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South Dakota State University Graduate Catalog 2004-2006

South Dakota State University

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South Dakota State University Bulletin

SOUTH DAKOTA STATE UNIVERSITY

2004
.....
2006

*A Land-Grant University
established in 1881*

GRADUATE PROGRAMS



UNIVERSITY CALENDAR

2004 FALL TERM

(1 day registration, 69 class days, 1 reading day, 5 exam days)

- August 30, MondayRegistration and Orientation
 August 31, TuesdayInstruction begins
 September 6, MondayLabor Day Holiday
 September 10, FridayLast day to drop or add and adjust final fees
 September 11, Saturday“W” grade begins
 September 17; FridayLast day to submit
 a graduation application for Fall 2004
 October 11, MondayNative American Day Holiday
 October 25, MondayFirst half Fall Term ends
 November 1, MondayDeficiency reports due
 in Registrar’s Office, ADM 310, by 5:00 p.m.
 November 6, SaturdayHobo Day
 November 11, ThursdayVeterans Day Holiday
 November 16, TuesdayLast day to drop a course
 November 25, 26, Thursday-FridayThanksgiving Recess
 December 10, FridayLast day of classes, Fall 2004
 December 11, SaturdayGraduation, 10:00 a.m.
 December 13-17, Monday-FridayFinal exams
 December 20-21*, Monday-TuesdayContingent days for make up
 of classes or finals as needed
 December 22, WednesdayGrades due in Registrar’s Office,
 ADM 310, not later than 5:00 p.m.

**December 21 will be official graduation date noted on transcript.*

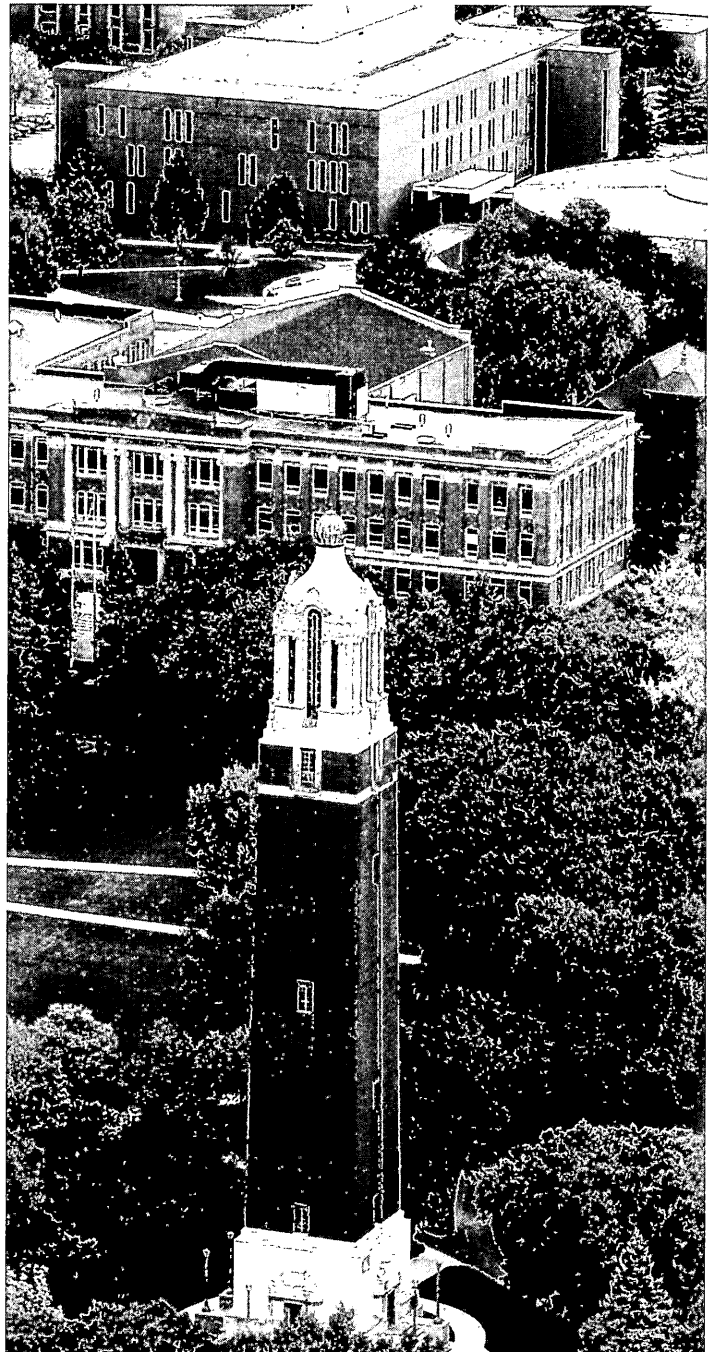
2005 SPRING TERM

(1 day registration, 70 class days, 5 exam days)

- January 10, MondayRegistration and Orientation
 January 11, TuesdayInstruction begins
 January 17, MondayMartin Luther King, Jr. Day Holiday
 January 20, ThursdayLast day to drop or add and
 adjust final fees
 January 21, Friday“W” grade begins
 February 4, FridayLast day to submit
 a graduation application for Spring 2005
 February 21, Monday.Presidents’ Day Holiday
 March 4, FridayFirst half Spring Term ends
 March 7-11, Monday-FridaySpring Break
 March 18, FridayDeficiency reports due
 in Registrar’s Office, ADM 310, by 5:00 p.m.
 March 25-28, Friday-MondayEaster Recess
 April 5, TuesdayLast day to drop a course
 April 29, FridayLast day of classes, Spring 2005
 April 30, Saturday119th Annual Commencement, 10:00 a.m.
 May 2-6, Monday-FridayFinal exams
 May 11, WednesdayGrades due in Registrar’s Office,
 ADM 310, not later than 5:00 p.m.

2005 SUMMER TERM

- May 9, (Monday) - June 3 (Friday)Session 1
 May 30, MondayMemorial Day Holiday
 June 6, (Monday) - July 1 (Friday)Session 2
 July 4, MondaIndependence Day Holiday
 July 5, (Tuesday) - July 29 (Friday)Session 3
 August 1, (Monday) - August 26 (Friday)Session 4
 May 9 (Monday) - August 26 (Friday)Summer Term





South Dakota State University

GRADUATE CATALOG

2004 - 2006

www3.sdstate.edu/academics/graduateschool

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The information contained in this catalog is the most accurate available at the time of publication, but changes may become effective before the next catalog is printed. It is ultimately the student's responsibility to stay abreast of current regulations, curricula, and the status of specific programs being offered. Furthermore, the University reserves the

right, as approved by the Board of Regents, to modify requirements, curricular offerings, and charges, and to add, alter, or delete courses and programs through appropriate procedures. While reasonable efforts will be made to publicize such changes, a student is encouraged to seek current information from appropriate offices.

Address from the Dean

Welcome to South Dakota State University's Graduate School

Thank you for considering graduate school at South Dakota State University. Individuals have many different reasons for pursuing graduate level education. These include a desire to broaden your knowledge base, the need to obtain the credentials necessary to assume or maintain a leadership role in your professional career, and personal fulfillment. Whether you are motivated by one of these or by other factors, SDSU will provide a high quality educational experience in a wide range of disciplines in M.S., M.A., M.Ed. and Ph.D. programs for degree-seeking students as well as individual classes for those enrolled as special (non-degree) students.

South Dakota State University's approximately 300 graduate faculty provide graduate education in 30 majors in agriculture, engineering, humanities, health sciences, education, natural sciences and social sciences. Depending upon your major, you may conduct research that expands the boundaries of knowledge or follow a non-thesis option. In either case, your plan of study will be carefully developed to prepare you to live, work and contribute in the 21st century.

This Graduate Catalog is your best source of information about our programs and the guidelines and procedures associated with admissions, degree requirements and graduation procedures. You are encouraged to keep it as a reference throughout your graduate career at SDSU. Information is also available on-line. General information about SDSU can be obtained by connecting to the University's homepage at: www3.sdstate.edu.

Information more specific to the graduate school can be reached at: www3.sdstate.edu/Academics/Graduateschool/Index.cfm or by clicking on "academics" on the University's homepage.

South Dakota State University is located in Brookings, South Dakota, a very friendly town of about 18,500. You can learn more about Brookings by checking the website: www.brookings.com.

I invite you to contact us by telephone at 605/688-4181, or to visit our campus and your prospective department. I assure you that you will find many interesting and challenging opportunities as a part of your graduate education at SDSU!

David C. Hilderbrand

Interim Vice President for Research and Dean of the Graduate School

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South Dakota State University Non-Discrimination Policy

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

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

Board and Council Members, Administration

— Board of Regents —

- Honorable Robert T. (Tad) Perry
Pierre
Executive Director
- Honorable Richard G. Belatti
Madison
Term expires March 31, 2009
- Honorable James O. Hansen
Pierre
Term expires March 31, 2007
- Honorable Harvey C. Jewett, IV
Aberdeen
Term expires March 31, 2005
- Honorable Dean Krogman
Brookings
Term expires March 31, 2009
- Honorable Pat Lebrun
Rapid City
Term expires March 31, 2005
- Honorable Randall K. Morris
Spearfish
Term expires March 31, 2010
- Honorable Carole Pagonis
Sioux Falls
Term expires March 31, 2009
- Honorable Tonnis Venhuizen
Armour
Term expires July 1, 2006

— Graduate Council —

- David C. HilderbrandProfessor of Chemistry
Chair; Interim Vice President for Research and Dean of the Graduate School
- Martin A. DraperAssociate Professor of Plant Science, *Term expires 2005*
- R.L. ErionProfessor and Acting Department Head, Education and Counseling, *Term expires 2005*
- Susan GibsonAssociate Professor Biology and Microbiology, *Term expires 2006*
- Steve R. MarquardtDean of Libraries, Professor of Library Science, *Ex-officio*
- Bob MendelsohnProfessor of Rural Sociology, *Term expires 2006*
- Mary O'ConnorProfessor of English, *Term expires 2005*
- Ali SalehniaProfessor of Computer Science, *Term expires 2005*
- John J. RuffoloAssociate Dean of Graduate School/Office of Research, *Ex-officio*
Professor of Biology and Microbiology
- Hans SteinAssistant Professor of Animal and Range Sciences, *Term expires 2005*
- Thomas P. WestProfessor, Station Biochemistry, *Term expires 2005*

— SDSU Administration —

- Peggy Gordon MillerPresident
Ed.D., Indiana University, 1975, Professor of Education
- Carol J. PetersonProvost and Vice President for Academic Affairs
Ph.D., University of Minnesota-Minneapolis/St. Paul, 1969, Professor of Nursing
- Michael P. RegerVice President for Administration
Ph.D., The Ohio State University, 1983, Assistant Professor of Education
- Mary Kay HellingAssistant Vice President for Academic Affairs
Ph.D., Purdue University, 1992, Professor of Human Development, Consumer and Family Sciences
- Richard H. DavisRegistrar
Ed.D., University of South Dakota, 1997

— College Deans —

- Lewis F. BrownDean, College of Engineering
Ph.D., Iowa State University, 1988, Professor of Electrical Engineering
- David C. HilderbrandInterim Vice President for Research and Dean of the Graduate School
Ph.D., University of Missouri, 1971, Professor of Chemistry
- Jerry D. JorgensenDean, College of Arts and Science
Ph.D., University of Nebraska, 1990, Professor of Communication Studies and Theatre
- Brian KaatzDean, College of Pharmacy
Pharm.D., University of Minnesota, 1977, Professor of Clinical Pharmacy
- Steve R. MarquardtDean of Libraries
Ph.D., University of Minnesota, 1978, Professor of Library Science
- Laurie Stenberg NicholsDean, College of Family and Consumer Sciences
Ph.D., The Ohio State University, 1988, Professor of Human Development, Consumer and Family Sciences
- Roberta OlsonDean, College of Nursing
Ph.D., Saint Louis University, 1984, Professor of Nursing
- Marysz Palczewski RamesVice President for Student Affairs
Ed.D., University of South Dakota, 1997, Professor of Education
- Henry H. ("Hank") RubinJoint Dean of Education, SDSU/USD
Ph.D., Northwestern University, 1980, Professor of Educational Administration
- Gail Dobbs TidemannDean, College of General Studies and Outreach Programs
Ph.D., University of Alabama, 1978, Professor of Human Development, Consumer and Family Sciences

General Information

An act of the Territorial Legislature approved in 1881 provided for the establishment of what is now South Dakota State University. The institution granted its first Master of Science degree in 1891, its first Master of Education degree and Doctor of Philosophy degree in 1958. All graduate work was supervised by a committee until 1957, when the Graduate School was established.

A **Graduate Council** of nine elected members from the Graduate Faculty assists the Graduate Dean. The council includes the Graduate Dean (chair); Associate Dean, one member each from Animal Sciences, Biological Sciences, Education and Counseling, Engineering Sciences, Health Sciences, Physical Sciences, Plant Sciences, Social Sciences and Humanities. The Dean of the Library serves as an ex-officio non-voting member.

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

The **Graduate School** provides an atmosphere for qualified students to obtain rigorous advanced education in a variety of fields in preparation for service and leadership in their professions and society. It also promotes scholarly pursuits and scientific research for the advancement of knowledge within a climate of freedom of inquiry.

This Catalog deals only with the graduate programs of the institution. For material on undergraduate programs and for general information concerning South Dakota State University, refer to the General Catalog (Undergraduate Catalog), available in the Admissions Office, Administration Building (SAD 200), or at www3.sdstate.edu.

This Catalog is printed to provide information about the graduate programs of South Dakota State University. Every effort has been made to provide as complete and accurate information as possible; however, it should be noted that changes may occur at any time. Students are allowed to fulfill the degree requirements in effect at the time of initial enrollment as a degree-seeking student, provided the student completes the degree requirements within the stated time frame through continuous enrollment. If a student needs to re-apply into the degree program, the guidelines in effect at the time of re-application must then be followed. It is the student's responsibility to become familiar with and complete the requirements for the degree being sought.

South Dakota State University is a land-grant university and as such subscribes to the land-grant philosophy of education, research, and extension as its three-fold mission. The Graduate School is a separate administrative unit composed of selected scholars within the University.

Listed below are the SDSU areas noting the **accreditation boards**:

SDSU Graduate Programs through the Doctoral Degree —

North Central Association of Colleges and Secondary Schools, the regional accrediting agency for 19 states including South Dakota

Agricultural, Civil, Electrical, and Mechanical Engineering Departments —

Engineering Commission of the Accreditation Board for Engineering and Technology

The Council for the Accreditation of Counseling and Related Educational Programs (CACREP)

American Council on Pharmaceutical Education (ACPE)

Journalism Curriculum —
American Council on Education for Journalism

College of Nursing —
National League for Nursing

Chemistry Department —
American Chemical Society

Preparation of secondary teachers, administrators and guidance counselors at the graduate level —

National Council for Accreditation of Teacher Education

Memberships include:

SDSU Graduate School —
Council of Graduate Schools in the United States and the Midwestern Association of Graduate Schools

University —
American Council on Education, National Association of State Universities and Land-Grant Colleges

Other —
*American Society for Engineering Education
The Association of Accredited Schools and Departments of Journalism
American Library Association
The National Commission on Accrediting Agencies*

Admission Information

Degrees Offered

MAJOR

- Specialization
Emphasis

Doctor of Philosophy

AGRICULTURAL ENGINEERING

Offered through a cooperative program with Iowa State University

AGRONOMY

ANIMAL SCIENCE

Offered in the Departments of: Animal and Range Sciences, Dairy Science

ATMOSPHERIC, ENVIRONMENTAL AND WATER RESOURCES

Offered in cooperation with the South Dakota School of Mines and Technology (SDSM&T)

BIOLOGICAL SCIENCES

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

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

CHEMISTRY

SOCIOLOGY

- Cultural Ecology
- Demography
- Family Studies
- Social Deviance
- Social Organization

Master of Arts

ENGLISH

*Literature
Language and Rhetoric*

Admission to Graduate School

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

Admission Requirements

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

Graduate Record Examination (GRE) — Submission of the results of a Graduate Record Examination is not a Graduate School requirement. However, the following programs require that scores be submitted: Agronomy; Biology; English; Entomology; Microbiology; Pharmacy, Plant Pathology, and Wildlife and Fisheries. Chemistry recommends the GRE, but does not require it. For information about the GRE test, contact the department concerned or the Academic Evaluation and Assessment Office, Pugsley Continuing Education Center, Room 201.

Department Requirements — Individual departments may have additional admission requirements. Applicants should inquire about such requirements from the department of interest.

Application Procedure

Application Form — A completed form supplied by the Graduate School must be submitted and accompanied by a non-refundable application fee of \$35 if degree-seeking. An application form can be found at the back of this Catalog or on the Internet.

Official Transcripts — For degree seeking students, official transcripts of all undergraduate and graduate course work are needed. The Graduate School will access all South Dakota regental transcripts, but the student must furnish all those from non-regental institutions. For those students not actively pursuing a graduate degree, the Bachelor's degree must be stated on the application form and the degree will be verified. Students will be withdrawn from graduate coursework if a degree cannot be verified.

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

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

Letters of Recommendation — Two letters of recommendation from persons acquainted with the academic ability and professional competence of the applicant should be sent directly to the Graduate School. Forms are available with the application packet as well as in the back of this Catalog and on the Internet. This requirement may be waived by the Dean of the Graduate School on recommendation of the department.

Application Procedure for International Students

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

TOEFL Score — A score of 525 paper-based or 197 computer-based or above is required by the Graduate School for the Test of English as a Foreign Language (TOEFL). Department requirements are listed with each department section in this Catalog. Departments may require additional testing upon arrival.

Financial Support — Evidence of available financial support for at least two years (M.S., M.A., M.Ed.) or four years (Ph.D.) must be submitted to the International Student Affairs (ISA) Office, SAD 210. For any financial assistance from this institution, the applicant should correspond with the Head of the Major Department.

Physical Examination Record — A physical evaluation is helpful. A record of 2 (two) immunizations for measles and 2 (two) for rubella, signed by a doctor, is required.

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

Application Process

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

Admission Status

Admission

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

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

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

Conditional Admission

Conditional admission may be granted for students enrolled in an accredited American college or university, if:

- 1) For students enrolled in accredited American colleges or universities, the applicant meets the requirements for admission for the last three semesters but has not completed the last semester of undergraduate study. Admission is conditional until the Bachelor's degree is granted, **OR**
- 2) The applicant lacks prerequisite undergraduate courses specified by the major department. Admission is conditional until these courses have been completed to the satisfaction of the department and these courses cannot be used on the graduate Plan of Study, **OR**
- 3) The applicant has a grade point average between 2.5 and 3.0 for the junior and senior years.

Degrees Offered

MAJOR

- Specialization
Emphasis

Master of Education

CURRICULUM AND INSTRUCTION

- Adult and Higher Education
- Career and Technical

Agricultural Education

Instructional Technology

- Elementary or Secondary

Computer Education

Content Areas:

Biology

Chemistry

Mathematics

Physics

Others to be planned with advisor

English as a Second Language

Gifted Education

Middle School

Reading

EDUCATIONAL ADMINISTRATION

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

Master of Science

ANIMAL SCIENCE

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

BIOLOGICAL SCIENCES

- Biology
- Dairy Science
- Food and BioMaterials Processing
- Horticulture Science
- Human Nutrition and Food Science
- Microbiology
- Pharmaceutical Science
- Veterinary Microbiology
- Veterinary Pathology

CHEMISTRY

COMMUNICATIONS STUDIES AND JOURNALISM

- Communications Studies
- Journalism

Degrees Offered

MAJOR

- Specialization
Emphasis

COUNSELING AND HUMAN RESOURCES DEVELOPMENT

- Counseling in an Agency Setting
- Counseling in a School Setting
- Counseling in a Student Affairs Setting
- Administration of Student Affairs Programs

ECONOMICS

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

ENGINEERING

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

FAMILY AND CONSUMER SCIENCES

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

GEOGRAPHY

HEALTH, PHYSICAL EDUCATION

- AND RECREATION**
- Athletic Training
- Sports Pedagogy*
- Sports Science*

INDUSTRIAL MANAGEMENT

MATHEMATICS

NURSING

- Administrator
- Clinical Nurse Specialists
- Educator
- Family Nurse Practitioner
- Neonatal Nurse Practitioner
- Psychiatric Nurse Practitioner

PLANT SCIENCE

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

RURAL SOCIOLOGY

- Applied Research
- Criminal Justice
- Demography
- Family Studies
- Planning/Development

WILDLIFE AND FISHERIES SCIENCES

- Fisheries
- Wildlife

Students admitted conditionally with a cumulative or junior/senior grade point average of less than 2.75 must complete a minimum of 9 graduate credits with grades of B or above before becoming eligible for a graduate assistantship. A student admitted conditionally must satisfy any conditions within the first year after admission. Departments will assign advisors to such students. Failure of a student to fulfill the above conditions or to do satisfactory graduate work at any point in his/her program is sufficient grounds for dismissal or reclassification as a Special (non-degree) Student.

Students with a junior-senior grade point average above 2.75 and who have pass-fail (or equivalent) grades shall have instructors for such courses furnish letter grades or shall furnish satisfactory Graduate Record Examination (GRE) scores.

Special Student (non-degree)

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

Change of Admission Status

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

Readmission

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

Graduate School rules and regulations in effect at the time of readmission apply to students who are readmitted. The Graduate School or graduate program may require applicants for readmission to update their application file or to complete a new application including current references if required by the program. Students who are readmitted may be required to change their advisory committee and file a new Plan of Study.

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

Student Responsibility

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

Graduate Academic Standards

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

Converted Credits

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

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

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

- b. Courses used for converted credit must be SDSU credits and taken during the period the student is enrolled as a graduate student at this institution. These must be entered on the graduate transcript to be eligible for converted credit.
- c. For the Master of Arts, Master of Science or Master of Education degrees, a maximum of seven converted credits may be applied to the graduate program. They may be applied in the major, minor, or supporting course areas.
- d. For the Doctor of Philosophy degree, a maximum of ten converted credits may be applied to the graduate program. They may be applied in the major, minor, or supporting course areas, if applicable.
- e. Converted credits may be applied to a graduate program only with the permission of the major advisor or Advisory Committee and Dean of the Graduate School.

300-499 series — Advanced undergraduate courses which may be used in meeting part of the requirements for graduate degrees in accordance with the policy on converted credit, page 9.

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

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

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

600-699 series — Graduate level courses.

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

1. Within 15 credits of completing a Bachelor's degree;
2. Have an overall grade point average of 2.5 or higher, or a Junior-Senior grade point average of 3.0 or higher;
3. Enroll for no more than 18 credits, undergraduate and graduate credits combined (9 credits during Summer Term);
4. The course(s) cannot be required, or included, for the Bachelor's degree;
5. A signed permit is required.

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

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

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

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

x9x Common Course Descriptions

The following middle digit 9 course numbering scheme is used in the South Dakota public university system. These courses may have multiple sections. A section's title may or may not reflect the material covered in that section. See the academic department for courses specific to your degree.

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

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

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

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

Definitions

x90 Seminar

A highly focused, and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media such as Internet and are at the upper division or graduate levels. Enrollment is generally limited to fewer than 20 students.

x91 Independent Study

Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic.

x92 Topics

Includes Current Topics, Advanced Topics and Special Topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

x93 Workshop

Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

x94 Internship

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

x95 Practicum

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

x96 Field Experience

Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study established between the student, instructor and field experience supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an Internship or Practicum course.

x97 Cooperative Education

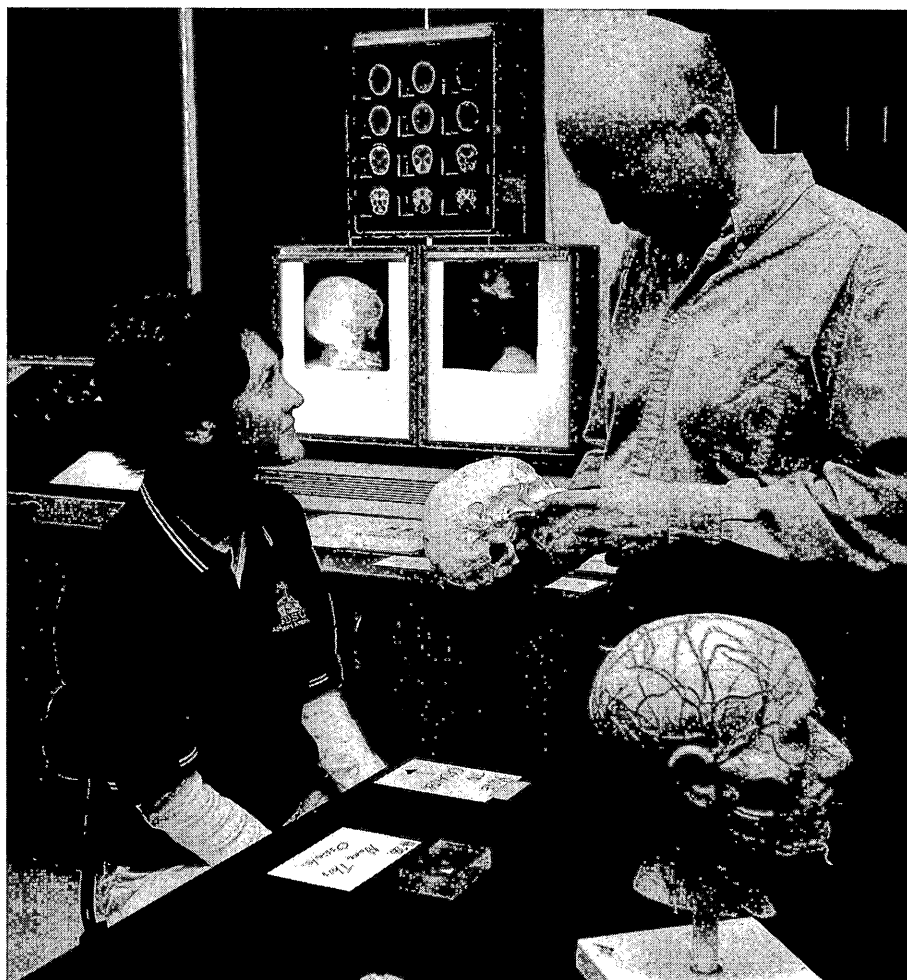
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study established between the student, instructor and field experience supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an Internship or Practicum course.

788 Master's Research Problems/Projects

Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive. Does not include research courses which are theoretical.

798/898S/898D Thesis/Dissertation

A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.



Course Restrictions for Master's and Doctoral Plans of Study

Correspondence Courses — Correspondence courses are not given at the graduate level at this institution and are not permitted on a student's Plan of Study. Generally courses delivered by television are considered to be correspondence courses, with the exception of two-way interactive television offered by this institution.

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

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

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

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

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

Credit Loads

Credits Needed for Full-Time/Part-Time Status, not including graduate assistants:

| | <i>Minimum Credits</i> | <i>Maximum credits without overload</i> |
|--|----------------------------|---|
| Full-Time M.S., Fall/Spring semesters | 9 | 12 |
| Full-Time Ph.D., Fall/Spring semesters | 7 | 12 |
| Half-Time M.S./Ph.D., Fall/Spring semesters... | 5 | |
| Full-Time, Summer Term, 4-week session | 4 | 5 |
| Full-Time, Summer Term, 8-week session | 6 | 9 |

Maximum credits **graduate assistants** may carry:

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

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

Cancellation of Courses

In general, courses will not be offered to fewer than seven students for graduate courses, unless there is some special reason for doing so. Instructors will cancel courses with low enrollment or for other reasons only with the approval of the dean of the academic college concerned.

