plant Disease Control, Path 373		3
*Electives		
Senior Year	**F**	**S**
Mycology, Path 424	4	
Crop Diseases, Path 404	4	
Plant Physiology, Bot 424	4	
Soil Microbiology, Bac 444		4
Introduction to Sociology, RS 153		3
National Government, PolS 213		3
Humanities elective from approved list	2	3
*Electives		

MAJOR: Path 234, 373, 404, 424; Agron 213; Bac 444; Bot 414.

*Students planning to teach in the secondary schools must consult with the head of the Education department before registering for their first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree. Students who plan to enter graduate school are urged to complete one or two years of foreign languages.

Department of Printing and Journalism

Professor Phillips; Professor Emeritus Harding; Associate Professors Abel, Blinn, Evenson, Hvistendahl; Assistant Professors Dickinson, Jess; Instructors Buckbee, Miller, Schultz, Smith, Stensaas

This department offers courses in journalism, printing, and secretarial science. Four-year programs leading to the degree bachelor of science are available in journalism and in printing management. Two-year courses leading to certificates are offered in printing and in secretarial science.

Journalism (J)

The journalism major is described as a "news-editorial' sequence, and is accredited by the American Council on Education for Journalism. It has been accredited continuously since such accreditation began in 1948. This program consists of a broad background of courses in social sciences, humanities and natural sciences with a minimum of 30 credits in journalism, and about 20 open electives. Not more than 34 credits in journalism may be counted toward the degree, exclusive of History of Journalism, Magazines in America, and Law of the Press. A student must have no grade lower than C in freshman English to be eligible to work toward the journalism major. A student may not be graduated with a major in journalism with less than a C average in his journalism courses or a C average in all of his college work. (See Divisional Requirements in Science and Applied Arts.)

The curriculum leading to the major in journalism is designed to prepare men and women for work on daily and weekly newspapers, press services, and in other situations where the requirements center around a broad background in general education plus a knowledge of news gathering, news writing and news editing.

The Science Writing major is for those who wish to become technical writers, either for commercial companies or for magazines and newspapers. The demand for persons with such training is currently heavy, and is increasing. The major consists of 43 required credits in the natural sciences, 24 credits in social sciences, 25 credits in communications, 7 credits in humanities, and about 18 credits of free electives.

Agricultural Journalism. Students in the Division of Agriculture may take a major in journalism. The curriculum will be found in the catalog of the Division of Agriculture. The program prepares men and women for positions as agricultural editors in colleges (extension and experiment station editors) with the United States Department of Agriculture, and with co-ops, banks, insurance companies, advertising agencies, and other businesses where a knowledge of both agriculture and journalism is a desired qualification.

Home Economics Journalism. Students in the Division of Home Economics may take a journalism major. The curriculum will be found in the catalog of the Division of Home Economics. The program is intended to prepare Home Economics students for editorial positions with colleges, government agencies, and with private businesses such as advertising agencies and trade associations which require persons with knowledge and skills in the fields of journalism and Home Economics.

Printing and Journalism. A program combining printing with journalism provides a separate major for students who wish to prepare for positions in the publishing field where a knowledge of printing production coupled with journalistic skills is a principal qualification. Graduates with this major are especially well qualified to enter the weekly newspaper field as owners or managers, and to take positions in public relations, advertising, and other phases of publishing. The major consists of 22 credits in printing and 23 credits in journalism. Not more than 50 credits in printing and journalism courses may be counted toward the bachelor of science degree.

Graduate Work in Journalism. A major toward the master of science degree is offered in journalism, and work in journalism may also be counted toward the major in communications for the master of education degree. Journalism graduate courses may be selected as supporting courses or as a minor for students taking graduate majors in other

fields. (See the Graduate Division catalog for details.)

A Minor in Journalism is available for students majoring in other fields. Courses required for the minor are Typography, Newswriting and Reporting, Press Photography, Newspaper Editing, Editing Laboratory, Advanced Reporting and Law of the Press.

Student Organizations. The department sponsors a student chapter of Sigma Delta Chi, the national professional society for journalists; a chapter of Theta Sigma Phi, national journalism fraternity for women; Kappa Tau Alpha, national honorary journalism society and the Journalism Club, a local organization for student journalists.

Publications. The department sponsors *The Dakotan,* a monthly magazine on which students may secure valuable experience in magazine work. A weekly newspaper, *The Volga Tribune,* published in the nearby city of Volga, is produced and managed by the department, and is owned by the Alumni Division of the State College Foundation. *The P-J Bulletin* is published quarterly for alumni and students. *The South Dakota Collegian,* students' weekly newspaper, and *The Jack Rabbit,* the yearbook, are independent of the Department of Printing and Journalism, but the department urges students to work on these publications and cooperates with the *Collegian* through the newswriting and editing laboratories.

Professional Affiliations. Academic memberships are maintained by the department in the Advertising Research Foundation, Associated Business Publications, and National Business Publications. The department is a member of the American Association of Schools and Departments of Journalism, and the head of the department is a member of the American Association of Journalism School Administrators. Individual members of the Association for Education in Journalism. The department provides office space for the South Dakota Press Association and cooperates in many of its activities.

Curriculum in Science and Applied Arts, Journalism Major

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
World History, Hist 103-113 or Foreign Languages	3–4	3–4
Biology, Bot 113-123 or Botany, Bot 103-104 or Zoology, Z 103-113 (Bac 202-212 may be substituted for one course in Botany or Zoology)	3	3–4
Fundamentals of Speech, Sp 103		3
College Algebra, Math 113	3	
Introduction to Journalism, J 102	2	
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	
Electives		

Sophomore Year	F	S
Introduction to Literature, Engl 203	3	
General Psychology, Psy 203		3
Typography, J 202	2	
English elective		2
Newswriting and Reporting, J 243	3	
Press Photography, J 232		2
Introductory Physics, Phy 104 and Introductory Chemistry, Ch 104, or Chemistry, Ch 110 and Ch 115 or Ch 124, or Elementary Physics, Phy 114-124	4	4–5
Art Appreciation, Art 212		2
Elective (Foreign Language suggested)	4	3

Junior Year	F	S
National Government, PolS 213	3	
State and Local Government, PolS 243		3
History of Journalism, J 362	2	
Newspaper Editing, J 302	2	
Editing Laboratory, J 331-341	1	1
Newspaper Advertising, J 352		2
Law of the Press, J 473	3	
Principles of Economics, Econ 203-213	3	3
Music Appreciation, Mus 102-112	2	2
*Electives		

Senior Year	F	S
†Problems and Methods, J 411	1	
†Advanced Reporting, J 422	2	
†Newspaper Management, J 412	2	
†Newspaper Publishing Practices, J 415	5	
Journalism Seminar, J 431		1
Statistical Methods I, Econ 353	3 or 3	
*Electives		

*Not more than 34 credits in journalism, exclusive of History of Journalism, Law of the Press, and the Magazine in America, may be counted toward the degree. All students must complete 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

†This group of four courses, 10 credits, must be taken in either the Fall or Spring semester of the senior year.

Curriculum in Science and Applied Arts, Science Writing Major

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Fundamentals of Speech, Sp 103	3	
Mathematical Analysis, Math 145-155	5	5
General Zoology, Z 103-113	3	3
General Bacteriology, Bac 202		2
Engineering Graphics I-II, EG 103-112	3	2
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Introduction to Literature, Engl 203	3	
English elective		2
Inorganic Chemistry, Ch 110-115	5	5
Mathematical Analysis, Math 245	5	
National Government, PolS 213		3
Newswriting and Reporting, J 243	3	
General Psychology, Psy 203		3
Military Science, Mil 211-221 or 251-261	1	1
Electives		

Junior Year	F	S
English Literature, Engl 313-323 or American Literature, Engl 333-343	3	3
Newspaper Editing, J 302	2	
Editing Laboratory, J 331-341	1	1
Economic History of the U. S., Hist 324		4
Advanced Exposition, Engl 322	2	
General Physics, Phy 205-215	5	5
Principles of Economics, Econ 203-213	3	3
Humanities elective	1	1

Senior Year	F	S
Contemporary World, Hist 404-414	4	4
Law of the Press, J 473	3	
Magazine Editing, J 311-321	1	1
Statistics elective	3–4	
*Electives		

*All students must complete a minimum of 40 credits in courses numbered 300 or above to qualify for the B.S. degree.

UNDERGRADUATE COURSES

102 Introduction to Journalism 2(2,0) F

Nature of journalism, occupations in the field. Open to freshmen only.

202 Typography 2(1,3) FS

Fundamentals of printing, type faces, processes, proofreading.

231 Basic Photography 1(0,2) FS

Fundamentals of photography. Includes use of camera, and darkroom equipment. Open only to non-journalism students.

232 Press Photography 2(1,3) FS

Camera and darkroom techniques. P, consent of department.

243 Newswriting and Reporting 3(2,3) FS

Gathering, evaluating, and writing news. P, freshman English with no grade lower than C.

300 Journalism Lectures (No credit) FS

Meets once a month for lectures by staff and visiting speakers. Open.

302 Newspaper Editing 2(2,0) F

Copyreading, headlines, news evaluation, picture usage, page makeup, and editing problems. P, J 243. Must be taken concurrrently with J 331.

311-321 Magazine Editing 1(0,3) FS

Editing and production of magazines, with practice on *The Dakotan*.

322 Publicity Methods 2(2,0) FSSu

Newswriting, organizing publicity campaigns, press relations. For students expecting to become county agents, home economics leaders, or teachers. P, freshman English. Not for journalism majors or minors.

331-341 Editing Laboratory 1(0,3) FS

Practice in editing. Required of all majors. First term must be taken concurrently with J 302.

342 Broadcast Journalism 2(2,0) F

Writing and editing radio news programs. P, J 243.

352 Newspaper Advertising 2(2,0) S

Writing, layout, and production of newspaper advertising; advertising salesmanship. P, J 202.

353 Principles of Advertising 3(3,0) F

History, ethics, economics, and psychology of advertising. Open.

362 History of Journalism 2(2,0) F
(Offered in 1963)

Development of journalism in United States. Alternate years.

372 Feature Writing 2(1,3) S

Writing of features and special articles. Open to non-journalism majors.

411 Problems and Methods 1(1,0) FS

Individual research problem in journalism. P, senior standing.

412 Newspaper Management 2(1,3) FS

Management principles and business office practices for newspapers. P, senior standing.

415 Newspaper Publishing Practice 5(0,15) FS

Practical experience on Volga Tribune. P, senior standing.

422 Advanced Reporting 2(1,3) FS

Reporting of public affairs; political, scientific, and technical events. P, senior standing.

431 Journalism Seminar 1(1,0) FS

Problems and trends in publishing and broadcasting. Open.

452 Reporting in Special Fields 2(2,0) SSu

Reporting and writing about scientific and technical developments; intensive course in writing. Open.

473 Law of the Press 3(3,0) F
Libel, privilege, right of privacy, contempt of court, copyright, constitutional guarantees and regulations pertaining to advertising, publishing, and broadcasting. Open.

GRADUATE COURSES

632 Supervision of School Publications 2(2,0) Su
School yearbooks, newspapers, and problems of secondary school journalism education. Open.

640 Workshop in School Publications 1 to 3 credits Su

642 Institutional Public Relations 2(2,0) SSu
Interpreting institutional programs to the public.

662 The Magazine in America 2(2,0) SSu
History of magazines in United States. Open

672 Rights and Responsibilities of the Press 2(2,0) S
Nature and history of rights and responsibilities of the press and relations of press to individuals and society. Analysis of court cases involving first and fourteenth amendments to Constitution. Open.

713 Research Methods in Communications 3(3,0) FSu
Survey of major research in communications, study of methods employed; elementary statistical procedures.

723 Special Problem in Journalism 3 credits FSSu
Individual research problem. P, J 713.

732 Theories of Communication 2(2,0) S
Survey of literature dealing with theories of information and communication. Intensive reading course. Open.

742 Seminar in Current Editorial Problems 2(2,0) S

790 Thesis in Journalism 5 credits

Printing Management (PM)

Printing Management major. Those who seek positions as executives or managers in the printing industry will find the Printing Management curriculum well suited to their needs. This is a four-year program leading to the bachelor of science degree. Students get a solid background in general education, including 17 credits in natural sciences and mathematics, 22 credits in social sciences, 11 credits in humanities, 6 to 10 credits in general requirements, and 46 credits in printing and management courses.

Not more than 46 credits in printing management courses or more than 10 in journalism may be counted toward the degree. A student may have no grade lower than C in freshman English to be eligible to work toward the major in printing management. A student may not be graduated with a major in printing management with less than a C (2.0) grade point average, and any student who does not maintain a C average may be required to change majors. (See Divisional Requirements in the Division of Science and Applied Arts.)

Major in Printing-Education. Those who wish to prepare to teach printing in vocational schools or high schools will find the curriculum in printing-education designed for their needs. Although the first two years are about the same as the first two years of the printing management curriculum, it is necessary that the student going into education make his decision before beginning his junior year, and consult the head of the department and the head of the education department. Inasmuch as most states require that printing teachers must have a certain amount of industrial experience before being certificated, it is urgent that students planning to teach learn the nature of the regulations in the various states, and that they obtain as much practical experience during their summers and school years as possible. The department assists students in obtaining such experience.

Two-year Printing Course. Students who wish to become printing craftsmen will find the two-year certificate course well suited to their needs. Although a student who completes the course is not a finished craftsman, he will have had two years of general education coupled with practical shop courses and, if adept, will be able to qualify for excellent positions after acquiring some practical experience. Graduates of this course are in good demand.

Non-credit Shop Courses. Printers who wish to broaden their knowledge of the craft or who wish to attain skill in a phase of printing in which they have but little experience may enroll in non-credit shop course PM110. Such students can not enroll in any other courses. The number of students which can be accepted is limited; the best opportunities for enrollment are in the summer.

Enrollment may be for half a regular term or for a full term, and may be for half a load or for a full load. A full load is interpreted to be from 27 to 40 clock hours a week, and a half load is from 16 to 26 clock hours a week, inclusive.

Limited enrollment. The number of students who can be accepted in printing courses is naturally limited by the space and equipment available. At present, the limit for entering freshmen is 24 full-time students, and advanced application is required. Application should be made in the regular way to the office of Admissions and Records.

Waiving courses for experienced students. Students who can demonstrate proficiency in certain printing skills may be excused from appropriate courses and may substitute other courses, either printing or otherwise, with the approval of the head of the department.

Standards of proficiency. In technical printing courses, the department must insist upon certain standards of proficiency. Students who are not capable of meeting these standards (such as operational speeds in composing machines) may be dropped from the courses or required to attend additional periods.

Graduate work in printing management. A major on the master of science degree may be earned in printing management. It is believed that this is the only institution in the country which offers such a major. Emphasis is on management courses. (See Graduate Division for details.)

Student organizations. The Printonian Club is open to all students in printing. The club publishes the College Directory and sponsors an annual industrial tour to one of the Mid-Western publishing centers. Students in printing participate in journalistic and publishing activities including holding positions on the *South Dakota Collegian, The Jack Rabbit,* and *The Dakotan.*

Professional Affiliations. Printing management instructors are associated with the Graphic Arts Education Association, and the department maintains close relations with the Printing Industry of America.