Grades

Cumulative "B" (3.0) average — The student must maintain a "B" average (3.0) in all courses in the graduate program. No credit is given toward a graduate degree for any grade below "C" in 500, 600, 700 or 800 level courses, or below "B" in 300 or 400 level courses. All work in the major must average "B" (3.0), and all work in the minor or supporting courses must average "B" (3.0). Grades for transfer courses are not used in calculating these grade point averages. The grade earned the last time the course was taken will be used to determine the grade point average for the Plan of Study.

Dissertation/Thesis/Research-Design Paper Credits — Graduate students usually register for dissertation/thesis/research-design paper credit during several semesters. An "in progress" (IP) is normally given until satisfactory completion of the dissertation/thesis/research-design paper and final oral examination. The advisor, upon satisfactory completion of these credits and final oral, will then assign a satisfactory grade (S) for all dissertation/thesis/research-design paper and sustaining credits by notifying the Registrar through the "Change of Grade" form. If not satisfactory, a grade of unsatisfactory (U) is given. Departments may elect to use Pass/Fail for Thesis and Dissertation providing the Graduate School and Registrar are notified and the policy is applied uniformly to all students in the program.

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

Incomplete Grades — When a graduate student is given an Incomplete grade (I) for any course in the student's graduate program, the instructor may indicate in writing to the student what additional work must be completed and may establish a date at which such work must be completed. A copy of this information must be filed with the Graduate School. If the work is not completed in either the manner or time prescribed, the instructor may change the Incomplete grade to whatever grade is justified as an evaluation of the student's work or may allow the grade to remain Incomplete. Incomplete grades given without this procedure will remain as Incomplete on the student's record unless changed because of completion of the remaining work in the course.

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

Graduate Credit for Seniors

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

Graduate Study by University Staff

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

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

Postdoctoral Study

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

Graduation

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

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

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

Continual Registration for Dissertation/Thesis/ Research-Design Paper

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

- a. Students who have completed the required number of dissertation/thesis/research-design paper credits on the Plan of Study, but are still involved in research work as part of the degree requirement, must continue to register for one credit for each succeeding semester including summer.
- b. Students who miss the deadline for graduation in a given semester, but successfully complete their final orals and all other requirements except minor edits of their thesis or dissertation prior to the start of the next semester do not have to enroll for the semester they graduate.

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

Professional Conduct

South Dakota State University has taken a strong and clear stand regarding academic dishonesty. The consequence of academic dishonesty ranges from disciplinary probation to expulsion. The full policies are found in Chapter 1 of the Student Code (01:10:23:01-1:10:23:04) within the Student Policy Manual. A student charged with academic dishonesty who wishes to appeal that charge may follow the Appeals Procedure outlined in Chapter 2 of the Student Policy Manual (Academic Appeals and Classroom Standards) or contact the Dean of the Graduate School, SAD 130, 605/688-4181.

Academic Performance Not Directly Related to Course Work

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

Appeals

The Graduate School has an academic appeal process for resolution of graduate student and faculty grievances such as prejudicial or capricious academic evaluation, cheating, and plagiarism. Procedures for appeals are available from the Graduate School and its website.

Building Abbreviations

| | |
|------|---|
| SAD | Administration |
| SADA | Administration 1918 Addition |
| SAE | Agricultural Engineering |
| SAG | Agricultural Hall |
| SAR | Animal Disease Research Lab |
| SAA | Animal Science Arena |
| SAS | Animal Science Complex |
| SBX | Biology Annex |
| SBL | Briggs Library |
| SCEH | Crothers Engineering Hall |
| SDM | Dairy Microbiology Building |
| SDP | Depuy Military Hall |
| SGH | Grove Hall |
| SHN | Hansen Hall |
| SHH | Harding Hall |
| SHUB | Horse Barn |
| SHF | Horticulture-Forestry |
| SPE | HPER Center |
| SIA | Industrial Arts Building |
| SIM | Intramural Building |
| SLC | Larson Commons |
| SLM | Lincoln Music Hall |
| SMC | Medary Commons |
| SNP | Northern Plains Biostress Lab |
| SNF | Nursing-Family and Consumer Sciences |
| SPAC | Performing Arts Center |
| SPH | Pharmacy Addition |
| SPL | Physiology Laboratories |
| SPCA | Pugsley Continuing Education Center 1957 |
| SPC | Pugsley Continuing Education Center |
| SRO | Rotunda For Arts & Science |
| SSB | Scobey Hall |
| SSH | Shepard Hall |
| SSHA | Shepard Hall 1964 Addition |
| SSO | Solberg Hall |
| SSOR | Sorensen Center (formerly Family Resources & Management Center) |
| SMUA | South Dakota Art Museum Addition |
| SMU | South Dakota Art Museum |
| SUM | United Ministries Center |
| SSU | University Student Union |
| SWC | Wecota Hall |
| SWE | Wenona Hall |
| SYE | Yeager Hall |
| SYEA | Yeager Hall Addition |

Master's Degree Requirements

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

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

*Consult major department for requirements.

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

NOTE:
Some degree programs require additional credits; see program listings.

Admission Requirements

Applicants for the Master of Arts, Master of Education, and Master of Science degrees must have an approved Bachelor's degree from an accredited institution except in approved accelerated programs.

Advisory Committee

As a minimum, the Advisory Committee will be composed of *at least* four faculty members:

- Major Advisor* — acts as chairperson of the committee, must have Graduate Faculty status.
- Major Department Representative* — an additional member of the major department.
- Minor/Supporting Area*, if applicable to the program — must have Graduate Faculty status. If the program does not require a minor/supporting area, an additional member of the Graduate Faculty representing the major area or a related area is required.
- Graduate Faculty Representative* — The Graduate Dean will select this member from a department not closely related to the major/minor/supporting areas. This member ensures that rules and regulations are followed and acts as the student's advocate, if necessary.
- Thesis Advisor* — if different from major advisor.

The major advisor should be chosen or assigned by the head of the major department. Following selection by the student and recommendation of the major advisor, the Advisory Committee should be appointed by the Dean of the Graduate School as soon as practical after starting work on the graduate program and prior to submission of a thesis or arranging for an examination. To pre-assign a Graduate Faculty representative, a memo or email needs to be sent to the Graduate School from the student's major advisor listing all other Committee Members. After a Representative is assigned, those involved will be contacted.

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

Plan of Study Information

Guidelines — During the first semester of graduate work and no later than the end of the first year, the Plan of Study should be prepared on the appropriate form and approved by the Advisory Committee. After approval by the Advisory Committee, the Plan of Study will be submitted to the Dean of the Graduate School for approval. Courses for the major must be taken in the major department or in related fields. At least 50% of the credits on a Plan of Study must be in courses open only to graduate students (600-series or above). Failure to submit a Plan of Study may result in disapproval of courses taken prior to approval. After approval, changes in the Plan of Study must be requested on a form furnished by the Graduate School and approved by the Advisory Committee and the Dean of the Graduate School. While devising a plan of study, refer to the "Academic Information" section in this catalog, beginning on page 9, in addition to the following information.

- Options:
- | | |
|---|-----------------------------|
| A | Thesis |
| B | Research Paper/Design Paper |
| C | Coursework |

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

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

Examinations

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

Final — An oral examination will be administered by the Advisory Committee covering the student's Plan of Study. This examination should be comprehensive, testing the student's ability to analyze, integrate, and apply knowledge from the discipline. This examination should occur at least ten working days before Commencement.

Research Paper/Design Paper

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

Grading — See page 13 for grading policies for Research Paper and Design Paper.

Thesis

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

Credits — A research area for the thesis topic should be chosen after consultation with the major advisor as early in the student's program as possible. The thesis accounts for 5 to 10 semester hours in the major.

Guidelines — The thesis may be prepared with a view to publication and conform to the style of one of the journals in the major field as required by the major department. It must be prepared in the format required by the Graduate School as shown in "Instructions for Thesis" available from the Graduate School. The thesis should be a single document rather than a compilation of individual manuscripts.

Grading — See page 13 for grading policies for Thesis.

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

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

Electronic Thesis Submission — All masters candidates are required to submit their thesis in the appropriate format for electronic publication. Students should contact the Graduate School for appropriate guidelines.

Multiple Master's Degrees or Majors

Graduate students may pursue a second or additional master's degree in areas other than their first master's degree, providing the degree designation is different. If approved by the Advisory Committee and the Dean of the Graduate School, up to ten credits may be transferred to a second degree program.

Time Limitation

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

Obsolete Coursework — Courses completed more than six years prior to completion of the requirements of the Master's degree and not part of a previous degree are regarded as obsolete coursework. Such courses may be used in the Master's degree program if validated. Validation is allowed at the discretion of the Advisory Committee and the department involved. Validation of obsolete coursework cannot exceed fifty percent of the total coursework listed on the plan of study and must be certified by the Advisory Committee on a form prescribed by the Graduate School.

Continual Registration for Dissertation/Thesis/Research-Design Paper — See page 15.



Master's Degrees and Options

| Major | Degree | Options | | |
|--|--------|---------|---|-------------------------|
| Animal Science ¹ | M.S. | A | | |
| Biological Sciences | M.S. | A | B | (Biology emphasis only) |
| Chemistry | M.S. | A | | |
| Communication Studies and Journalism | M.S. | A | | |
| Counseling and Human Resource Development | M.S. | A | B | C |
| Curriculum and Instruction | M.Ed. | | B | C |
| Economics | M.S. | A | B | |
| J.D./M.S. | | A | B | |
| Educational Administration | M.Ed. | | B | C |
| Engineering ² <i>(Option C not available for Agricultural and Biosystems Engineering and Computer Science)</i> | M.S. | A | B | C |
| English | M.A. | A | | C |
| Family and Consumer Sciences ³ | M.S. | A | B | C |
| Geography | M.S. | A | B | |
| Health, Physical Education and Recreation | M.S. | A | B | |
| Industrial Management | M.S. | A | B | C |
| Mathematics | M.S. | A | B | C |
| Nursing | M.S. | A | B | |
| Pharmaceutical Sciences ⁴ | M.S. | A | | |
| Plant Science | M.S. | A | B | |
| Rural Sociology | M.S. | A | B | C |
| Wildlife and Fisheries Sciences | M.S. | A | | |

¹ Department requires a minor/supporting area.

² M.S. in Engineering is available with coursework in:
 Agricultural and Biosystems Engineering
 Civil Engineering
 Computer Science
 Electrical Engineering
 Mechanical Engineering
 Physics

³ M.S. in Family and Consumer Sciences is available with study in:
 Family Financial Planning
 Human Development, Consumer and Family Sciences
 Nutrition and Food Science

⁴ As of July 1, 1996, the M.S. in Pharmaceutical Sciences has been put on hold. No applications will be processed.

The major fields shown (with the exception of Nursing) may be selected as minor fields; in addition to:
 Agricultural Systems Technology
 Botany
 Geographic Information Systems
 Gerontology
 History
 Music
 Planning
 Political Science
 Zoology

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

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

*Consult major department for requirements.

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

NOTE:

Some degree programs require additional credits; see program listings.

Options:

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

Master's Degree Checklist

| <i>Requirements</i> | <i>When Due</i> |
|--|---|
| 1. Application for Admission to Graduate School | One month before initial registration |
| 2. Designation of Major Advisor | Prior to registration for first semester, or as soon as practical after beginning program |
| 3. Designation of Advisory Committee | During first semester or as soon as practical after beginning program |
| 4. Approval of Plan of Study by Advisory Committee; submit to Graduate School | During first semester |
| 5. Comprehensive Written Examination | During the last semester of course work, at least two weeks before final oral examination |
| 6. Filing of Graduation Application | After 20 graduate credits have been earned. |
| 7. Thesis/Research-Design Paper submitted to Advisory Committee | During last semester of course work, at least two weeks before final oral examination |
| 8. Thesis submitted to Graduate School | During last semester of course work, at least two weeks before final oral examination |
| 9. Request for Scheduling Oral Examination | At least ten working days before final oral examination |
| 10. Final Oral Examination | At least ten working days before commencement date |
| 11. Corrected copies of Thesis submitted to Graduate School and Library <i>OR</i> Research Paper filed in major department | At least five working days before commencement date |

Doctor of Philosophy Degree Requirements

Admission Requirements

Applicants for the Doctor of Philosophy degree will usually have a Master's degree. This degree must be awarded from an approved, accredited institution. In those cases where applicants do not have a Master's degree, departmental requirements will apply, either requiring completion of a Master's degree or permitting an individual to move directly into a doctoral program.

Advisory Committee

After consultation with the student, the head of the major department will designate a major advisor. During the student's first semester in residence (or before the completion of 12 credits) the major advisor will recommend to the Dean of the Graduate School members of an Advisory Committee as follows:

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

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

The Advisory Committee is responsible for assisting the student in developing a suitable graduate program, providing guidance and counsel, evaluating student progress, and certifying the completion of the degree requirements to the Dean of the Graduate School. The Advisory Committee approves the Plan of Study and any revision(s) of it, approves the Dissertation Proposal, reviews the Dissertation, evaluates the student's progress, conducts the comprehensive examinations and the final examination, supervises the validation of courses, and ensures that professional standards have been met in completing the degree requirements.

Plan of Study Information

Within six weeks after the Advisory Committee is formed, it will schedule a meeting with the student to approve a Plan of Study and to consider a research area for the dissertation. The Plan of Study must be prepared using the form provided by the Graduate School and approved by the Advisory Committee and the Dean of the Graduate School. Delay in submitting a Plan of Study may result in disapproval of courses taken prior to approval. The student cannot take the comprehensive written examination prior to approval of the Plan of Study. Changes in the approved Plan of Study must be requested using the form provided by Graduate School, and must be approved by the Advisory Committee and the Dean of the Graduate School. While devising your plan of study, refer to the "Academic Information" section in this catalog, beginning on page 9, in addition to the following information.

Degrees Offered

MAJOR

- Specialization
Emphasis

Doctor of Philosophy

AGRICULTURAL ENGINEERING

Offered through a cooperative program with Iowa State University

AGRONOMY

ANIMAL SCIENCE

Offered in the Departments of: Animal and Range Sciences, Dairy Science

ATMOSPHERIC, ENVIRONMENTAL AND WATER RESOURCES

Offered in cooperation with the South Dakota School of Mines and Technology (SDSM&T)

BIOLOGICAL SCIENCES

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

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

CHEMISTRY

SOCIOLOGY

- Cultural Ecology
- Demography
- Family Studies
- Social Deviance
- Social Organization

Plan of Study Credit Requirements

Total Credits Required — A minimum of three academic years of full-time work beyond the Bachelor's degree (minimum of 90 semester credits, 90-Credit Plan) or a minimum of two academic years of full time work beyond the Master's degree (minimum of 60 semester credits, 60-Credit Plan) are required for the Doctor of Philosophy degree. Where consideration is given to a master's degree it must be in the area of the major, minor or a related area, be an academic program from a regionally accredited institution, and be declared at the time the Plan of Study is submitted. The Advisory Committee may require more credits than the minimum listed above if it believes the extra requirements are in the best interest of the student.

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

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

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

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

Dissertation

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

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

The dissertation should be an integrated document reporting philosophic inquiry. The students are encouraged to develop one or more journal articles from their dissertation. Some departments may require that the journal articles be a part of the dissertation. However, the dissertation should be a single document rather than a compilation of individual manuscripts.

Review — It is the responsibility of the student to schedule the oral examination and distribute a copy to each member of the graduate committee including the graduate representative ten working days in advance of the oral examination.

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

Electronic Dissertation Submission — All doctoral candidates are required to submit their dissertations in the appropriate format for electronic publication. Students should contact the Graduate School for appropriate guidelines.

Continuing Dissertation Enrollment

See page 15, section titled “Continual Registration for Dissertation/Thesis/Research-Design Paper.”

Failure to maintain registration or enrollment will automatically terminate the doctoral program. Reinstatement requires retaking the Comprehensive Written Examination with performance approved by the Advisory Committee.

Examinations

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

Comprehensive Written and Oral Examinations — When coursework has been substantially completed, examinations covering coursework are taken. The comprehensive written examination is followed, on satisfactory completion, by an oral examination. These examinations are to test the student’s knowledge and ability to integrate this knowledge in both the major and minor (or supporting courses) areas. All members of the Graduate Faculty may listen to but not participate in the questioning.

The student and Advisor arrange for the exam through a memo or mail to the Dean of the Graduate School specifying date, time, place. This memo initiates the “Notification of Action” form from the Graduate School to the Advisor who uses the form to record results of the Comprehensive Examinations. Copies of the written examination are filed in the major department. The Comprehensive Examinations must be completed at least two months before the final examination. Upon satisfactory completion of the Comprehensive Examinations, a student is formally admitted to candidacy for the Ph.D. degree. Unless a student receives the Ph.D. degree within three years after becoming a candidate, Comprehensive Examinations must be repeated.

Final Examination — This examination is conducted by the Advisory Committee after notifying the Graduate School of the time and place ten working days prior to the examination. While the Advisory Committee determines the character and length of the examination, sufficient time should be devoted to the dissertation, including journal articles, to test the ability of the student to defend the research. In addition, questions to test the student’s general knowledge, judgement and critical thinking powers are usually asked. The final oral examination cannot be taken earlier than two months following successful completion of the comprehensive examinations and must be completed ten working days prior to Commencement.

Time Limitation

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

Obsolete Coursework — Courses completed more than eight years before completion of the doctorate and not part of a previous degree are regarded as obsolete coursework. Such courses may be used in the doctoral degree program if validated. Validation is allowed at the discretion

of the Advisory Committee and department involved and can be accomplished by passing a validation examination in the subject matter area. Validated obsolete coursework cannot exceed fifty percent of the total coursework listed on the Plan of Study and must be certified by the Advisory Committee on a form provided by the Graduate School. However, credits earned as a part of a Master's degree, which are applied toward the doctoral program, remain valid.

Doctor of Philosophy Degree Checklist

| <i>Requirements</i> | <i>When Due</i> |
|---|---|
| 1. Application for Admission to Graduate School | One month before initial registration |
| 2. Designation of Major Advisor | Prior to registration for first semester. |
| 3. Designation of Advisory Committee | Within first semester of graduate work or prior to 12 semester hours of graduate work |
| 4. Approval of Plan of Study by Advisory Committee; submit to Graduate School | Within the first semester of graduate work |
| 5. Approval of Dissertation Proposal by Advisory Committee | Before beginning research |
| 6. Interim Evaluation by the Advisory Committee | Not later than halfway through the coursework on the Plan of Study |
| 7. Comprehensive Examinations; Candidacy for Ph.D. Degree | Near completion of coursework and at least 2 months prior to final oral examination |
| 8. Filing of Graduation Application | Within the first three weeks of final semester |
| 9. Memo submitted from advisor to Graduate School requesting Final Oral Examination | At least ten working days prior to final oral examinations |
| 10. Dissertation due to Graduate School and Advisory Committee | At least ten working days prior to final oral examinations |
| 11. Final Oral Examination | At least ten working days prior to commencement |
| 12. Corrected Copies of Dissertation due to Graduate School | At least five days prior to commencement |
| 13. Arrangements for microfilming and binding of Dissertation | At least five days prior to commencement |

Financial Information and Student Services

Tuition and Fees* – *Effective 3/18/04*

| <i>Tuition, per credit hour</i> | <i>Cost</i> |
|---|-------------|
| Undergraduate Resident | \$74.10 |
| Undergraduate Non-Resident | 235.55 |
| Graduate Resident | 112.45 |
| Graduate Non-Resident | 331.50 |
| Graduate Assistant, graduate course | 37.50 |

| <i>Fees, per credit hour</i> | <i>Cost</i> |
|--|-------------|
| University Support Fee | \$58.30 |
| Activity Fee..... | 16.00 |
| Engineering Education Fee, per credit | 17.50 |
| Engineering/Science Lab fees, per course | 23.30 |
| Nursing Major Fee, per semester | 156.00 |

See sidebars for special expenses.

**Effective Summer 2004 and subject to change by action of the Board of Regents.*

**Other tuition fees may apply for off-campus delivery.*

Payment Process

Consult the current semester schedule book for the appropriate time and method of payment.

Campus Card Debit System – Hobo Dough

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

Fees for Auditing Courses

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

Thesis and Dissertation Fees

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

Fellowships and Assistantships

Application — A number of fellowships and administrative, research, and teaching assistantships are available to qualified graduate students admitted to degree programs. Recommendations for granting these are handled by the departments. Students interested in obtaining such financial assistance should write directly to the department in which they

Application Fee —

non-refundable charge assessed all applicants for degree-seeking admission.

Activity Fee —

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

University Support Fee —

A fee assessed per credit to replace expendable supplies, defray cost of maintenance, repair and replacement of equipment, testing and other instruction related costs. Also to assist in providing services that benefit students which are not funded from other sources.

Late Charge —

If you do not pay tuition and fees during the regular established payment periods, you will be assessed a late charge. If you fail to satisfy financial obligations when due, you will be administratively withdrawn from the University.

International Student Fee —

\$110.40 fee required during first semester of enrollment.

Special Expenses for Education Students —

Education students enrolled in selected Education courses are assessed a \$132.85 one-time fee for Master's Level Internships.

Special Expenses for Engineering Courses —

A fee of \$17.50 per credit hour is charged for courses in the College of Engineering. This fee applies to Mathematics and Computer Science courses as well.

Engineering/Science Lab Fee —

of \$23.30 per designated course is charged to all lab classes in engineering, mathematics, and selected sciences. These funds are used for supplies and materials and to purchase equipment.

Special Expenses for Nursing Students —

Nursing majors enrolled in more than 2 credits of nursing courses are assessed a major fee of \$159.45 for the Graduate program. Students enrolled in the Family Nurse Practitioner program are assessed a fee of \$567.20 per semester.

expect to do their major work. A minimum undergraduate grade point average of 2.75 or completion of at least 10 graduate credits with a cumulative grade point average of 3.0 is required for appointment as a graduate assistant.

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

Financial Aid

Student financial assistance programs are administered through the student Financial Aid Office in SAD 106, or may be contacted at 605/688-4695. Graduate assistantships, fellowships, and traineeships are administered by the department or program involved.

Student Services

Detailed information on Student Life and Services is found in the General Catalog (Undergraduate Catalog).

Academic Evaluation and Assessment Office — Students needing testing information (GRE, TOEFL, etc.) should contact this office located in Pugsley Center 201, telephone 605/688-4217.

Bookstore — The University Bookstore is located in the University Student Union for purchase of textbooks and other supplies.

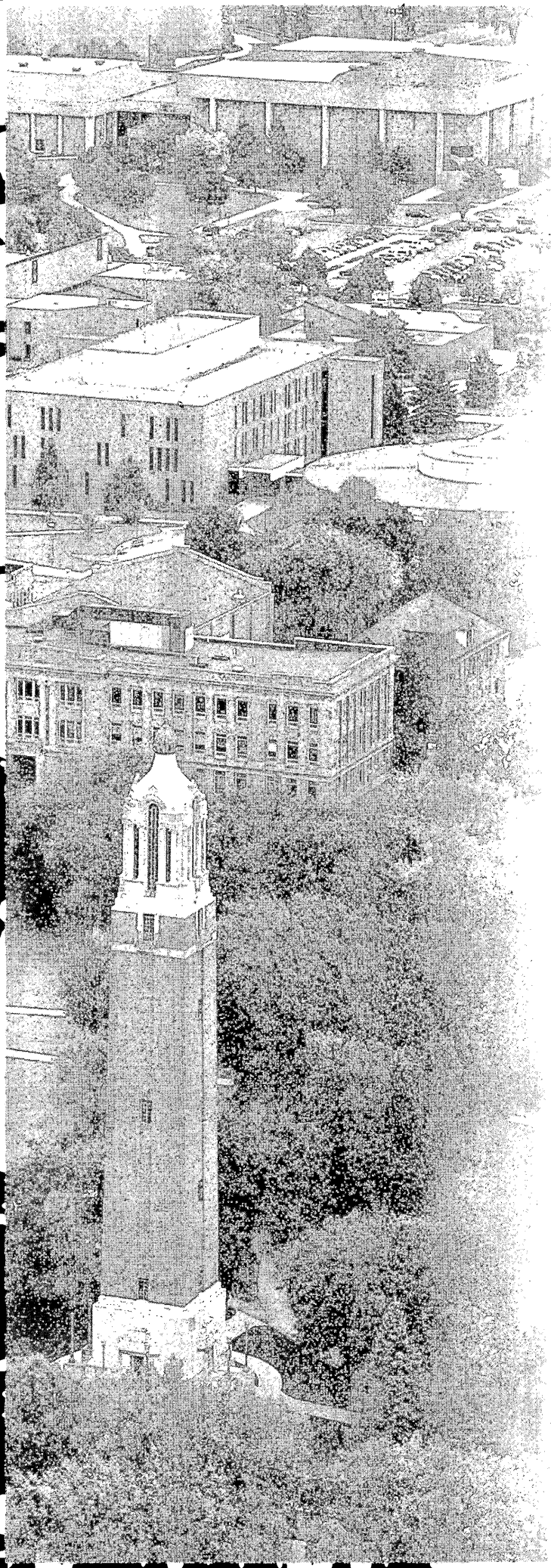
Disabled Student Services — Assistance is available for students with disabilities. The Office of Disability Services is located in West Hall 110, telephone 605/688-4504, TTD 688-4394.

Health Service — The Health Service provides outpatient services and is located on the second floor of West Hall. Information is available by calling 605/688-5588 for appointments.

Housing and Food Service — Prospective graduate students should inquire about rooms or apartments from the Director of Residential Life, well in advance of registration. The Residential Life Office is located in Wecota Hall 115, telephone 605/688-5148. Information concerning off-campus housing is available from the Off-Campus Housing Assistance Office, University Student Union 062, telephone 605/688-5916.

International Student Affairs — International students should consult with the International Student Affairs Office concerning special requirements and additional expenses, Administration Building 210, telephone 605/688-4122.

Native American Student Advising — The Native American Student Advisor is available to aid Native American students and is located in University Student Union 065, telephone 605/688-6129.



DEPARTMENTS OF INSTRUCTION

Agricultural and Biosystems Engineering

Degrees Offered:

Ph.D. Agricultural and Biosystems Engineering (*cooperatively with Iowa State University*)

Ph.D. Biological Sciences

- Agricultural and Biosystems Engineering specialization

Ph.D. Atmospheric Environmental and Water Resources

M.S. Engineering

- Agricultural and Biosystems Engineering specialization

M.S. Biological Sciences

- Food and Biomaterial Processing specialization

Graduate Faculty

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

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

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

Daniel S. Humburg
Associate Professor
Ph.D., University of Illinois,
1991
Machine Design, Machine
Vision

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

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

Department Head: Associate Professor Van C. Kelley

Graduate Coordinator: Associate Professor Kasiviswanathan Muthukumarappan

For additional information contact:

Mailing address: SDSU Box 2120

Agricultural Engineering — SAE

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

E-mail: muthukum@sdstate.edu

Phone: 605/688-5141

Fax: 605/688-6764

Program Description

Graduate work in the Department of Agricultural and Biosystems Engineering leads to Master of Science and Doctor of Philosophy degrees. Depending on the educational background of the individual, a M.S. in Engineering with specialization in Agricultural and Biosystems Engineering or M.S. in Biological Sciences with specialization in Food and Biomaterial Processing may be earned. The Ph.D. in Biological Sciences with a specialization in Agricultural and Biosystems Engineering shares a common core with several other departments. The core is defined in this Catalog on page 39. Additional classes are selected by the individual with the approval of the committee. A Ph.D. in cooperation with Iowa State University is also offered. The area of specialization pertaining to the cooperative Ph.D. is in natural resources engineering. ABE Faculty can advise students pursuing a Ph.D. degree in Atmospheric Environmental and Water Resources.