Curriculum in Science and Applied Arts, Printing Management Major

Freshman Year	**F**	**S**
English, Engl 113-123 or 143-153	3	3
Introduction to Printing, PM 113	3	
Presswork, PM 121	1	
Typography, PM 131	1	
Composing Machines, PM 143		3
Display Typography, PM 152		2
College Algebra, Math 113	3	
Elementary Physics, Phy 114		4
General Bacteriology, Bac 202 or General Biology, Bot 113-123	2–3	2–3
National Government, PolS 213		3
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	**F**	**S**
Introduction to Literature, Engl 203	3	
English elective		2
Fundamentals of Speech, Sp 103		3
Inorganic Chemistry, Ch 110-124, or Introductory Chemistry, Ch 104 and Phy 124	4	4
Advanced Presswork, PM 212	2	
Advanced Composing Machines, PM 222	2	
Advanced Typography, PM 232		2
Lithography, PM 243		3
Press Photography, J 232	2	
General Psychology, Psy 203	3	
Art Appreciation, Art 212		2
Military Science, Mil 211-221 or 251-261	1	1

Junior Year	**F**	**S**
Principles of Economics, Econ 203-213	3	3
Principles of Accounting, Econ 223	3	
Imposition and Lockup, PM 323	3	
Pressroom Production, PM 333 or Composing Machine Mechanism, PM 313	3	or 3
Plant Administration, PM 353	3	
Labor and Personnel, PM 363		3
Introduction to Sociology, RS 153		3
Newswriting and Reporting, J 243	3	
History elective		3
Social Science electives	2	2

Senior Year	**F**	**S**
Estimating, PM 434	4	
Printing Sales and Promotion, PM 432		2
Production Problems, PM 464		4
Industrial Management, ME 403	3	
Statistical Methods I, Econ 353	3	
Humanities elective	2	2
*Electives	5	9

*Not more than 46 credits in Printing Management or more than 10 credits in Journalism will be counted toward the degree. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

Curriculum in Science and Applied Arts, Printing-Education Major

Freshman Year	F	S
Same as Printing Management	17	17

Sophomore Year	F	S
Same as Printing Management except that students may substitute biological sciences for one semester of physical science	17	17

Junior Year	F	S
Practicum and Professional Laboratory Experiences, Ed 301	1	
Introduction to American Education, Ed 302		2
Educational Psychology, Ed 312		2
Principles of Economics, Econ 203-213	3	3
Imposition and Lockup, PM 323	3	
Printing elective	3	3
History elective	4	4
Introduction to Sociology, RS 153	3	
*Electives		3
	17	17

Senior Year	F	S
Educational Measurements, Ed 402	2 or 2	
Principles of Guidance, Ed 412	2 or 2	
Audio-Visual Methods and Materials, Ed 422	2 or 2	
Methods of Teaching in Secondary Schools, Ed 403	3 or 3	
Supervised Student Teaching in Secondary Schools, Ed 408	8 or 8	
*Electives		
	17	17

*All students must complete a total of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

Curriculum for Two-Year Printing Course

Freshman Year	F	S
Orientation, Or 100	0	0
English, Engl 113-123 or 143-153	3	3
Science and/or Mathematics	3–4	3–4
Fundamentals of Speech, Sp 103	3	
Physical Education, PE 121-131	1	1
Introduction to Printing, PM 113	3	
Presswork, PM 121	1	
Typography, PM 131	1	
Display Typography, PM 152		2
Composing Machines, PM 143		3
Electives	1–2	4–5
	17	17

Sophomore Year	F	S
Introduction to Literature, Engl 203	3	
Introduction to Sociology, RS 153		3
Advanced Presswork, PM 212	2	
Advanced Composing Machines, PM 222	2	
Newspaper Composition, PM 262	2	
Imposition and Lockup, PM 323	3	
Art Appreciation, Art 212		2
*Electives	5	12
	17	17

*Must be approved by the head of the department.

UNDERGRADUATE COURSES

110 Practical Shop Work Not for credit

Workshop-type course for special students. P, advanced application and consent of department.

113 Introduction to Printing 3(3,0) F

History and scope of graphic arts; principles of letterpress, lithographic, intaglio, and silk screen printing; printing measurements; basic principles of type composition and presses. Includes safety principlies and shop ethics.

121 Presswork 1(0,3) F

Laboratory; must be taken concurrently with PM 113. Includes platen press make-ready and operation on open and automatic presses.

131 Typography 1(0,3) F

Laboratory; must be taken concurrently with PM 113. Includes hand composition, proofreading, type faces, elements of design.

143 Composing Machines 3(1,6) S

Introduction to linecasting machines; operations, maintenance, and office style.

152 Display Typography 2(1,3) S

Principles of display, copy-fittting, type faces, legibility, use, and layouts for advertising and job composition. P, 131.

212 Advanced Presswork 2(1,3) F

Cylinder press operation, make-ready, open and automatic presses. P, 121.

222 Advanced Composing Machines 2(1,3)

Composition of display matter, tabular material, forms. P, 143.

232 Advanced Typography 2(1,3) S

Design, layout and composition for both offset and letterpress; copy mark-up; tabular work.

243 Lithography 3(2,3) S

Principles of lithography; offset press operation; camera work; plate making.

262 Newspaper Composition 2(1,3) F

Newspaper makeup, stereotyping, stoneroom procedures. P, 232.

272 Press and Bindery Problems 2(1,3) S

Bindery equipment, stock handling, paper. P, 212.

282 Production and Pricing 2(2,0) S

Franklin catalog, estimating procedures, office records, legal requirements, standards of industry. For two-year course.

313 Composing Machine Mechanism 3(1,6) F

Nomenclature; dismantling and reassembly of linecasting machines; diagnosis of machine failures. P, 222.

323 Imposition and Lockup 3(1,6) F

Imposition for letterpress and offset; lockup for letterpress; press layout problems. P, 232.

333 Pressroom Production 3(1,6) S

Press maintenance and operation; color work; press room requirements and conditions. P, 212.

353 Plant Administration 3(3,0) F

Legal requirements, tax problems, office records, routing, purchasing, and inventory control.

363 Labor and Personnel 3(3,0) S

Labor costs, unionization, employe relations, and personnel department practices in the industry.

413 Newspaper Shop Practices 3(0,9) FSSu

Laboratory work on Volga Tribune or selected newspapers. Required in 2-year course. P, 262.

423 Education in the Graphic Arts 3(3,0) SSu

History, philosophy, and methods of education in graphic arts industries.

432 Printing Sales and Promotion 2(2,0) S

Principles of promotion, salesmanship trade customs; servicing accounts.

434 Estimating 4(4,0) F

PIA system of pricing, principles of cost finding; depreciation; variables in production.

451-461 Advanced Printing Operations 1(0,3) FS

Selected problems in shop work for advanced students.

464 Production Problems 4(4,0) S

Introduction to production control, quality control; materials handling, scheduling, and dispatching.

GRADUATE COURSES

632 Advanced Typographical Design 2(2,0) S

Important typographers and their works; principles of graphic design, classical and modern; Morris and the classical revival; American designers; book and periodical design.

643 Advanced Lithography 3(2,3) F

Color separation negatives; halftones; varieties of lithographic materials and processes; trouble-shooting.

712 Labor in the Typographical Industries 2(2,0) F

Intensive study of labor negotiations, contracts, labor-management relations in the industry.

722 Plant Appraisal and Finance 2(2,0) S

733 Production Management 3(3,0) F

Division of labor, lines of control, responsibility, authority, tooling, logistics.

743 Production Control 3(3,0) S

Time and motion studies; analysis of cost factors; survey of current practices in the industry.

752 Trends in Graphic Reproduction 2(2,0) S

Current problems in industry, including those being studied in laboratories and research centers; automation, electronics, photo-sensitive materials.

790 Thesis in Printing Management 5-8 credits

Secretarial Science (SecS)

Minor on the B.S. degree. Secretarial science may be selected as a minor on the bachelor of science degree. Courses for the minor should be selected upon consultation with the administrator of the secretarial science work. A total of 16 credits is required for the minor. Those planning to qualify to teach secretarial science or commercial subjects in high school should consult the head of the Education Department.

Two-year professional course. This program is designed to prepare students for office clerical and secretarial positions. It consists of a background in general education courses plus a minimum of 16 credits in secretarial courses. Many opportunities exist for secretaries who have additional training in technical fields. The minor for the two-year course may be selected with this in mind.

Curriculum for Two-Year Course in Secretarial Science

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Intermediate Typewriting, Advanced Typewriting, SecS 122-132	2	2
Duplicating Machines, SecS 152	2	
Calculating Machines, SecS 161	1	
Transcribing Machines, SecS 171		1
Beginning Shorthand, Intermediate Shorthand, SecS 183-193	3	3
Fundamentals of Speech, Sp 103		3
Physical Education, PE 121-131	1	1
Orientation, Or 100	0	
Science, Mathematics, or Language	3–4	3–4
Electives		
	17	17

Sophomore Year	F	S
Typewriting Office Practice, SecS 233	3	
Advanced Shorthand, SecS 213	3	
Secretarial Practice, SecS 263		3
General Psychology, Psy 203	3	
Accounting, Econ 223	3	

Commercial Correspondence, SecS 332		2
Business Law, Econ 303		3
Minor subjects and electives		
	17	17

UNDERGRADUATE COURSES

111 Beginning Typewriting 1(0,3) S

Open only to those who have had no previous instruction in typewriting.

122 Intermediate Typewriting 2(0,5) F

Not open to those who have had more than one year of instruction in typewriting. Includes typewriting of business letters, manuscripts, tabular matter and documents.

132 Advanced Typewriting 2(0,5) S

Increasing speed and accuracy. Business forms, letter production, statistical reports, legal papers. P, 122 or one year of instruction in typing.

152 Duplicating Machines 2(1,3) F

Stencil, spirit, and photo-copy duplicators; kinds and uses, operation.

161 Calculating Machines 1(0,3) F

Comptometer, rotary, ten-key and full-keyboard machines; kinds, functions, and operation.

171 Transcribing Machines 1(0,3) S

Tape, record, and belt-type dictating and transcribing machine operation.

183 Beginning Shorthand 3(3,0) F

Gregg system; open for credit only to those with no previous instruction in shorthand.

193 Intermediate Shorthand 3(3,0) S

Review of shorthand theory; dictation and transcription. P, 183 or one year of previous shorthand instruction.

213 Advanced Shorthand 3(3,0) F

Increasing speed and accuracy, production of mailable transcripts. P, 193 or 2 years of previous instruction in shorthand.

233 Typewriting Office Practice 3(2,3) F

Office procedure, filing, production routine. P, 132 or 2 years of previous instruction in typing.

263 Secretarial Practice 3(2,3) S

Duties, ethics, and responsibilities of personal and confidential secretary; office organization and management; procurement and supplies. P, 193.

332 Commercial Correspondence 2(2,0) S

Business letter writing, organization of correspondence, dictation. P, freshman English.

Rural Sociology Department (RS)

Curriculum in Science and Applied Arts, Rural Sociology Major

(See Rural Sociology Major in Technical Agriculture under Division of Agriculture)

Freshman Year	**F**	**S**
English, Engl 113-123 or 143-153	3	3
Fundamentals of Speech, Sp 103		3
Introduction to Sociology, RS 153		3
Introductory Chemistry, Ch 104 or Inorganic Chemistry, Ch 110	4	
College Algebra, Math 113 or 145		3–5
World History, Hist 103-113	3	3
General Physical Education, PE 101-111 or 121-131	1	1
Military Science, Mil 111-121 or 151-161	1	1
Orientation, Or 100	0	
Electives		

Sophomore Year	**F**	**S**
Rural Sociology, RS 202		2
Leadership, RS 262	2	
Principles of Economics, Econ 203-213	3	3
Anthropology, RS 213		3
Social Problems, RS 232	2	
National Government, PolS 213	3	
General Botany, Bot 103-104 or General Zoology, Z 103-113 or Bot 103 and Z 103	3	3–4
Introductory Physics, Phy 104	4	
Humanities elective from approved list		3
Military Science, Mil 211-221 or 251-261	1	1
Electives		

Junior Year	**F**	**S**
Urban Sociology, RS 373	3	
Intermediate Sociology, RS 393	3	
State and Local Government, PolS 243		3
Philosophic Inquiry, GS 303		3
General Psychology, Psy 203	3	
General Bacteriology, Bac 202-212		4
Introduction to Literature, Engl 203	3	
Advanced Exposition, Engl 352 or Publicity Methods, J 322		2
*Social Science electives (300 or above courses)	5	5

Senior Year	**F**	**S**
The Family, RS 433	3	
Statistical Methods I, Econ 353	3	
Required electives in Economics		3
Genetics, Z 303	3	
Electives in Rural Sociology	6	3
*Electives		

MAJOR: RS 153, 202, 213, 232, 262, 373, 393, and 433 plus electives to total 24 semester credits.

MINOR: RS 153, 202 and sociology electives to total 16 credits. Six credits must be numbered 300 or above. (RS 213 and 393 recommended as electives.)

*Students planning to teach in the secondary schools must consult with the head of the Education department before registering for the first term of their junior year. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

Speech Department (Sp)

Professor Sikkink; Associate Professor Stine; Assistant Professors Denton, Hoogestraat, Seymour (on leave); Instructors Litke, McCleary; Assistant Fisher

Students may major or minor in speech, select courses for self-improvement, take courses to meet the Humanities requirement, or participate in extra-curricular speech activities. The major may choose to emphasize any one of the following areas: Speech Correction, Drama and Theater, General Speech, or Public Address.

All students are required to take Speech 103 as a part of the core requirements for graduation. Students who receive a D in Speech 103 are required to enroll in Speech 11 until they earn a final course grade of E in order to meet the Proficiency Requirement in speech.

Drama

A program of major productions is presented each year. Any regular college student may be cast in or assist with the production of one or more of the plays. College credit may be earned. A local chapter of Alpha Psi Omega, national honorary fraternity, is affiliated with the department.

Forensics

A program of local and regional participation in debate, extempore speaking, and oratory is sponsored by the department. Any regular college student is eligible. College credit may be earned. A local chapter of Pi Kappa Delta, national honorary fraternity, is affiliated with the departmnt.

Speech Correction

A program in the study of speech defects and their correction and in hearing testing and rehabilitation is offered. Completion of a specified curriculum qualifies students for certification as speech and hearing therapists in South Dakota.

Assistance is given, without charge, to regularly enrolled college students who need special help with their speech.

Curriculum in Science and Applied Arts, Speech Major

Freshman Year	F	S
English, Engl 113-123 or 143-153	3	3
Fundamentals of Speech, Sp 103	3	
Stagecraft, Sp 143 or 153	3	or 3
Acting and Directing, Sp 183	3	
College Algebra, Math 113		3
General Biology, Bot 113-123 or General Botany, Bot 103-104 or General Zoology, Z 103-113 or General Bacteriology, Bac 202-212	3	3–4
Music Appreciation, Mus 102 or 112	2	or 2
Principles of Sociology, RS 153	3	or 3
Military Science, Mil 111-121 or 151-161	1	1
General Physical Education, PE 101-111 or 121-131	1	1
Orientation, Or 100	0	

Sophomore Year	F	S
Introduction to Speech Correction,* Sp 243	3	
Phonetics, Sp 262		2
Introductory Physics 104 and Introductory Chemistry, Ch 104; or Chemistry, Ch 110 and 115 or 124; or Elementary Physics, Phy 114-124	4	4
*Social Science: Econ 203, PolS 213 or 243, PolS 222; Hist 103 or 113 or 214 or 224; Psy 203	7	8
Significant Books, GS 201	1	or 1
Art Appreciation, Art 212	2	or 2
Introduction to Literature, Engl 203	3	or 3
Military Science, Mil 211-221 or 251-261	1	1

Junior Year	F	S
Argumentation and Debate, Sp 302		2
Discussion, Sp 312 and Parliamentary Procedure, Sp 361 or Public Speaking, Sp 323	3	
Development of Theatre, Sp 482	2	
Philosophic Inquiry, GS 303		3
Required Speech electives for major		
†Electives		

Senior Year	F	S
Required Speech electives for major		
†Electives		

MAJOR: Sp 143 or 153, 183, 243, 262, 302, three credits from 312, 323, 361, plus 14 additional credits in Speech approved by the head of the Speech department.

MINOR: Sixteen semester credits approved by the head of the Speech department.

*Credits in GS 103-113 may be substituted for these required courses, but Speech-Education majors must take General Psychology 203.

†Students who plan to teach in the secondary schools should consult with the head of the Education department before registering for the first term of their junior year. Students who plan to teach must complete a total of 14 semester credits in English to qualify for a teaching certificate. Those who wish to meet certification requirements for Speech Correctionists in South Dakota must have their schedules approved by the director of the Speech and Hearing Center. All students must complete a minimum of 40 semester credits in courses numbered 300 or above to qualify for the B.S. degree.

UNDERGRADUATE COURSES

11 Remedial Speech 1(1,0) FS

Required of all students who received a grade of D in Speech 103. Credit does not count toward graduation, but student must earn final course grade of E in order to graduate. P, D in Sp 103.

103 Fundamentals of Speech 3(3,0) FS

Required of all students. Emphasis on development of skills in research, organization, delivery and listening necessary for effective oral communication.

143 Stagecraft 3(2,3) F

Theater organization, scene construction and decoration, painting, lighting, and make-up. Laboratory work on two major theater productions.

153 Stagecraft 3(2,3) S

History of set design, planning and designing for the stage. Laboratory work on two major theater productions.

183 Acting and Directing 3(3,0) F

Basic principles of acting and directing.

243 Introduction to Speech Correction 3(3,0) F (Offered in 1963)

Survey of common speech problems, their correction and prevention. Emphasis on voice and articulation problems. Designed for speech correctionists, teachers, nurses, child development majors and parents. Alternate years.

251 Speech Activities 1(0,3) FS

Credit earned by active participation in dramatic or forensic program. May be repeated until six credits are earned.

262 Phonetics 2(2,0) S (Offered in 1964)

International Phonetic Alphabet and its uses. Designed for students of speech, music and foreign languages. Alternate years.

282 Speech Science 2(2,0) S (Offered in 1964)

Physical, physiological, neurological, psychological and other scientific bases of speech. Alternate years.

302 Argumentation and Debate 2(2,0) S (Offered in 1964)

Principles and practices of argumentative speaking and debate. P, 103. Alternate years.

312 Discussion 2(2,0) F (Offered in 1963)

Nature, values and limitations of discussion. Theory and practice. P, 103. Alternate years.

323 Public Speaking 3(3,0) F

Theory and practice of giving public speeches and speeches for special situations. P, 103.

353 Oral Interpretation 3(3,0) S

Oral interpretation of literature. P, 103.

361 Parliamentary Procedure 1(1,0) FS

Organizing and conducting meetings. Practical experience. P, 103.

363 Speech Pathology 3(3,0) S (Offered in 1965)

Diagnosis, causes, treatment, and prevention of stuttering, aphasia, cerebral palsy and cleft palate speech. Planning and operating the public school remedial program. P, 243, 262, 282. Alternate years.

463 Audiology 3(3,0) F (Offered in 1964)

Pathologies of the ear. Hearing tests and their interpretation. Introduction of hearing rehabilitation. Practice administering and interpreting hearing tests. P, 282 or consent of instructor. Alternate years.

472 Playwriting 2(2,0) F (Offered in 1964)

Dramatic theory and writing plays. Experimental theater production of selected original scripts. P, consent of instructor. Alternate years.

482 Development of Theater 2(2,0) F (Offered in 1963)

Periods, theaters, and representative dramatic literature of theater from primitives to present day. Alternate years.

GRADUATE COURSES

612 Persuasion 2(2,0) S (Offered in 1965)

Audiences, motivation, principles of attention and suggestion, bases of belief and action applicable in persuasive speaking. Theory and practice. P, 323. Alternate years.

613 Directing Speech Activities 3(3,0) S (Offered in 1965)

Organizing declamation, dramatics, and forensic programs. Teaching of speech. Professional organization and journals. P, consent of department head. Alternate years.

630-640-650 Special Problems in Speech 1 to 2 cr FS

Directed research and reading. May be repeated for total of 4 credits. P, 16 credits in speech or graduate standing.

630 Public Address

640 Theater

650 Speech Correction Practicum

790 Thesis in Language Skills 5-8 credits FS

College Staff 1962-1963

Resident on the Campus[1]

Following the Purchasing Agent the names are arranged alphabetically

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 college staff, the number following if there is one, the year of appointment to present rank. An asterisk (*) in connection with a name indicates that there has been a break in the member's official connection with the College.

The above notation is not used with names of those whose duties are wholly in the field.

H. M. Briggs, President, 1958; B.S., Iowa State College, 1933; M.S., North Dakota Agricultural College, 1935; Ph.D., Cornell University, 1938.

David F. Pearson, Director of Development and Assistant to the President, Assistant Professor of Economics, 1957, 1961; B.S., South Dakota State College, 1939; J.D., University of South Dakota, 1950.

Harold S. Bailey, Dean of Academic Affairs and Professor of Pharmaceutical Chemistry, Graduate Faculty 1951, 1961; B.S., Massachusetts College of Pharmacy, 1944, M.S., 1948; Ph.D., Purdue University, 1951

Wesley A. Bugg, Director of Finance, 1957, 1958; B.E., Western State (Illinois), 1942; B.S.A., Walton School of Commerce (Chicago), 1949.

David B. Doner, Director of Admissions and Records, 1919, 1953; B.S., South Dakota State College, 1928.

Winston W. Wolpert, Purchasing Agent, Office Manager, Business Office, 1954, 1958; B.A., Concordia College (Moorhead, Minnesota), 1943; M.A., South Dakota State College, 1961.

Abdul K. Abdul-Shafi, Assistant Professor of Civil Engineering, 1958, 1960; B.S., Utah State College, 1953; M.S., University of Missouri, 1955.

Oscar R. Abel, Superintendent of Printing Production, Associate Professor of Printing and Journalism, 1937, 1956; B.S., South Dakota State College, 1942.

Dwight L. Adams, Lt. Colonel, Professor, AROTC, 1962; B.B.A., University of Georgia, 1959.

Shair Ahmad, Instructor in Mathematics, 1962; B.S., University of Utah, 1960, M.S., 1962.

***Mrs. Ruth A. Alexander,** Assistant Professor of English, 1952, 1962; B.A., Michigan State University, 1945; M.A., University of Minnesota, 1947; Ph.D., Michigan State University, 1952.

***Glenn H. Allcott,** Instructor in Chemistry, 1957, 1959; B.S., Black Hills Teachers College, 1956; M.S., South Dakota State College, 1959.

Marvin O. Allum, Assistant Professor of Entomology-Zoology, Graduate Faculty, 1956, 1957; B.S., South Dakota State College, 1949; M.S., University of Michigan, 1951.

Mrs. Ruth B. Amidon, Extension Nutritionist, 1960; B.S., Ohio University, 1924; M.A., Columbia University, 1931.

J. R. Andersen, Assistant Professor of Civil Engineering, 1954, 1958; Registered Professional Engineer (South Dakota); B.S., South Dakota State College, 1954, M.S., 1958. On leave 1962-63.

Arthur W. Anderson, Farm Management Specialist, Extension Service, 1947, 1957; B.S., University of Minnesota, 1938, M.S., 1942.

Marshall L. Anderson, Assistant Professor of Civil Engineering, 1959; B.S., University of Minnesota, 1943, M.S., 1949.

Norman R. Anderson, Captain, Assistant Professor, AROTC, 1962; B.S., South Dakota State College, 1952.

***Richard D. Anderson,** Professor of Engineering Shops, Head of Department, 1940, 1958; B.S., South Dakota State College, 1933; M.A., University of Wyoming, 1953.

Robert J. Antonides, Associate Professor of Economics, 1953, 1958; B.S., South Dakota State College, 1947, M.S., 1953.

Glenn R. Appleton, Instructor in General Engineering, Manager, Development Hall, 1949, 1959; B.S., South Dakota State College, 1942.

Donald L. Armstrong, Assistant in Economics, 1960; B.S., University of South Dakota, 1958. Resigned August 31, 1962.

Mrs. Joan M. Aspelin, Assistant in Home Economics Research, 1961; B.S., South Dakota State College, 1961.

Roscoe J. Baker, Professor of Dairy Science and Bacteriology, Graduate Faculty, 1950, 1958; B.S., Iowa State College, 1942, M.S., 1947, Ph.D., 1950.

Allen R. Barnes, Associate Professor of Foreign Languages, Head of Department, Graduate Faculty, 1961; B.A., Hastings College, 1948; M.A., University of Idaho, 1951; Ph.D., University of Madrid (Spain), 1953.

Edward E. Barry, Assistant Professor of History, 1961; B.A., University of Tulsa, 1953; M.A., University of Missouri, 1955. Resigned August 17, 1962.

Emery Bartle, Associate Professor of Dairy Science, Graduate Faculty, 1944, 1958; B.S., South Dakota State College, 1926, M.S., 1950.

Herbert C. Bartling, Director of Tests and Measurements, Student Personnel, 1956, 1960; B.S., South Dakota State College, 1951, M.Ed., University of Texas, 1956.

[1]This list is effective as of October 1, 1962.

Durwood W. Beatty, Assistant Professor of Agronomy, 1960; B.S., Michigan State University, 1952, M.S., 1954; Ph.D., Iowa State University, 1959.

Miss Mary E. Becker, Instructor in Clinical Nursing, Administrative Assistant, 1960, 1962; B.S., College of St. Catherine, 1958; M.Ed., University of Minnesota, 1960.

Alexander G. Bednekoff, Assistant Professor of Station Biochemistry, 1962; B.S., University of Washington, 1954; M.S., University of Wisconsin, 1961, Ph.D., 1962 .

Leonard R. Benning, Extension Economist, Marketing and Project Leader, Extension, 1955, 1961; B.S., South Dakota State College, 1954, M.S., 1958.

Charles H. Benrud, Associate Professor of Economics, 1955, 1958; B.S., University of Minnesota, 1948, M.S., 1949.

***Mrs. Sharon L. Benshoof,** Instructor in Clinical Nursing, 1957, 1962; B.S., South Dakota State College, 1957.

Orville G. Bentley, Dean of Agriculture, Director of Agricultural Experiment Station, Graduate Faculty, 1958; B.S., South Dakota State College, 1942; M.S., University of Wisconsin, 1947, Ph.D., 1950.

Edward C. Berry, Professor of Bacteriology, Head of Department, Graduate Faculty, 1950, 1956; B.S., (Ed), Central Missouri State Teachers College, 1925; M.A., University of Missouri ,1936; Ph.D., Washington University, (St. Louis), 1941.

Russell L. Berry, Associate Professor of Economics, Graduate Faculty, 1949, 1955; B.S., University of Illinois, 1939; M.S., Michigan State University, 1948.

Mrs. Jeanne C. Biggar, Instructor in Rural Sociology, 1962; B.S., South Dakota State College, 1960, M.S., 1962.

Edward R. Binnewies, Professor Emeritus of Chemistry, Graduate Faculty, Director Emeritus of Student Affairs, 1913, 1953; B.S., South Dakota State College, 1913, M.S., 1915.

Donald C. Blaser, Student Personnel Counselor, 1962; B.A., Nebraska State Teachers College, 1954; M.A., University of Omaha, 1959.

Edmund G. Blinn, Associate Professor of Printing and Journalism, Graduate Faculty, 1952, 1958; B.S., Boston University, 1948; M.S., Iowa State College, 1950.

Miss Bertha Boekelheide, Associate Professor of Clinical Nursing, Administrative Assistant, 1958, 1960; B.S., Northern State Teachers College, 1924; B.A., University of Minnesota, 1925; M.S., University of Colorado, 1958.

John W. Boever, Internal Auditor and Chief Accountant, 1962; B.S., University of South Dakota, 1957.

Jack J. Bond, Assistant Professor of Agronomy, 1961; B.S., Texas Technological College, 1952, M.S., 1953.

Joseph J. Bonnemann, Assistant Agronomist, 1955, 1960; B.S., South Dakota State College, 1951.

Boyd J. Bonzer, Extension Poultryman, 1948, 1961; B.S., South Dakota State College, 1942, M.S., 1959.

Leslie Bork, Supervisor of Motion Picture Production and in Charge of Radio and Television, Assistant Professor Audio-Visual Center, Acting Head of Audio-Visual Center, 1952, 1962; B.S., Northern State Teachers College, 1948; M.Ed., South Dakota State College, 1957.

Mrs. Mary H. Bowen, Instructor in Clinical Nursing, 1962; R.N., University of Tennessee, 1948; B.S., University of Mississippi, 1954.

Burton L. Brage, Director of Resident Instruction and Assistant to Director of Experiment Station, Professor of Agronomy, Graduate Faculty, 1950, 1959; B.S., University of Minnesota, 1946, Ph.D., 1950.

Bernard J. Brandwein, Associate Professor of Chemistry, Graduate Faculty, 1955, 1960; B.S., Purdue University, 1948, M.S., 1951, Ph.D., 1955.

Delbert F. Breazeale, Professor of Dairy Science, Head of Department, Graduate Faculty, 1944, 1951; B.S., Iowa State College, 1928, M.S., 1929, Ph.D., 1938.

Miss Mary M. Brown, Assistant Professor of English, 1955, 1959; B.A., Briar Cliff College (Sioux City, Iowa), 1938; M.A., University of South Dakota, 1947.

Mrs. Cordus L. Brownson, Bursar, 1957; B.S., South Dakota State College, 1942.

James D. Bruce, Assistant Professor of Electrical Engineering, 1960; Registered Professional Engineer (West Virginia); B.S. (Ed), Northern State Teachers College, 1936; M.A., University of South Dakota, 1942; B.S. (Eng), Kansas State College, 1952, M.S., 1959.

Milo F. Bryn, Instructor in Mathematics, 1962; B.S., North Dakota State University, 1954, M.S., 1959; M.A., University of Illinois, 1962.

George W. Buchenau, Assistant Professor of Plant Pathology, 1959; B.S., New Mexico State University, 1954, M.S., 1955; Ph.D., Iowa State University, 1960.

Bert H. Buckbee, Instructor in Printing and Journalism, 1957; B.S., South Dakota State College, 1957, M.S., 1961.

Axel C. Bundgaard, Professor of Physical Education, Head of Department, Director of Athletics, Graduate Faculty, 1961; B.A., Midland College (Fremont, Nebraska), 1939; M.A., University of Michigan, 1947; Ph.D., State University of Iowa, 1958.

***George J. Buntley,** Assistant Professor of Agronomy, 1949, 1957; B.S., South Dakota State College, 1949, M.S., 1950.

Miss Bessie K. Burgi, Head Resident of the Women's Dormitories, 1957; B.A., Milwaukee-Downer College (Wisconsin), 1918; M.A., Columbia University, 1936. Resigned August 31, 1962.

***Miss Lida M. Burrill,** Professor of Home Economics Research, Graduate Faculty, 1939, 1962; B.S., University of Minnesota, 1926; M.A., University of Toronto (Canada), 1933; Ph.D., University of Minnesota, 1947.

LeRoy Burris, Associate Professor of General Engineering, 1958, 1961; B.S., Oklahoma State University, 1929, M.S., 1932.

Leon F. Bush, Associate Professor of Animal Science, Graduate Faculty, 1954; B.S., University of Kentucky, 1950, M.S., 1951; Ph.D., Cornell University, 1954.

H. E. Calkins, Associate Professor of Bacteriology, Graduate Faculty, 1954; A.B., Transylvania College, 1933; M.S., University of Kentucky, 1937; Ph.D., University of Pennsylvania, 1941.

C. Wendell Carlson, Professor of Poultry Science, Graduate Faculty, 1949, 1956; B.S., Colorado State University, 1942; M.S., Cornell University, 1948, Ph.D., 1949. On leave 1962-63.

Francis M. Carroll, Instructor in English, 1962; B.A., Carleton College (Minnesota), 1960; M.A., University of Minnesota, 1962.

Paul L. Carson, Associate Professor of Agronomy, Graduate Faculty, 1948, 1956; B.S., Northwest Missouri State Teachers College, 1941; M.S., Iowa State College, 1947.

Glenn F. Casady, A1C, Training NCO, AFROTC, 1961.

Raymond Y. Chapman, Dean of Student Personnel, Director of Terminal Courses, 1942, 1949; B.A., Dakota Wesleyan College, 1926; M.A., University of South Dakota, 1931.

J. Norman Cheadle, Professor of Electrical Engineering, Graduate Faculty, 1945, 1956; Registered Professional Engineer (South Dakota); B.S., South Dakota State College, 1937, M.S., 1949.

Ke-Chieh Cheng, Associate Professor of Civil Engineering, Graduate Faculty, 1961; B.S., National Central University (China), 1933; Ph.D., Technische Hochschule Berlin (Germany), 1939.

W. Douglas Chittick, Professor of Rural Sociology, Graduate Faculty, 1947, 1958; B.S., Northern State Teachers College, 1938; M.S., University of North Dakota, 1947.

Carl Christensen, Professor Emeritus of Music, 1906, 1951; B.Mus., McPhail, 1929.

Kenneth D. Christianson, Assistant Professor of Mechanical Engineering, 1955, 1959; B.S., South Dakota State College, 1949, M.S., 1958.