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

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

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

Available Options for Graduate Degrees

Master of Science: Option A and Option B

Doctor of Philosophy: Dissertation

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options

Core Requirements

For specific details regarding programs, refer to pages 38-40, Ph.D. in Biological Sciences; 37, Ph.D. in Atmospheric Environmental and Water Resources; 41-45, M.S. in Biological Sciences, and 80-82, M.S. in Engineering.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

General Requirements begin on page 16 (Master's Degree) and page 21 (Ph.D.).

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

Agricultural and Biosystems Engineering (ABE) Course Offerings

- ABE 503 Energy and Environment3**
Discussion of conventional energy sources, their historic and projected use patterns, predicted resources and energy conservation. Evaluation of alternate energy sources such as solar, wind, biomass, tidal, geothermal, ocean thermal, oil shale and nuclear. Energy and the environment and energy and the agricultural industry.
- ABE 512 Advanced Agricultural Tractors and Machine.....2 S**
Units of instruction will be selected from the following areas: tractor chassis mechanics and dynamics, transmissions, hydraulics, human factors, considerations for agricultural machine operators, soil dynamics in tillage and machine-plant concepts. P, MATH 321 or equivalent.
- ABE 522 Bio-Environmental Engineering2**
Analysis of farm animals and their environment employing engineering principles combined with biological principles. Homeothermic mechanisms of animals and the influence of thermal environment upon growth and production. P, ABE 324 or consent.
- ABE 533 Advanced Irrigation Engineering3 FS**
Basic soil-water-crop relationships. Theory and design of pumping plants, surface, sprinkler, and drip irrigation systems. P, ABE 434 or consent.
- ABE 533L Advanced Irrigation Engineering Lab0 FS**
- ABE 544 Unit Operations of Biological Materials Processing.....4 S**
Transport processes of heat and mass are applied to the following unit operations: evaporation, drying, gas liquid separation processes (humidification cooling towers), vapor-liquid separation processes (distillation), soil-liquid separation processes (leaching), membrane separations (ultrafiltration, reverse osmosis), mechanical separation processes, extrusion. P, senior standing or consent. Corequisite course: ABE 544L.
- ABE 544L Unit Operations of Biological Materials Processing Lab0 S**
- ABE 732 Advanced Hydrology in Agriculture2 F**
Small watershed hydrology principles. Unit hydrograph theory. Infiltration and evapotranspiration processes. Small watershed surface runoff simulation. Soil erosion principles. P, consent.
- ABE 733 Ground Water Engineering in Agriculture3**
Saturated and unsaturated ground water flow theory. Steady and transient well hydraulics. Aquifer groundwater flow simulation. Infiltration models. Vadose zone simulation. Groundwater recharge. P, consent.
- ABE 752 Theoretical Micro-Climatology2**
Derivation and application of physical laws to air layer near the ground occupied by plants and animals. Instruments used to take measurements in layer near ground. P, Calculus, Physics, ABE 353 or consent.
- ABE 754 Advanced Unit Operations in Food/Biomaterials Processing.....4 FS**
Advanced study of engineering principles as they apply to unit operations for food preservation and processing, including effect of heat and time on the lethality of undesirable food microorganisms, heat transfer with foods and containers and its effect on food safety, freezing and refrigeration technology, high temperature short time extrusion processing, and aseptic processing. P, senior standing or consent.
- ABE 754L Advanced Unit Operations in Food/Biomaterials Processing0**
- ABE 763 Instrumentation3 S**
Principles of transducers, amplifiers and terminating devices in measurement systems with emphasis on transducers and systems performance. Techniques and methods for use in engineering and scientific measurement. P, PHYS 213, MATH 225. Corequisite course: ABE 763L.
- ABE 763L Instrumentation Lab0 S**

*Kasiviswanathan
Muthukumarappan
Associate Professor
Ph.D., University of Wisconsin,
1993*

*Food and Biomaterials
Processing*

*Todd P. Trooien
Associate Professor
Ph.D., Colorado State
University, 1988
Soil and Water Engineering*

*Hal D. Werner
Professor
Ph.D., University of Minnesota,
1984
Irrigation, Drainage*

Key to Course Descriptions

Course Number & Name
 Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

ABE 771 Graduate Seminar1
 Discussion and reports of current topics and investigations in Agricultural and Biosystems Engineering. (Limit of 2 credits)

ABE 772 Similitude2
 A systematic approach to the principles and theory of dimensional analysis, problems of model design and test. The use of true, distorted and dissimilar models as they pertain to engineering design and research. Corequisite course: ABE 772L.

ABE 772L Similitude Lab.....0

ABE 773 Programming Agricultural Systems3
 The use of programs and computers in advanced engineering for the solution of problems occurring in Agricultural and Biosystems Engineering studies. Gathering, processing, evaluating mass engineering and scientific data. P, BASIC or FORTRAN. Corequisite course: ABE 773L.

ABE 773L Programming Agricultural Systems Lab0

ABE 787 Research1-9

ABE 788 Research Report/Design Paper.....1-2 FSSu

ABE 791 Independent Study.....1-2 FSSu

ABE 792 Topics1-3 FSSu

ABE 792L Special Topics Lab0 S

ABE 798 Thesis.....1-7 FSSu

ABE 898D Dissertation-PhD.....1-12 FSSu

Agricultural Systems Technology (AST) Course Offerings

AST 512 Hydraulic and Pneumatic Systems and Controls.....2
 Principles of fluid power, hydraulic and pneumatic components and system function. Component selection and off-the-shelf system design. Manual, microprocessor and electronic control of systems. Corequisite course: AST 512L.

AST 512L Hydraulic and Pneumatic Systems and Controls0

AST 522 Environmental Control in Structures2
 Study of heat and moisture balance, gases, dust, and odors. Selection and design of fans, ducts, diffusers and efficient ventilation patterns. Corequisite course: AST 522L.

AST 522L Environmental Control in Structures Lab0

AST 562 Advanced Topics in Natural Resource Technology2 F
 Examination of topics related to the natural resources management technologies. Potential topics include irrigation systems and water management, livestock waste facilities, soil erosion control, drainage systems and economics, wetlands, water supply and quality, watershed hydrology, water measurement and data acquisition equipment. (May be repeated when topic is different.)

AST 582 Advanced Farm Engines2
 Operation, selection, care, adjustment, and new development of internal combustion engines as applied to farm power units. Corequisite course: AST 582L.

AST 582L Advanced Farm Engines Lab0

AST 791 Independent Study1-3 FSSu

AST 792 Topics.....1-4 FSSu

Agriculture and Biological Sciences

Coursework for following degrees:

- Ph.D. Agronomy, *see page 131*
- Ph.D. Animal Science, *see page 33*
- Ph.D. Biological Sciences, *see page 38*

- M.S. Animal Science, *see page 33*
- M.S. Biological Sciences, *see page 38*
- M.S. Plant Science, *see page 131*

Agriculture and Biological Sciences (ABS) Course Offerings

ABS 582 International Experience2-4 Su
 This will be a team-mentored class. Students will work one on one or in small groups with professors that have knowledge of the global region and culture that will be visited. Students will participate in a one-to-three week travel/study abroad experience to another nation(s) to experience and evaluate diverse food/agricultural systems. For the Bachelor's degree, a maximum of 8 credits is allowed for domestic multicultural travel/study experience (ABS 381) and/or an international travel/study experience (ABS 382). ABS 203 is recommended.

ABS 701 Animal Systems.....1-10
 Advanced study in animal systems. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: ruminant nutrition, advanced physiology of reproduction, vitamins and minerals, protein and energy nutrition, monogastric nutrition, animal growth and development, meat science, cellular signal transduction, biology of aging, physiology of lactation, laboratory techniques in dairy science, systemic physiology, molecular aspects of immunology, behavioral management of insects, biological control of arthropods, nematology, immature insects, insect taxonomy, insect anatomy and physiology, and other topics as needed. P, consent of module instructor.

ABS 702 Genetics1-10 F
 Advanced study in genetics. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: molecular evolution, genetics of development, cytogenetics, population genetics, animal breeding, plant breeding, advanced genetics, quantitative genetics, and other topics as needed. P, consent of module instructor.

ABS 703 Microbial Systems.....1-10 FS
 Advanced study in microbial systems. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: bacterial molecular, virology, prokaryotic evolution and phylogeny, metabolism of microbes, bacterial systematics, industrial microbiology, ruminology, dairy microbiology, viral infections, bacterial infections, viral and bacterial disease of plants, mycology, and other topics as needed. P, consent of module instructor.

ABS 704 Plant Systems1-10 FSu
 Advanced study in plant systems. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential topic could include: advanced weed science, crop-water relationships, environmental and physiological aspects of crop production, environmental stress physiology, field studies in plant disease diagnosis, host-plant pathogen interactions and genetics of plant disease resistance, metabolism during stress, physiology of plants, plant growth and development, plant molecular biology, and other topics as needed. P, consent of module instructor.

Key to Course Descriptions

Course Number & Name
 Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Key to Course Descriptions

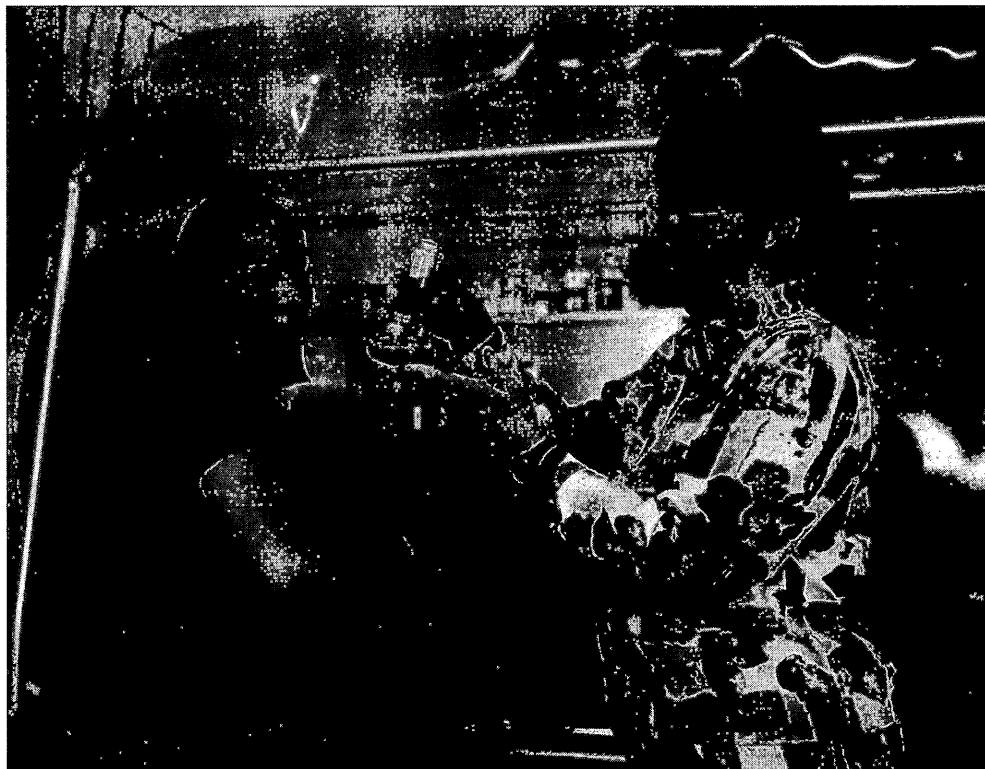
Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

- ABS 705 Research Methodology1-10 FS**
Advanced instruction in research methodology. Credit earned will depend on the module(s) taken. Each module will provide in-depth coverage on one type of techniques. Modules will involve lectures on the theory behind a technique, simulations/demonstrations of the techniques, and hands on experiments. Each module requires a colloquium (reports and discussions) designed to show the student how these techniques can be combined to solve a research problem. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: Electrophoresis, liquid chromatography, spectroscopy, centrifugation, hybridization, cloning, PCR, monoclonal antibodies, protein characterization, light microscopy, electron microscopy, in situ hybridization, fluorescent imaging, chromosomal analysis, plant tissue culture, mammalian tissue culture, anaerobic bacterial culture, design of ecological field studies, sampling of terrestrial plants, sampling of aquatic plants, sampling of terrestrial animals, sampling of aquatic animals, geographic information systems and global positioning systems in ecology, analysis of ecological data, modeling and simulation in ecology, crop breeding techniques, and other topics as needed. P, consent of module instructor.
- ABS 706 Natural Resources Management1-10 FS**
Advanced study in natural resource management. Credit earned will depend on the module(s) taken. Each module requires a colloquium (reports and discussions) of current investigations related to the module selected. Course may be repeated as long as the module(s) are not repeated. Potential modules include: advanced ecology, advanced plant ecology, advanced soil genesis, agristology, agroecology, algae, applied insect ecology, aquatic plants, chemical properties of soils, disturbance ecology, ecological monitoring, ecotoxicology, environmental biology, environmental soil chemistry, field studies in pedology, grown water protection, landscape ecology, physical properties of soils, precision farming, soil and plant analysis; soil microbiology; soil N, P, and K; soil/plant secondary macro/micronutrients; water quality in agriculture; and other topics as needed. P, consent of module instructor. Corequisite course: ABS 706L.
- ABS 706L Natural Resources Management Lab0 F**
- ABS 792 Topics1-6**



Animal and Range Sciences

Degrees Offered:

Ph.D. Animal Science

Ph.D. Biological Sciences, *see also page 38*

- Animal and Range Sciences specialization

M.S. Animal Sciences

- Genetics and Reproduction specialization
- Meats, Muscle Biology and Growth specialization
- Nutrition specialization, *see also page 63*
- Production and Processing Systems specialization
- Range Science specialization
- Veterinary Science specialization, *see also page 142*

Department Head: Professor Donald L. Boggs
Graduate Coordinator: Professor Donald L. Boggs

For additional information contact:

Mailing address: SDSU Box 2170

Animal Science Complex – SAS

WWW: <http://www.abs.sdstate.edu/ars/index.htm>

E-mail: Donald.Boggs@sdstate.edu

Phone: 605/6888-5166

Fax: 605/688-6170

Program Description

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

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

Available Options for Graduate Degrees

Master of Science: Option A

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

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options.

Graduate Faculty

Donald L. Boggs
Professor

Ph.D., Michigan State
University, 1982
Ruminant Nutrition

Jeffrey A. Clapper
Assistant Professor
Ph.D., Purdue University,
1992
Reproductive Physiology

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

Robert J. Maddock
Assistant professor
Ph.D., Texas A&M University,
2001
Range Science

Douglas C. McFarland
Professor
Ph.D., Washington State
University, 1984
Muscle Biology

Robbi H. Pritchard
Professor
Ph.D., Washington State
University, 1983
Ruminant Nutrition

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

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

Alexander J. "Sandy" Smart
 Assistant Professor
 Ph.D., University of Nebraska,
 2001
 Range Science

Hans H. Stein
 Assistant Professor
 Ph.D., University of Illinois,
 1998
 Swine Nutrition

Duane M. Wulf
 Associate Professor
 Ph.D., Colorado State
 University, 1996
 Meat Science

Core Requirements

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

| | | |
|-----------|--|-----------|
| ABE 554 | Advanced Food/Biomaterials Processing | 4 credits |
| ABS 705 | Research Methodology | 3 credits |
| ABS 706 | Natural Resource Management..... | 3 credits |
| AS 731 | Experimental Procedures | 2 credits |
| AS 750 | Animal Growth and Development..... | 3 credits |
| AST 522 | Environmental Control in Structures | 2 credits |
| BOT 727 | Advanced Plant Physiology | 4 credits |
| CHEM 662 | Principles of Biochemistry..... | 3 credits |
| DS 731 | Laboratory Techniques in Dairy Science | 2 credits |
| DS/AS 711 | Ruminology..... | 3 credits |
| STAT 541 | Statistical Methods II..... | 3 credits |
| VET 723 | Systemic Physiology | 4 credits |
- 12-14 credits of discipline specific courses are required for a requirement of 30 credits total. The student, Major Advisor and Advisory Committee will select the discipline specific courses. The discipline courses prepare students in a specific emphasis area. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Core Requirements for Doctor of Philosophy

2 credits of Graduate Seminar
 Present seminar on dissertation

Additional Admission Requirements

TOEFL: required score of 550
 GRE: Not required
 Letter of interest and intent

General Requirements begin on page 16 (Master's Degree) and 21 (Ph.D.).

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

Animal Science (AS) Course Offerings

| | |
|--|-----------------|
| AS 591 Independent Study | 1-3 FSSu |
| AS 592 Topics | 1-6 FSu |
| AS 711 Ruminology | 3 F |
| Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. P, CHEM 361 and VET 223 or consent. | |
| AS 712 Ruminant Nutrition | 3 S |
| Principles of nutrition for ruminants in relation to growth, reproduction and lactation. | |
| AS 723 Population Genetics | 3 |
| Genetic structure of populations and forces affecting this structure. Theories of biological variation, race and species formation. P, BIO 371 or equivalent. STAT 541 or equivalent highly recommended. | |
| AS 730 Endocrinology | 3 |
| This course covers topics pertaining to endocrine gland and hormone function; hormone synthesis; control of hormone secretion, circulation and metabolism; physiological roles of hormones; and mechanisms of hormone action. Specific areas of study involve pituitary and hypothalamic function, pancreatic function, and hormones regulating growth and metabolism, thyroid hormones, gonadal and adrenal hormones. | |

| | |
|---|------------------|
| AS 731 Experimental Procedures | 2 SSu |
| Research methods and planning of experimental work, necessary records, interpretation of results and presentation of material. Introduction to research application of linear programming. P, STAT 541 or equivalent. | |
| AS 732 Advanced Physiology of Reproduction | 3 FS |
| Anatomical and physiological process of reproduction in domestic animals with special emphasis on research techniques and the findings of recent research. P, AS 433. Corequisite course: AS 732L. | |
| AS 733 Vitamins and Minerals | 3 S |
| Relationships between nutrients in metabolism. Comparing metabolic significance of required nutrients for different animal species and as applied to human nutrition. | |
| AS 734 Protein and Energy Nutrition | 3 FS |
| Principles of protein and energy metabolism and the partitioning of these nutrients for maintenance, growth and production in domestic farm animals. | |
| AS 736 Monogastric Nutrition | 3 F |
| Nutrition principles for nonruminants related to reproduction, lactation and growth. | |
| AS 750 Animal Growth and Development | 3 S |
| Growth of animals at the cellular level, including hormones, growth factors, receptors and signaling and growth at the whole animal level. | |
| AS 753 Meat Science | 3 F |
| Basic physical, chemical, microbiological and histological characteristics of meat and effects of various processing methods on meat products and by-products. P, AS 241, CHEM 361. Corequisite course: 753L. | |
| AS 753L Meat Science Lab | 0 F |
| AS 790 Seminar | 1 F |
| AS 798 Thesis | 1-7 FSSu |
| AS 898D Dissertation-PhD | 1-12 FSSu |

Biological Sciences (BIOS) Course Offerings

| | |
|---|-----------------|
| BIOS 790 Seminar | 1 FS |
| BIOS 792 Topics | 1-6 |
| BIOS 798 Thesis | 1-7 FSSu |
| BIOS 890 Seminar | 1 FSSu |
| BIOS 898D Dissertation-PhD | 1-7 FSSu |

Range Science (RANG) Course Offerings

| | |
|---|----------------|
| RANG 521 Grassland Fire Ecology | 3 FSu |
| The course is designed to describe the ecological effects of fire on grassland ecosystems. It also provides insight into the history of fires, the people who use them and why, the parts of a fire, how fires behave in relation to fuel and weather, and the conducting and safety of prescribed burns. P, consent; Crosslisted with WL 421/521. Equivalent to WL 521. Corequisite course: RANG 521L. | |
| RANG 521L Grassland Fire Ecology Lab | 0 FSu |
| RANG 591 Independent Study | 1-3 SSu |
| RANG 592 Topics | 1-3 FSu |

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Apparel Merchandising and Interior Design

Coursework only offered

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department Head: Professor Jane E. Hegland

For additional information contact:

Mailing address: SDSU Box 2275A

Phone: 605/688-5196

Nursing/Family/A&S — SNF

Fax: 605/688-4439

WWW: <http://www3.sdstate.edu/Academics/CollegeofFamilyAndConsumerSciences/ApparelMerchandisingandInteriorDesign/index.cfm>

Program Description

Courses offered in Apparel Merchandising and Interior Design support the Master of Science in Family and Consumer Sciences degree program. Students may select courses in Apparel Merchandising and Interior Design to support their graduate program. These courses are not currently scheduled, as the program is inactive. Refer to College of Family and Consumer Sciences section, pages 86-87, for specific details.

Apparel Merchandising (AM) Course Offerings

| | |
|---|-----|
| AM 580 Travel Studies | 1-5 |
| Study of businesses, museums, and other relevant places through site tours and presentations in selected locations. Includes pre-travel orientation and post-travel written report. P, consent of department. | |
| AM 591 Independent Study | 1-3 |
| AM 592 Topics | 1-3 |
| AM 790 Seminar | 1-2 |
| AM 791 Independent Study | 1-3 |

Interior Design (ID) Course Offerings

| | |
|--|-------|
| ID 573 Travel Studies | 1-5 |
| Study of businesses, museums and other relevant places through site tours and presentations in selected locations. Includes pre-travel orientation and post-travel written report. P, consent of department. | |
| ID 590 Seminar | 1-3 |
| ID 591 Independent Study | 1-3 S |
| ID 592 Topics | 1-3 |

Atmospheric, Environmental and Water Resources

Degree Offered:

Ph.D. Atmospheric, Environmental and Water Resources

Coordinator: Associate Professor Suzette R. Burckhard

For additional information contact:

Mailing address: SDSU Box 2219

Crothers Engineering Hall — SCEH 150

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

E-mail: suzette.burckhard@sdstate.edu

Phone: 605/688-5316

Fax: 605/688-6476

Program Description

The Doctor of Philosophy degree in Atmospheric, Environmental and Water Resources (AEWR) is a research degree designed to develop the student's capacity to make significant contributions in understanding the physical processes taking place in the atmosphere and at the land surface, and the complex issues associated with the development, use, and protection of precious water resources. The program is a joint effort with the South Dakota School of Mines and Technology (SDSM&T) in Rapid City, South Dakota, in the three fields of atmospheric, environmental, and water resources. The primary departments and disciplines involved in the programs are Civil and Environmental Engineering, Agricultural and Biosystems Engineering, Electrical Engineering, Computer Science, Software Engineering, Chemistry and Biochemistry, Plant Science, Biology and Microbiology, Geography and Wildlife and Fisheries Sciences. At SDSM&T, the departments and disciplines involved are Civil and Environmental Engineering, Geology and Geological Engineering, Meteorology, Chemical Engineering and Chemistry and Atmospheric Sciences.

Core Requirements

A program core will be required of all students, which includes four courses and seminars taken by all students in the joint program. These courses are chosen to give every student in the program breadth of knowledge across the three disciplines. This core consists of a course in each of the three focus areas; Atmosphere, Environment, and Water Resource. Graduate students should consult with their advisor for a list of accepted courses in these areas. The requirement of breadth in the three subject areas will be obtained by students through taking the core courses or by equivalent knowledge as determined by the students' graduate committee.

In addition, each student will be required to take a minimum of three one-credit seminar courses. The residence requirement is two consecutive semesters. The program requires a minimum 30 dissertation credits. The students' graduate committee will set the course and dissertation requirements consistent with university regulations based on the knowledge base of each student. The graduate advisory committee will determine the exact distribution of credits between coursework and research for a minimum total of 90 credits beyond the bachelors degree or 60 credits beyond the masters degree.

The Dakota Digital Network (DDN) and other networks will be used to provide instruction from one university to the other. All AEWR students are required to take a minimum of one 3-credit course at the other participating institution exclusive of the three seminars.

General Requirements begin on page 21 (Ph.D.).

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

Atmospheric, Environmental and Water Resources (AEWR) Course Offerings

| | |
|---------------------------------|-----------|
| AEWR 790 Seminar..... | 1 FS |
| AEWR 898D Dissertation-PhD..... | 1-12 FSSu |

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Biological Sciences

Degrees Offered:

Ph.D. Biological Sciences (with the following specializations):

- Agricultural and Biosystems Engineering, *see page 28*
- Animal and Range Sciences, *see page 33*
- Biology, *see page 41*
- Dairy Science, *see page 63*
- Fisheries Science, *see page 145*
- Human Nutrition and Food Science, *see page 120*
- Microbiology, *see page 41*
- Molecular Biology, *see page 41*
- Pharmaceutical Sciences, *see page 122*
- Plant Molecular Biology, *see pages 41, 131*
- Plant Science, *see page 131*
- Veterinary Microbiology, *see page 142*
- Veterinary Pathobiology, *see page 142*
- Wildlife Science, *see page 145*

M.S. Biological Sciences (with the following specializations):

- Biology, *see page 41*
- Dairy Science, *see page 63*
- Food and Biomaterial Processing, *see page 28*
- Horticultural Science, *see page 97*
- Human Nutrition and Food Science, *see page 120*
- Microbiology, *see page 41*
- Pharmaceutical Sciences, *see page 122*
- Veterinary Microbiology, *see page 142*
- Veterinary Pathology, *see page 142*

Ph.D. Coordinator: Professor John J. Ruffolo

For additional information contact:

Mailing address: SDSU Box 2201

Administration Building — SAD 130

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

E-mail: john.ruffolo@sdstate.edu

Phone: 605/688-6696

Fax: 605/688-6167

Program Description

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

This program allows for considerable latitude in the education and training of students. The plan of study, including a range of 30-40 hours of dissertation credit, can be designed to meet the interests and individual needs of the student. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available. Generally, identification of a major professor with resources to support the student's dissertation project is required for unconditional acceptance into the

program. Therefore, interested persons should make application for program admission well in advance of the anticipated date of enrollment.

Please refer to each departmental section for a listing of the graduate faculty and details regarding the areas of study offered in this program. Inquiries should be made directly to the department representing the discipline of interest.

Core Requirements

The Biological Sciences program has only two specific course requirements:

| | |
|---------------------------------------|---|
| BIOS 890 Seminar..... | 1 |
| STAT 541 Statistical Methods II | 3 |

(two semesters of 1 credit each)

All students are required to present a seminar on their dissertation project. All other courses submitted in the doctoral candidate's plan of study are approved by the student's advisory committee.

General Requirements begin on page 21 (Ph.D.).

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

M.S. Coordinator: Professor Donald M. Marshall

For additional information contact:

Mailing address: SDSU Box 2207

Academic Programs Office, Ag Hall 156

College of Agriculture and Biological Sciences

E-mail: donald.marshall@sdstate.edu

Phone: 605/688-5133

Fax: 605/688-5582

Program Description

This is a collaborative graduate program leading to the Master of Science degree in Biological Sciences. Departments that cooperate in the program are the Departments of Agricultural and Biosystems Engineering; Biology and Microbiology; Dairy Science; Horticulture, Forestry, Landscape and Parks; Nutrition, Food Science and Hospitality; Pharmaceutical Sciences; and Veterinary Science.

Students interested in advanced studies in the biological sciences will have the opportunity to tailor a program that meets their interest by selecting courses offered by faculty from the participating departments. Each student's plan will be developed in consultation with the student's major advisor and graduate advisory committee. The plan of study including a common core of 5-7 credits of thesis, 2 credits of seminar and 9 additional course credits will be designed to meet the interests and individual needs of the student. While the training of most students is largely directed to a single discipline, cross-discipline training is available and encouraged. Generally, identification of a major professor with resources to support the student's thesis project is required for unconditional acceptance into the program.

Please refer to each departmental section for a listing of the graduate faculty and details regarding the areas of study offered in this program. Inquiries should be made directly to the department representing the discipline of interest.

Available Options for Graduate Degrees

Master of Science: Option A (thesis required)
 Option B (research paper required; Biology emphasis only)

Core Requirements

1. Option A students required to take BIOS 798 Thesis for 5-7 credits and BIOS 790 Seminar for 2 credits (two semesters of 1 credit each).
Option B students required to take BIOL 788, Biological Research Problems for 3 credits and BIOS 790, Seminar for 2 credits.

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

2. At least 9 credits from the following courses is required; additional courses from this list may be taken toward discipline course requirement; the courses will be identified on the student's Plan of Study no later than the end of the first year of study:

| | | |
|----------|---|--------------|
| ABS 703 | Microbiology Systems..... | 1-10 credits |
| ABS 705 | Research Methodology..... | 1-10 credits |
| ABE 554 | Advanced Unit Operations in Food/Biomaterials Processing..... | 4 credits |
| ABE 792 | Special Topics of Food and Bioprocessing..... | 1-3 credits |
| BOT 705 | Aquatic Plants..... | 3 credits |
| CHEM 662 | Principles of Biochemistry..... | 3 credits |
| DS 731 | Laboratory Techniques in Dairy Science..... | 2 credits |
| HO 580 | Environmental Stress Physiology..... | 3 credits |
| NFSH 725 | Nutrition and Human Performance..... | 3 credits |
| PHA 740 | Advanced Pharmacology..... | 3 credits |
| STAT 541 | Statistical Methods II..... | 3 credits |
| VET 524 | Medical and Veterinary Virology..... | 4 credits |

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

The student, Major Advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

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

General Requirements begin on page 21 (Ph.D.).

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

Biological Sciences (BIOS) Course Offerings

| | |
|---------------------------------|----------|
| BIOS 790 Seminar..... | 1 FS |
| BIOS 792 Topics..... | 1-6 |
| BIOS 798 Thesis..... | 1-7 FSSu |
| BIOS 890 Seminar..... | 1 FSSu |
| BIOS 898D Dissertation-PhD..... | 1-7 FSSu |

Biology and Microbiology

Degrees Offered:

Ph.D. Biological Sciences

- Biology specialization
- Microbiology specialization
- Molecular Biology specialization

M.S. Biological Sciences

- Biology specialization
- Microbiology specialization

Department Head: Professor Thomas Cheesbrough
Graduate Coordinator: Professor Gary Larson

For additional information contact:

Mailing address: SDSU Box 2207B

Agricultural Hall — SAG 304

WWW: <http://www3.sdstate.edu/Academics/Collegeof>

AgricultureAndBiologicalSciences/BiologyandMicrobiology

E-mail: biomicro@abs.sdstate.edu

Phone: 605/688-6141

Fax: 605/688-6677

Program Description

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offer expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment and field research sites available to carry out their research projects. Alumni rate the learning environment, scholarly excellence and quality of teaching as areas of strength in the department's graduate program.

Available Graduate Degree Options and Core Requirements

See the descriptions on pages 19 (M.S.) and 21 (Ph.D.) for degree options and pages 39-40 for core requirements.

Additional Admission Requirements

GRE scores ranking above the 50th percentile will strengthen the case for admission.

TOEFL: Graduate School requirement of 600

Retention in the program is dependent on formation of a committee and completion of the review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review at least once every six months; students who do not complete this requirement will lose their assistantship and may be terminated from the program.

General Requirements begin on page 16 (Master's Degree) and 21 (Ph.D.).

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

Graduate Faculty

Donald Auger
Assistant Professor
Ph.D., University of North Dakota, 1995
Plant Genetics

Bruce Bleakley
Professor
Ph.D., University of Florida, 1986
Soil Microbiology

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

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

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

William Ray Gibbons
Professor
Ph.D., South Dakota State University, 1987
Industrial Microbiology

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

Tagir G. Gilmanov
Assistant Professor
Ph.D., Moscow State University, 1976
Ecological Modeling

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

Michael Hildreth
Professor
Ph.D., Tulane University, 1983
Parasitology

Carol A. Johnston
Professor
Ph.D., University of Wisconsin,
1982
Wetlands Ecology

Radhey Kaushik
Assistant Professor
Ph.D., University of
Saskatchewan, 1998
Immunology

Henry Kayongo-Male
Professor
Ph.D., Michigan State
University, 1974
Mineral Metabolism

Gary E. Larson
Professor
Ph.D., North Dakota State
University, 1979
Plant Systematics

Scott Pederson
Assistant Professor
Ph.D., University of Nebraska,
1993
Craniofacio Morphogenesis in
Bats

R. Neil Reese
Professor
Ph.D., University of Idaho,
1984
Plant Physiology

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

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

Alan J. Young
Assistant Professor
Ph.D., University of Toronto,
1994
Immunology

Biology (BIOL) Course Offerings

| | |
|---|-----------------|
| BIOL 515 Mycology | 3 F |
| Provides an understanding of the processes which have brought about long-term changes in living systems. Surveys evidences of plant and animal evolution, achievement in evolution theory and examines mechanisms responsible for genetic change. | |
| BIOL 515L Mycology Lab | 0 F |
| Laboratory experience that accompanies BIOL 515. | |
| BIOL 539 Biology of Aging | 3 F |
| Physical, sensory, and physiological changes with age, aging of cells and tissues. Cellular, developmental, endocrine and other theories of aging. Pathologies of aging. P, physiology course, ZOOL 325. | |
| BIOL 545L Histological Techniques Lab | 0 S |
| BIOL 553 Advanced Genetics | 3 F |
| Procedures in genetic studies as they relate to molecular and classical genetic applications. Crosslisted with PS 453/553. | |
| BIOL 562 Molecular Biology I | 2 F |
| Charge, partitioning migration of molecules; protein structure, enzymes; DNA structure and properties, pro-caryotic and eukaryotic conjugation, transduction and transformation; DNA replication and repair; genetic recombination; RNA structure and properties; RNA replication and repair; mRNA synthesis and processing; kinetics; chromosomes and chromosome replication. Crosslisted with PS 462/562. | |
| BIOL 564 Molecular Biology II | 2 S |
| Structure of the nucleus; endocytosis; genome of mitochondria and chloroplasts; cell growth and division; cancer; immune system; pattern formation; homeoboxes; intracellular transport; gene expression and regulation. Crosslisted with PS 464/564. | |
| BIOL 564L Molecular Biology II Lab | 2 S |
| Screening recombinant DNA libraries; DNA sequencing; analysis of proteins; detection of proteins; RNA transfer and hybridization analyses; use of nucleic acid and protein databases. Crosslisted with PS 465/565. | |
| BIOL 566 Environmental Toxicology and Contaminants | 3 S |
| This course will prepare students in the area of Ecological Effects of Toxic Substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to wildlife toxicology. | |
| BIOL 567 Parasitology | 3 |
| This course will prepare students in the area of ecological effects of toxic substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to wildlife toxicology. | |
| BIOL 567L Parasitology Lab | 0 |
| Laboratory experience that accompanies BIOL 567. | |
| BIOL 580 Environmental Stress Physiology | 3 |
| Physiological and cellular response of plants to environmental stresses. Crosslisted with HO 480/580 and PS 480/580. | |
| BIOL 592 Topics | 1-5 FSSu |
| BIOL 592L Topics Lab | 0 FS |
| BIOL 645 Microimaging Techniques | 3 S |
| Preparation and observation of animal and plant tissues for microscopic and photomicroscopic study. Emphasis will be given to various techniques used in current research areas. | |
| BIOL 762 Eukaryotic Molecular Bio Lab | 1 |
| BIOL 773 Cytogenetics | 3 F |
| To study the nature and behavior of chromosomes in relation to heredity. Crosslisted with PS 773. | |
| BIOL 773L Cytogenetics Lab | 0 F |
| BIOL 788 Biological Research Problem | 1-3 FS |
| BIOL 790 Seminar | 1 FS |
| BIOL 791 Independent Study | 1-4 FSSu |

Biological Sciences (BIOS) Course Offerings

| | |
|----------------------------------|----------|
| BIOS 790 Seminar | 1 FS |
| BIOS 792 Topics..... | 1-6 |
| BIOS 798 Thesis | 1-7 FSSu |
| BIOS 890 Seminar | 1 FSSu |
| BIOS 898D Dissertation-PhD | 1-7 FSSu |

Biology Teaching (BIST) Course Offerings

| | |
|-----------------------|---------|
| BIST 692 Topics | 1-12 Su |
|-----------------------|---------|

Botany (BOT) Course Offerings

| | |
|--|---------------|
| BOT 505 Grasses and Grasslike Plants | 3 F |
| A systematic study of grasses, and grasslike plants of the northern Great Plains; field and lab practice in collection and identification of graminoid plants; discussion of unique biological aspects of grass and grasslike plants that make them economically and ecologically significant. | |
| BOT 505L Grasses and Grasslike Plants Lab..... | 0 F |
| BOT 512 Morphology of Non-Vascular Plants | 1-3 |
| A systematic survey of vascular plants that grow in wetland habitats, and a study of their adaptations to life in the water. Field and laboratory practice in identification and recognition of common aquatic plants. P, BOT 301 or consent of instructor. Corequisite course: BOT 512L. | |
| BOT 512L Morphology of Non-Vascular Plants Lab | 0 |
| BOT 513 Morphology of Vascular Plants | 3 |
| BOT 513L Morphology of Vascular Plants Lab | 0 |
| Morphology has been defined as philosophical anatomy. This course addresses comparative structure and evolutionary patterns existing in the diverse vascular plant groups including club mosses, ferns, gymnosperms and angiosperms. The student will gain insight into unity from homeostasis and diversity through evolution of this group of plants. Corequisite course: BOT 513. | |
| BOT 705 Aquatic Plants | 3 F |
| A systematic survey of vascular plants that grow in wetland habitats, and a study of their adaptations to life in the water. Field and laboratory practice in identification and recognition of common aquatic plants. P, BOT 301, or consent of instructor. Corequisite course: BOT 705L. | |
| BOT 705L Aquatic Plants Lab | 0 F |
| BOT 715 Advanced Plant Ecology | 4 S |
| Analysis of the energy relationships of communities with emphasis on productivity. Literature readings. Laboratory work in techniques of community analysis. P, consent. Corequisite course: BOT 715L. | |
| BOT 715L Advanced Plant Ecology Lab..... | 0 S |
| BOT 730 Plant Molecular Biology | 3 |
| Molecular mechanisms involved in regulation of subcellular assemblies and metabolism in higher plants. P, BIOL 343 and CHEM 361 or MICR 436. | |
| BOT 781 Plant Biotechnology..... | 3 F |
| Comparative studies in in vivo and in vitro cellular differentiation, organ formation, and plant development. P, BOT 421 or BIOL 371 or BOT 327. Corequisite course: BOT 781L. | |
| BOT 781L Plant Tissue Culture Lab | 0 F |
| BOT 791 Independent Study | 1-4 FS |
| BOT 792 Topics | 1-5 FS |

Xiuqing Wang
Assistant Professor
Ph.D., University of
Connecticut, 2000
Virology

Richard H. Whalen
Professor
Ph.D., Purdue University, 1965
Plant Genetics

Adjunct/Courtesy/Joint Faculty

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

Christopher Chase
Associate Professor of
Veterinary Science
Ph.D., University of Wisconsin-
Madison, 1990
Virology/Immunology

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

Donald P. Evenson
Distinguished Professor of
Station Biochemistry
Ph.D., University of Colorado-
Boulder, 1968
Cellular Biochemistry

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

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

David R. Henning
Associate Professor of Dairy
Science, Alfred Chair
Ph.D., Oregon State University,
1966
Food Safety

Paul Johnson
Associate Professor of Plant
Science
Ph.D., University of Wisconsin-
Madison, 1992
Insect Systematics

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

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

Carolyn Hull Sieg
 Professor of Biology and
 Microbiology
 Ph.D., Texas Tech University,
 1991
 Fire Ecology

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

Fedora Sutton
 Associate Professor of Plant
 Science
 Ph.D., Howard University,
 1985
 Plant Molecular Biology

Thomas P. West
 Professor of Chemistry
 Ph.D., Texas A&M University,
 1980
 Microbial Biochemistry

Environmental Management (ENVM) Course Offerings

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

Microbiology (MICR) Course Offerings

- MICR 514 Anaerobic Microbiology**3 F
 Anaerobic metabolism and ecology of bacteria, culturing techniques for anaerobic microorganisms. P, MICR 231.
- MICR 514L Anaerobic Microbiology Studio**0 F
- MICR 521 Soil Microbiology**3 S
 Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these microorganisms. P, 231-231A or consent. Crosslisted with PS 521. Equivalent to PS 521. Prerequisites: take 1 group (take BIOL 151, BIOL 152, BIOL 154/take BIOL 201, BOT 202). Corequisite course: MICR 421L.
- MICR 521L Soil Microbiology Lab**0 S
- MICR 522 Introductory Immunology Lecture**4 F
 Immunology and immunochemistry, mechanisms of immunologic injury, and their application to clinical immunobiology. Serological techniques for detecting and measuring the presence of antigens or antibodies in specimens and production of immune serum.
- MICR 522 Introductory Immunology Lecture**3 F
 An introduction to basic aspects of host defense, including principles of immunity, cells and organs of the immune system, biochemical nature of immune proteins, and cellular interactions of the immune response. Specific diseases of the immune system and the response of the immune system to infectious disease will be covered, with a focus on basic mechanisms of immunity that may be applied to specific conditions and diseases. As a component of the course, all students will be required to read a basic paper in the scientific literature and summarize the important components and impact in essay format. The 500-level course will involve tutorials, during which recent papers in the basic scientific literature will be discussed. graduate students will be expected to participate in the learning process by giving an oral presentation of a current problem in immunology, and delivering a written analysis of a current paper (within the previous year) on a basic question in Immunology.
- MICR 522L Introductory Immunology Lab**0
 Immunology and immunochemistry, mechanisms of immunologic injury, and their application to clinical immunobiology. Serological techniques for detecting and measuring the presence of antigens of antibodies in specimens and production of immune serum.
- MICR 523 Introductory Immunology Lab**1
 An introduction to important laboratory techniques in immunology, including principles of immunoassays, immunofluorescence, ELISA, Western Blotting, and functional assays of immune function. Through the use of experimental procedures, will illustrate basic concepts of immunology. A major proportion of the laboratory time will be taken to focus on practical aspects of currently used immunological assays (focusing on the use of antibodies in the diagnostic laboratory).
- MICR 524 Medical and VET Virology**3 FS
 Basic course discussing the characterization, structure, and replication of viruses and the pathogenesis of viral disease in man and animals. Laboratory exercises emphasize techniques in virus isolation, characterization, and detection by immunological assays. Crosslisted with VET 524. Equivalent to VET 524. P, MICR 433. Corequisite course: MICR 524L.
- MICR 526L Infectious Disease Laboratory**2 FS
- MICR 537 Systematic Bacteriology**4 F
 Techniques for isolation, identification, classification, and preservation of bacterial cultures are presented. Current topic areas and theory in taxonomy and nomenclature are discussed in detail. P, MICR 231 (or equivalent). Corequisite course: MICR 537L.
- MICR 537L Systematic Bacteriology Lab**0 F

| | |
|--|-----------------|
| MICR 592 Topics | 1-4 FS |
| Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement. | |
| MICR 592L Topics Lab | 1-4 F |
| Laboratory experience that accompanies MICR 592. | |
| MICR 713 Industrial Microbiology | 4 F |
| A course detailing the use of microorganisms by people. Topics include the production of food and beverages, agricultural and industrial chemicals, pharmaceuticals, and alternate fuels. Legal and ethical ramifications are presented. P, MICR 332 (or equivalent) and consent. CHEM 361 or equivalent is recommended. Corequisite course: MICR 713L. | |
| MICR 713L Industrial Microbiology Lab | 0 F |
| MICR 722 Molecular and Cell Biology of the Immune Response | 3 F |
| An in depth examination of the molecular and cellular basis of immune function and regulation. | |
| MICR 726 Cell Physiology of Signal Transduction | 3 F |
| A basic review of cellular physiology, membrane biology and cell signalling mechanisms in leukocyte models will be provided. The course will then examine recent primary literature to survey developments in this area. | |
| MICR 738 Microbial Metabolism | 4 S |
| A course dealing with microbial respiration of organic and inorganic compounds, anaerobic respiration, the various fermentations, photosynthesis, nitrogen fixation, and the biosynthesis of certain organic intermediates. The lab introduces the student to the usage of various research equipment. Elementary biochemistry recommended. Corequisite course: MICR 738L. | |
| MICR 738L Microbial Metabolism Lab | 0 S |
| MICR 790 Seminar | 1 S |
| MICR 791 Independent Study | 1-4 FSSu |
| MICR 792 Topics | 1 FS |
| MICR 798 Thesis | 1-7 FS |

Zoology (ZOOL) Course Offerings

| | |
|---|---------------|
| ZOOL 723 Systemic Physiology | 4 F |
| Physiology aspects of tissue cells, hematology, neuroendocrine system, central and autonomic nervous systems, and mycology. Discuss various interrelationships to body system functions and maintenance of homeostasis. Corequisite course: ZOOL 723L. | |
| ZOOL 723 Advanced Mammalian Physiology | 5 |
| This course is an advanced study of the cellular and molecular mechanisms used by mammals to acquire energy for their cells, to regulate body functions using the nervous and endocrine systems, to integrate the functions of the organs systems in order to maintain homeostasis and health of the animal, and to produce new members of its species. | |
| ZOOL 723L Systemic Physiology Lab | 0 F |
| ZOOL 761 Taxonomy of Insects | 3 F |
| ZOOL 761L Taxonomy of Insects Lab | 1 F |
| ZOOL 791 Independent Study | 1-4 FS |
| ZOOL 792 Topics | 1-5 FS |

Key to Course Descriptions

| | |
|----------------------|----------------------------|
| Course Number & Name | Credits |
| | F = Fall |
| | S = Spring |
| | Su = Summer |
| | (Lecture Hours, Lab Hours) |

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Chemistry and Biochemistry

Degrees Offered:

Ph.D. Chemistry

M.S. Chemistry

Graduate Faculty

David Cartrette
Assistant Professor
Ph.D., Purdue University,
2003
Chemical Education/Organic

Jihong Cole-Dai
Assistant Professor
Ph.D., University of Maryland,
1988
Analytical/Environmental
Chemistry

Donald P. Evenson
Distinguished Professor
Ph.D., University of Colorado-
Boulder, 1968
Cellular Biochemistry

Fathi Halaweish
Assistant Professor
Ph.D., University of Wales,
1987
Natural Products/Organic
Chemistry

David C. Hilderbrand
Professor
Ph.D., University of Missouri-
Columbia, 1971
Analytical Chemistry

Duane P. Matthees
Professor
Ph.D., University of Maryland-
College Park, 1978
Analytical Chemistry

Matt Miller
Assistant Professor
Ph.D., Purdue University,
2001
Chemical Education/Analytical

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

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

For additional information contact:

Mailing address: SDSU Box 2202

Shepard Hall — SSH 121

<http://www3.sdsu.edu/Academics/CollegeOfArtsAndScience/ChemistryandBiochemistry>

E-mail: gradchem.rice@sdsu.edu

Phone: 605/688-5154

Fax: 605/688-6364

Program Description

The emphases of the department's research falls into the general areas of structural and cell biochemistry, environmental chemistry, materials science and chemical education. Within these focus areas, programs in the Department cover the traditional areas of chemistry; analytical, biochemistry, inorganic, organic and physical. Currently active research projects in the Department focus on various aspects of analytical chemistry, organic synthesis, materials science, the chemistry and biochemistry of cell membranes, environmental chemistry, the biochemistry of animal health, nutrition and fertility, bioinorganic chemistry, computational chemistry, and solid-state NMR. The Department is equipped with modern instrumentation to support research in these areas. Most of this equipment is readily available to graduate students for "hands-on" experience after successfully completing a short training course. This includes: a NMR facility consisting of 400 and 200 MHz solution FT-NMR spectrometers; powder x-ray diffractometer; 400, 300, 200, 100 MHz wide-bore solid-state NMR spectrometers; a mass spectrometry facility consisting of 7T ESI FTMS a high-resolution magnetic sector mass spectrometer with EI and CI sources and GC, HPLC, pyrolysis and fast-atom bombardment capabilities and a MALDI-TOF mass spectrometer; FT-IR spectrometer with far-IR capabilities; near-IR reflectance scanning spectrophotometer; time-resolved spectrofluorometer; flow cytometer with cell-sorting capabilities; 7T FTMS with ESI capabilities; MALDI-TOF; atomic absorption and diode-array UV-Vis spectrophotometers. In addition to these departmental resources, individual research groups also maintain their own instrumentation. Campus mainframe computer facilities and on-line computer access to Chemical Abstracts Services are readily available. Individual groups maintain their own computer systems for molecular modeling or dedicated data manipulation.

Available Options for Graduate Degrees

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

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options.

Core Requirements

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

| | | |
|------------------------------|--|---|
| <i>Doctor of Philosophy:</i> | CHEM 516 Chemical Communication Skills | 2 |
| <i>(CHEM 516 and</i> | CHEM 622 Advanced Organic Chemistry I | 3 |
| <i>4 of the 5</i> | CHEM 632 Advanced Analytical Chemistry | 3 |
| <i>courses listed)</i> | CHEM 642 Advanced Physical Chemistry | 3 |
| | CHEM 654 Advanced Inorganic Chemistry | 3 |
| | CHEM 662 Principles of Biochemistry | 3 |

Additional Admission Requirements

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

TOEFL: Department requirement of 580*

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

General Requirements begin on page 16 (Master's Degree) and 19 (Ph.D.).

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

Chemistry (CHEM) Course Offerings

(if not listed, see department for schedule of offerings)

| | |
|--|-----------------|
| CHEM 516 Chemical Communication Skills | 2 Su |
| Searching chemical literature by traditional and computer assisted methods; techniques of written and oral communication of chemical information. | |
| CHEM 622 Advanced Organic Chemistry I | 3 F |
| Review and discussion of nomenclature, stereochemistry, resonance theory, equilibria, elementary kinetics, intermediate and mechanisms. Chemistry of polymers, heterocyclics, and natural products. P, CHEM 328, CHEM 344. | |
| CHEM 632 Advanced Analytical Chemistry..... | 3 S |
| Theoretical treatment of principles involved in noninstrumental analytical chemistry including sampling and statistics. P, CHEM 344. | |
| CHEM 642 Advanced Physical Chemistry | 3 S |
| A review of the principles and applications of physical chemistry. Topics such as thermochemistry, quantum mechanics, spectroscopy, kinetics, and electrochemistry considered. P, CHEM 344. | |
| CHEM 654 Advanced Inorganic Chemistry | 3 F |
| Inorganic systems including theoretical, representative group and transition metal topics. P, CHEM 344 or CHEM 352. | |
| CHEM 662 Principles of Biochemistry..... | 2-5 F |
| Chemistry of biological processes occurring in plants and animals. P, CHEM 361. | |
| CHEM 691 Independent Study..... | 1-4 FSSu |
| CHEM 720 Special Topics in Organic Chemistry | 1-6 FS |
| One term, advanced courses taught upon demand and covering such topics as stereochemistry, advanced synthetic organic chemistry, etc. P, consent. | |
| CHEM 722 Synthesis of Natural Products | 3 S |
| Synthetic strategies and pathways for the formation of natural products. P, CHEM 328. | |
| CHEM 724 Structural Determination of Organic Compounds | 3 S |
| Determination of the structure of organic compounds primarily by spectroscopic techniques. P, CHEM 328. Corequisite course 724L. | |
| CHEM 724L Structural Determination of Organic Compounds Lab | 0 S |
| CHEM 725 Polymer Chemistry | 4 |
| The chemistry of high molecular-weight polymeric molecules will be discussed. The laboratory will consist of the preparation, reactions, and properties of select polymers. P, CHEM 328. Corequisite course: CHEM 725L. | |
| CHEM 725L Polymer Chemistry Lab..... | 0 |
| CHEM 726 Advanced Organic Chemistry II | 3 |
| Physical organic, reaction mechanisms, M.O. calculations, orbital symmetry, and E.S.R. spectroscopy. P, CHEM 328 and CHEM 344. | |
| CHEM 728 Bioorganic Chemistry | 3 |
| Interpretation and categorization of biochemical reactions in terms of principles of organic chemistry. Synthesis of biologically active macromolecules and models for enzyme catalysis. P, CHEM 328, CHEM 662. | |

Harrell Sellers
Professor
Ph.D., Arkansas State
University, 1979
Physical/Computational
Chemistry

Igor Sergeev
Assistant Professor
Ph.D., Institute of Biomedical
Problems (Russia), 1984
D.Sc., Institute of Nutrition
(Russia), 1991
Cellular Biochemistry

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

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

Thomas West
Professor
Ph.D., Texas A&M University,
1980
Biochemistry

Adjunct/Courtesy/Joint Faculty

Royce Engstrom
Professor at University of South
Dakota
Ph.D., University of Wisconsin-
Madison, 1979
Analytical Chemistry/
Electrochemistry

Stanley May
Professor at University of
South Dakota
Ph.D., University of Virginia,
1988
Physical Inorganic Chemistry