Leon R. Clark, Lt. Col., Professor, AFROTC, 1961; B.S., Oklahoma A&M, 1940.

Ralph A. Cline, Associate Extension Agronomist, 1949; B.S., Montana State College, 1930.

J. Duane Colburn, Assistant Professor of Agronomy, 1957, 1960; B.S., South Dakota State College, 1950, M.S., 1960.

Miss Zora R. Colburn, Associate Professor of Food and Nutrition, Home Economics, 1955, 1958; B.S., South Dakota State College, 1942, M.S., 1954.

Nathanial Cole, Assistant Professor of Art, 1962; B.F.A., Kansas City Art Institute, 1951, M.F.A., 1952.

Floyd F. Collins, District Extension Supervisor Emeritus (Belle Fourche), 1922, 1956; B.S., Iowa State College, 1910.

Paul E. Collins, Associate Professor of Horticulture, Graduate Faculty, 1951, 1956; B.A., Gustavus Adolphus, (Minnesota), 1939; B.S., University of Minnesota, 1948, M.S., 1949.

Robert C. Cottingham, Assistant in Mechanized Agriculture, 1961; B.S., South Dakota State College, 1962.

Miss Geraldine Crabbs, Assistant Professor and Head of Women's Physical Education, Graduate Faculty, 1953, 1957; B.A., Iowa State Teachers, 1933; M.S., University of Colorado, 1958.

***Miss Ima R. Crisman,** Assistant State Club Leader, Extension Service, 1942, 1946; B.S., South Dakota State College, 1928.

Miss Geneva V. Croll, Administrative Assistant, Extension Service, 1957.

***Harold M. Crothers,** Dean Emeritus, Engineering, Profsesor of Electrical Engineering, Graduate Faculty, 1911, 1958; B.S., South Dakota State College, 1910; E.E., University of Wisconsin, 1913, Ph.D., 1920; Honorary Doctor of Science, South Dakota State College, 1960.

***Mrs. Rae Deane Crow,** Student Personnel Counselor, 1956, 1959; B.S., Kansas State Teachers, 1952, M.S., 1956. Resigned July 31, 1962.

Waldemar Dahl, Assistant Professor of Foreign Languages, 1960; B.A., Institute of Foreign Languages, (Moscow, Russia), 1936.

Edward Dailey, Assistant Professor of Economics, 1951, 1958; B.S., South Dakota State College, 1949, M.S., 1957. Resigned September 30, 1962.

Magni Davidson, College Physician, 1938; B.A., University of North Dakota, 1920; M.D., University of Illinois, 1925.

***Mrs. Ross D. Davies,** Resident in Waneta, 1923, 1962; B.S., South Dakota State College, 1922.

***Mrs. Cassie D. Davis,** Manager Food Service, Assistant Director of Pugsley Union, 1943, 1958.

Lloyd E. Davis, Associate Extension Soils Specialist, 1957, 1959; B.S., South Dakota State College, 1956, M.S., 1960.

Delwyn D. Dearborn, Associate Extension Livestock Specialist, 1956, 1962; B.S., South Dakota State College, 1954, M.S., 1959.

Mrs. Dorothy E. Deethardt, Assistant in Home Economics Research, 1959; B.S., South Dakota State College, 1937.

Henry H. DeLong, Professor of Agricultural Engineering, Graduate Faculty, 1930, 1956; B.S., South Dakota State College, 1928, B.S., (A.E.), 1938; M.S., University of Minnesota, 1941.

Frank E. Denholm, Instructor in Economics, 1962; B.S., South Dakota State College, 1956; L.L.B., University of South Dakota, 1962.

Clarence E. Denton, Assistant Professor of Speech, Graduate Faculty, 1956; B.S., University of Nebraska, 1950; M.A., Louisiana State University, 1954.

Lyle A. Derscheid, Professor of Agronomy, Extension Agronomist, Graduate Faculty, 1946, 1960; B.S., South Dakota State College, 1943, M.S., 1948; Ph.D., Iowa State College, 1951.

Miss A. Ruth Dickinson, Assistant Professor of Secretarial Science, 1951; B.S., University of Nebraska, 1939, M.A., 1951.

C. A. Dinkel, Professor of Animal Science, Graduate Faculty, 1951, 1960; B.S., Iowa State College, 1948; M.S., South Dakota State College, 1949; Ph.D., Iowa State College, 1953.

W. E. Dittmer, Assistant to Director of Extension, Emeritus, 1923, 1962; B.S., Iowa State College, 1922.

***James N. Dornbush,** Associate Professor of Civil Engineering, Graduate Faculty, 1949, 1958; Registered Professional Engineer (South Dakota); B.S., South Dakota State College, 1949; M.S., University of Minnesota, 1959; D.Sc., Washington University, 1962.

T. A. Dorsey, Associate Professor of Veterinary Science, 1950; D.V.M., Iowa State College, 1943.

John G. Dosland, Instructor in Agronomy, 1962; B.S., Moorhead State College (Minnesota), 1959.

J. T. Dotson, Major, Assistant Professor, AROTC, 1960., B.S., Texas A&M, 1950.

Arthur E. Dracy, Professor of Dairy Science and Zoology, Graduate Faculty, 1948, 1961; B.S., University of Minnesota, 1943, M.S., 1946, Ph.D., 1949.

***George H. Duffey,** Professor of Physics, Graduate Faculty, 1945, 1959; B.A., Cornell College (Mount Vernon, Iowa), 1942; M.A., Princeton University, 1944, Ph.D., 1945.

George R. Durland, Assistant Extension Agricultural Engineer, 1955; B.S., South Dakota State College, 1953.

C. Dean Dybing, Instructor in Agronomy, USDA, 1960, 1961; B.S., Colorado A&M, 1953, M.S., 1955; Ph.D., University of California, 1959.

Alfred M. Eberle, Dean Emeritus, Division of Agriculture, Graduate Faculty, 1922, 1958; B.S., Montana State College, 1915; M.S., University of Minnesota, 1939.

D. Arlington Eddy, Assistant to Director of Resident Instruction, 1927, 1961; B.S., South Dakota State College, 1927, M.S., 1945.

Richard W. Edie, Assistant Professor of Art, 1956; B.F.A., Kansas City Art Institute, 1951; M.F.A., University of Kansas, 1956. On leave 1962-63.

Clark T. Eidsmoe, Professor of Pharmacy, Head of Department, Graduate Faculty, 1929, 1940; Ph.C., South Dakota State College, 1928, B.S., 1929, M.S., 1931.

Mrs. Carol A. Eisenbraun, Assistant in Physical Education, 1961, 1962; B.S., South Dakota State College, 1958.

Thomas R. Elsasser, Mechanical Engineer, Physical Plant, 1962; B.S., South Dakota State College, 1959.

Lawrence B. Embry, Professor of Animal Science, Graduate Faculty, 1950, 1954; B.S.A., University of Kentucky, 1942; M.S.A., Cornell University, 1948, Ph.D., 1950.

Royce J. Emerick, Associate Professor of Station Biochemistry and Acting Head of Department, Graduate Faculty, 1957, 1962; B.S., Oklahoma A&M, 1952; M.S., University of Wisconsin, 1954, Ph.D., 1957.

***Laurel A. Engberg,** Professor of Political Science, Graduate Faculty, 1947, 1956; B.A., Colorado State Teachers College, 1934; M.A., University of Colorado, 1940.

Miss Helen Engebretson, Professor of Mathematics, Graduate Faculty, 1945, 1962; B.A., St. Olaf College (Minnesota), 1934; M.A., University of Minnesota, 1945.

Charles D. England, Assistant Professor of Economics and Philosophy ,1962; B.A., Findley College (Ohio), 1953; B.D., Chicago Theological Seminary, 1956; Ph.D., University of Chicago, 1962.

Miss R. Esther Erickson, Professor Emeritus of Nursing Education, 1935, 1961; Diploma in Nursing, Fairview Hospital, 1928; R.N., 1928; B.A., Baylor University, 1935; M.A., Columbia University, 1948.

***Gerhardt W. Erion,** Assistant Professor of Agronomy, 1948, 1960; B.S., South Dakota State College, 1948, M.S., 1955.

Albert Duane Evenson, Associate Professor of Printing and Journalism and Supervisor of Curriculum, 1930, 1956; B.S., South Dakota State College, 1930.

Paul D. Evenson, Instructor in Agronomy, 1959, 1961; B.S., University of Nebraska, 1957, M.S., 1959.

Mrs. Esther S. Farnham, District Home Demonstration Leader, 1940, 1961; B.S., Iowa State College, 1927.

Ralph O. Felberg, Assistant Professor of Economics, 1955, 1958; B.S., South Dakota State College, 1953, M.S., 1957. On leave 1962-63.

Elvin K. Ferrell, Extension Forester, 1946; B.S., Washington State College, 1930; M.S., South Dakota State College, 1954.

Miss Elva O. Feuerhelm, Administrative Assistant to Director of Experiment Station, 1957.

Lawrence O. Fine, Professor of Agronomy, Head of Department, Graduate Faculty, 1946, 1958; B.S., North Dakota Agricultural College, 1938; Ph.D., University of Wisconsin, 1941.

B. Aubrey Fisher, Assistant in Speech, 1962; B.S., Northern State Teachers College, 1959.

Kenneth D. Fisher, Assistant Professor of Plant Pathology, 1960; B.S., University of Vermont, 1953, M.S., 1955; Ph.D., North Carolina State College, 1960.

Miss Elizabeth A. Fitzgerald, Extension Home Economics Editor, 1960; B.S., University of Nebraska, 1953. Resigned August 17, 1962.

Jacob L. Foreman, Associate Professor of Education, Graduate Faculty, 1957, 1961; B.A., Westmar College, (LeMars, Iowa), 1946; M.A., University of Minnesota, 1950; D.Ed., Colorado State College, 1957.

Harry L. Forsyth, Assistant Professor of Physical Education and Ticket Manager of Athletics, 1956, 1961; B.S., South Dakota State College, 1951, M.S., 1956.

***Maynard Fox,** Professor of English, Graduate Faculty, 1942, 1957; B.A., Fort Hays Kansas State College, 1937, M.S., 1939. On leave 1962-63.

Clifford J. Franzke, Professor of Agronomy, 1924, 1953; B.S., South Dakota State College, 1924.

Robert E. Fritz, Assistant in Animal Science, 1962; B.S., South Dakota State College, 1962.

H. M. Froslie, Professor of Physics, Head of Department, Graduate Faculty, 1949, 1959; B.A., Augustana College, 1940; M.S., State University of Iowa, 1942; Ph.D., University of Wisconsin, 1947.

Kenneth R. Frost, Jr., Extension Weed Specialist, 1961; B.S., University of Arizona, 1958, M.S., 1960.

H. W. Gadda, Associate Professor of Education, 1956, 1962; B.S., Wisconsin State College, 1940; M.S., South Dakota State College, 1956.

Mrs. Lilyan King Galbraith, Professor of Home Economics Education, Head of Department, Graduate Faculty, 1955; B.S., West Virginia University, 1927, M.S., 1946; D.Ed., Pennsylvania State University, 1953.

***William H. Gamble,** Professor of Electrical Engineering, Head of Department, Graduate Faculty, 1925, 1959; Registered Professional Engineer (South Dakota); B.S., South Dakota State College, 1925; M.S., University of Wisconsin, 1929.

F. Robert Gartner, Assistant Professor of Animal Science, 1956; B.S., Univeristy of Wyoming, 1950; M.S., University of California, 1956.

George F. Gastler, Associate Professor of Station Biochemistry, 1942, 1960; B.S., South Dakota State College, 1929, M.S., 1943.

Harry A. Geise, Assistant Agronomist, 1958; B.S., South Dakota State College, 1952, M.S., 1957.

Denver D. George, SFC, Sergeant Major, AROTC, 1958.

Joseph Addison Giddings, Professor of English, Head of Department, Graduate Faculty, 1936, 1951; B.A., Western Reserve University, 1926; M.A., Cornell University, 1928.

George I. Gilbertson, Director Emeritus of Extension Service, 1916, 1958; B.S., South Dakota State College, 1914, M.S., 1916.

Ralph A. Ginn, Professor of Physical Education, Head Football Coach, Associate Director of Athletics, Graduate Faculty, 1947, 1957; B.A., Tarkio College (Missouri), 1930; M.A., University of Missouri, 1940.

Carol Givens, Assistant Publications Editor IV, 1962; B.S., South Dakota State College, 1962.

Loyd Glover, Jr., Professor of Economics, Head of Department, Graduate Faculty, 1954, 1959; B.S., University of Nebraska, 1948, M.A., 1950; Ph.D., University of Wisconsin, 1955.

Miss Henrietta M. Gohring, State Club Agent, 1950, 1959; B.S., South Dakota State College, 1948; M.S., University of Wisconsin, 1958.

Bernard J. Gorrow, Associate Professor of Rural Sociology, Graduate Faculty, 1962; B.S., Buffalo State College (New York), 1942; M.S., St. Lawrence University (New York), 1944; Ph.D., University of Nebraska, 1951.

Mrs. Mary W. Gorrow, Assistant Professor of Clinical Nursing, 1962; B.S., Carroll College (Montana), 1956; M.S., University of Utah, 1960.

Fred L. Graber, Captain, Assistant Professor, AFROTC, 1960; B.S., Utah State University of Agriculture and Applied Science, 1951.

Hans G. Graetzer, Associate Professor of Physics, 1956, 1961; B.A., Oberlin College (Ohio), 1952; M.S., Yale University, 1953, Ph.D., 1956.

Mrs. Magnhild T. Greb, Associate Professor of Chemistry, Graduate Faculty, 1946, 1955; B.A., University of South Dakota, 1925; M.S., University of Chicago, 1926; Ph.D., University of Pittsburgh, 1931.

Raymond J. Greb, Associate Professor of Entomology-Zoology, Graduate Faculty, 1946, 1951; B.S., University of Pittsburgh, 1928, M.S., 1929, Ph.D., 1934.

Harry Greenbaum, Assistant Professor of Economics, 1961; B.S., Texas A&M, 1955; M.S., Ohio State University, 1956, Ph.D., 1961.

***Guilford C. Gross,** Professor of Pharmacology, Head of Department, Graduate Faculty, 1940, 1952; B.S., South Dakota State College, 1939, M.S., 1940; Ph.D., University of Florida, 1952.

Edmund Guenthner, Instructor in Poultry Science, 1961; B.S., South Dakota State College, 1953; M.S., Montana State College, 1960.

Mrs. Merle L. Gunsalus, Family Life Specialist, Extension, 1954; B.S., South Dakota State College, 1935.

Hollis D. Hall, Associate Extension Dairyman, 1956, 1962; B.S., South Dakota State College, 1956.

Vincent A. Hall, Instructor in Entomology-Zoology, 1962; B.S., South Dakota State College, 1956, M.S., 1957.

Andrew W. Halverson, Professor of Station Biochemistry, Graduate Faculty, 1949, 1960; B.S., South Dakota State College, 1943; M.S., University of Wisconsin, 1947, Ph.D., 1949.

Miss Phyllis L. Hanson, Assistant Cataloger in Library, 1961; B.S., Northern State Teachers College, 1954; M.S., University of Washington, 1961.

Robert L. Hanten, Survey Entomologist, 1961; B.S., South Dakota State College, 1599. Resigned November 30, 1961.

John Harceg, Jr., SSgt., Supply NCO, AFROTC, 1960.

***Mrs. Susan W. Hardin,** Assistant in General Nursing, 1958; B.S., South Daktoa State College, 1958.

***Edwin B. Harding,** Professor Emeritus of Printing and Journalism, 1921, 1954; B.S., South Dakota State College, 1931.

Emil R. Hargett, Associate Professor of Civil Engineering, 1959; Registered Professional Engineer (Alabama, South Dakota); B.S., Auburn University (Alabama), 1946; M.S., University of Colorado, 1954.

Dale D. Harpstead, Associate Professor of Agronomy, 1953, 1961; B.S., South Dakota State College, 1950, M.S., 1953; Ph.D., University of Nebraska, 1961. Resigned December 15, 1961.

G. S. Harshfield, Professor of Veterinary Science, Head of Department, Director of Animal Health Laboratory, 1943; D.V.M., Ohio State University, 1926, M.S., (Veterinary Pathology), 1930.

Miss Nelle A. Hartwig, Professor of Entomology-Zoology, Graduate Faculty, 1927, 1957; B.S., Kansas State College, 1926, M.S., 1927.

Mrs. Hilda R. Hasslinger, Associate Professor of Foreign Languages, 1947, 1957; B.A., University of Wisconsin, 1933; B.S., Ohio State University, 1939, M.A., 1940.

Warren G. Hatfield, Assistant Professor of Music and Director of Bands, 1961; B.A., Iowa State Teachers College, 1952; M.A., State University of Iowa, 1959.

***Kenneth S. Hayter,** Director of Physical Plant, 1933, 1955; B.S., South Dakota State College, 1933.

Mrs. Leona L. Headley, Head Resident of the Women's Dormitories, 1962; B.S., General Beadle State Teachers College, 1931; M.Ed., South Dakota State College, 1960.

Frank J. Heitland, State Club Agent, Extension Service, 1951, 1953; B.S., South Dakota State College, 1951; M.S., University of Wisconsin, 1957.

Rex D. Helfinstine, Professor of Economics, Extension Economist, 1960; B.S., Iowa State College, 1932; M.S., 1947; Ph.D., University of California, 1958.

John Philip Hendrickson, Professor of Political Science, Graduate Faculty, 1954, 1962; B.A., State University of Iowa, 1947; M.A., University of Minnesota, 1949; Ph.D., State University of Iowa, 1952.

Melvin B. Henrichsen, Director of Bookstore, Resident Manager of Brown Hall, 1945, 1961; B.S., South Dakota State College, 1938.

Roy D. Herold, Associate Professor of Industrial Arts, Education, Graduate Faculty, 1947, 1958; B.S., South Dakota State College, 1926, M.S., 1939.

Judson A. Herriott, Captain, Assistant Professor, AFROTC, 1959; B.A., State University of Iowa, 1952.

Miss Frances M. Hettler, Dean, Division of Home Economics, Professor of Food and Nutrition, Graduate Faculty, 1953, 1955; B.S., Iowa State College, 1932, M.S., 1940, Ph.D., 1953.

Mrs. Eva G. Hill, Assistant Resident of Scobey Hall (Women), 1962; B.S., South Dakota State College, 1917.

Mark V. Himley, TSgt., Det. Sgt. Major, AFROTC, 1960.

Henry W. Hinck, Associate Professor of English, Graduate Faculty, 1961; B.A., St. Ambrose College (Davenport, Iowa), 1939; M.A., University of Iowa, 1947, Ph.D., 1955.

Charles N. Hinkle, Associate Professor of Agricultural Engineering, 1957; Registered Professional Engineer (South Dakota); B.S., Purdue University, 1951; M.S., Michigan State University, 1953; Ph.D., University of Missouri, 1957.

Miss Inez G. Hinsvark, Dean, Division of Nursing, Professor of Nursing, 1952, 1957; Diploma in Nursing, Lutheran Hospital (Watertown, South Dakota), 1939; R.N., 1939; B.A., San Francisco State College, 1951; M.A., Stanford University, 1952.

***Merlin G. Hodgson,** Resource Development (Oahe Area), Extension, 1946, 1961; B.S., South Dakota State College, 1943.

David J. Holden, Associate Professor of Botany, Head of Department, 1956, 1958; B.S., South Dakota State College, 1950, M.S., 1952; Ph.D., University of Chicago, 1956.

Douglas L. Holden, Maintenance Engineer, 1957, 1961; B.S., University of Minnesota, 1943.

Robert E. Holdridge, Assistant Professor, Director of Audio-Visual Center, 1950, 1960; B.A., Augustana College, 1948; M.Ed., University of South Dakota, 1953. On leave 1962-63.

Miss Evelyn Hollen, Professor of Food and Nutrition, Head of Department, Graduate Faculty, 1954, 1957; B.S., Iowa State College, 1934; M.S., Pennsylvania State College, 1942.

Dennis J. Holm, Publications Artist, 1960. Resigned October 3, 1962.

Miss Ilverine T. Holter, Assistant Professor of Clinical Nursing, 1957; B.S., University of Washington, 1951.

Henry P. Holzman, Associate Animal Husbandman Emeritus, Extension Service; 1933, 1961.

Wayne E. Hoogestraat, Assistant Professor of Speech, 1960; B.A., Sioux Falls College, 1951; M.A., University of South Dakota, 1953.

Dwight R. Hovland, Assistant Professor of Agronomy, 1959; B.A., St. Olaf College (Minnesota), 1952; M.S., University of Minnesota, 1956, Ph.D., 1959.

Kenneth E. Howard, Assistant Professor of Chemistry, 1953, 1955; B.S., Wisconsin State College, 1940; M.S., Marquette University, 1949.

Mrs. Phyllis M. Howard, Assistant in Food and Nutrition, Home Economics, 1955; B.Ed., Wisconsin State College, 1940.

Laurel L. Howe, District Extension Supervisor and Indian Extension Program Coordinator, 1948, 1961; B.S., South Dakota State College, 1947.

Wayne L. Howe, Professor of Entomology-Zoology, USDA, Graduate Faculty, 1961; B.S., Colorado State University, 1938; M.S., Cornell University, 1949, Ph.D., 1951.

David Huang, Associate Professor of Mechanical Engineering, 1962; B.S., National Wu-Han University (China), 1947; M.S., University of Rhode Island, 1958; Ph.D., Pennsylvania State University, 1962.

Miss Hazel I. Hubbs, Professor of Nursing, Head, Department of Rural Nursing, 1954, 1960; Diploma in Nursing, Methodist Hospital (Mitchell, South Dakota), 1931; R.N., 1931; B.S., Dakota Wesleyan, 1935.

Ervin A. Huether, Associate Professor of Physical Education, Baseball Coach, Graduate Faculty, 1949, 1957; B.A., Yankton College, 1943; M.Ed., University of Minnesota, 1950.

Ernest J. Hugghins, Professor of Entomology-Zoology, Graduate Faculty, 1952, 1961; B.A., Baylor University (Texas), 1943; M.S., Texas A&M College, 1949; Ph.D., University of Illinois, 1952.

Albert Nash Hume, Professor Emeritus of Agronomy, 1911, 1949; B.S.A., Purdue University, 1900, M.S., 1902; Ph.D., Gottingen (Germany), 1910. Deceased September, 1962.

Mrs. Florence May Hunter, Assistant Resident in charge of Waneta Hall, 1957, 1959.

Edward G. Huppler, Assistant Professor of Entomology-Zoology, 1960; B.A., University of Minnesota, 1949, B.S., 1950, B.Med., 1952, M.D., 1953, M.S., (Surgery), 1956.

J. K. Hvistendahl, Associate Professor of Journalism, 1955, 1961; B.A., Augustana College, 1941; M.A., University of Oregon, 1950.

Kenneth J. Ivers, Admissions Counselor, Admissions and Records, Manager of Eastmen's Hall, 1962; B.S., South Dakota State College, 1957; M.A., Colorado State College, 1962.

James D. Iverson, Assistant Professor of Physical Education, Head Basketball Coach, 1956; B.S., Kansas State College, 1952, M.S., 1955.

Paul O. Jacobson, Assistant in Welding, Engineering Shops, 1956; Associate Degree, South Dakota State College, 1957.

Richard A. Jacobson, Instructor in Mathematics, 1961; B.S., South Dakota School of Mines, 1959, M.S., 1961.

***Kilbourn L. Janecek,** Associate Librarian and Assistant Professor of Library Science, 1957, 1959; B.S., University of Denver, 1949; M.A., 1951.

Edward J. Janisch, Assistant Professor of History and Political Science, 1961; B.S., State University of New York, 1952; M.A., Colgate University (Hamilton, New York), 1954.

Paul H. Jess, Assistant Professor of Printing and Journalism, 1959; B.A., State University of Iowa, 1958, M.A., 1959.

***Canute M. Johnson,** Associate Professor of Economics, Assistant to Director of Finance, Graduate Faculty, 1946, 1962; B.S., South Dakota State College, 1949, M.S., 1953.

Dan W. Johnson, Editorial Assistant, College Editor's Office, 1961; B.A., University of Minnesota, 1940; M.S., South Dakota State College, 1962.

Elmer R. Johnson, Professor of Chemistry, Graduate Faculty, 1946, 1955; B.S., South Dakota State College, 1933; Ph.D., University of Wisconsin, 1940.

***Emory E. Johnson,** Professor of Civil Engineering, Head of Department, Graduate Faculty, 1942, 1959; Registered Professional Engineer (South Dakota); B.S., University of Nebraska, 1936; M.S., University of Michigan, 1941.

Miss Genevieve B. Johnson, Associate Professor, Head Public Health Nursing, 1956, 1961, B.S.N.Ed., South Dakota State College, 1944; B.S., Public Health Nursing, Vanderbilt (Tennessee), 1945; M.A., Columbia University, 1955. On leave 1962-63.

Harvey E. Johnson, Associate Director of Admissions and Records, 1948, 1959; B.S., Southern State Teachers College, 1947.

***Isaac B. Johnson,** Professor Emeritus of Animal Science 1917, 1960; B.S., Iowa State College, 1913, M.Agr., 1921.

***John A. Johnson,** Manager Athletic Supplies and Equipment, Instructor, Physical Education, 1933, 1946; B.S., South Dakota State College, 1927.

Kenneth D. Johnson, Instructor in Engineering Drawing, General Engineering, 1958; B.S., University of Minnesota, 1958; M.Ed., South Dakota State College, 1962.

Miss Eleanor C. Johnston, Associate Professor of Home Economics Education, Graduate Faculty, 1956, 1958; B.S., University of Minnesota, 1936, M.S., 1947.

Mrs. Gladys C. Johnston, Instructor in English, 1961; B.A., Luther College (Decorah, Iowa), 1952; M.A., University of Minnesota, 1958.

Stanley L. Johnston, Associate Professor of Education, 1961; B.Ed., St. Cloud State College, 1933; M.A., University of Minnesota, 1945.

***Leslie D. Kamstra,** Associate Professor of Animal Science, Graduate Faculty, 1951, 1955; B.S., South Dakota State College, 1947, B.S., 1948, M.S., 1951; Ph.D., Ohio State University, 1955.

Benjamin H. Kantack, Assistant Professor of Entomology-Zoology, 1962; B.S. Kansas State University, 1951; M.S., Oklahoma State University, 1954.

Miss Nellie G. Kendall, Professor Emeritus of Physical Education, 1912, 1957; B.S., South Dakota State College, 1908.

Donald G. Kenefick, Assistant Professor of Agronomy, 1959; B.S., University of Wisconsin, 1951; Ph.D., Michigan State University, 1959.

Roger D. Kerns, Instructor in Physical Education, Football Line Coach, 1962; B.S., South Dakota State College, 1955.

Foster F. Kerr, Extension Water Resources Specialist, 1957, 1960; B.S., University of South Dakota, 1933.

Virginia Curry Kilander, Assistant Professor of Clinical Nursing, 1962; R.N., Swedish Hospital (Seattle), 1943; B.S., University of Minnesota, 1947, M.Ed., 1951.

Raymond Clark Kinch, Professor of Agronomy, Graduate Faculty, 1947, 1958; B.S., University of Nebraska, 1935, M.S., 1936.

Quentin St. Clare Kingsley, Assistant Agronomist, 1956; B.S., South Dakota State College, 1956.

***Mrs. Darlien G. Klug,** Reference Assistant in Library, 1949, 1961; B.A., Yankton College, 1930; M.S., South Dakota State College, 1961.

Harlan Lyle Klug, Professor of Chemistry, Graduate Faculty, 1947, 1955; B.S., South Dakota State College, 1930; M.A., University of South Dakota, 1944; Ph.D., University of Wisconsin, 1949.

Wayne E. Knabach, Assistant Professor of Electrical Engineering, 1957, 1961; B.S., South Dakota State College, 1949, M.S., 1961.

Kenneth E. Knight, Assistant in Animal Science, 1962; B.S., North Dakota State University, 1962.

Clayton W. Knofczynski, Assistant in Mechanical Engineering, 1958; B.S., South Dakota State College, 1958.

Paul L. Koepsell, Associate Professor of Civil Engineering, Graduate Faculty, 1957, 1958; Registered Professional Engineer (South Dakota); B.S., South Dakota State College, 1952; M.S., University of Washington, 1954.

Paul H. Kohler, Professor of Animal Science, Graduate Faculty, 1950, 1962; B.S., South Dakota State College, 1949, M.S., 1950; Ph.D., University of Minnesota, 1959.

William Kohlmeyer, Professor of Poultry Science, Head of Department, Graduate Faculty, 1944, 1947; B.S., Iowa State College, 1928; M.S., Purdue University, 1938.

LaVerne J. Kortan, Extension Livestock Specialist, 1945, 1962; B.S., South Dakota State College, 1942, M.S., 1955.

Mrs. Josephine Kracht, Assistant Resident in charge of Wecota Annex, 1946, 1961.

***Albert W. Kranzler,** Associate Professor of Mathematics, Graduate Faculty, 1943, 1962; B.S., University of North Dakota, 1937; M.S., University of Minnesota, 1950.

Mrs. Ruth K. Kranzler, Assistant Professor of Child Development, Home Economics, 1959, 1962; B.S., South Dakota State College, 1957, M.S., 1959.

Mrs. Emma D. Kundell, Instructor in Mathematics, 1954; B.S., Huron College, 1927; M.Ed., South Dakota State College, 1958.

Aelred J. Kurtenbach, Instructor in Electrical Engineering, 1962; B.S., South Dakota School of Mines, 1961; M.S., University of Nebraska, 1962.

Ervin Kurtz, Extension Dairyman, 1953; B.S., South Dakota State College, 1939.

***Leonard L. Ladd,** Farm and Home Development Specialist Emeritus, 1921, 1960; B.S., South Dakota State College, 1920.

Edward J. Langin, Instructor in Agronomy, 1961; B.S., University of Nebraska, 1950, M.S., 1961.

Lorys J. Larson, Assistant Professor of Civil Engineering, 1957, 1962; B.S., South Dakota State College, 1939, M.S., 1961.

Marvin E. Larson, Assistant Professor of Agricultural Engineering, 1958; B.S., South Dakota State College, 1949, M.S., 1959.

Mrs. Nancy E. Lautzenheiser, Associate Professor of Public Health Nursing, 1957, 1960; A.B., University of Cincinnati, 1936, M.B., 1939, M.D., 1940; M.P.H., University of Minnesota, 1959.

J. Patrick Leary, Supervisor of Newspaper Practice Laboratory, Printing and Journalism, 1959; B.S., South Dakota State College, 1958.

Floyd J. LeBlanc, Dean, Division of Pharmacy, Professor of Pharmaceutical Chemistry, Graduate Faculty, 1924, 1941; B.S., South Dakota State College, 1924, M.S., 1927; Ph.D., Purdue University, 1938.

Lloyd D. Lee, Assistant Professor of Mechanical Engineering, 1956, 1960; Registered Professional Engineer (South Dakota); B.S., South Dakota State College, 1956, M.S., 1959.

Walter D. Lembke, Associate Professor of Agricultural Engineering, Graduate Faculty, 1961; Registered Professional Engineer (Indiana); B.S., University of Illinois, 1951, M.S., 1952; Ph.D., Purdue University, 1961.

John D. Leonard, Associate Professor of Economics, 1962; B.S., University of North Dakota, 1949; L.L.B., 1950; M.S., Purdue University, 1954.

James K. Lewis, Associate Professor of Animal Science, Graduate Faculty, 1950, 1959; B.S., Colorado State University, 1948; M.S., Montana State College, 1950.

***Kenneth E. Lindley,** Professor of Electrical Engineering, Graduate Faculty, 1949, 1958; Registered Professional Engineer (South Dakota); B.S., University of Wisconsin, 1948, M.S., 1949; Ph.D., University of Iowa, 1953.

Ralph W. Lindsay, Jr., Aircraft Coordinator, 1954, 1957; B.S., South Dakota State College, 1962.

Ennis W. Lindsey, MSgt, Instructor, AROTC, 1962.