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

| | |
|---|----------|
| CHEM 730 Special Topics in Analytical Chemistry | 1-6 FS |
| Individualized studies in mass spectrometry, electroanalytical, trace analysis, or instrumentation and electronics. P, consent. | |
| CHEM 732 Analytical Agricultural and Environmental Chemistry | 4 |
| The principles of analytical chemistry as applied to agricultural environmental chemistry will be presented in the lecture portion of the course and the performance of those procedures will be presented in the laboratory section of the course. P, CHEM 434. Corequisite course: CHEM 732L. | |
| CHEM 732L Analytical Agricultural and Environmental Chemistry Lab | 0 |
| CHEM 734 Analytical Spectroscopy | 3 F |
| In-depth treatment of the quantitative applications and theory of modern spectroscopy techniques including atomic absorption, emission, and fluorescence; molecular absorption and fluorescence; and X-ray spectroscopy. P, CHEM 434. | |
| CHEM 736 Chromatography and Separation | 3 F |
| Theory and practice of solvent extraction and paper, thin layer, gas and liquid chromatographic techniques. P, CHEM 232. | |
| CHEM 738 Electroanalytical Chemistry | 3 |
| The principles of electrochemistry as applied to analytical methods will be presented in this course. Topics covered will include polarography, potentiometry, conductance, coulometry, and related topics. P, CHEM 434. | |
| CHEM 740 Special Topics in Physical Chemistry | 1-6 FSSu |
| One-term, advanced courses taught upon demand covering such topics as electrochemistry, surface chemistry, kinetics, quantum chemistry, etc. P, consent. | |
| CHEM 741 Quantum Chemistry I | 3 F |
| The application of wave mechanics to simple atomic and molecular systems, properties of wave functions, and approximate methods. P, CHEM 642, MATH 321. | |
| CHEM 742 Quantum Chemistry II | 3 |
| Continuation of CHEM 741. P, CHEM 741. | |
| CHEM 744 Chemical Thermodynamics | 3 |
| Discussion of the laws and theories of classical and statistical thermodynamics as related to macroscopic chemical systems. P, CHEM 344. | |
| CHEM 745 Statistical Thermodynamics | 3 S |
| Fundamental principles of statistical thermodynamics with applications to chemical systems. P, CHEM 642, CHEM 744. | |
| CHEM 746 Atomic and Molecular Structure | 3 |
| Introduction to quantum mechanics and theoretical treatment of chemical structure and binding. P, CHEM 328, CHEM 344. | |
| CHEM 748 Chemical Kinetics | 3 FS |
| Experimental methods and theoretical approaches to the study of reaction rates. P, CHEM 328, Chem344. | |
| CHEM 750 Special Topics in Inorganic Chemistry | 1-6 FSu |
| One-term, advanced courses taught upon demand and covering such topics as coordination chemistry of transition elements, structural determinations, etc. P, consent. | |
| CHEM 752 Descriptive Inorganic Chemistry | 3 |
| Discussion centered on periodic relationships of the elements. The laboratory work includes preparation and purification of typical inorganic compounds. P, CHEM 120 (4 credits), CHEM 232, CHEM 352. Concurrent registration in CHEM 752L. | |
| CHEM 752L Descriptive Inorganic Chemistry Lab | 0 |
| CHEM 753 Organometallic Chemistry | 3 S |
| The study of metal compounds containing organic moieties and related inorganic compounds. Major emphasis will be focused on transition metal-carbon compounds such as the carbonyls, aromatic hydrocarbons and nonaromatic olefin and acetylene complexes. Homogenous catalysts will be discussed. P, CHEM 352. | |
| CHEM 754 Physical Methods of Inorganic Chemistry | 3 |
| The study of instrumental methods and spectral interpretation used to investigate inorganic compounds. EPR, X-ray, NMR, UV-Vis and IR will be discussed. P, CHEM 344, CHEM 352. | |
| CHEM 760 Special Topics in Biochemistry | 1-6 FS |
| One-term, advanced courses taught upon demand and covering a variety of topics. P, consent. | |
| CHEM 764 Biochemistry I | 3 S |
| Study of metabolism of carbohydrates and lipids. Includes aspects on enzyme kinetics and regulation as well as principles and characteristics of ATP-synthesizing complexes. P, CHEM 622 and 662. | |

| | |
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| CHEM 766 Biochemistry II..... | 3 S |
| Study of the metabolism of amino acids, proteins, nucleotides and nucleic acids. Includes some aspects of enzymology and the mechanism of intra and intercellular communication. P, CHEM 662. | |
| CHEM 767 Biophysical Chemistry | 3 |
| Discussion of the theoretical and practical aspects of biophysical methods. These will include an examination of electrophoresis, centrifugation, light scattering, optical rotary dispersion, X-ray diffraction, viscosity/ diffusion, and spectroscopy. P, CHEM 340, CHEM 662. | |
| CHEM 768 Plant Biochemistry..... | 3 S |
| Chemistry of structural and functional elements of plants with special emphasis on bioenergetics, photosynthesis, nitrogen fixation, sulfur metabolism, carbohydrate interconversion, secondary plant products, seed development and fruit ripening, and genome expression. P, CHEM 662. | |
| CHEM 769 Nutritional Biochemistry | 3 |
| Study of the biochemistry of systems that are significant in nutrition including metabolism, requirements and deficiencies. | |
| CHEM 772 Seminar Preparation..... | 1 |
| Required of all graduate majors in chemistry. | |
| CHEM 781 Bioinorganic Chemistry | 3 |
| A study of biological systems stressing the role of metals ions, primarily the transition metals. Model systems included in the discussion. P, CHEM 120 (4 credits), CHEM 352 or consent. | |
| CHEM 782 Radioisotope Techniques..... | 4 S |
| Theory and measurement of radioactivity. Techniques for the application of radioactive isotopes in chemical and biological experimentation. P, consent. Corequisite course: CHEM 782L. | |
| CHEM 782L Radioisotope Techniques Lab | 0 S |
| CHEM 790 Seminar | 1 F |
| CHEM 798 Thesis | 1-7 FSSu |
| CHEM 898D Dissertation-PhD..... | 1-12 FSSu |

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Chemistry Teaching (CHST) Course Offerings

CHST 601 Chemistry Topics for Educators **1-12 Su**

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

Physics (PHYS) Course Offerings

The following Physics courses may be used in the graduate major plan of study. (See complete descriptions under Department of Physics.)

PHYS 743 Statistical Mechanics **3 S**

PHYS 775 Tensors and General Relativity **3**

PHYS 779 Group Theory in Quantum Mechanics **3**

Civil and Environmental Engineering

Degree Offered:

M.S. Engineering

• Civil Engineering emphasis

Graduate Faculty

Suzette Burckhard
Associate Professor
Ph.D., Kansas State University,
1997
Environmental Engineering and
Water Resources Engineering

Delvin DeBoer
Professor
Ph.D., Iowa State University,
1990
Environmental Engineering

Allen Jones
Assistant Professor
Ph.D., University of
Washington, 2003
Geotechnical Engineering

Richard A. Reid
Associate Professor
Ph.D., Georgia Institute of
Technology, 1995
Geotechnical/Transportation
Engineering

John J. Schemmel
Professor
Ph.D., North Carolina State
University, 1989
Structural Engineering

Christopher G. Schmit
Associate Professor
Ph.D., Iowa State University,
1997
Environmental Engineering

Ali A. Selim
Professor
Ph.D., University of Missouri-
Rolla, 1976
Transportation Engineering

Arden B. Sigl
Professor
Ph.D., Northwestern University,
1977
Structural Engineering

Francis C.K. Ting
Associate Professor
Ph.D., California Institute of
Technology, 1989
Fluid Mechanics/Hydraulic
Engineering

Department Head: Professor John J. Schemmel
Graduate Coordinator: Professor Delvin DeBoer

For additional information contact:

Mailing address: SDSU Box 2219
Crothers Engineering Hall — SCEH
WWW: <http://www.engineering.sdstate.edu>
E-mail: delvin.deboer@sdstate.edu

Phone: 605/688-5427
Fax: 605/688-6476

Program Description

Courses, design, and research activities within Civil and Environmental Engineering are related to structural, transportation, geotechnical, water resources, hydrology, hydraulics and environmental engineering as well as engineering mechanics. These are supportive of the Master of Science in Engineering.

Core Requirements

Students registering for CEE 702 Advanced CEE module must concurrently register for CEE 702 Advanced CEE - Colloquium, (1 cr.). At least 2 credits of Colloquium must be included on the student's plan of study. Refer to College of Engineering section, pages 80-82, for specific details of additional engineering college requirements.

Additional Admission Requirements

GRE: Not required

TOEFL: Civil and Environmental Engineering requirement of 525

General Requirements begin on page 16 (Master's Degree).

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

Civil and Environmental Engineering (CEE) Course Offerings

- CEE 511 Bituminous Materials3 FS**
Properties of bituminous materials including their compatibility with various types of aggregates. Asphalt mixes are designed and tested. Standards tests are performed on bituminous materials with emphasis on test results. Asphalt surface evaluation techniques. P, CEE 216. Corequisite course: CEE 511L.
- CEE 511L Bituminous Materials Lab0 FS**
- CEE 522 Environmental Engineering Instrumentation.....3 F**
Analysis of water and waste water samples, using environmental laboratory instrumentation. Design of treatment facility process instrumentation and controls. P, CEE 423 or consent. Corequisite course: CEE 527L.
- CEE 522L Environmental Engineering Instrumentation Lab0 F**
- CEE 524 Industrial Waste Treatment3 S**
Characteristics and composition of industrial wastes, sampling and methods of analysis of these wastes and remedial measures for treatment and disposal.
- CEE 529 Solid Waste Engineering and Management3 FS**
Solid waste regulation and characterization. Design of disposal facilities, management of collection, transport, transfer, storage and disposal systems. Field trips to various disposal facilities required. P, CEE 446. Corequisite course: CEE 528L.

| | |
|---|-----------------|
| CEE 529L Solid Waste Engineering and Management Lab | 0 FS |
| CEE 535 Water Resources Engineering | 3 S |
| Topics related to water resources engineering including: multiple purpose river development, economic analysis of flood control measures, aspects of water law, advanced topics related to surface and ground water hydrology and administrative aspects of water resources planning. P, CEE 433. | |
| CEE 543 Matrix Analysis of Structures | 3 FS |
| Theory and application of matrix methods in structural analysis. P, CEE 353. | |
| CEE 544 Precast Concrete Structures..... | 3 |
| Advantages of precast concrete. Structural and architectural precast elements. Building systems. Design concepts and structural design. Connections, specifications, and detailing. P, CEE 456. | |
| CEE 546 Advanced Geotechnical Engineering..... | 3 FS |
| Development of a fundamental understanding of engineering properties of soils and the factors controlling their magnitude and changes with time and environment. Development of why this knowledge is important and how it can be used in the solution of geotechnical and geoenvironmental problems. | |
| CEE 547 Foundation Engineering | 3 FS |
| Application of the fundamental concepts of soil behavior to evaluation, selection, and design of shallow and deep foundation systems. Related topics such as temporary support systems for excavations and pile driving are also included. Students enrolling in CEE 547 will be held to a higher standard than those enrolling in CEE 447. | |
| CEE 547L Foundation Engineering Lab..... | 0 FS |
| CEE 552 Prestressed Concrete | 3 FS |
| Theory and design of prestressed concrete including pre-tensioning and post-tensioning. P, CEE 456. | |
| CEE 558 Design of Timber Structures..... | 3 S |
| Gravity and lateral loads, physical and mechanical properties of wood, properties of dimension lumber and glued laminated timber, design of beams and columns, properties of structural wood panels. Design of sheathing, diaphragms and shearwalls. Design of connections. | |
| CEE 559 Advanced Structural Mechanics | 3 |
| Review of principal moments of inertia; relationship of plain stresses and strains; use of rosettes; shear center; unsymmetrical bending; theories of failure; curved beams and closed rings; thick-walled cylinders; beams on continuous elastic support, miscellaneous topics in structural analysis. P, CEE 353. Corequisite course: CEE 559L. | |
| CEE 559L Advanced Structural Mechanics Lab | 0 |
| CEE 572 Geosynthetics | 3 F |
| Detailed study of the types of geosynthetic materials used in environmental, geotechnical, and transportation engineering as well as how they are used and manufactured. Particular emphasis will be placed on erosion control, landfill, transportation, drainage, tiltration and reinforcement applications. P, CEE 336. | |
| CEE 592 Topics | 1-3 FSSu |
| CEE 592L Special Topics Lab | 0 FSSu |
| CEE 623 Advanced Sanitary Engineering | 3 |
| Advanced engineering topics related to sanitary engineering and public health, including housing, air conditioning and ventilation, air pollution, hospital and institutional sanitation, stream sanitation, waste disposal, radiological health and industrial hygiene. | |
| CEE 625 Environmental Engineering Planning..... | 3 |
| Analysis and review of basic concepts and procedures involved in environmental aspects of planning. Consideration given to local effects of projects as well as effects on the area and the state or region. P, Graduate standing or consent. | |
| CEE 632 Advanced Foundation Engineering | 3 F |
| Advanced treatment of foundations and earth retaining structures. Bearing capacity, lateral resistance and settlement of deep foundations; earth pressures on sheet pile walls, braced excavations and buried pipes; numerical methods and computer use in design and analysis applications. P, CEE 547. Corequisite course: CEE 632L. | |
| CEE 632L Advanced Foundation Engineering Lab..... | 0 F |
| CEE 633 Open Channel Hydraulics..... | 3 S |
| Energy and momentum principles in open channel flow, flow resistance, flow in uniform and non-uniform channels, flood routing. P, CEE 433. | |
| CEE 634 Fluvial Hydraulics..... | 3 |
| Erosion, transportation and deposition of sediments by flowing water, bed load and suspended load movement, river behavior and control. P, CEE 433. | |

Nadim Wehbe
Associate Professor
Ph.D., University of Nevada,
Reno, 1997
Engineering Mechanics/
Structural Engineering

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

| | |
|--|----------------|
| CEE 639 Geotechnical Testing | 3 Su |
| Determination of engineering properties of soils. Measurement of stress-strain behavior, compressibility, permeability. Use of direct shear test, triaxial compression test, consolidation test, permeameter tests. Interpretation of test data for engineering applications. Use of computerized data acquisition methods. P, CEE 446. Corequisite course: CEE 639L. | |
| CEE 639L Geotechnical Testing Lab | 0 Su |
| CEE 654 Advanced Design of Steel Structures | 3 FS |
| Design of slender compression elements tapered members, hybrid plate girders, column base plates subjected to bending moments, bolted and welded connections. Cold form steel structures. P, CEE 455. | |
| CEE 656 Advanced Reinforced Concrete Design | 3 FS |
| Design of rigid frames, effect of plastic behavior, details for complex structures, analysis of flat plate and other two-way floor systems. Design comparisons. P, CEE 456. | |
| CEE 664 Highway Capacity Analysis | 3 FS |
| Sizing road segments in terms of number of lanes based on traffic volume and level of service. Eliminating traffic conflict on road sections and intersections. Vehicle and pedestrian analysis. P, CEE 363. | |
| CEE 690 Seminar | 0 FS |
| CEE 692 Topics | 1-3 FSu |
| CEE 702 Advanced Civil and Environmental Engineering | 1-13 FS |
| Graduate study in Civil/Environmental Engineering. Registration in one or more modules requires concurrent registration in the 1-credit colloquium, which includes reports and discussions of current advanced topics related to the module content. Credit earned will depend on modules taken. Modules may include engineering analysis and design in the topic areas of civil engineering, environmental engineering, geotechnical engineering, hydraulic engineering and hydrology, structural engineering, transportation engineering and water resources engineering. Course may be repeated but individual modules may not be repeated. | |
| CEE 702L Advanced Civil and Environmental Engineering | 0 FS |
| Graduate study in Civil/Environmental Engineering. Registration in one or more modules requires concurrent registration in the 1-credit colloquium, which includes reports and discussions of current advanced topics related to the module content. Credit earned will depend on modules taken. Modules may include engineering analysis and design in the topic areas of civil engineering, environmental engineering, geotechnical engineering, hydraulic engineering and hydrology, structural engineering, transportation engineering and water resources engineering. Course may be repeated but individual modules may not be repeated. | |
| CEE 721 Environmental Engineering | 3 S |
| The relationship of man's environment to health and control of this environment from an engineering standpoint. P, consent. | |
| CEE 722 Hazardous/Toxic Waste Disposal | 3 S |
| Legislation, regulation, business aspects and technology related to the management and disposal of hazardous and toxic wastes. P, consent. Corequisite course: CEE 722L. | |
| CEE 722L Hazardous/Toxic Waste Disposal Lab | 0 S |
| CEE 724 Land Treatment of Wastes | 3 S |
| State-of-the-art planning and process design of land treatment systems for the disposal of municipal, industrial, and agricultural wastes. Physical, chemical and biological limiting factors with emphasis on site selection and process feasibility. Land disposal of sludges. Corequisite course: CEE 724L. | |
| CEE 724L Land Treatment of Wastes Lab | 0 S |
| CEE 725 Biological Principles of Environmental Engineering | 3 F |
| Ecology, energetics and kinetics of biochemical systems. Analysis and modeling of suspended growth and fixed film biological processes used in environmental engineering. Laboratory procedures for developing biokinetic data. P, CEE 423 or consent. Corequisite course: CEE 725L. | |
| CEE 725L Biological Principles of Environmental Engineering Lab | 0 F |
| CEE 726 Physical/Chemical Principles in Environmental Engineering | 3 SSu |
| Fundamental concepts of fluid/particle interactions, process kinetics, and equilibrium chemistry applied to natural and engineered aquatic environmental systems. Coagulation, fluid/particle separation, oxidation/reduction, precipitation/dissolution, carbonate systems, absorption, ion exchange, and gas/liquid interfaces. P, CEE 423 or consent. Corequisite course: CEE 726L. | |
| CEE 726L Physical/Chemical Principles in Environmental Engineering Lab | 0 SSu |
| CEE 727 Water Treatment Plant Design | 3 FS |
| Water supply sources, design of treatment plants, cost estimates of water supply systems. P, CEE 327 or consent. Corequisite course: CEE 727L. | |

| | |
|---|-----------------|
| CEE 727L Water Treatment Plant Design Lab | 0 FS |
| CEE 728 Waste Water Treatment Plant Design..... | 3 F |
| Design of waste collection and disposal facilities, waste treatment plants, cost estimates of waste disposal and treatment systems. P, CEE 423; graduate standing. Corequisite course: CEE 728L. | |
| CEE 728L Waste Water Treatment Plant Design Lab | 0 F |
| CEE 733 Water Resources Engineering | 3 F |
| Advanced topics related to water resources engineering including: Multiple purpose river development, economic analysis of flood control measures, aspects of water law, advanced topics related to surface and ground water hydrology and administrative aspects of water resources planning. P, CEE 535. | |
| CEE 734 Surface Water Quality Model | 3 |
| Modeling advective and dispersive mass transport in surface and engineered water systems. analysis of reactions affecting the fate of dissolved oxygen, nutrients, toxic compounds and pathogens. Analytical and numerical solutions to deterministic modeling equations. Application and use of the QUALI-III and EPANET models. P, CEE 423, MATH 321. | |
| CEE 737 Hydraulic Design | 3 |
| Hydraulic design as applied to hydroelectric power development and turbine design, flood routing in reservoirs and natural channels, design of drainage structures, and energy dissipators. P, CEE 433. | |
| CEE 738 Advanced Hydraulics | 3 |
| Introduction to topics related to water resources engineering including: dimensional analysis, similitude, mechanics of sediment transport, river engineering, coastal hydraulics and stream channel mechanics. P, CEE 433; graduate standing. Corequisite course: CEE 738L. | |
| CEE 738L Advanced Hydraulics Lab | 0 |
| CEE 749 Structural Dynamics | 3 S |
| Dynamic analysis of structural system with one and several degrees of freedom. Determination of natural frequencies. Analysis of free and forced vibration systems including damping. Introduction to earthquake engineering. P, CEE 353, CEE 456. | |
| CEE 756 Reinforced Masonry Design | 3 |
| Development of masonry construction. Material properties. Structural design of loadbearing walls, columns, beams and shear walls. Design of masonry buildings due to gravity loads, lateral forces and earthquakes. P, CEE 456. | |
| CEE 762 Pavement Management and Rehabilitation | 3 F |
| Assessment of road networks to determine maintenance rehabilitation needs. Rehabilitation strategies for various types of pavements. Prioritization schemes for road section repair. P, CEE 467, CEE 765, or concurrent. Corequisite course: CEE 762L. | |
| CEE 762L Pavement Management and Rehabilitation Lab | 0 F |
| CEE 765 Pavement Design | 3 F |
| Stresses in and design of flexible and rigid pavements including subgrades, bases and sub-bases. P, CEE 363. | |
| CEE 769 Design Steel and Concrete Bridges | 3 F |
| Determination of bridge loadings and bearings. Design of concrete and steel bridge systems. Specifications and detailing related to bridge. P, CEE 455, CEE 456. | |
| CEE 787 Research | 1-9 SSu |
| CEE 788 Engineering Research or Design Paper | 1-2 FSSu |
| Conduct a research or design project and write a report on the work done using thesis format. | |
| CEE 790 Seminar..... | 1 FSu |
| CEE 791 Independent Study..... | 1-3 FSSu |
| CEE 792 Topics..... | 1-3 FS |
| CEE 792L Special Topics Lab | 0 F |
| CEE 798 Thesis..... | 1-7 FSSu |

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Communication Studies and Theatre

Degree Offered:

M.S.

- Communication Studies specialization
- Journalism specialization

(see also *Journalism*, page 104)

Graduate Faculty

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

Laurie L. Haleta
Professor
Ph.D., University of Nebraska,
1994
Instructional Communication

Jerry Jorgensen
Professor
Ph.D., University of Nebraska,
1990
Media Studies, Organizational
Communication

Department Head: Professor Laurie L. Haleta

Graduate Coordinator: Professor Laurie L. Haleta

For additional information contact:

Mailing address: SDSU Box 2218

Phone: 605/688-6131

Pugsley Center — SPC

Fax: 605/688-6551

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

E-mail: laurie.haleta@sdstate.edu

Program Description

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

Areas of Specialization for Graduate Degrees

Master of Science: Option A: Communication Studies

OR

Journalism

Specializations Descriptions

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

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

Core Requirements

MEPR 787 Research Methods in Communication (taken by second semester)

SPCM 605 Current Approaches to Communication

SPCM 700 Instructional Methods in Communications
(for Graduate Teaching Assistants)

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 600

Master of Science: Minimum of 20 semester hours of undergraduate credit in Speech, Theatre, Journalism, or Communication. Other undergraduate programs *may* qualify.

General Requirements begin on page 16 (Master's Degree).

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

Media Production (MEPR) Course Offerings

- MEPR 537 Education and Corporate Television3 Su**
Educational broadcasting with practical work in preparation and presentation of educational and instructional materials for radio, TV, and film and their use in the classroom. Crosslisted with MCOM 437-537. Equivalent to MCOM 537.
- MEPR 564 Film Studies3**
Film art forms, artists and critics. Viewing and making films. Emphasis on major film theories.
- MEPR 787 Research Methods of Communication3 S**
Research Methods in Communication under Department of Journalism and Mass Communication.
- MEPR 791 Independent Study1-2 SSu**

Speech Communication (SPCM) Course Offerings

- SPCM 510 Organizational Communication3**
Explores communication processes in organizational contexts, theories of leadership, decision making and conflict, the application of principles that facilitate communication in organizations, and other selected topics.
- SPCM 516 Rhetorical Criticism3 F**
Critical evaluation of American speakers from Colonial to contemporary. P, consent.
- SPCM 552 General Semantics3**
Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistic assumptions; and the objective systematization of language. Crosslisted with LING 452-552. Equivalent to LING 552.
- SPCM 592 Topics1-5 SSu**
- SPCM 605 Current Approaches to Communication3 F**
- SPCM 700 Instructional Methods in Communication3 F**
Problems and issues in teaching the basic communication course, development of communication courses, and issues relevant to communication education.
- SPCM 707 Speech/English/Drama for Teachers.....1-3**
Designed to help teachers develop curriculum materials and curricular/co-curricular instruction of literature and drama.
- SPCM 766 Rhetorical Theory3 F**
Historical development of rhetorical theory from classical to modern times.
- SPCM 791 Independent Study1-2 FSSu**
- SPCM 792 Topics1-3 F**
- SPCM 798 Thesis1-7 FSSu**

Theatre (THEA) Course Offerings

- THEA 510 Dramatic Literature3 S**
Analysis of important drama through present day.
- THEA 560 History of Theatre.....3 S**
Periods, theatres, and representative dramatic literature from the classical to the present day.
- THEA 594 Internship.....0-16**
- THEA 791 Independent Study1-2 SSu**

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Computer Science

Degree Offered:

M.S. Engineering

- Computer Science emphasis

Graduate Faculty

Ali Salehnia
Professor
Ph.D., University of Missouri-
Columbia, 1989
Information Systems

Yong-Sang Shim
Assistant Professor
Ph.D., University of Wyoming,
2001
Computer Security

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

Department Head: Professor Dennis Helder
Graduate Coordinator: Professor Sung Shin

For additional information contact:

Mailing address: SDSU Box 2201

Administration — SAD 144

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

E-mail: sung.shin@sdsstate.edu

Phone: 605/688-5719

Fax: 605/688-4532

Program Description

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

Computer Science Core Requirements

| | |
|--|---|
| CSC 705 Design and Analysis of Computer Algorithms..... | 3 |
| CSC 710 Structure and Design of Programming Languages..... | 3 |
| CSC 720 Theory of Computation..... | 3 |
| CSC 770 Software Engineering Management..... | 3 |

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 525

Refer to College of Engineering section, pages 80-82, for specific details.

Computer Science (CSC) Course Offerings

CSC 522 GUI Programming.....3 FS
This course is event-driven graphical user interface (GUI) programming will cover topics such as C++ programming for Windows.

CSC 572 Artificial Intelligence3 Su
Introduction to ideas, issues and applications of Artificial Intelligence. Knowledge representation, problem solving, search, inference techniques, theorem proving. Expert systems. Artificial intelligence programming languages. P, CSC 290.

CSC 574 Computer Networks.....3 S
Analysis of current and future computer networks with emphasis on the OSI model. Local and wide area networks. TCP/IP, SNA, token ring, ethernet and other common networks will be covered. Protocol and interfaces within and across networks including the OSI layers, routers, bridges and gateway. P, CSC 285.

CSC 576 Computer Graphics3 F
Principles of computer graphics. A study of the algorithms used to generate raster and vector graphics. P, CSC 285, MATH 215 and 125.

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation
are offered either FS or FSSu.

Course Description as written
by department and approved by
the Board of Regents.

P = Prerequisite

| | |
|---|-----------------|
| CSC 581 Systems Analysis | 3 Su |
| Advanced theory and practice of systems analysis. Life cycle concept of information system development. Covers HIPO charts, dataflow analysis, Nasis-Schneiderman charts, decision tables, structured walk-throughs, PERT and CPM, computer selection and evaluation. Modular design and the use of a computer aided software engineering (CASE) tools in the completion of an analysis and design project are also emphasized. P, CSC 325, or consent of instructor. | |
| CSC 592 Topics | 1-3 FSSu |
| CSC 630 Principles Data Base Systems Design | 3 Su |
| Fundamental concepts. Physical data organization. Data models. Data Manipulation languages. Data base design. Application of data base concepts in design and development of data base systems and applications. Design of current commercial as well as research oriented data base systems. Techniques of using data base systems for application security and integrity. Performance evaluation. P, CSC 484. | |
| CSC 705 Design and Analysis of Computer Algorithms | 3 S |
| Design and analysis of algorithms to determine their time and space requirements. The study of efficient algorithms for various computational problems. Analysis of specific algorithms for internal sorting, hashing, and string search. Sorting manipulation of data structures, graphs, matrix multiplication, the Fast Fourier Transform,arithmetical operations and pattern matching. Study and implication of advanced topics on lists,stacks, trees, sets and dynamic allocation. P, CSC 285. | |
| CSC 710 Structural and Design Programming Languages | 3 F |
| Evolution of concepts in programming languages. Data and control abstraction. Run-time effects of binding, scope and extent; structure of ALGOL-like and interpretive languages. Data types, problem areas and implementation models. Control structures, exception handling, concurrency. Functional programming. Examples from representative languages. P, CSC 285. | |
| CSC 720 Theory of Computation | 3 S |
| Formal models of computation. Recursive function theory, computable functions, decidable and enumerable sets, unsolvable programs, correctness of programs, undecidability and incompleteness and complexity of computation. P, CSC 328. | |
| CSC 740 Management Information Systems | 3 SU |
| Computer appreciation course providing technical background for understanding and raising issues treated in other courses. Structure and operation of computer systems. Hardware technology and software development. Tools and methods for developing computer applications. Structure and components of Management Information Systems. Using the computer to support operations of management in planning and control and decision making. MIS development, organization, management and evaluation. Acquiring computer resources. The computer industry and profession. P, CSC 325. | |
| CSC 750 Recent Advances in Parallel Processing | 3 SSU |
| A survey of topics related to the architecture of highly parallel machines, programming and algorithms. Pipelined computers, associative machines, array processors. Interconnection networks. Parallel algorithms. P, CSc 705. | |
| CSC 770 Software Engineering Management | 3 F |
| Management issues arise in the development of software systems. The topics include planning documentation for requirements, design, implementation and testing, cost projection and modeling, documentation standards, code control, tracking of defects management psychology, group interaction and communication, and the management of reviews and walk-throughs. P, CSC 470, or consent of instructor. | |
| CSC 787 Research | 1-9 SU |
| Individualized research. Repeatable P/F. Credits cannot be used on Plan of Study. | |
| CSC 788 Research Report/Design Paper | 1-2 FSSu |
| Conduct an approved research or design project and complete an approved research report or design paper in Computer Science. | |
| CSC 790 Seminar | 1 FS |
| CSC 791 Independent Study | 1-3 FSSu |
| CSC 792 Topics | 1-3 FSSu |
| CSC 798 Thesis | 1-7 FSSu |

Counseling and Human Resource Development

Degree Offered:

M.S. Counseling and Human Resource Development

- Administration of Student Affairs Programs specialization
- Counseling in an Agency Setting specialization
- Counseling in a School Setting specialization
- Counseling in a Student Affairs Setting specialization

Graduate Faculty

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

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

Ruth Harper
Professor
Ph.D., Kansas State University,
1987
Student Affairs

Dianna Knox
Assistant Professor
Ed.D., University of South
Dakota, 1998
Community Counseling

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

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

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

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

Department Head: Associate Professor Jay Trenhaile

For additional information contact:

Mailing address: SDSU Box 507
Wenona Hall — SWE

Phone: 605/688-4190

Fax: 605/688-5929

WWW: <http://www3.sdstate.edu/Academics/CollegeOfEducationAndCounseling/CounselingandHumanResourceDevelopment/Index.cfm>

E-mail: jay.trenhaile@sdstate.edu

For West River Graduate Center information contact:

E-mail: dianna.knox@sdstate.edu

Program Description

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

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

See page 19 for descriptions of available options.

Core Requirements

| | | |
|----------|---|---|
| CHRD 601 | Introduction to Counseling | 3 |
| CHRD 602 | Research and Evaluation in Counseling | 3 |
| CHRD 610 | Developmental Issues in Counseling..... | 3 |
| CHRD 661 | Theories of Counseling..... | 3 |
| CHRD 736 | Appraisal of the Individual | 3 |
| CHRD 742 | Career Counseling and Planning | 3 |
| CHRD 766 | Group Counseling | 3 |
| CHRD 785 | Pre-Practicum..... | 3 |
| CHRD 786 | Counseling Practicum | 3 |

Additional Requirements

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

Counseling in an Agency Setting

| | | |
|----------|--|---|
| CHRD 713 | Administration and Management of Mental Health Organizations..... | 3 |
| CHRD 723 | Counseling the Family | 3 |
| CHRD 755 | Clinical Diagnosis and Treatment Planning | 3 |
| CHRD 794 | Counseling Internship: Agency Setting | 6 |

Counseling in a School Setting

| | | |
|----------|--|---|
| CHRD 721 | School Counseling | 3 |
| CHRD 722 | Administration and Management of School Counseling Programs | 3 |
| CHRD 755 | Clinical Diagnosis and Treatment Planning | 3 |

OR

| | | |
|----------|---|---|
| CHRD 723 | Counseling the Family | 3 |
| CHRD 794 | Counseling Internship: School Setting | 6 |

Counseling in a Student Affairs Setting

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

Additional Admission Requirements

- GRE: Not required
- TOEFL: Department requirement of 525

General Requirements begin on page 16 (Master's Degree).

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

Adjunct/Courtesy/Joint Faculty

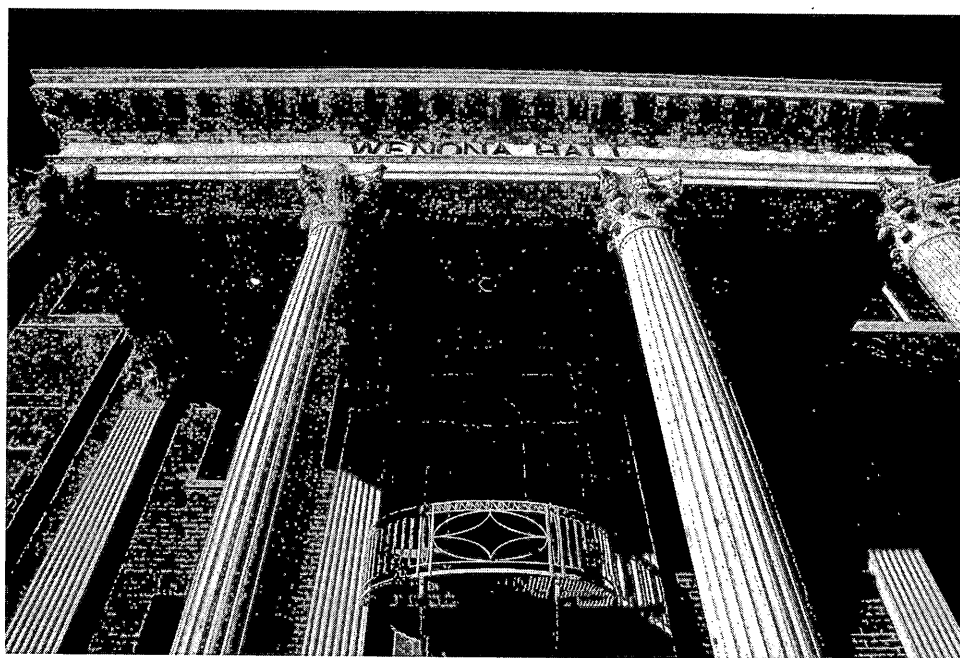
Robert Holmes
Assistant Professor
Ed.D., State University of New York-Albany, 1987
Social Work

Patricia G. Mahon
Assistant Professor
Ph.D., Kansas State University, 1994
Student Personnel Services

Judith Neighbours
Assistant Professor
Ed.D., U.S. International University-San Diego, 1991
Agency Counseling

Kari Scovel
Assistant Professor
Ph.D., University of South Dakota, 2000
Agency Counseling

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



**Requirements for
36-hour program in
Student Personnel:**

CHRD 601
Introduction to
Counseling3

CHRD 602
Research and Evaluation in
Counseling3

CHRD 742
Career Counseling and
Planning3

CHRD 770
Student Development
Theory and Practice3

CHRD 771
Student Personnel
Services3

CHRD 772
Administration and
Leadership in Student
Affairs3

CHRD 794
Internship in Student
Affairs3-6

EDFN 727
Group Processes3

Electives 9 hours (see advisor
for suggestions)

Requirements for Admission to the Program

Step 1

Acceptance by the Graduate School (*see page 6 for additional information*)

If accepted to the Graduate School, those seeking admittance to the Counseling and Human Resource Department will be given a "Special Student Status." The Graduate School Catalog states that a student given this status may not receive Graduate Assistantships, financial aid, or enroll for thesis/dissertation credits. The Graduate Dean will act as advisor for these students.

No more than ten credits under Special Student status may be applied toward a degree. The last statement is important in that it will limit the number of credits students can take in CHRD before being formally accepted.

Step 2

Admission to the Counseling and Human Resource Development Department

a. Prospective students need to make formal application to the CHRD Department. To be considered for formal admission, a file containing the following items must be submitted to the Graduate School office by **April 1** for Fall, and **October 15** for Spring. Other arrangements may be made by contacting the Department Chair.

1) A one page goal statement including **one or more** of the following:

- a. Aspirations related to the field of counseling;
- b. One significant life event that contributed to the development of these aspirations;
- c. The single greatest personal asset that will serve you in realizing your aspirations;
- d. The one personal characteristic or quality that you most need to modify, improve, or change in order to realize your aspirations.

Goal statements that exceed one page will not be considered.

2) A current resume that includes all previous work experience, volunteer service, and education that you feel have contributed to your desire to enter the counseling profession.

3) Two completed CHRD Reference Evaluation Forms, which are available from the department. **These Evaluation Forms are in lieu of the Graduate School Personal Reference Form.**

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

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

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

If admission was not granted and the student has exceeded the 10 hours allowed as Special Student status, the student will be administratively dropped from counselor education courses in which she/he enrolls. However, those students who have not been admitted may want to consider reapplying during the next application period.

Counseling and Human Resource Development (CHRD) Course Offerings

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

- CHRD 530 Gender Issues in Counseling**3 F
CHRD 571 Gerontology Issues in Counseling.....3 Su
CHRD 601 Introduction to Counseling3 FS
 This course provides an introduction to the counseling profession. Historic events, current concerns, responses to societal issues, legal and ethical issues are covered. This course serves as an orientation to the profession.
- CHRD 602 Research and Evaluation in Counseling**3 FS
 The course explores various research designs and methodologies applicable to the field of counseling. The course will emphasize qualitative and quantitative research, critical evaluation of research reports, the use of internet databases for writing a research paper, a thorough understanding of APA format.
- CHRD 610 Developmental Issues in Counseling**3 FSSu
 Provides an understanding of the developmental needs of humans across the life span and adolescents and appropriate intervention methods to be used in counseling.
- CHRD 651 Mental Health and Personality Development**3
 The nature of personality and developmental theory, mental health issues of children, adolescents and adults with emphasis on programs/ strategies for positive mental health. Various personality assessment methods are used. On demand.
- CHRD 661 Theories of Counseling**3 FSSu
 This course takes a practice-based approach to teaching students counseling theory. The course focuses on several major theories, such as Adlerian, Person-Centered, Cognitive-Behavioral, and Family Systems theories. Students are encouraged to understand the utility of theory-based practice. Course work involves applying theory to case studies and developing treatment plans based on the tenets and techniques of the theories studied.
- CHRD 690 Seminar**1-3 FSSu
CHRD 691 Independent Study1-3 FS
CHRD 692 Topics.....1-3 FSSu
CHRD 693 Workshop1-3 FSSu
CHRD 700 Public School Administration.....3
CHRD 706 Counseling the Victim3 SSu
 Study of effective counseling during the crisis and recovery stages of the healing process. Addresses the victim's experience with such issues as developmental concerns, dissociation, post-traumatic reaction, denial and loss of memory about/around the victimization. P, consent.
- CHRD 713 Administration and Management of Mental Health Organizations**3 FSu
 Developing and managing a comprehensive counseling program in schools and agencies. Emphasis on the planning process management, budgeting, organizational structure, supervision, evaluation and consultation. P, consent.
- CHRD 716 Human Resources Management in Business and Industry**3 FS
 This course will focus on the human factors affecting the workplace. Specific topics to be covered will include employee assistance programs, wellness programs, management training, conflict resolution, and career planning.
- CHRD 721 School Counseling**3 FS
 A study of the role and function of a K-12 school counselor including individual counseling, small group counseling, classroom guidance, and consultation with parents, teachers, administrators.
- CHRD 722 Administration and Management of School Counseling Programs**3 SSu
 Developing and managing a comprehensive counseling program in a school setting. Emphasis on the planning process, management, budgeting, organizational structure, supervision, evaluation and consultation.
- CHRD 723 Counseling the Family**.....3 FS
 Counseling the Family is a course which describes the major systems of family therapy and the resulting impact upon the counseling process. An inter-psycho, systematic framework will be formulated as a supplemental way to view familial problems and promote change.
- CHRD 736 Appraisal of the Individual**3 FSSu
 Assessment methods used in studying individuals. Standardized instruments, self-report inventories, observation, case study techniques and other non-standardized assessment tools are used. Recording, analyzing, compiling and interpreting data for use in counseling setting.
- CHRD 742 Career Counseling and Planning**3 FSSu
 Examination of the career development and counseling process through the life span. Assist those intending to counsel at elementary, secondary, higher education and the community/workplace. Explores strategies and resources for career/life planning. Various interest inventories and personality assessment methods are used.

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

- CHRD 755 Clinical Diagnosis and Treatment Planning3**
This course is designed to introduce students to the DSM-IV and to help develop their diagnostic and treatment planning skills. Students will focus on particular disorders and how to effectively treat those disorders in clinical and school settings. Among the disorders and treatment plans that will be covered in class are: depressive disorders, anxiety disorders, substance abuse disorders, schizophrenia, disorders first diagnosed in infancy, childhood and adolescence, as well as personality disorders. P, PSYC 451 within the last five years.
- CHRD 756 Counseling the Addictive Client.....3 FSu**
Counseling the addictive client is a course which describes how one can identify and treat addictive behaviors. Emphasis is on preventive and remedial action.
- CHRD 757 Advanced Testing: Intellectual Assessment.....3 F**
Examines the role, function, and use of intellectual assessment instruments. Emphasis is placed on administration and interpretation of the assessment instruments.
- CHRD 759 Advanced Testing: Personality Assessment3**
Examines the role, function, and use of personality assessment instruments. Emphasis will be placed on the administration and interpretation of personality assessment instruments.
- CHRD 766 Group Counseling3 FSSu**
Processes and procedures used in small group counseling. Students participate in group counseling, facilitate in-class counseling sessions and develop structured units for specific populations. P, CHRD 601, 602, 610, 661. Written permission.
- CHRD 770 Student Development: Theory and Practice3 F**
This course introduces various theories of college student development and includes attention to developmental issues of special populations, such as minority students, international students, and nontraditional students. Research in several areas of student affairs work is emphasized.
- CHRD 771 Student Personnel Services3 S**
Two basic orientations provide the framework for this course: understanding the transition from theory to practice, and becoming a reflective, ethical practitioner. Students will gain a broad knowledge of student affairs functions as well as good overview of current issues in higher education.
- CHRD 772 Administration and Leadership Student Affairs3 S**
Legal cases and precedents having a major impact in student affairs administration are covered in this course. In addition, leadership skills are developed. The differences between public and private institutions as well as among various constituent groups in higher education are included. Equivalent to AHED 772.
- CHRD 785 Pre-Practicum3 FSSu**
This course provides an introduction to basic therapeutic skills and structures compatible with a wide range of theoretical approaches. Students learn to conduct counseling interviews in order to successfully identify clients' conflicts, determine clients' desire for change, explore options and assist client action. This course serves as a foundation of CHRD 786 Counseling Practicum. P, CHRD 601, 602, 610, 661.
- CHRD 786 Counseling Practicum3-5 FSSu**
This course builds on the basic counseling skills learned in CHRD 786 Pre-Practicum and preferably directly follows that course in students' course work. In addition to enhancing basic counseling skills, this course is designed to help students integrate theory and practice. As part of their course work, students are asked to develop theory-based conceptualizations of client concerns. The faculty reserve the right to deny admission to CHRD 786 if they have reason to suspect a student might be unable to provide quality counseling services to clients. A minimum of 20 semester credit hours, including, CHRD 601, 610, 661, 766, and 785, with a grade of B or better in 721 and 786.
- CHRD 787 Group Counseling Practicum3**
Supervised practicum in conducting small group counseling sessions.
- CHRD 788 Research Problems in Counseling and Guidance2 FSSu**
A problem is selected, analyzed, and reported in a form approved by the research advisor. Required of all graduate students in counseling qualifying for Master's degree under Option B. Can be elected under Option C if desired.
- CHRD 791 Independent Study1-3 FSSu**
- CHRD 794 Internship2-6 FSSu**
- CHRD 798 Thesis1-6 FS**

Dairy Science

Degrees Offered:

- Ph.D. Animal Sciences
- Ph.D. Biological Sciences
 - Dairy Science specialization

- M.S. Animal Sciences
 - Nutrition specialization

- M.S. Biological Sciences
 - Dairy Science specialization

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

For additional information contact:

Mailing address: SDSU Box 2104

Dairy Microbiology — SDM

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

E-mail: vikram.mistry@sdstate.edu

Phone: 605/688-4116

Fax: 605/688-6276

Program Description

The Dairy Science Department provides research opportunities leading to M.S. and Ph.D. degrees in both Animal Sciences and Biological Sciences. Contact the department for specific research areas.

Available Options for Graduate Degrees

Master of Science: Option A

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

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options.

Core Requirements

None

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

General Requirements begin on page 16 (Master's Degree) and page 21 (Ph.D.).
Graduate students should consult with their advisor before registering for graduate work.

Dairy Science (DS) Course Offerings

DS 513 Physiology of Lactation3 S

Anatomy, physiology, and biochemistry of mammary glands. Factors affecting quality and quantity of milk. P, VET 223 or equivalent.

DS 552 Environmental Management of Dairy Systems2 S

Discussion of environmental issues concerning dairy farms and dairy manufacturing plants with a focus on nutrient balances, by-product usage, odors, social consequences, and government policies which affect the dairy industry. P, junior standing or consent.

DS 711 Ruminology3 F

Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. P, CHEM 361 and VET 223 or consent.

Graduate Faculty

Robert J. Baer

Professor

Ph.D., University of Georgia,
1983

*Sensory Evaluation of Dairy
Products, Dairy Chemistry*

Rajiv Dave

Associate Professor

Ph.D., Victoria University of
Technology - Melbourne,
Australia, 1998

*Mozzarella Cheese, Probiotics
and Dairy Microbiology*

Ashraf Hassan

Assistant Professor

Ph.D., University of Georgia,
2003

*Cheese Technology, Fermented
Milks, Electron Microscopy*

David Henning

Associate Professor/Alfred
Chair

Ph.D., Oregon State University,
1966

*Microbiology of Dairy
Products, Product Safety*

Arnold Hippen

Associate Professor

Ph.D., Iowa State University,
1997

*Dairy Cattle Nutrition and
Feed Management*

Kenneth F. Kalscheur

Assistant Professor

Ph.D., University of Maryland,
2002

*Nutrient Metabolism and
Utilization in Dairy Cattle*

Vikram Mistry
 Professor
 Ph.D., Cornell University, 1986
 Membrane Processing, Cheese
 Technology, Dairy Chemistry

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

| | |
|--|------------------|
| DS 722 Advanced Dairy Microbiology | 3 S |
| Role of microorganisms in manufacture and spoilage of dairy products. Emphasis on starter culture technology. P, DS 301 or MICR 311. Corequisite course: DS 722L. | |
| DS 722L Advanced Dairy Microbiology Lab | 0 S |
| DS 731 Laboratory Techniques in Dairy Science | 3 F |
| Research design, laboratory techniques, and data management and presentation in Dairy Science. Laboratory procedures include photometry, gas chromatography, and microbiological (aerobic and anaerobic) assays. | |
| DS 791 Independent Study | 1-4 FSSu |
| DS 798 Thesis | 1-7 FSSu |
| DS 898D Dissertation-PhD | 1-12 FSSu |

Biological Sciences (BIOS) Course Offerings

| | |
|---|-----------------|
| BIOS 790 Seminar | 1 FS |
| BIOS 792 Topics | 1-6 |
| BIOS 798 Thesis | 1-7 FSSu |
| BIOS 890 Seminar | 1 FSSu |
| BIOS 898D Dissertation-PhD | 1-7 FSSu |

SDSU is one of the few universities in the U.S. with a traditional Dairy Science Department. It is equipped with excellent laboratories, a dairy processing plant which manufactures fluid milk, cheese, butter, ice cream, and other products; and a dairy production research and training facility where a herd of 300 Holstein and Brown Swiss cattle for teaching and research is maintained. Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment in Station Biochemistry, Veterinary Science, and Nutrition and Food Science Departments are also available. Graduate students accepted into the program will have opportunities to utilize these facilities to develop basic and/or applied research programs in dairy product processing, microbiology, chemistry, food safety, dairy cattle nutrition, metabolism, breeding, ruminal microbiology, immunology, and management, while interacting with well-qualified faculty.

The SDSU Dairy Science Department, in collaboration with the Food Science and Nutrition Department at the University of Minnesota, is a National Dairy Foods Research Center partially supported by the National Dairy Research and Promotion Board. This provides graduate students in the manufacturing area a unique opportunity to be involved with current issues and research needs.

Economics

Degrees Offered:

M.S. Economics

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

J.D./M.S. Economics (cooperatively with University of South Dakota)

Department Head: Professor Richard Shane

Graduate Coordinator: Assistant Professor Gary Taylor

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB

WWW: www3.sdstate.edu/Academics/CollgeofAgricultureAndBiologicalSciences/Economics/Index.cfm

E-mail: gary.taylor@sdstate.edu

Phone: 605/688-4141

Fax: 605/688-6386

Program Description

The graduate curriculum is designed to prepare students for professional placement or further graduate study. Emphasis is placed upon development and application of analytical skills. Students can design an individualized program within any of four areas of concentration: business economics; agricultural business; general economics; or, agricultural economics. All students take a core of applied theory and analysis courses and complete their individual program. An accelerated program is offered that allows exceptional students to start their graduate studies while completing their undergraduate degree. The combined degree program can be completed in five years. Many courses are offered in the evening. A limited number of research and teaching assistantships are available for qualified students. The Economics Department also offers courses that satisfy requirements in the Master of Science in Industrial Management program.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Accelerated

See page 19 for descriptions of available options. Individuals interested in the Accelerated option should contact the graduate coordinator for application requirements.

Core Requirements

| | | |
|----------|-------------------------|--------|
| ECON 703 | Advanced Macroeconomics |3 |
| ECON 704 | Advanced Microeconomics |3 |
| ECON 705 | Econometrics |3 |

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

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

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

Graduate Faculty

Dwight Adamson
Associate Professor
Ph.D., Washington State
University, 1988
Macroeconomics; Statistics

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

Carol Cumber
Professor
Ph.D., South Dakota State
University, 1994
Business Management and
Business Policy

Thomas L. Dobbs
Professor
Ph.D., University of Maryland-
College Park, 1969
Sustainable Agriculture;
Natural Resource Economics;
Agricultural Production

Scott Fausti
Professor
Ph.D., University of Illinois,
1991
Macroeconomics;
Mathematical Economics

Larry Janssen
Professor
Ph.D., University of Nebraska-
Lincoln, 1978
Agricultural Finance;
Agricultural Policy

Han J. Kim
Professor
Ph.D., Oregon State University,
1969
Econometrics, Operations
Research

Nicole Klein
Associate Professor
Ph.D., Kansas State University,
1996
Management, Marketing

Charles Lamberton
Professor
Ph.D., Iowa State University of
Science and Technology, 1975
Microeconomic Theory;
Mathematical Economics;
Finance

George Langelett
Assistant Professor
Ph.D., University of Nebraska,
2000
Economic Theory, Marketing

Burton Pflueger
Professor
Ph.D., University of Illinois,
1985
Financial and Farm
Management

Bashir Qasmi
Associate Professor
Ph.D., Iowa State University,
1986
Agricultural Marketing

Joseph M. Santos
Associate Professor
Ph.D., Rutgers University, 1996
Macroeconomics, Money and
Banking

Richard Shane
Professor
Ph.D., Washington State
University, 1978
Agricultural Economics

John Sondey
Professor
Ph.D., Washington State
University, 1989
Marketing

Gary Taylor
Assistant Professor
Ph.D., Oklahoma State
University, 1995
Agricultural Economics and
Business

John Trierweiler
Professor
Ph.D., University of Nebraska,
1970
Business Economics

General Requirements begin on page 16 (Master's Degree).

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

J.D./M.S. in Economics. A cooperative program between the University of South Dakota School of Law and South Dakota State University Department of Economics. The two institutions mutually accept up to nine semester hours of transferred credit. Students design their academic program in Economics to best suit their career goals and interests. For details, consult the USD Law School or SDSU Economics Department.

Accounting (ACCT) Course Offerings

ACCT 506 Accounting for Entrepreneurs3

Accounting concepts and practices for entrepreneurs/small business owners. Emphasis given to the use of accounting tools to solve small business problems.

ACCT 592 Topics1-4

Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.

Agricultural Economics (AGEC) Course Offerings

AGEC 521 Farming and Food Systems Economics3 S

Economic concepts and methods for analyzing farming system and food system alternatives, investments, and issues. Includes economic feasibility analysis methods for assessing potential farm/ranch, value-added, and other food enterprises. Economic structure and organization of food systems in U.S. and other parts of the world are examined. P, senior standing, AGEC 271 or ECON 201.

AGEC 571 Advanced Farm and Ranch Management.....3 FS

Leasing arrangements, capital investment, computerized accounting and budgeting. Linear programming as a tool for planning and organizing the farm business. P, senior standing, AGEC 271, ECON 301, or consent.

AGEC 591 Independent Study1-3

AGEC 592 Topics1-4

AGEC 593 Workshop1-3

AGEC 621 Advanced Production Economics3

Economic theory and quantitative techniques used in the analysis of agricultural production decisions; estimation of production functions; determination of optimal input and output combinations; and the impacts of risk on production decisions. P, AGEC 271 or ECON 201.

AGEC 630 Advanced Agricultural Marketing and Prices3 F

Economic theory and quantitative techniques used in analysis of agricultural market problems, construction of economic models, statistical estimates of supply and demand, and price forecasting. P, AGEC 354, ECON 301, ECON 423, or consent.

AGEC 691 Independent Study1-3 FSSu

Business Administration (BADM) Course Offerings

BADM 506 Accounting for Entrepreneurs3

Accounting concepts and practices for entrepreneurs/small business owners. Emphasis given to the use of accounting tools to solve small business problems.

BADM 576 Marketing Research3 FS

This course provides an in-depth study of the primary methodologies of marketing research. Emphasis is placed on collecting, analyzing, interpreting and presenting information for the purpose of reducing uncertainty surrounding marketing and management decisions.