Robert E. Litke, Instructor in Speech, 1960; B.A., San Jose State, 1955; M.S., South Dakota State College, 1960.

Miss Anne E. Little, Director of Food Service, Assistant Professor of Food and Nutrition, Home Economics, 1958; B.S., University of Idaho, 1941; M.S., Michigan State University, 1960.

Donald C. Lockwood, Superintendent, Machine Records, 1955, 1956.

Louis Lubinus, Extension Agricultural Engineer, 1947; B.S., South Dakota State College, 1947.

Mrs. Elaine K. Luchsinger, Associate Professor, Home Management and Household Equipment, Head of Department, Graduate Faculty, 1955, 1960; B.S., Iowa State College, 1954, M.S., 1955.

Miss Lillian O. Lund, Professor of Clothing and Textiles, Graduate Faculty, 1944, 1962; B.A., St. Olaf College (Minnesota), 1930; M.S., University of Minnesota, 1944.

Gabriel Lundy, Professor Emeritus of Economics, Graduate Faculty, 1926, 1957; B.S., North Dakota Agricultural College, 1914; M.S., University of Wisconsin, 1917.

Richard M. Luther, Instructor, Animal Science, 1954, 1960; B.S., South Dakota State College, 1954, M.S., 1959. On leave 1962-63.

***Miss Mary Frances Lyle,** State Home Demonstration Leader, Graduate Faculty, 1943, 1961; B.S., University of South Dakota, 1943; M.S., Iowa State College, 1953; Ph.D., University of Wisconsin, 1958.

Douglas C. Lyman, Photographer, Audio-Visual Center, 1959; B.A., State University of Iowa, 1958. Resigned August 31, 1962.

William F. Lytle, Associate Professor of Agricultural Engineering, Graduate Faculty, 1961; Registered Professional Engineer (Illinois); B.S.Ag.Eng., University of Illinois, 1939, B.S.C.E., 1940, M.S., 1948.

Herbert B. MacDougal, Professor of Mathematics, Graduate Faculty, 1929, 1961; B.A., Miami University 1927; M.S., University of Iowa, 1929.

Donald C. Mackintosh, Instructor in Mathematics, 1951; B.A., Morningside College, 1926; M.A. University of South Dakota, 1935. Deceased.

William G. Macksam, Associate Professor of Horticulture, Graduate Faculty, 1954, 1959; B.S., Colorado State University, 1949; M.S., Kansas State College, 1951.

Miss Catherine Fraser MacLaggan, Professor Emeritus of Foreign Languages, 1927, 1953; A.B., Bucknell University, 1906, A.M., 1922.

Vernon D. Malan, Professor of Rural Sociology, Graduate Faculty, 1953, 1962; B.A., Montana State University, 1947, M.A., 1948; Ph.D., University of Oregon, 1955. On leave 1962-63.

***Cleon J. Mankin,** Associate Professor of Plant Pathology, Graduate Faculty, 1953, 1956; B.A., Highlands (New Mexico), 1938; M.S., New Mexico College of A&M, 1950; Ph.D., State College of Washington, 1953.

Melvin L. Manning, Dean of Engineering, Director of Engineering Experiment Station, Professor of Electrical Engineering, Graduate Faculty, 1959; Registered Professional Engineer (Pennsylvania, South Dakota); B.S., South Dakota State College, 1927; M.S., University of Pittsburgh, 1932.

James A. Marking, Assistant Professor of Physical Education, Freshman Basketball Coach, Assistant Varsity Coach, 1960, 1961; B.S., South Dakota State College, 1950, M.A., 1959.

Gerald E. Marousek, Associate Professor of Economics, 1956, 1962; B.S., South Dakota State College, 1951, M.S., 1954; Ph.D., Oklahoma State University, 1960. Resigned October 15, 1962.

Stanley J. Marshall, Assistant Professor of Physical Education, Football Line Coach, Graduate Faculty, 1957; B.S., South Dakota State College, 1950; M.A., State University of Iowa, 1953. On leave 1962-63.

Dean M. Martin, Extension Horticulturist, 1955; B.S., South Dakota State College, 1949.

Mrs. Grace E. Martin, Resident Assistant, Nursing, Sioux Sanatorium, 1962.

Gale B. Mast, Extension Entomologist, 1958, 1961; B.S., South Dakota State College, 1957.

Arthur J. Matson, Assistant Professor of Economics, 1961; B.S., South Dakota State College, 1947.

Richard L. Mayer, Union Program Director and Assistant to Director of Union, 1962; B.S., University of Wisconsin, 1960.

John P. McAdaragh, Assistant Professor of Veterinary Science, 1955, 1958; B.S., South Dakota State College, 1955, M.S., 1957.

Miss Laura J. McArthur, Professor Emeritus of Home Economics, 1920, 1955; B.S., University of Minnesota, 1920, M.S., 1935.

J. Walters McCarty, Associate Professor of Animal Science, Graduate Faculty, 1948, 1953; B.S., South Dakota State College, 1947; M.S., University of Minnesota, 1948.

William R. McCleary, Instructor in Speech, 1962; B.A., Yankton College, 1961; M.A., University of South Dakota, 1962.

William Clark McCone, Associate Professor of Animal Science, Graduate Faculty, 1947, 1956; B.S., South Dakota State College, 1943, M.S., 1950.

Samuel A. McCrory, Professor of Horticulture, Head of Department, Graduate Faculty, 1938, 1947; B.Ed., State Teachers College, Springfield, Missouri, 1927; B.S. (Agriculture), University of Missouri, 1936, M.A., 1937.

Miss Isabel McGibney, Extension Home Management Specialist, 1948; B.S., South Dakota State College, 1937.

James M. McGuire, Assistant Professor of Plant Pathology, 1961; B.S., University of Arkansas, 1956, M.S., 1957; Ph.D., North Carolina State College, 1961.

Miss Nellie A. McLoughlin, State Leader Home Economics Program, Extension Service, 1935, 1961; B.S., South Dakota State College, 1932; M.A., Columbia University, 1955.

Wilfred E. McMurphy, Assistant Professor of Agronomy, Research Substation, 1962; B.S., Oklahoma A&M, 1956; M.S., Oklahoma State University, 1959; Ph.D., Kansas State University, 1962.

Gordon L. McNeilly, Extension Veterinarian and Poultry Improvement Specialist, 1962; B.S., Michigan State University, 1941; D.V.M., 1952.

Donald E. McRoberts, Assistant Professor in Chemistry, 1956, 1962; B.S., Montana State College, 1943, M.S., 1962.

Everett W. Metcalf, Agricultural Editor, 1954, 1960; B.S., Wisconsin State College, 1951; M.S., University of Wisconsin, 1954.

Miss Marilyn R. Mihelcic, Instructor in Clinical Nursing, 1962; B.S., University of Minnesota, 1953, M.Ed., 1960.

Bruce L. Miller, Associate Professor of Physics, Graduate Faculty, 1955, 1959; B.S., South Dakota State College, 1948; M.S., Kansas University, 1951, Ph.D., 1953.

Clyde W. Miller, Instructor in Printing and Journalism, 1954; B.S., South Dakota State College, 1944.

Miss Elinor L. Miller, Assistant Professor of General Nursing, 1954, 1956; B.S., Western Reserve University, 1949. On leave 1962-63.

Ward L. Miller, Professor of Botany, Graduate Faculty, 1928, 1958; B.A., Southwestern College, 1916; M.S., University of Chicago, 1919, Ph.D., 1928.

Joe A. Minyard, Assistant Professor of Animal Science, Research Station, 1953, 1961; B.S., West Texas State College, 1951; M.S., South Dakota State College, 1959.

Dennis L. Moe, Professor of Agricultural Engineering, Head of Department, Graduate Faculty, 1946, 1956; B.S., South Dakota State College, 1948, M.S., 1949.

Raymond C. Moir, Capt., Assistant Professor, AROTC, 1961; B.S., North Dakota State University, 1954; L.L.B., Blackstone Law School (Chicago, Illinois), 1958.

***Maurice L. Monahan,** Instructor in Mathematics, 1954, 1958; B.S., South Dakota State College, 1956.

Earl A. Monnens, Assistant in Agronomy, 1959; B.S., University of Minnesota, 1959.

Miss Anita F. Moore, Professor of Art, 1946, 1956; B.J., University of Missouri, 1922, B.S., MA.., 1928.

Raymond A. Moore, Assistant Professor of Agronomy, 1956, 1958; B.S., South Dakota State College, 1951, M.S., 1958. On leave 1962.

George Alan Morgan, Assistant Professor of English, 1960; B.S., University of Minnesota, 1939, M.A., 1940; Ph.D., University of Iowa, 1957.

Morris J. Morgan, Associate Professor of Religion and Philosophy, Director of Religious Affairs, Associate Philosopher, Experiment Station, 1956, 1958; A.B., DePauw University, 1940; S.T.B., Boston University, 1943, Ph.D., 1945.

Walter C. Morgan, Jr., Professor of Poultry Science, Graduate Faculty, 1954, 1958; B.S., University of Connecticut, 1946; M.S., George Washington University, 1949; Ph.D., University of Connecticut, 1953.

***J. Beeman Mullinix,** Alumni Field Director, 1953, 1962; B.S., South Dakota State College, 1939.

Irving M. Munn, Associate Professor and Coordinator of Counseling Services, Student Personnel, 1961; B.A., Cornell University, 1948.

Alfred L. Musson, Assistant to Dean of Agriculture, Director in Charge of Farm Operations, Professor of Animal Science, Graduate Faculty, 1952, 1960; B.S.A., University of Connecticut, 1933; M.S., Iowa State College, 1934, Ph.D., 1951.

Gerald A. Myers, Instructor in Botany, 1958; B.A., Nebraska State Teachers, 1950; M.A., Colorado State, 1957.

***Max Myers,** Professor of Economics, Graduate Faculty, 1946, 1961; B.S., South Dakota State College, 1938; M.S., Cornell University, 1942, Ph.D., 1950.

Clatus M. Nagel, Professor of Plant Pathology, Head of Department, Graduate Faculty, 1944, 1957; B.S., North Dakota State College, 1929; M.S., Iowa State College, 1932, Ph.D., 1938.

Mrs. Kathleen M. Nagle, Associate Professor of English, Graduate Faculty, 1952, 1961; B.A., Sioux Falls College, 1936; M.A., University of Wisconsin, 1949.

***Miss Alma R. Nelson,** Food Supervisor, Cafeteria, 1958; B.S., South Dakota State College, 1926.

Miss Eva H. Nelson, Associate Professor of English, Graduate Faculty, 1947, 1949; B.A., University of South Dakota, 1931; M.A., University of Southern California, 1941.

***Mrs. Gretchen E. Nelson,** Cataloger, Library, 1946, 1961; B.S. (History), South Dakota State College, 1938; B.S. (Library Science), University of Denver, 1942.

Mrs. Kay S. Nelson, Associate Specialist, Extension Home Economics, 1951, 1953; B.S., Iowa State College, 1932.

Ralph E. Nelson, Associate Professor of Economics, 1957, 1961; B.S., University of Minnesota, 1949, M.S., 1952. On leave 1962-63.

William E. Nickell, Professor of Physics, Graduate Faculty, 1953, 1956; B.A., Berea College (Berea, Kentucky), 1940; M.S., State University of Iowa, 1943, Ph.D., 1954.

Charles E. Nielsen, Instructor in Philosophy and Religion and Economics, 1960; B.A., Anderson College (Indiana), 1955, B.D., 1958.

John Noonan, Area Potato Specialist Emeritus, Extension, 1933, 1962; B.A., Northern State Teachers College (South Dakota), 1913.

U. J. Norgaard, Extension Agronomist Emeritus, 1926, 1958; B.S.A., University of Wisconsin, 1921.

Lowell J. Nygaard, Assistant in Animal Science, 1962; B.S., South Dakota State College, 1962.

Miss Elsie T. Ober, Assistant Professor of Art, Emeritus, 1924, 1962; Graduate, Minneapolis School of Art, 1919; B.S., University of Minnesota, 1923; M.A., Columbia University, 1941.

James J. O'Connell, Extension Animal Husbandman, 1936, 1946; B.S., South Dakota State College, 1935.

***Miss Ella L. Ollenburg,** State Club Agent, Extension, 1947, 1956; B.S., Dakota Wesleyan University (Mitchell, South Dakota), 1934.

Charles E. Olson, Grounds Superintendent, Physical Plant, 1959; B.S., South Dakota State College, 1959.

Edward S. Olson, Assistant Professor of Botany, 1954, 1958; B.S., University of Minnesota, 1951; M.S., South Dakota State College, 1953.

Harlan R. Olson, Director, Pugsley Union, 1947, 1958; B.S., South Dakota State College, 1942.

***Oscar E. Olson,** Professor of Station Biochemistry, Head of Department, Dean of Graduate Division, Graduate Faculty, 1937, 1960; B.S., South Dakota State College, 1936, M.S., 1937; Ph.D., University of Wisconsin, 1948. On leave 1962-63.

Gary W. Omodt, Assistant Professor of Pharmaceutical Chemistry, 1958; B.S., University of Minnesota, 1953; Ph.D., 1959.

Gert B. Orlob, Assistant Professor of Plant Pathology, 1961; Diploma in Agriculture, University of Bonn, (Germany), 1955; M.S., University of Wisconsin, 1957; Ph.D., 1959.

Miss Joan E. Orvis, Assistant Professor of Music, 1958; B.Mus., Oberlin Conservatory of Music, 1953; M.A., University of Washington, 1954.

***Kenneth Ostroot,** District Extension Supervisor, 1946, 1961; B.S., South Dakota State College, 1940.

Myron D. Paine, Assistant Professor of Agricultural Engineering, 1958, 1961; B.S., South Dakota State College, 1956; M.S., University of Illinois, 1957.

Ivan S. Palmer, Assistant Professor of Station Biochemistry, 1962; B.S., South Dakota State College, 1955; M.S., 1956; Ph.D., Pennsylvania State University, 1960.

Francis C. Paradise, Assistant Professor of Mechanical Engineering, 1959; B.S., University of Nebraka, 1940.

Donald D. Parker, Professor of History, Head of Department of History and Political Science, Graduate Faculty, 1943; B.A., Park College (Parkville, Missouri), 1922; M.A., University of Washington, 1932; Ph.D., University of Chicago, 1936.

John L. Pates, Extension News Editor, 1955, 1961; B.S., South Dakota State College, 1953; M.S., 1962.

Anthony L. Pavlick, Associate Professor of Economics, 1956, 1959; B.S., University of Illinois, 1949, M.Ed., 1956; M.S., University of Minnesota, 1956. Resigned September 15, 1962.

James O. Pedersen, Assistant Director of Admissions and Records, 1957, 1959; B.S., South Dakota State College, 1955, M.S., 1962.

Vernyl D. Pederson, Assistant Professor of Plant Pathology, 1960; B.S., South Dakota State College, 1949, M.S., 1957; Ph.D., Iowa State University, 1960.

Ray F. Pengra, Professor Emeritus, Economics, 1944, 1958; B.S., University of Minnesota, 1927; M.S., South Dakota State College, 1946.

Robert M. Pengra, Associate Professor of Bacteriology, Graduate Faculty, 1957; B.S., South Dakota State College, 1951, M.S., 1953; Ph.D., University of Wisconsin, 1959.

***Lyndell H. Petersen,** Area Club Agent, Extension, 1952, 1961; B.S., South Dakota State College, 1951.

Miss Evelyn T. Peterson, Assistant Professor of Clinical Nursing, Head of Department, 1954, 1961; B.S., University of Washington, 1951, M.N., 1960.

Ronald M. Peterson, Associate Professor of Horticulture, Graduate Faculty, 1953, 1956; B.S., Colorado State University, 1947; M.S., University of California, 1949; Ph.D., University of Minnesota, 1953.

W. Albert Peterson, Professor Emeritus of Music, 1912, 1954; B.Mus., American Conservatory of Music, (Chicago, Illinois), 1911.

William H. Peterson, Rural Electrification Specialist, Extension, 1955; B.S., South Dakota State College, 1950.

Miss Beatrice A. Petrich, Assistant Professor, Home Economics Education, 1959, 1960; B.S., University of Minnesota, 1947; M.Ed., Colorado State University, 1958.