BADM 593 Workshop1-3

Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

Economics (ECON) Course Offerings

- ECON 503 History of Economic Thought.....3 FSu**
 History of economic thought surveys the historical development of economic theory from ancient to modern times. The writings of Aristotle, Adam Smith, Marx, and Marshall provide part of the diverse menu of economic thought.
- ECON 520 Economics of the Public Sector3**
 Governmental operations, policies, and revenues as related to employment, productivity and economic welfare. Alternatives that would affect social services, education, commerce and trade, fiscal policies, and quality of life. P, ECON 201 or consent.
- ECON 531 Managerial Economics.....3 Su**
 Applications of microeconomic theory, statistics and other quantitative methods to analysis and solution of decision making problems confronted by managers of agribusiness, commercial and manufacturing enterprises. Topics include economic analysis of demand, production, cost, market structure, government regulation, risk, and capital budgeting. P, ECON 301, MATH 121, STAT 281, or equivalent.
- ECON 540 Economics of the International Sector3 S**
 International flow of trade and balance of payments. Monetary and fiscal policies. Trade controls and their effect upon the agricultural and domestic economies. Significant current developments in trade and finance. P, ECON 201, 202, 330 or consent.
- ECON 550 Industrial Organization3 FS**
 Industrial organization studies how different industry structures influence firm performance and business practices, and how government policies affect competitiveness and the economy.
- ECON 560 Economic Development3 F**
 Developing and developed national economies. Factors impacting economic development. Role of public policies in development. Agricultural and rural development issues emphasized. P, ECON 201, 202, or consent.
- ECON 572 Resource and Environmental Economics.....3 S**
 Resource and environmental economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on environmental economics including the problems of pollution, population, and economic growth. Methods for evaluating projects and programs are considered.
- ECON 576 Marketing Research3 S**
 (Offered on demand) Marketing problems confronting agribusinesses and businesses. Descriptive and analytical techniques in a research methods approach. Marketing research techniques.
- ECON 591 Independent Study1-3 F**
- ECON 593 Workshop1-3**
- ECON 601 Economic Study in Industrial Management3 FS**
 Intensive study of economic choice and value theory, financial statement structure and analysis, and financial management. Not open to Economics majors.
- ECON 610 Financial Management3 FS**
 Advanced techniques for managing working capital, capital budgeting, analysis of financial structure and cost of capital, valuation, financial planning and control. P, BADM 310, STAT 281, or consent.
- ECON 624 Advanced Mathematical Economics.....3 F**
 Integral calculus, differential and difference equations, optimal control and other methods used to analyze economic dynamics, investment, growth and other advanced topics in economics. P, ECON 428.
- ECON 653 Advanced Market Research3 Su**
 Strategic marketing and decision making with emphasis on utilizing both qualitative and quantitative techniques as well as marketing models. P, ECON 370, STAT 281.
- ECON 660 Operations Management3 FS**
 Product planning, demand forecasting and management, capacity planning, scheduling, inventory planning and timing, materials management, quality, work standards and measurement. P, BADM 360, ECON 301, STAT 281.
- ECON 691 Independent Study1-3 FS**
- ECON 692 Topics1-4 F**
- ECON 703 Advanced Macroeconomics3 S**
 Comparative statics analysis of aggregate income determination; comparison of alternative stabilization policies; modeling of investment and consumption behavior, dynamic analysis of optimal growth. P, ECON 428 or consent.

Evert Van der Sluis
 Associate Professor
 Ph.D., University of Minnesota,
 1993
International Economics
Agricultural Economics

Jason Zimmerman
 Associate Professor
 Ph.D. Purdue University,
 1998
Microeconomic Theory

| | |
|--|-----------------|
| ECON 704 Advanced Microeconomics | 3 F |
| Rigorous analysis of topics in microeconomics including: methodology of economic science, economic choice, production, resource allocation, distribution, welfare economics, and general equilibrium. P, ECON 428 or consent. | |
| ECON 705 Econometrics | 3 S |
| Practice in the application of micro-and macro-economic theory to solutions of real and hypothetical problems. Selection and use of appropriate statistical and other analytical methods suitable for complex problems. P, ECON 423, ECON 428. | |
| ECON 782 Personnel and Labor Relations | 3 FSu |
| Labor relations, negotiation and arbitration; pay and benefits; hiring, promotion and termination policies; use of testing in the workplace. P, BADM 360 or consent. | |
| ECON 788 Research Paper | 1-2 FSSu |
| ECON 792 Topics..... | 1-4 FSSu |
| ECON 798 Thesis | 1-7 FSSu |



Educational Leadership

Degrees Offered:

M.Ed. Curriculum and Instruction

- Adult and Higher Education specialization
- Career and Technical Education specialization
 - ▲ Agricultural emphasis
 - ▲ Instructional Technology emphasis
- Elementary or Secondary specialization
 - ▲ Computer Education emphasis
 - ▲ Content Areas:
 - Biology emphasis
 - Chemistry emphasis
 - Mathematics emphasis
 - Physics emphasis
 - Others to be planned with advisor
 - ▲ English as a second language emphasis
 - ▲ Middle School emphasis
 - ▲ Reading emphasis

M.Ed. Educational Administration

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

Department Head: Associate Professor Kenneth S. Rasmussen

Graduate Coordinator: Associate Professor Kenneth S. Rasmussen

For additional information contact

Mailing address: SDSU Box 507

Wenona Hall — SWE

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

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

Phone: 605/688-6365

Fax: 605/688-6074

For West River Graduate Center information contact:

E-mail: dianna.knox@sdstate.edu

Program Descriptions

Curriculum and Instruction

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

Educational Administration

This major is designed to provide the basic professional preparation for those who expect to become qualified administrators in schools where certification is required, and for other institutions, businesses, industries and service-orientated agencies where an administrative program is of value. The South Dakota State Board of Education requires four years of teaching experience for administrator certification. The emphases above are presently available.

Available Options for Graduate Degrees

Master of Education: Option B

Option C

See page 19 for descriptions of available options.

Core Requirements

Educational Administration, see sidebars on pages 72-73

Curriculum and Instruction, see sidebars on pages 74-75

Graduate Faculty

Tim Andera

Associate Professor

*Ed.D., Illinois State University,
1994*

*Career and Technical
Education*

R. L. Erion

Professor

*Ph.D., Texas A & M University,
1985*

*Research, Computers,
Assessment*

Michael L. Garnos

Associate Professor

*Ed.D., University of Northern
Colorado, 1993*

Educational Administration

Lonell Moeller

Professor

*Ph.D., Iowa State University of
Science & Technology, 1981*

*Agricultural Education, CTE,
Computers*

Peggy Gordon Miller

President/Professor

Ed.D., Indiana University, 1975
Leadership, Teaching, Reading

Kathryn Penrod

Professor

Ph.D., Cornell University, 1984
Adolescence, Teaching,

Curriculum

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

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

Lawrence Rogers
Professor
Ph.D., University of Nebraska,
1975
Foundations, Curriculum,
Social Studies

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

Hank Rubin
Professor
Ph.D., Northwestern University,
1980
Educational Leadership

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

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

Adjunct/Courtesy/Joint Faculty

Mark A. Baron
Associate Professor
Ph.D., University of Alabama,
1991
Strategic Planning

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

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

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

Applicants must provide a resumé, goal statement, and two letters of professional reference to the Graduate School. Once all material is received, it is reviewed by the Department. Students are assigned an admission status of “unconditional,” “conditional” or “not admitted.”

General Requirements begin on page 16 (Master’s Degree).

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

Agricultural Education (AGED) Course Offerings

- AGED 591 Independent Study**1-3 FSSu
- AGED 690 Seminar**1-2 Su
- AGED 706 Adult Education in Agriculture**2
Selected areas of Agricultural Education including special investigation, reports, and discussion.
- AGED 707 Supervised Occupational Experiences and Student Groups**2 Su
Emphasizes relationships of occupational experience and vocational student organization in agriculture to instructional programs; needs, scope, techniques and materials in developing and improving these programs.
- AGED 776 Curriculum in Agricultural Education**2 Su
For teachers, administrators and supervisors of vocational agriculture/agribusiness programs at secondary, post-secondary and adult levels; principles and procedures in course building, courses of study, and curriculum. P, graduate student in Agricultural Education. Equivalent to CTE 776.
- AGED 788 Research Problems in Agricultural Education**.....2 FSSu
A problem is selected, analyzed, and reported in form approved by the research advisor. Required of all graduate students in education qualifying for the degree under Option B. Can be elected under Option C, if desired.

Adult Higher Education (AHED) Course Offerings

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

Career and Technical Education (CTE) Course Offerings

- CTE 519 Methods of Teaching3 S**
 This course will feature lesson presentation and methods of delivering instruction in vocational technical education. The course is designed for individuals who are presently teaching in the vocational technical education field. Content builds upon existing knowledge of the program participants in order to increase comprehension of the field of vocational technical education. Instructional techniques appropriate for vocational technical education are developed based on the models identified in competency-based or performance-based philosophy. Participants are actively involved in current teaching assignments which creates an enormous opportunity for reflection and debate.
- CTE 520 Entrepreneurship in Career Education3 FSU**
 This course is designed to help educators in all areas of vocational education to incorporate basic concepts of entrepreneurship into the curriculum. Topics include: small business plans, government regulations, site locations, record keeping, financing, legal consideration, business promotions, managing human resources, small business contributions to the economy and economic development, educational resources for entrepreneurship, placement of the entrepreneurship concept in vocational education programs and review of basic concepts related to entrepreneurship such as business ownership options and entrepreneur characteristics.
- CTE 525 Development of Career and Technical Education Thought and Practices3 FSSu**
 Philosophy, origins, and development of vocational, technical and practical arts, education programs at adult, post-secondary, secondary, and pre-vocational levels. Current and emerging principles, practices, and issues are stressed.
- CTE 530 Cooperative Education Coordination Techniques.....3 FSSu**
 This course emphasizes the organization and coordination of cooperative work experience in vocational education programs: agriculture, marketing education, health occupations, family consumer sciences education, business education, and trade and industrial. Emphasizes strategies and techniques for coordinating classroom instruction with on-the-job work experience. Topics include: program organization, coordinator responsibilities, student selection, placement, advisory councils, public relations, training stations, training plans, legal aspects, and program and student evaluation.
- CTE 540 Curriculum Design Career Education3 FSU**
 This course addresses principles in developing vocational education curriculum research, development, implementation, and evaluation at the secondary, post-secondary and adult levels. Concepts include: coordination and organization of vocational education curriculum, curriculum design models (including competency-based education and applied academics); trends in state and national programs; long-range planning; articulation between secondary, post-secondary and 4-year programs.
- CTE 563 Technical and Industrial Experiences1-4 FSSu**
 This course is designed for Career and Technical Educators. The purpose of this course is to aid the educator in staying current with new technologies and methodologies occurring in business and industry. Approval is required from the Coordinator of Career and Technical Education (CTE) at least two weeks prior to the educational experience. To receive graduate credit a student will need to complete a paper reviewing the educational experience. Complete details on receiving undergraduate and graduate credit for the Technical and Industrial Experiences course are included in the application materials. (Appropriate forms and related paperwork can be acquired from the Coordinator of CTE).
- CTE 591 Independent Study1-4 FS**
- CTE 592 Topics1-3 FSSu**
- CTE 598 Cooperative Education Coordination Techniques3 Su**
- CTE 700 Technology in Career Education3**
 Presents technology-based alternatives to traditional standard delivery group instruction practices. Emphasizes computer-assisted and computer-managed instructional concepts, interactive video, interactive telecommunications, and other distance learning methods. Also addresses individualized learning approaches to education. P, Baccalaureate degree or consent. Computer background.
- CTE 720 Entrepreneurship in Career Education.....3 F**
- CTE 731 Administration and Supervision of Career Education3**
 Organization, administration of career and technical education and the practical arts at all levels. Local-state-federal relationships in administration and supervision. State plan development, reimbursement plans and procedures, projected activities, and program standards. Principles of effective supervision and evaluation applicable to vocational-technical education. P, consent.
- CTE 751 Curriculum in Home Economics Education.....2**
- CTE 761 Evaluation in Home Economics2**

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

Bruce Crosswait
 Assistant Professor
 Ed.D., University of Kansas,
 1967
 Educational Administration

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

Michael P. Reger
 Assistant Professor
 Ph.D., Ohio State University,
 1983
 Leadership, Student Affairs,
 Administration

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

Curt Voight
 Assistant Professor
 Ed.D., University of South
 Dakota, 1996
 Educational Leadership,
 Principalship

Educational Administration with Specialization in Elementary or Secondary Education*

EDAD 700
Introduction to Educational Administration3

EDAD 707
Principalship2

EDAD 708
Elementary Principalship Practicum.....1

OR

EDAD 709 Secondary
Principalship Practicum...1

EDAD 715 Supervision3

EDAD 730 School Finance....2

EDAD 735 School Law3

EDAD 789 Internship.....2

EDER 761 Informational Literacy.....3

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

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

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

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

SEED 748 Secondary Curriculum Practicum1

OR

ELED 748 Elementary Curriculum Practicum.....1

EDFN 750 Educational Technology.....3

EDFN 782 Capstone Seminar1

**Meets requirements for a principalship endorsement on a South Dakota Teaching Certificate. Also requires at least four years experience as a certified teacher at the level for which the endorsement is sought.*

CTE 776 Curriculum in Agricultural Education2
For teachers, administrators and supervisors of career and technical agriculture/programs at secondary, post secondary and adult levels; principles and procedures in course building, courses of study, and curriculum. Crosslisted with AGED 776.

CTE 788 Research Problems1-2 FSSu
Significant action research in an area related to the student's technical specialty. A problem is selected, analyzed and reported in a form approved by the research advisor. Required of all graduate students in education qualifying for the Master's of Education degree under the Research Option.

CTE 790 Seminar1-3 FS

CTE 791 Independent Study1-3 FSSu

CTE 792 Topics1-3 FSSu

CTE 794 Internship1-3 SSu

CTE 798 Thesis in CTE5

Educational Administration (EDAD) Course Offerings

EDAD 692 Topics1-3 F

EDAD 695 Practicum1-3 F

EDAD 700 Introduction to School Administration3 FSu
A broad overview of administration. Will examine administration as an applied science and analyze the organizational, political, and human relations systems as forces affecting administration. Specific topics will include conflict resolution, crisis management, planning, staff development, evaluation, and communications theory.

EDAD 707 The Principalship2 FSu
Emphasis is on the principal as an instructional leader with major topics focusing on staff recruitment, supervision and evaluation, student services, rights and responsibilities, research on effective schools, parent community relationships and the principal's role in dealing with current issues facing our schools. Corequisite courses: EDAD 709 and 709.

EDAD 708 Elementary Principalship Practices1 FSu
Field-based problem-centered experience. Corequisite course: EDAD 707.

EDAD 709 Secondary Principalship Practices1 FSu
Field-based problem-centered experience. Corequisite course: EDAD 707.

EDAD 710 Elementary School Administration.....3 Su

EDAD 711 Secondary School Administration3 FSu

EDAD 715 Supervision3 SSu
A study of leadership styles and the effects different styles have on motivating people. Emphasis on utilizing and developing human potential.

EDAD 718 Current Issues in Education3 FSSu
Analysis of current trends and issues in education. Focus on the change process in educational and social settings.

EDAD 725 Education in a Pluralistic Society.....3 FSSu
Focus on school issues surrounding pluralism in a democratic society. This course relates to working with the diversity of populations within our schools. This diversity is represented in our schools by the multi-cultural nature of American society, and differences associated with exceptionality, gender, age, religion, and socio-economic status. The course will focus on preparing educators to confront issues relating to pluralism and diversity and to work productively in a variety of settings.

EDAD 730 School Finance2 SSu
Develop an understanding and working knowledge of school finance theory and practice. Emphasis will be placed on the school finance reform movement in recent years.

EDAD 732 School Buildings and Grounds2
Management, care and operation of school plant. Needs and evaluation of existing facilities, new buildings and remodeling. Emphasis on facility planning at school system and building levels. Not a technical course in design and materials.

EDAD 735 School Law3 SSu
Legal foundations of elementary and secondary education in our society; legal powers and relationships of school boards, administrators, teachers, parents (guardians) and students. Emphasis will be placed upon the values underlying these foundations, powers and relationships.

| | |
|--|-----------------|
| EDAD 788 Research Problems in Educational Administration | 2 FSSu |
| A problem is selected, analyzed, and reported in form approved by the research advisor. Required of all graduate students in education qualifying for the degree under Option B. Can be elected under Option C if desired. | |
| EDAD 790 Seminar | 1-3 FSSu |
| EDAD 791 Independent Study | 1-3 FSSu |
| EDAD 792 Topics | 1-3 FS |
| EDAD 793 Workshop | 1-3 Su |
| EDAD 794 Internship | 1-6 FSSu |

Education Evaluation and Research (EDER) Course Offerings

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

Education Foundations (EDFN) Course Offerings

| | |
|---|--------------|
| EDFN 527 Middle School: Philosophy and Application | 2 FS |
| Group processes and issues in affective education at the middle school/junior high level. Topics for study are group processes, interdisciplinary team planning, cooperative learning, student advisory programs, self-esteem building, and student/teacher relationships. P, admitted to teacher education program, junior standing, an adolescent psychology/development course of 3 credits. | |
| EDFN 528 Middle School Curriculum and Instruction | 3 SSu |
| The essential methods and materials of judging high/middle school instruction. Methods and topics included are the middle school concept, team teaching, mastery learning, exploratories, classroom management, and grouping strategies. Representative curriculum materials, appropriate to the transescent learner, are examined and utilized in multi-disciplinary team planning projects. P, admitted to teacher education program, junior standing, adolescent developmental/psychology course of 3 credits. | |
| EDFN 551 Curriculum and Instruction in Gifted Education | 3 |
| Examines curriculum methods and materials for gifted and talented children and youth. Students will be exposed to various programming models, IEP development, differentiated curricular concepts, as well as skills in self-directed learning. | |
| EDFN 552 Foundations of Reading | 3 F |
| Description of normal process of development in reading skills and techniques which may be used in remedying deviations which hinder readers in speed or comprehension. Recommended for graduate students in Language Skills and Communications programs. | |
| EDFN 558 Literacy Assessment and Remediation | 3 SSu |
| General nature of causes of reading disability; principles of diagnosis and use of instruments; basic principles of individual remediation; case studies; evaluation of progress of the disabled reader; adaptation of techniques to classroom. P, EPSY 302. | |
| EDFN 560 Applied Linguistics for Teaching English as a Second Language | 3 FSu |
| The study of social and linguistic structures which undergird different discourse forms. Emphasis will be on discourse forms which are particularly important for full participation in U.S. culture such as the rhetoric of public and school interactions. Crosslisted with LING 460-560. Equivalent to LING 560. P, LING 203. | |

Educational Administration with Specialization in Adult and Higher Education

| | | |
|-----------------|--|----------|
| AHED 711 | Assessment and Program Design | 3 |
| AHED 720 | Principles of Postsecondary Education | 3 |
| CHRD 771 | Student Personnel Services | 3 |
| EDAD 715 | Supervision | 3 |
| EDAD 735 | School Law | 3 |

OR

| | | |
|-----------------------|---------------------------------------|----------|
| EDAD 730 | School Finance | 2 |
| HDFS 614 | Adult Development Theory | 3 |

OR

| | | |
|-----------------|--|------------|
| AHED 794 | Internship | 2-6 |
| CHRD 770 | Student Development Theory and Practice | 3 |
| EDER 761 | Informational Literacy | 3 |
| EDFN 725 | Education in a Pluralistic Society | 3 |
| EDFN 782 | Seminar: Capstone | 1 |

Educational Administration with Specialization in Career and Technical Education

| | | |
|-----------------|--|----------|
| CTE 525 | Development of CTE Thought and Practice | 3 |
| CTE 540 | Curriculum Design in CTE | 3 |
| CTE 782 | Seminar in CTE | 1 |
| EDAD 700 | Introduction to School Administration | 3 |
| EDAD 715 | Supervision | 3 |
| EDER 761 | Informational Literacy | 3 |
| EDFN 725 | Education in a Pluralistic Society | 3 |

Curriculum and Instruction with Specialization in Elementary or Secondary Education

EDER 711
Educational Assessment....3

EDER 761
Informational Literacy.....3

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

EDFN 730
Current Issues in Education3

EDFN 745
Effective Teaching.....3

EDFN 747
Curriculum: Theory into Practice.....3

SEED 748
Secondary Curriculum Practicum.....1

OR

ELED 748
Elementary Curriculum Practicum.....1

EDFN 750
Educational Technology ...3

EDFN 782
Capstone Seminar.....1

EPSY 740
Advanced Educational Psychology.....3

Curriculum and Instruction with Specialization in Adult and Higher Education

AHED 711
Assessment and Program Design.....3

AHED 720
Principles of Postsecondary Education.....3

AHED 755
Principles of College Teaching3

AHED 794
Internship2-6

EDER 761
Informational Literacy.....3

EDER 711
Educational Assessment ...3

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

EDFN 727
Group Processes.....3

EDFN 782
Seminar: Capstone1

HDFS 614
Adult Development Theory.....3

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

EDFN 562 Teaching Language Arts for English as a Second Language Across the Curriculum.....3 FSSu
The teaching of reading and writing to students with limited English proficiency. Emphasis will be on reading and writing as it pertains to performance in educational and public settings. P,EdFn 460 or 560.

EDFN 563 Methods of Teaching English as a Second Language3 FS
Develops the central concepts, tools of inquiry, and structure of teaching English to students with limited English proficiency. Includes the evaluation of instructional processes, learning resources, curriculum, and programs. Emphasis will be on teaching students to use English in educational and public settings. P, EDFN 460 or 560.

EDFN 590 Seminar.....1-3 SSu

EDFN 592 Topics1-3 FSSu

EDFN 598 Comparative Education3 Su

EDFN 605 Computers in the Classroom2
Examines the relationship between teaching methods, learning theory and the place of the computer in the classroom; covers such topics as the data processing cycle, an overview of computer hardware and software, computer vocabulary, career opportunities, and some programming. P, EPSY 302 or consent.

EDFN 648 Learning Styles3
Learning styles deals with research findings about learning styles and teaching styles. It examines learning style inventories, and explores how teachers can adapt instruction to promote student interest and success, based on the students varying approaches to learning. The course is appropriate for all educated personnel. Alternate years.

EDFN 691 Independent Study1-3 FSSu

EDFN 700 Exceptional Learners3 Su
Assist regular classroom teachers to better understand and more effectively teach students with special learning needs. Focuses on learning disabilities, mental retardation, and behavior disorders. Also includes short sections regarding hearing impairments, visual impairments, orthopedic or health impairments, speech/language disorders, and the gifted. Regular classroom curricular adaptations and modifications are included.

EDFN 727 Group Processes3 SSu
A survey of small group constructs, research, and principles of application. Emphasis on learning methods and skills of group observation as well as developing knowledge of group roles and dynamics. Members will learn experimentally about groups by participating, observing and analyzing opportunities to experience their own behaviors and styles as they deem appropriate.

EDFN 745 Effective Teaching: Theory Into Practices3 FSSu
Approaches instruction from the perspective of Effective Teaching Research integrated with a focus on thinking skills. Students study various instructional models, focus on selection and implementation of appropriate strategies and consider other classroom issues related to effective teaching.

EDFN 747 Curriculum: Theory and Practice2 FSSu
A study of the nature and principles of curriculum and curriculum development in schools. Process of curriculum change, development and evaluation will be examined. Roles of teachers, administrators, students and the public in curriculum change will be studied. Corequisite courses: EDEL 748, SeEd 748.

EDFN 750 Technology in Education3 FS
This course provides an advanced grounding in the educational uses of computing and communications technology. It includes integration of technology into the classroom, distance education, multimedia production, and school management systems.

EDFN 751 Teaching Reading Across Disciplines3 FSu
Examines the latest research on how readers comprehend and learn from written tests, and the classroom applications of this research. Intended for teachers of content subjects (science, English, math, history, etc.) in grades 4 through the early years of college.

EDFN 754 Clinical Practice in Reading.....1-3 FSSu
Supervised experience in utilizing best techniques and materials to effect desirable solution to reading difficulties; practical experience in writing case studies, in diagnosing reading disability. Proposing effective remediation, keeping records and in evaluating progress of student.

EDFN 790 Seminar1-3 FSSu

EDFN 792 Topics1-3 F

EDFN 794 Internship.....1-6 FSSu

Educational Psychology (EPSY) Course Offerings

- EPSY 526 Psychology of the Early Adolescent Learner3 FSSu**
To guide students in the personal construction and application of an early adolescent development knowledge base. The learning environment of the early adolescent/middle school student will be the context of study in this course. A theoretical base related to intellectual development, identity development, and social development will be used as a basis for exploring the benefits and needed changes in current educational settings of the 10-15 year old. Students will study the impact of various influences on the healthy and positive development of the learner. Students will apply the knowledge base to evaluate and critique personal experiences, issues, and programs designed for early adolescent learners. P, admitted to education program. Junior stand or graduate student.
- EPSY 542 Serving Students With Learning Disabilities3**
Examines the identification and assessment of learning disabilities in students. Provides a variety of teaching and learning strategies. Includes both federal and state laws, rules, and guidelines.
- EPSY 550 Gifted and Talented3**
Overview of the Gifted and Talented field; explores the development of gifted/talented children as well as identification and curriculum adaptations for meeting the needs of these children; also focuses on issues surrounding the parents and families of gifted and talented as well as program development and evaluation.
- EPSY 552 Enhancing Creativity3**
Explores the various dimensions of creativity, including what it is, how it develops, how to teach creative students, and how to evaluate creative works. Emphasis will be on how to work with students who already exhibit significant creative abilities as well as how to foster creativity with all students.
- EPSY 723 Adolescent Psychology3**
- EPSY 740 Advanced Educational Psychology3 FSu**
A study of theories of learning. The goal of the course is for each student to gain insight into their own beliefs about how learning occurs.
- EPSY 761 Testing Practices: Intellectual Assessment2 F**
A psychological testing practicum that focuses on intellectual assessment. The student learns to select, administer, score, and interpret the Wechsler scales as well as write a psychological report. P, CHRD 736, CHRD 755, and consent of instructor.
- EPSY 762 Testing Practices: Personality Assessment3 SSu**
A psychological testing practicum that focuses on objective personality assessment. The student learns to select, administer, score, and interpret the MMPI and PIC as well as write a psychological report. P, CHRD 736, CHRD 755, and consent of instructor.
- EPSY 763 Testing Practices: Projective Techniques2 Su**
A psychological testing practicum that focuses on projective techniques. The student learns to select, administer, score, and interpret the TAT, H-T-P and various other projective techniques as well as write a psychological report. P, CHRD 736, CHRD 755, and consent of instructor.

Elementary Education (ELED) Course Offerings

- ELED 593 Workshop1-3 SSu**
- ELED 748 Elementary Curriculum Practices1 FSSu**
Field-based problem-centered experience. Corequisite course: EDFN 747, SEED 748.
- ELED 773 Elementary School Curriculum3 Su**
A study of the nature and principles on curriculum development in the elementary schools. Processes of curriculum change, development and evaluation will be examined. Roles of teachers, administrators, students and the public in curriculum change will be studied.

Indian Education (INED) Course Offerings

- INED 511 South Dakota Indian Studies3 F**
Provides prospective teachers and those interested in Indian people with a basic knowledge of Indian heritage and culture. Emphasis on the Dakota Indians. Crosslisted with AIS 421. (Fulfills Teacher Education requirement.)

Curriculum and Instruction with Specialization in Career and Technical Education

<http://learn.sdstate.edu/cte>

- EDER 761**
Informational Literacy.....3
- EDFN 725**
Education in a Pluralistic Society.....3
- EPSY 740**
Advanced Educational Psychology.....3
- OR**
- HDFS 614**
Adult Development Theory.....3
- CTE 525**
Development of CTE Thought and Practice.....3
- CTE 530**
Cooperative Education Coordination Techniques...3
- CTE 540**
Curriculum Design in CTE.....3
- CTE 782**
Seminar in CTE.....1

Curriculum and Instruction with Specialization in Mathematics and Science Education

- EDER 761**
Informational Literacy.....3
- EDFN 725**
Education in a Pluralistic Society.....3
- SCST 601**
Science in Our World.....7
- SCST 602**
Modeling and Mathematics.....2
- SCST 782**
Capstone Seminar.....2

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

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Lofti (LFT) Course Offerings

LFT 592 Topics1-3 Su

Science Teaching (SCST) Course Offerings

SCST 601 Science in Our World.....1-7 Su

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

SCST 602 Modeling and Mathematics2

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

Secondary Education (SEED) Course Offerings

SEED 592 Topics1-5

SEED 593 Workshop1-3

SEED 672 Motivation and Discipline3

Theories of motivation and discipline and their application in the classroom. Stresses techniques for preventing discipline problems, with emphasis upon ways to provide success experiences and positive reinforcement for students. Emphasizes effective procedures of group management as applied to the classroom situation. The course is appropriate for teachers, counselors, and administrative personnel.