George H. Phillips, Professor of Printing and Journalism, Head of Department, Graduate Faculty, 1949; B.S., South Dakota State College, 1929, M.S., 1935, Ph.D., State University of Iowa, 1962.

M. Glade Pincock, Assistant Professor of Economics, 1961; B.S., Ricks College (Idaho), 1956; M.S., Cornell University, 1957, Ph.D., 1961. Resigned August 31, 1962.

Phillip E. Plumart, Assistant Professor of Poultry Science, 1961; B.S., University of Illinois, 1950; M.S., Kansas State University, 1952.

***Milo A. Potas,** Specialist in Visual-Aids, Extension Service, 1937, 1958.

D. Paul Prashar, Assistant Professor of Horticulture, Assistant Manager of Mathews Hall, 1960, 1962; B.S., Government Agricultural College (Ludhiana, India), 1948; M.S., University of Minnesota, 1955; Ph.D., University of Missouri, 1960.

Donald R. Progulske, Associate Professor of Entomology-Zoology, 1956, 1962; B.S., University of Massachusetts, 1950; M.S., Virginia Polytechnic Insitute, 1952; Ph.D., University of Missouri, 1956.

Leo F. Puhr, Professor of Agronomy, Graduate Faculty, 1927, 1948; B.S., South Dakota State College, 1925, M.S., 1927; Ph.D., University of Wisconsin, 1940. Deceased October 12, 1962.

Wayne Puttmann, Professor of Education, Graduate Faculty, 1956, 1962; B.S., Morningside College, 1947; M.S., Iowa State College, 1951; D.Ed., University of North Dakota, 1955.

Duane C. Quail, Instructor, Photographic Technician, Audio-Visual Center, 1956, 1960; B.S., South Dakota State College, 1953, M.Ed., 1959.

William F. Railing, Associate Professor of Economics, Graduate Faculty, 1955, 1958; B.S., U. S. Merchant Marine Academy, 1950; B.A., John Hopkins University, 1950; Ph.D., Cornell University, 1958. On leave 1962-63.

Jesse M. Rawson, Associate Professor of Horticulture, Graduate Faculty, 1954, 1957; B.S., Hillsdale College (Michigan), 1939; B.S. (Floriculture), Michigan State University, 1947, M.S., 1948, Ph.D., 1953.

Donald E. Ray, Assistant Professor of Animal Science, 1961; B.S., Oklahomo State University, 1957, M.S., 1959; Ph.D., Iowa State University, 1961.

Mrs. Loretta A. Raymond, Instructor in Nursing, 1959; R.N., Swedish Hospital School of Nursing (Minneapolis), 1947; B.S., South Dakota State College, 1959.

Mrs. Ruth E. Rea, Assistant Professor of Public Health Nursing, Administrative Assistant, 1956, 1960; B.A., Jamestown College (North Dakota), 1933; Nursing Certificate, University of Michigan, 1945; M.S., University of Oregon, 1959.

Mrs. Ruth W. Redhead, Instructor in Foreign Languages, 1962; B.Ed., University of Vermont, 1945; M.A., 1954.

Kenneth Redman, Professor of Pharmacognosy, Head of Department, Graduate Faculty, 1951, 1953; Ph.C,. University of Washington, 1929, B.S., 1930; Ph.D., University of Wisconsin, 1941.

Leonard Rehder, SSgt., Training NCO, AFROTC, 1961.

***Mrs. Helen E. Rezatto,** Instructor in English, 1959; B.A., University of North Dakota, 1941; M.S., South Dakota State College, 1958.

John L. Rezatto, Professor of Music, Head of Department, Graduate Faculty, 1956; B.S., Central State Wisconsin, 1931; B.M., Chicago Conservatory, 1933; M.S., University of North Dakota, 1937; D.Ed., University of Colorado, 1951.

J. Ernest Richards, Associate Professor of Mathematics, Graduate Faculty, 1947, 1959; B.S., South Dakota State College, 1946; M.A., University of South Dakota, 1950.

Gerald A. Richardson, Assistant to College Editor, 1955; B.S., South Dakota State College, 1953.

Jay R. Richardson, Associate Professor of Child Development and Family Relations, 1962; B.S., Brigham Young University, 1957, M.S., 1958; Ph.D., Pennsylvania State University, 1962.

Marvin P. Riley, Associate Professor of Rural Sociology, Graduate Faculty, 1950, 1956; B.S., Northwestern University, 1942; M.A., University of Missouri, 1950.

Mrs. Delores K. Rishoi, Instructor in Clinical Nursing, 1956; Diploma in Nursing, Sioux Valley Hospital (Sioux Falls), 1955, R.N., 1955; B.S., South Dakota State College, 1956.

Frederick J. Rittershaus, Instructor in Civil Engineering, 1958, 1962; B.S., South Dakota State College, 1958, M.S., 1962.

Miss Madeline G. Ritz, Professor of Art, Head of Department, Graduate Faculty, 1945; B.A., Oklahoma College for Women, 1925; M.A., Columbia University, 1928; D.Ed., Pennsylvainia State, 1954.

***Mrs. Florence Robinson,** Instructor in Textiles and Clothing, Home Economics, 1955; B.S., Iowa State College, 1946, M.S., 1951.

Glenn E. Robinson, Associate Professor of Physical Education, 1957; B.A., Monmouth College, 1932; M.A., University of Illinois, 1942; Professional Diploma, Columbia University, 1951.

Joshua F. Robinson, Assistant Professor of Economics, Associate Farm Management Specialist, Extension, 1954, 1960; B.S., Wisconsin State College, 1952; M.S., South Dakota State College, 1956.

Miss Alice Mae Rosenberger, Professor Emeritus of Home Economics, 1928, 1960; B.A., University of Iowa, 1916; M.S., Iowa State College, 1928.

James G. Ross, Professor of Agronomy, Graduate Faculty, 1947, 1955; B.S., University of Alberta, 1941, M.S., 1943; Ph.D., University of Wisconsin, 1947.

Ronald E. Ross, Assistant Agricultural Publications Editor, 1961; B.S., South Dakota State College, 1959.

Mrs. Eva I. Rowe, Assistant in Clinical Nursing, 1961; Diploma in Nursing, Bartron School of Nursing, 1947; R.N., 1947; B.S., South Dakota State College, 1948.

Rolland R. Rue, Assistant Professor of Chemistry, 1962; B.A., Macalaster College, 1957; Ph.D., Iowa State University, 1962.

Melvin D. Rumbaugh, Associate Professor of Agronomy, Graduate Faculty, 1959, 1962; B.S., Central College (Iowa), 1951; M.S., University of Nebraska, 1953, Ph.D., 1958.

Jack R. Runkles, Associate Professor of Agronomy, Graduate Faculty, 1955, 1957; B.S., Texas A & M, 1950, M.S., 1952; Ph.D., Iowa State College, 1956.

***Cecil D. Sanderson,** District Extension Supervisor, 1937, 1960; B.S., South Dakota State College, 1936.

Elmer E. Sanderson, Associate Extension Agronomist, 1941, 1947; B.S., South Dakota State College, 1942.

John F. Sandfort, Professor of Mechanical Engineering, Head of Department, Graduate Faculty, 1958; Registered Professional Engineer (Iowa, South Dakota); B.M.E., Ohio State University, 1933, B.I.E., 1934; M.S., Iowa State College, 1947.

***Howard M. Sauer,** Professor of Rural Sociology, Head of Department, Graduate Faculty, 1938, 1958; B.A., Des Moines University, 1929; M.A., University of Iowa, 1931.

Donald F. Scannell, Associate Professor of Journalism, Information Specialist, College News Service, 1951, 1960; B.A., University of Iowa, 1948, M.A., 1951.

Richard K. Scheer, Assistant Professor of Philosophy, 1960; B.A., University of Nebraska, 1950; M.A., University of Florida, 1951; Ph.D., University of Nebraska, 1958.

Mrs. Alice M. Schmidt, Assistant Student Health Nurse, 1959; Diploma in Nursing, St. Barnabas Hospital (Minneapolis, Minnesota), 1957; R.N., 1957.

Marvin M. Scholten, Associate Professor of Education, Graduate Faculty, 1956, 1962; B.A., University of Minnesota, 1949; M.A., University of South Dakota, 1950.

Mrs. Ruth G. Scholten, Associate Professor of Mathematics, Graduate Faculty, 1948, 1961; B.A., Park College (Missouri), 1923; M.A., Drake University, 1934.

Donald M. Schoonhoven, Aircraft Mechanic, Pilot and Flight Instructor, Air Transportation, 1958; University of Illinois, Institute of Aviation, Commercial Pilot License, Flight Instructor's License, Aircraft and Aircraft Engine License, 1957.

Miss Cecilia Schuck, Professor of Food and Nutrition, Home Economics, Graduate Faculty, 1957; B.A., Indiana State Teachers College, 1922; M.S., University of Minnesota, 1923; Ph.D., University of Chicago, 1934.

Frank G. Schultz, Dean, Division of Science and Applied Arts, Professor of Education, Graduate Faculty, 1942; B.A., Northland College (Wisconsin), 1926; M.A., University of Minnesota, 1935; Ph.D., 1941.

Mrs. Helen K. Schultz, Instructor in Secretarial Science, 1961; B.S., South Dakota State College, 1949.

S. Ray Schultz, Associate Professor of Economics, Graduate Faculty, 1960, 1962; B.A., Ohio Wesleyan University, 1951; M.S., Ohio State University, 1957, Ph.D., 1960.

Wolfgang M. Schultz, Assistant Professor of Economics, 1961; Diploma in Agriculture, Justus Liebig University (Germany), 1954, D.Ag., 1956.

Melvin R. Scott, Major, Assistant Professor, AFROTC, 1962; M.Bus.Ad., University of Mississippi, 1956.

Mrs. Helen Q. Scribner, Assistant Professor of Mathematics, 1961; B.A., State University of Iowa, 1928, M.A., 1929.

Shirley W. Seas, Assistant Professor of Dairy Science, 1955, 1961; B.S., South Dakota State College, 1955, M.S., 1959.

Robert W. Seerley, Assistant Professor of Animal Science, 1960; B.S., Purdue University, 1952; M.S., Michigan State University, 1957, Ph.D., 1960.

Paul M. Seevers, Research Assistant, Agronomy, 1960; B.S., University of Nebraska, 1959; M.A., University of Wyoming, 1960.

Mrs. Alice O. Semeniuk, Instructor, Clothing and Textiles, Home Economics, 1959; B.S., South Dakota State College, 1955, M.S., 1961.

George Semeniuk, Professor of Plant Pathology, Graduate Faculty, 1952, 1953; B.S., University of Alberta, 1932, M.S., 1934; Ph.D., Iowa State College, 1938.

Harry C. Severin, Professor Emeritus of Entomology-Zoology, Graduate Faculty, 1909, 1955; B.A., University of Wisconsin, 1907; M.A., Ohio State University, 1908.

Charles L. Sewrey, Professor of History, Graduate Faculty, 1947, 1961; B.S., University of Minnesota, 1941, M.A., 1946, Ph.D., 1955.

Paul J. Seymour, Assistant Professor of Speech, 1959; B.A., University of Minnesota, 1950, M.A., 1956.

D. Boyd Shank, Professor of Agronomy, Graduate Faculty, 1946, 1953; B.S., University of Nebraska, 1935; Ph.D., Iowa State College, 1941.

Clarence Shanley, Operations Assistant Emeritus, Extension, 1931, 1957; B.S., South Dakota State College, 1913.

Stanley Shaw, Assistant Professor of Pharmaceutical Chemistry, 1960, 1962; B.S., South Dakota State College, 1957; M.S., 1959, Ph.D., Purdue University, 1962. Resigned August 31, 1962.

Kermith E. Sheimo, Instructor in English, 1955; B.A., Luther College, 1931; M.A., University of South Dakota, 1944; M.S., South Dakota State College, 1962.

Mrs. Ina L. Sherman, Assistant in Public Health Nursing, 1962; B.S., South Dakota State College, 1952.

Miss Ethel M. Shimmin, Assistant Office Manager, Business Office, 1954, 1961; B.S., General Beadle Teachers, 1930, M.B.A., University of Denver, 1956 .

Zaher Shoukry, Assistant Professor of Civil Engineering, Graduate Faculty, 1958; B.S., University of Alexandria (Egypt), 1948, M.S., 1953. On leave 1962-63.

Fred E. Shubeck, Associate Professor of Agronomy, Graduate Faculty, 1951, 1957; B.S., South Dakota State College, 1940; Ph.D., University of Minnesota, 1951.

Donald E. Sikkink, Professor of Speech, Head of Department, Graduate Faculty, 1956, 1962; B.A., University of Minnesota, 1949, M.A., 1951, Ph.D., 1954.

Rexford D. Singer, Instructor in Civil Engineering, 1960; B.S., South Dakota State College, 1959; M.S., University of Minnesota, 1960.

Waldemar G. Sippel, Assistant Professor of Physics, Graduate Faculty, 1953, 1955; B.A., University of South Dakota, 1947, M.A., 1950.

Louis G. Skubic, Associate Professor of Engineering Drawing, Administrative Assistant to Dean, Graduate Faculty, 1954, 1956; B.S., University of Minnesota, 1947, M.A., 1953.

Mrs. Lela L. Smith, Assistant in Admissions and Records, 1943.

William H. Smith, Instructor in Printing and Journalism, 1958; B.S., Marion College (Indiana), 1953; M.S., South Dakota State College, 1962.

Limen T. Smythe, Professor of Economics, Graduate Faculty, 1941, 1959; B.A., University of Washington, 1934, M.A., 1937.

Adaline Snellman, Associate Professor of Textiles and Clothing, Head of Department, 1962; B.S., North Dakota State University, 1943; M.S., Cornell University, 1956.

Herbert Sorbel, Assistant in Animal Science 1961; B.S., South Dakota State College, 1956.

***Gerald B. Spawn,** Professor of Entomology-Zoology, Head of Department, Graduate Faculty, 1938, 1954; B.S., South Dakota State College, 1931, M.S., 1933; Ph.D., Iowa State College, 1941.

Miss Elizabeth P. Speckels, State Club Agent, Extension Service, 1961; B.S., South Dakota State College, 1960.

Kenneth R. Spurgeon, Associate Professor of Dairy Science, Graduate Faculty, 1958; B.S., Purdue University, 1942, M.S., 1948; Ph.D., University of Wisconsin, 1951.

Harlan S. Stensaas, Instructor in Printing and Journalism, 1959; B.S., General Beadle State Teachers College, 1955; M.S., South Dakota State College, 1960.

Lawrence C. Stine, Associate Professor of Speech, Graduate Faculty, 1952, 1961; B.A., Butler University, 1947; M.A., State University of Iowa, 1951, Ph.D., 1962.

William F. Stoll, Assistant Professor of Dairy Science 1957, 1961; B.S., Iowa State College, 1955, M.S., 1957.

John T. Stone, Director of Extension, Professor of Agronomy, Graduate Faculty, 1959; B.S., Michigan State University, 1938, M.S., 1940; M.P.A., Harvard University, 1949, D.P.A., 1952.

Mrs. Alice Stoner, Assistant Resident in charge of Wenona Hall, 1948, 1955.

Junis O. Storry, Professor of Electrical Engineering, Administrative Assistant to Dean, Graduate Faculty, 1946, 1959; Registered Professional Engineer (South Dakota); B.S., South Dakota State College, 1942, M.S., 1949.

Noel E. Stratmoen, Instructor and Research Assistant, Engineering Shops, 1962; B.S., South Dakota State College, 1962.

Miss Pamela A. Straw, Assistant in Mathematics, 1957; B.S., South Dakota State Colllege, 1953.

Windsor A. Straw, Professor of Printing and Journalism, College Editor, 1939, 1954; B.S., South Dakota State College, 1927.

Neil A. Stueven, Radio Director, 1960; B.A., University of Minnesota, 1960.

Leland L. Sudlow, Specialist in Visual Aids, Extenson, 1952, 1958; B.S., South Dakota State College, 1952.

Ivan P. Sundal, State Club Agent, Extension, 1957; B.S., South Dakota State College, 1956.

Stanley A. Sundet, Professor of Education, Head of Department, Graduate Faculty, Director Summer School 1946, 1958; B.S., South Dakota State College, 1935; M.S., Iowa State College, 1939; Ph.D., University of Minnesota, 1955.

***Harry R. Svec,** Assistant Professor of Engineering Shops, 1940, 1958.

Miss Ardis R. Swanson, Assistant Professor of General Nursing, Head of Department, 1954, 1958; B.S., Augustana College, 1948; M.Ed., University of Minnesota, 1959.

Mrs. Roy Sykes, College Nurse, 1952; R.N., Luther Hospital (Watertown, South Dakota), 1924.

John Tanaka, Associate Professor of Chemistry, Graduate Faculty, 1956, 1959; B.S., University of California, 1951; Ph.D., Iowa State College, 1956.

Byron E. Taylor, Extension Marketing Specialist, 1961; B.S., Kansas State College, 1955, M.S., 1958. Resigned August 31, 1962.

Charles Arthur Taylor, Associate Professor of Botany, Graduate Faculty, 1949; B.S., Cornell University, 1935, M.S., 1939.

John B. Taylor, Professor of Veterinary Science, Associate Director, Animal Health Laboratory, 1920, 1957; V.M.D., University of Pennsylvania, 1917.

Mrs. Lovie Taylor, Resident Assistant, Nursing (Ellsworth Air Force Base), 1962.

Arden L. Telgren, SSgt., Sergeant Major, AROTC, 1962.

Karl Theman, Professor of Music, 1938, 1956; Fellow three years, Juliard Graduate School of Music, 1931; Scholarship Ecole Americaine, Fountainebleau, France, 1929; B.S., Teachers College Columbia University, 1936, M.A., 1937.

John E. Thompson, Agricultural Economist, Extension Service, 1953, 1960; B.S., University of South Dakota, 1950; M.S., South Dakota State College, 1953; Ph.D., University of Wisconsin, 1960.

Ted D. Thorn, Instructor in Agronomy, 1961; B.S., Oklahoma State University, 1958, M.S., 1959.

Claire C. Totman, Professor Emeritus of Dairy Science, Graduate Faculty, 1923, 1958; B.S., University of Wisconsin, 1912.

Frank J. Traver, Director of Student Housing, 1956, 1961; B.A., Huron College (South Dakota), 1946; M.Ed., Northern State Teachers College (South Dakota), 1956.

Robert H. Travis, Instructor in Chemistry, 1960, 1962; B.S., Black Hills Teachers College, 1957.

Alfred G. Trump, Director of Library, Professor of Library Science, 1948, 1960; Ph.B., University of Chicago, 1929; B.A., University of Michigan, 1933, M.A., 1938.

Harold J. Tuma, Assistant Professor of Animal Science, 1961; B.S., Kansas State University, 1955; M.S., 1957; Ph.D., Oklahoma State University, 1961.

Turgut Ucer, Assistant Professor of Electrical Engineering, 1962; B.S., Robert College (Turkey), 1954.

Winston K. Ullman, Associate Professor of Economics, 1954, 1958; B.S., South Dakota State College, 1942, M.S., 1955. On leave 1962-63.

J. William Ulmer, Associate Professor of Mechanical Engineering, 1947, 1962; B.S., South Dakota State College, 1944, M.S., 1958.

A. John Valois, Associate Professor of Education, 1961; Diploma in Philosophy, Seminaire de Philosophie (Montreal, Canada), 1950; M.A., Catholic University of America, 1957, Ph.D., 1960. Resigned August 3, 1962.

Miss Ethel VanCleve, Secretary Emeritus, 1924, 1953.

Philip W. Van Vlack, Associate Professor of Economics, 1950, 1957; B.S., Iowa State College, 1947, M.S., 1950.

Mrs. Florence Venables, Manager, Professional Personnel and Secretary to the President, 1952, 1957; B.S., South Dakota State College, 1929.

Howard H. Voelker, Associate Professor of Dairy Science, Graduate Faculty, 1954, 1957; B.S., Iowa State University, 1946; M.S., Kansas State University, 1949; Ph.D., Iowa State University, 1955.

Miss Vivian V. Volstorff, Dean of Women, Professor of History, Graduate Faculty, Associate Director of Student Affairs, 1932, 1957; B.S., Northwestern University, 1928, M.A., 1929, Ph.D., 1932.

Henry Waelti, Assistant Professor of Agricultural Engineering, 1962; B.S., Oregon State University, 1957; M.S., Purdue University, 1960.

Richard C. Wahlstrom, Professor of Animal Science, Head of Department, Graduate Faculty, 1952, 1960; B.S., University of Nebraska, 1948; M.S., University of Illinois, 1950, Ph.D., 1952.

***G. Harvey Wakeman,** Assistant Professor of Engineering Shops, 1941, 1958; Associate Degree, South Dakota State College, 1956.

Orlin E. Walder, Dean of Men, Professor of Mathematics, Graduate Faculty, Manager of Men's Dormitories, Director of Student Affairs, 1930, 1959; B.S., Huron College (South Dakota), 1928; M.A., University of Nebraska, 1930; L.H.D., Huron College, 1957.

Allen L. Walker, Placement Counselor and Loan Officer, Student Personnel, 1961; B.A., Colorado State College, 1956, M.A., 1958.

Mrs. Anna D. Walker, Extension Clothing Specialist, 1928, 1947; B.S., South Dakota State College, 1924.

Robert J. Walstrom, Associate Professor of Entomology-Zoology, Graduate Faculty, 1955, 1957; B.S., University of Nebraska, 1947, M.S., 1949; Ph.D., Iowa State University, 1955.

Mrs. Jean D. Walz, Instructor in English, 1960; B.S., Northern State Teachers College, 1933; M.A., University of South Dakota, 1939.

James R. Waples, Assistant in Horticulture, 1957; B.S., South Dakota State College, 1949.

Raymond C. Ward, Instructor in Agronomy, 1961; B.S., University of Nebraska, 1959, M.S., 1961.

Lloyd C. Warner, Assistant Professor of Agronomy, 1962; B.S., Utah State University, 1955; M.S., 1961.

Victor S. Webster, Professor of Chemistry, Head of Department, Acting Dean, Graduate School, Graduate Faculty, 1936, 1962; B.A., University of Iowa, 1930, M.S., 1931, Ph.D., 1933.

Darrell G. Wells, Professor of Agronomy, Graduate Faculty, 1962; B.S., South Dakota State College, 1941; M.S., State College of Washington, 1943; Ph.D., University of Wisconsin, 1949.

Donald R. Wenger, Assistant Professor of Veterinary Science, 1962; B.S., University of Minnesota, 1952, D.V.M., 1954.

Miss Irene L. Wente, Professor of Mathematics, Graduate Faculty, 1930, 1956; B.S., Lewis Institute (Chicago), 1927; M.S., University of Chicago, 1929.

***Woodrow P. Wentzy,** Assistant to College Editor, 1938, 1962; B.S., South Dakota State College, 1938; M.A., University of Oklahoma, 1950.

Robert R. Werner, Major, Assistant Professor, AROTC, 1960; B.S., Military Academy, 1950; M.S., Texas A & M, 1957.

Frederick C. Westin, Professor of Agronomy, Graduate Faculty, 1947, 1955; B.S., University of Wisconsin, 1941, M.S., 1947, Ph.D., 1952.

Paul M. Wheeldon, Draftsman, Agricultural Engineering, 1958; B.S., South Dakota State College, 1956.

Frank W. Whetzal, Instructor in Animal Science, 1953, 1957; B.S., South Dakota State College, 1953. M.S., 1962.

Robert B. Whitcomb, Associate Professor of Music, 1953, 1958; B.M. ,College of Music of Cincinnati, 1947, M.M., 1950; D.M., Eastman School of Music, University of Rochester, 1959.

Everett M. White, Associate Professor of Agronomy, 1954, 1956; B..S, Iowa State University, 1948, M.S., 1950, Ph.D., 1953.

Eugene I. Whitehead, Associate Professor of Station Biochemistry, Graduate Faculty, 1942, 1960; B.S., South Dakota State College, 1939, M.S., 1941.

Lawrence Whitman, Associate Professor of Electrical Engineering, 1963; B.S., University of Vermont, 1927, M.S., 1933.

E. L. Whitmore, Associate Professor of Education, Graduate Faculty, 1957, 1961; B.S., Kansas State Teachers College, 1939; M.A., Colorado State College, 1953, D.Ed., 1960.

***John L. Wiersma,** Professor of Agricultural Engineering, Graduate Faculty, 1943, 1958; B.S., South Dakota State Colllege, 1943, M.S., 1950.

Paul L. Williams, Assistant Professor of Education and Psychology, 1962; B.S., Northwestern University, 1951, M.S., 1953.

Perry W. Williams, Associate Professor of Physics, Graduate Faculty, 1945, 1951; B.A., Dakota Wesleyan University, 1936; M.S., South Dakota State College, 1940.

***Edward J. Williamson,** Extension Soils Specialist, 1947, 1957; B.S., South Dakota State College, 1947, M.S., 1953. Resigned September 29, 1962.

Warren E. Williamson, Assistant Professor of Physical Education, 1956, 1958; B.S., South Dakota State College, 1951, M.S., 1954.

Miss Lucile Willowby, Assistant Professor of English,in charge of Reading Laboratory, 1960; B.A., Southwestern State College (Oklahoma), 1939; M.A., Butler University, (Indiana), 1950.

Miss Rena Wills, Associate Professor, Foods and Nutrition, Home Economics, Graduate Faculty, 1952, 1956; B.S., Iowa State University, 1940, M.S., 1946.

***Lloyd R. Wilson,** District Extension Supervisor, Graduate Faculty, 1945, 1961; B.Ed., Wisconsin State Teachers College, 1936; M.S., University of Wisconsin, 1955.

Harold L. Winterfield, Assistant Agricultural Engineer, 1957; B.S., South Dakota State College, 1950.

Clyde R. Wisch, Classified Personnel Manager, Supervisor Student Loan Accounts, Manager of Mathews Hall, 1956, 1962; B.A., University of Minnesota, 1952, M.A., 1954.

Clinton R. Wiseman, Professor Emeritus of Education and Psychology, Graduate Faculty, 1918, 1957; B.S., University of Wisconsin, 1915, M.S., 1923; Ph.D., University of Minnesota, 1928.

Mrs. June G. Witt, Instructor in Clinical Nursing, 1962; Diploma in Nursing, Britton Hospital (South Dakota), 1939, R.N., 1939; B.S., South Dakota State College, 1942.

***Mrs. Berniece E. Wittkopf,** Assistant Professor of General Nursing, 1954, 1959; B.S. (Business Administration), Abilene Christian College (Texas), 1944; B.S. (Nursing), Baylor University (Texas), 1951; M.S., University of Pennsylvania, 1961.

***Paul P. Wittkopf,** Head of Public Services, Library, 1955, 1961; B.S., University of Wisconsin, 1954, M.S., 1955.

Leon Shelby Wood, Extension Plant Pathologist, 1962; B.S., Kent State University, 1949; M.S., Ohio State University, 1951; Ph.D., University of Minnesota, 1958.

M. Thomas Woodall, Assistant Professor of Physical Education, 1962; B.A., Iowa Wesleyan College, 1957; M.A., Colorado State College, 1960.
M.A., Colorado State State College, 1960.

Herbert W. Woodward, Property Accountant, Finance, 1961; B.S., South Dakota State College, 1925, M.S., 1950.

***Miss Ellen P. Wright,** Assistant Professor of English, 1956, 1962; B.A., Baldwin-Wallace College, 1940; M.A., Western Reserve University, 1951.

Wayne G. Wright, Assistant in Agronomy,|1957; B.S., South Dakota State College, 1957, M.S., 1961.

Mrs. Jean V. Wylie, Assistant in Clinical Nursing, 1962; Diploma in Nursing, Wesleyan Memorial Hospital, 1951, R.N., 1951.

John T. Ying, Assistant Professor of Economics, 1962; B.A., National Taiwan University, 1955; M.A., University of Minnesota, 1958.

Kenneth Lee Yocum, Instructor in Mathematics, 1962; B.S., South Dakota School of Mines and Technology, 1960; M.S., University of Wyoming, 1962.

Miss Gertrude Stickney Young, Professor Emeritus of History, Graduate Faculty, 1907, 1943; B.A., University of Wisconsin, 1906.

Harvey G. Young, Assistant Professor of Agricultural Engineering, 1955, 1960; A.S., North Dakota State University, 1950, B.S., 1953; M.S., South Dakota State College, 1960.

Miss Helen A. Young, Professor of Home Economics, Head, Child Development, Graduate Faculty, 1931, 1957; B.S., University of Nebraska, 1922; M.A., Columbia University, 1937.

T. H. Young, District Extension Supervisor Emeritus, 1936, 1961; Diploma, Huron College, 1919.

***John F. Younger,** State 4-H and YMW Leader, 1942, 1953; B.S., South Dakota State College, 1943, M.S., 1956.

Janis Zarins, Assistant Cataloger, Instructor, Library, 1949, 1958; University of Riga (Latvia).

Norman E. Zischke, Assistant in Agronomy, 1961; B.S., South Dakota State College, 1960.

Summary of Enrollment 1961-1962

COLLEGIATE

	Men	Women	Total	Totals
Graduates	258	34	292	
Seniors	535	131	666	
Juniors	455	125	580	
Sophomores	528	180	708	
Freshmen	777	306	1083	
Special	108	79	187	
Total Academic Year	2661	855	3516	
Summer Session 1961	577	211	788	
Total Collegiate Enrollment	3238	1066	4304	4304

SUMMER WORKSHOPS

Total in all workshops	72	87	159	
Registered in SS and Workshops	34	17	51	
Net total in all workshops	38	70	108	108

GRAND TOTALS	3276	1136	4412	4412
Names repeated	–305	–97	–402	–402
NET TOTAL ENROLLMENT June 1961 to June 1962	2971	1039	4010	4010

NOTE: Section abbreviations used in this index in the order that sections appear in the catalog: **FW,** Front White Section; **Gr,** Green Section; **G,** Gold Section; **B,** Blue Section; **P,** Pink Section; **Y,** Yellow Section; **I,** Ivory Section, and **BW,** Back White Section.

NOTE: Section abbreviations used in this index in the order that sections appear in the catalog: **FW,** Front White Section; **Gr,** Green Section; **G,** Gold Section; **B,** Blue Section; **P,** Pink Section; **Y,** Yellow Section; **I,** Ivory Section, and **BW,** Back White Section.

NOTE: Section abbreviations used in this index in the order that sections appear in the catalog: **FW,** Front White Section; **Gr,** Green Section; **G,** Gold Section; **B,** Blue Section; **P,** Pink Section; **Y,** Yellow Section; **I,** Ivory Section, and **BW,** Back White Section.

NOTE: Section abbreviations used in this index in the order that sections appear in the catalog: **FW,** Front White Section; **Gr,** Green Section; **G,** Gold Section; **B,** Blue Section; **P,** Pink Section; **Y,** Yellow Section; **I,** Ivory Section, and **BW,** Back White Section.

Did you know that State College . . .

. . . is a complete college, offering courses from Art through Zoology?

. . . offers more than 60 majors leading to the Bachelor of Science degree?

. . . offers 34 majors leading to the Master of Science degree?

. . . offers eight majors leading to the Doctor of Philosophy degree?

. . . has all curricula accredited by the North Central Association of Colleges and Secondary Schools?

. . . has professional accreditation in Agricultural Engineering, Civil Engineering, Electrical Engineering, Engineering Physics, Mechanical Engineering, Nursing, Journalism, Pharmacy, and Teacher Education? It is approved in Professional Chemistry, Agricultural Education, and Home Economics Education.

. . . Experiment Station has more than 150 research projects going on all the time in Agriculture, Engineering, Economics, Home Economics, Rural Sociology, and other specialized fields?

. . . research enriches undergraduate education by bringing the future to the classroom?

. . . Cooperative Extension Service, in 1961, had 18,000 boys and girls active in 4-H Club work . . . nearly 18,000 home makers in Home Demonstration study groups . . . was involved in nearly 42,000 meetings throughout the state that had an attendance of more than a million people?

. . . is here to help you with your problems?

For Information, write to Director of Admissions and Records

SOUTH DAKOTA STATE COLLEGE

Brookings, South Dakota