SEED 690 Seminar1-3

SEED 740 Secondary School Curriculum.....3 FSSu

A study of the nature and principles of curriculum development in the secondary schools. Process of curriculum change, development and evaluation will be examined. Roles of teachers, administrators, students and the public in curriculum change will be studied.

SEED 748 Secondary Curriculum Practicum1 FSSu

Field-based problem-centered secondary curriculum development experience. Corequisite course: EDFN 747.

Technology for Teaching and Learning (TTL) Course Offerings

TTL 500 Technology for Teaching and Learning3 Su

This course covers the fundamental concepts of computer and telecommunication uses in education. Extensive hands-on technology training provide the basis upon which participants reconstruct curriculum and instructional techniques to support the learning needs of student.

TTL 501 Technology for Teaching and Learning Follow Up2 F

TTL 502 Differentiating Instruction2 F

The follow up for the TTL Academy is a learning opportunity using both WebCT and ASCD online environments. TTL 2001 participants will apply these characteristics to their Unit of Practice designed in the summer Academy. This course is designed to make teachers cognizant of the numerous strategies and tools to differentiate instruction to support the learning needs of students.

TTL 503 Technology for Teaching and Learning Follow Up1 FS

This course will address technology innovations that are demanding reforms in teaching and learning approaches. These reforms have a significant impact on technology use expectations. Participants will analyze the impact of technology on student learning specific to their teaching and learning situation. In addition, participants will reflect on their own professional development, as a result of the TTL experience, in applying the appropriate uses of technology to increase student learning and achievement.

TTL 510 Distance Technology3 Su

Electrical Engineering

Degree Offered:

M.S. Engineering

- Electrical Engineering emphasis

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

For additional information contact:

Mailing address: SDSU Box 2220

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Program Description

The Department of Electrical Engineering and Computer Science offers a variety of courses which can be used to fulfill the requirements for the Master of Science in Engineering degree. The courses encompass a broad range of studies including signal/image processing, biomedical engineering, power engineering, sensors, electronic materials, communications, and electronics. Each of these areas of study is strengthened by on-going research work conducted by the department's faculty. Additional courses are offered through EE 692 and EE 792 Special Topics in Electrical Engineering, and individualized instruction is available through EE 691 Special Electrical Problems.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

Refer to College of Engineering section, pages 78-80, for specific details.

Core Requirements

| | | |
|--------|--|-----|
| EE 615 | Linear Systems Theory | 3 |
| EE 660 | Electrical Properties of Materials | 3 |
| EE 670 | Information and Signal Processing | 3 |
| EE 685 | Microwave Theory | 3 |
| EE 790 | Seminar | 0-1 |

General Requirements begin on page 16 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Electrical Engineering (EE) Course Offerings

| | |
|---|------------|
| EE 515 Linear Control Systems | 3 S |
| Feedback control systems by operational and differential methods. Topics may include differential and Laplace system modeling, Nyquist and Routh-Hurwitz stability analysis, and cascade PID/lead/lag and state-space feedback compensation design using room-locus, Bode and Ackermann's pole-placement methods. | |
| EE 516 Passive and Active Filters | 3 |
| The analysis and design of passive and active filters for electrical signals. Topics include Butterworth, Chebyshev, Bessel-Thompson response characteristics, biquad and Sallen-Key circuits, frequency and impedance transformations, sensitivity, gyrators, negative impedance elements, leap-frog filters and switched capacitor filters. P, EE 321 or consent. | |
| EE 524 RF Electronics | 3 S |
| Performance analysis and design methods for the functional blocks of radio frequency systems operating below the microwave bands. P, EE 321, EE 316. | |

Graduate Faculty

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

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

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

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

Dennis Helder
 Professor
 Ph.D., North Dakota State
 University, 1991
 Image and Signal Processing

Steven Hietpas
 Associate Professor
 Ph.D., Montana State
 University, 1994
 Controls, Power
 Electronics/Systems

Michael E. Ropp
 Assistant Professor
 Ph.D., Georgia Institute of
 Technology, 1998
 Power Electronics, Electronic
 Devices, Energy Conversion
 & Control

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

| | |
|--|-----------------|
| EE 533 Computer Analysis Power Systems | 3 Su |
| Concepts used in formulating load flow and fault study problems and stability analysis of power systems using computer solutions. P, EE 430, EE 415 or EE 515. | |
| EE 540 VSLI Design | 3 F |
| Provides an introduction to the technology and design of VSLI integrated circuits. Topics include MOS transistors, switch and gate logic, scalable design rules, speed and power considerations, floor planning, layout techniques, and design tools. (Design content -two credits). | |
| EE 540L VSLI Design Lab | 0 F |
| Accompanies EE 540. | |
| EE 550 Biomedical Signal Processing | 3 |
| Methods and techniques for the analysis and processing of physiological signals. Off-line and real-time digital signal processing using time and frequency domain techniques. Emphasis on signal processing of electrocardiographic signals. P, EE 317. | |
| EE 554 Biomedical Instrumentation and Electrical Safety | 3 S |
| The design of electronic instrumentation for physiological applications. Emphasis on modeling and design of biopotential electrode/amplifier systems, physiological measurement techniques, therapeutic and prosthetic devices, and electrical safety in healthcare facilities. P, EE 321. | |
| EE 560 Sensor Theory and Design | 3 S |
| Introduction to the operation, design, testing and applications of modern sensors in use and under development. Signal conditioning and system integration are also reviewed. P, EE 360. Corequisite course: EE 560L. | |
| EE 560L Sensor Theory and Design Lab | 0 S |
| EE 570 Digital Communication Systems | 3 S |
| Random signals, base-band transmissions, band-pass transmission, multiplexing, filtering, optimum detection, and information theory. P, EE 470 or consent. | |
| EE 571 Optical Fiber Communication | 3 S |
| Theory and application of optical fibers and communication systems. Topics include fundamentals of optical fiber waveguides, electroluminescent sources, single-mode and multimode, propagation, coupling consideration, photo-detectors, signal degradation, fabrication and cabling, and transmission linked analysis. P, EE 316 or consent. | |
| EE 572 Fiber Optic Communications Lab | 1 S |
| This laboratory reinforces the theoretical concepts presented in the lecture course, EE 471-571. Topics include basic knowledge and skills needed for handling and testing optical fibers, characteristics of optical components, fiber optic communication systems and fiber optic sensing systems. P, concurrent with EE 471-571. Corequisite course: EE 571. | |
| EE 575 Digital Image Processing | 3 FS |
| Introduction to the fundamentals of digital image processing. Topics include image formation, transforms, enhancement, restoration, compression, and analysis. P, EE 317 or consent. | |
| EE 592 Topics | 1-3 FSSu |
| EE 615 Linear Systems Theory | 3 S |
| State variables, Laplace transform theory, matrix analysis and complex variable theory as applied to problems in circuit analysis. Topology, network theorems and network functions. P, consent. | |
| EE 620 Advanced Digital Hardware | 3 |
| Topics may include a deeper examination of fundamentals of combinational and sequential circuits, design for testability, advanced function implementation, design with current programmable technologies. | |
| EE 660 Electrical Properties of Materials | 3 F |
| Topics covered will be concerned with electromigration, diffusion, theory of rate processes, relaxation, effects, phase transformations, physics of dielectrics, and other topics associated with the physics of failure in electrical circuit applications. P, MATH 331, PHYS 331, EE 360 or consent. | |
| EE 670 Information and Signal Process | 3 FS |
| Foundations of information theory and its relationship to the measure and transmission of information; comparison of analog and digital system implementations. Topics include random processes, signal representation, spectral analysis, channel capacity, rate distortion, coding, data compression. Z-transforms and digital filtering. P, EE 310, EE 316, or consent. | |

| | |
|--|-----------------|
| EE 685 Microwave Theory | 3 FS |
| Transmission lines, resonant cavities, waveguide junctions, and components. Active devices, lasers, masers. P, EE 385. | |
| EE 691 Independent Study | 1-3 FSSu |
| EE 692 Topics | 1-3 SSu |
| EE 788 Engineering Research or Design Paper | 1-2 FSSu |
| EE 790 Seminar | 1 S |
| EE 791 Independent Study | 1-9 Su |
| EE 792 Topics | 1-3 FSu |
| EE 798 Thesis | 1-7 FSSu |

Software Engineering (SE) Course Offerings

| | |
|---------------------------------------|--------------|
| SE 591 Independent Study | 1-3 |
| SE 592 Topics | 1-5 S |
| SE 791 Independent Study | 1-3 |
| SE 792 Topics | 1-3 |
| SE 794 Internship | 1-3 |

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Engineering

Degrees Offered:

Ph.D. Atmospheric, Environmental and Water Resources, *see page 37*

M.S. Engineering

- Agricultural and Biosystems Engineering coursework concentration, *see page 28*
- Civil and Environmental Engineering coursework concentration, *see page 50*
- Computer Science coursework concentration, *see page 56*
- Electrical Engineering coursework concentration, *see page 77*
- Mechanical Engineering coursework concentration, *see page 110*
- Physics coursework concentration, *see page 128*

M.S. Industrial Management, *see page 101*

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Dean: Dr. Lewis F. Brown

Assistant Dean: Dr. Richard Reid

For additional information contact:

Mailing address: SDSU Box 2219

Crothers Engineering Hall — SCEH

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E-mail: lewis.brown@sdstate.edu

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Master of Science in Engineering

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

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

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options.

Core Requirements for M.S. in Engineering

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

1. Core courses in major field or program area
2. Courses in supporting areas
3. Thesis or design/research paper

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

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

Engineering Mechanics (EM) Course Offerings

- EM 521 Introduction to Mechanics of a Continuous Medium3**
 General theory of a continuous medium. Kinematics of deformation and flow; stress tensors; conservation of mass, momentum and energy; invariance requirements; constitutive equations for solids and fluids; applications for special problems. P, 331, MATH 331.
- EM 522 Theory of Elasticity3**
 Analysis of stress and strain; equilibrium and compatibility equations; Hooke's law; fundamental problems in the theory of elasticity; plane-stress and plane-strain problems of the narrow beam, rotating discs and a plate with a circular hole. P, EM 321, MATH 331 or equivalent.
- EM 523 Theory of Plasticity3**
 Analysis of stress and strain; plastic behavior of materials; basic laws of plastic flow; applications to bending of beams, torsion of bars and thick-walled cylinders; slip line theory and its application to extrusion problems; limit analysis theorems and their applications to structural problems. P, EM 422/522 or consent.
- EM 624 Theory of Plates and Shells3**
 Small-deflection theory of plates. Laterally-loaded rectangular plates. Navier and Levy solutions. Plates of various shapes, boundary conditions, and loading systems. Basic equations of the theory of shells. Design problems in cylindrical shells. P, EM 432, MATH 321, MATH 331, or consent.
- EM 631 Advanced Fluid Mechanics3**
 Fundamental notions of continuum, stress at a point velocity field, and vorticity. General principles of kinematics and dynamics of a fluid. Potential flow and vortex motion. P, EM 331, MATH 331 or equivalent.
- EM 641 Finite Element Analysis.....3 S**
 Theoretical basis of the method of finite element analysis-an approximate method which analyzes problems using small, but finite elements rather than the infinitesimal elements of the calculus. Two- and three-dimensional stress analysis, plate bending and shell problems, static, dynamic and stability problems. Geometric and material non-linearities. Introduction to both heat and fluid flow problems. P, MATH 321 and consent.

Key to Course Descriptions

Course Number & Name
 Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
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(Lecture Hours, Lab Hours)

Courses with no FSSu notation
are offered either FS or FSSu.

Course Description as written
by department and approved by
the Board of Regents.

P = Prerequisite

Secondary Core Courses

| | |
|----------|---|
| ABE 512 | Advanced Agricultural Tractors and Machines |
| ABE 522 | Bio-Environmental Engineering |
| ABE 533 | Advanced Irrigation Engineering |
| ABE 754 | Advanced Unit Operations in Food/Biomaterials Processing |
| ABE 733 | Ground Water Engineering in Agriculture |
| ABE 772 | Similitude |
| CEE 511 | Bituminous Materials |
| CEE 524 | Industrial Waste Treatment |
| CEE 536 | Foundation Engineering |
| CEE 543 | Matrix Analysis of Structures |
| CEE 547 | Advanced Soils Engineering |
| CEE 552 | Prestressed Concrete |
| CEE 632 | Advanced Foundation Engineering |
| CEE 654 | Advanced Design of Steel Structures |
| CEE 656 | Advanced Reinforced Concrete Design |
| CEE 722 | Hazardous/Toxic Waste Disposal |
| CEE 725 | Biological Principles of Environmental Engineering |
| CEE 726 | Physical/Chemical Principles in Environmental Engineering |
| CEE 728 | Waste Water Treatment Plant Design |
| CEE 734 | Surface Water Quality Modeling |
| CEE 765 | Pavement Design |
| CEE 769 | Design of Steel and Concrete Bridges |
| CSC 572 | Artificial Intelligence |
| CSC 574 | Computer Network |
| CSC 576 | Computer Graphics |
| CSC 630 | Principles of Data Base System Design |
| CSC 643 | System Analysis and Design |
| CSC 705 | Design and Analysis of Computer Algorithms |
| CSC 710 | Structure and Design of Programming Languages |
| CSC 720 | Theory of Computation |
| CSC 740 | Management Information Systems |
| CSC 750 | Recent Advances in Parallel Processing |
| CSC 770 | Software Engineering Management |
| EE 615 | Linear Systems Theory |
| EE 660 | Electrical Properties of Materials |
| EE 670 | Information and Signal Processing |
| EE 685 | Microwave Theory |
| ME 514 | Air Pollution Control |
| ME 527 | Gas Dynamics I |
| ME 540 | Computer-Aided Design |
| ME 603 | Thermo-Fluid Energy Systems |
| ME 611 | Advanced Heat Transfer I |
| ME 612 | Convection Heat Transfer |
| ME 621 | Viscous Flow I |
| ME 628 | Gas Dynamics II |
| ME 631 | Advanced Analytical Methods |
| ME 635 | Modeling and Simulation |
| ME 639 | Advanced Metallurgy |
| ME 641 | Advanced Stress Analysis in Mechanical Design |
| ME 645 | Advanced Machine Design |
| ME 661 | Operations Research |
| ME 662 | Quality Control |
| ME 663 | Topics in Reliability Engineering |
| ME 665 | System Analysis |
| ME 667 | Decision Theory |
| PHYS 541 | Science of Solids |
| PHYS 743 | Statistical Mechanics |
| PHYS 721 | Electrodynamics I |
| PHYS 751 | Theoretical Mechanics |
| PHYS 771 | Quantum Physics I |

English

Degree Offered:

M.A. English

- Literature emphasis
- Language and Rhetoric emphasis

Department Head: Professor Kathleen Donovan
Graduate Coordinator: Assistant Professor Michael Nagy

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 014

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

E-mail: kathleen.donovan@sdstate.edu
michael.nagy@sdstate.edu

Phone: 605/688-5191

Fax: 605/688-5192

Program Description

To be admitted into the M.A. Program in English, the applicant should have a minimum of 24 semester hours of undergraduate credit in English or receive the consent of the department head. Admission to the English Department's graduate program must include a minimum GPA in English of 3.25. A full-time student can complete the course requirements in one academic year. Graduate assistants should be able to complete these requirements in four semesters. Students may choose either Option A (thesis) or Option C (non-thesis).

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

The two areas of study for the M.A. degree in English are:

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

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

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

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

Available Options for Graduate Degrees

Master of Arts: Option A
Option C

See page 19 for descriptions of available options.

Graduate Faculty

Bruce Brandt
Professor
Ph.D., Harvard University,
1977
English Renaissance Literature

Kathleen Danker
Professor
Ph.D., University of Nebraska-
Lincoln, 1985
*American, Native American
Literature*

Kathleen Donovan
Professor
Ph.D., University of Arizona,
1994
*Minority and Women's
Literature*

David Evans
Professor and Writer in
Residence
M.F.A., University of Arkansas,
1976
Creative Writing

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

Michael Keller
Professor
Ph.D., University of Illinois-
Chicago, 1993
Rhetoric

Michael Nagy
Assistant Professor
Ph.D., St. Louis University,
2001
*Medieval English and
Scandinavian Literature*

Mary O'Connor
Professor
Ph.D., University of California-
Los Angeles, 1992
*English Contemporary
Literature*

Mary Ryder
Distinguished Professor
Ph.D., University of Illinois-
Urbana, 1987
American Literature

John Taylor
Professor
Ph.D., Indiana University-
Bloomington, 1973
Linguistics

Louis P. Williams
Professor
Ph.D., University of Minnesota,
1976
American Literature

Charles Woodard
Distinguished Professor
Ph.D., University of Oklahoma-
Norman, 1975
American, Native American
Literature

Core Requirements

ENGL 704, Introduction to Graduate Studies
Reading knowledge of a modern foreign language or two years of undergraduate credit on the transcript.

Additional Admission Requirements

GRE: (General): Required
TOEFL: Department requirement of 600
Minimum GPA of 3.25 in English courses

General Requirements begin on page 16 (Master's Degree).

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

English (ENGL) Course Offerings

| | |
|---|--------------|
| ENGL 522 Chaucer | 3 F |
| Major works of Chaucer, with some attention to his sources and his language. | |
| ENGL 523 Old and Middle English Literature | 3 F |
| Emphasizing pre-Norman heroic and Christian literature, the work of Chaucer and his contemporaries, and folk literature such as the ballads. | |
| ENGL 527 Advanced Shakespeare | 3 |
| Selected plays of Shakespeare and significant Shakespearean criticism. | |
| ENGL 528 English Renaissance Literature | 3 S |
| Major writers of the 16th and early 17th centuries excluding Shakespeare. | |
| ENGL 534 English 18th Century Literature | 3 F |
| Literature of the later 17th and 18th centuries (1660-1800), including major works and developments in literature and thought. | |
| ENGL 537 English Romantic Literature | 3 S |
| English literature of the Romantic Movement (1789-1832). | |
| ENGL 538 English Victorian Literature | 3 S |
| English literature of the Victorian Period (1840-1900). | |
| ENGL 539 Modern English Literature to WW II | 3 FS |
| English literature from 1900 to WWII. | |
| ENGL 540 Contemporary English Literature | 3 S |
| English literature since WWII. | |
| ENGL 553 American Renaissance Literature | 3 F |
| American literature of the mid nineteenth-century, including the Transcendentalists and Romantics. | |
| ENGL 554 American Realist and Naturalist Literature | 3 FS |
| American literature of the realist and naturalist movements of the late 19th and early 20th centuries. | |
| ENGL 559 American Literature Between the Wars | 3 FS |
| American literature of the modernist movement from 1917 to 1945. | |
| ENGL 560 Contemporary American Literature | 3 FS |
| American literature since WWII. | |
| ENGL 563 Methods of Teaching English as a Second Language | 3 FS |
| Develops the central concepts, tools of inquiry, and structure of teaching English to students with limited English proficiency. Includes the evaluation of instructional processes, learning resources, curriculum, and programs. Emphasis will be on teaching students to use English in educational and public settings. Crosslisted with EDFN 563. Equivalent to EDFN 563. P, EDFN 560 or LING 560. | |
| ENGL 583 Advanced Creative Writing | 3 S |
| A course allowing students with experience in creative writing to specialize in a particular genre (poetry, fiction, etc.). P, ENGL 383 or consent of instructor. | |
| ENGL 591 Independent Study | 1-4 |
| ENGL 704 Introduction to Graduate Studies | 3 SSu |
| An introduction to literary criticism and study of bibliographic tools (including electronic sources) and research methods needed for scholarly writing in the Humanities. Required of all candidates for the M.A. degree in English. | |

| | |
|--|-----------------|
| ENGL 705 Seminar in Teaching Composition | 3 F |
| Study of the methods, theories, and history of writing instruction. A course for English GTAs and required of them. | |
| ENGL 710 Seminar in Rhetoric | 3 S |
| Intensive study of selected periods or topics in rhetoric, with special emphasis on their relation to issues in criticism and composition. | |
| ENGL 724 Seminar in English Literature to 1660 | 3 S |
| Intensive study of a selected type, theme, author, or period of English Literature from the beginning to 1660. | |
| ENGL 725 Seminar in English Literature Since 1660 | 3 FS |
| Intensive study of a selected type, theme, author, or period of English literature since 1660. | |
| ENGL 728 Seminar in American Literature to 1900 | 3 S |
| Intensive study of a selected type, theme, author, or period of American literature to 1900. | |
| ENGL 729 Seminar in American Literature Since 1900..... | 3 FSSu |
| Intensive study of a selected type, theme, author, or period of American literature since 1900. | |
| ENGL 742 Seminar in American Indian Literature | 3 FS |
| Intensive study of American Indian literature of the past or present with concentration on the Plains Indians. | |
| ENGL 755 Seminar in Minority Literature | 3 F |
| American literature of specific cultural or ethnic minorities other than Native American (African American, Asian American, Hispanic, Jewish, or woman writers, for example). May be repeated once with different content. | |
| ENGL 791 Independent Study | 1-3 FS |
| ENGL 792 Topics | 1-4 FS |
| ENGL 798 Thesis | 1-7 FSSu |

Linguistics (LING) Course Offerings

| | |
|---|--------------|
| LING 520 The New English | 3 F |
| Diverse new theories and applications in English linguistics: lexicography, pragmatics, stylistics, socio-semantic, semiotics, and discourse theory. | |
| LING 525 The Structure of English..... | 3 F |
| Use of traditional, structural, and transformational grammars for describing the English language. Practical application in teaching. Strongly recommended for majors planning to teach. | |
| LING 543 Development of the English Language | 3 S |
| Historical survey of phonology, grammar, syntax, and lexicon of English leading to an understanding of the present state of the language and future developments. | |
| LING 552 General Semantics | 3 S |
| Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistics assumptions; and the objective systematization of language. Crosslisted with SPCM 552. Equivalent to SPCM 552. | |
| LING 560 Applied Linguistics for Teaching English as a Second Language | 3 FSu |
| The study of social and linguistic structures which undergird different discourse forms. Emphasis will be on discourse forms which are particularly important for full participation in U.S. culture such as the rhetoric of public and school interactions. P, LING 203 or equivalent or instructor's permission. Crosslisted with EDFN 560. Equivalent to EDFN 560. | |

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Family and Consumer Sciences

Degree Offered:

M.S. Family and Consumer Sciences

- Child and Family Studies specialization, *see page 98*
- Family Financial Planning specialization, *see page 98*
- Nutrition and Food Science specialization, *see page 120*

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Dean: Professor Laurie Stenberg Nichols

For additional information contact:

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Nursing/Family/A&S — SNF

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

E-mail: laurie.nichols@sdstate.edu

Phone: 605/688-6181

Fax: 605/688-4439

Program Description

The mission of the graduate program in Family and Consumer Sciences is to provide an in-depth, specialized program of study in Child and Family Studies, Family Financial Planning or Nutrition and Food Science. The specialization in Family Financial Planning is offered through a consortium of seven land grant institutions located in the Midwest. Students take course work from all seven institutions including: North Dakota State University, South Dakota State University, Montana State University, Iowa State University, University of Nebraska, Kansas State University and Oklahoma State University. All courses are delivered via distance education. Graduate courses in Apparel Merchandising and Interior Design are inactive at this time. The degree granted is the Master of Science in Family and Consumer Sciences. An understanding of the research process is developed throughout graduate courses and other research requirements.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

See page 19 for descriptions of available options.

Additional Admission Requirements

GRE: See each specialization for GRE requirements.

TOEFL: Department Requirements of 525

General Requirements begin on page 16 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Family and Consumer Sciences (FCS) Course Offerings

FCS 591 Independent Study1-3 SSu
FCS 592 Topics.....1-3
FCS 611 History and Philosophy of Family and Consumer Sciences2

Family and Consumer Sciences Education (FCSE) Course Offerings

FCSE 591 Independent Study1-3 Su
FCSE 592 Topics.....1-3 Su
FCSE 741 Supervision in Family and Consumer Sciences Education2 Su
FCSE 751 Curriculum in Family and Consumer Sciences Education.....2
FCSE 791 Independent Study1-3
FCSE 792 Topics1-3



Geography

Degree Offered:

M.S. Geography

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

Graduate Faculty

Donald J. Berg
Associate Professor
Ph.D., University of California,
Berkeley, 1976
Physical and Human
Geography

Charles F. Gritzner
Distinguished Professor
Ph.D., Louisiana State
University, 1969
Cultural Geography and
Geography Education

Janet H. Gritzner
Professor
Ph.D., Louisiana State
University, 1978
Geographic Information
Systems

Darrell E. Napton
Professor
Ph.D., University of Minnesota,
1987
Environmental Geography

Roger K. Sandness
Professor
Ph.D., University of Iowa, 1986
Quantitative and Physical
Geography

Department Head: Professor Roger K. Sandness

Graduate Coordinator: Distinguished Professor Charles F. Gritzner

For additional information contact:

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Phone: 605/688-4511

Scobey Hall — SSB 232

Fax: 605/688-4030

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

E-mail: roger.sandness@sdstate.edu

charles.gritzner@sdstate.edu

Program Description

The Department of Geography offers graduate students the opportunity to earn a Master of Science Degree. The curriculum, organized through formal courses, seminars, internship experiences, and supervised research, is designed to prepare students for positions in such professional areas as planning, remote sensing, geographic information sciences, government service, research, business, and teaching. The program also is designed to provide students with the education needed to pursue further graduate study.

Students seeking this degree are expected to select courses that will provide a sound foundation in geography (philosophical, physical and human, and research techniques) supported, if appropriate, by courses outside the department. Cognate areas beneficial to the student include History, Economics, Education, Biology, Computer Science, Engineering, Plant Science, Sociology, Wildlife and Fisheries, among others.

Special programs are offered for students interested in unique educational experiences. Among them are interdisciplinary minors in both Planning and Geographic Information Systems. Internships generally are available with planning districts, governmental agencies, business, and industry. A limited number of Graduate Teaching Assistantships are available within the department. Occasionally, Graduate Research Assistantships are provided.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B

See page 19 for descriptions of available options.

Core Requirements

Students are expected to take the following courses:

GEOG 710 Evolution of Geographic Thought.....3
GEOG 714 Research and Writing3

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 525

General Requirements begin on page 16 (Master's Degree).

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

Geography (GEOG) Course Offerings

- GEOG 515 Environmental Geography3 F**
 Geographical aspects of environmental issues including historical geography of environmental problems, global driving forces, land ethics and stewardship, environmental externalities, population, resources, climate change, and environmental restoration. Focus on connections between human and natural systems; consequence chains between cause and effect; impact of time and space on problem perception, analysis, and solution; and natural and human laws. Term paper required.
- GEOG 588 Geographic Information Systems II3 FSSu**
 This course introduces advanced tools and techniques of data creation, data integration, mapping, and spatial analysis in geographic information systems (GIS). It provides basic approaches for solving problems of data integration including format identification, conversion, and registration. It gives a conceptual base to many methods and techniques associated with vector and raster-based spatial analysis. It provides an in-depth examination of the functions and capabilities of Arc View Desktop GIS, its extensions and ARC/INFO GIS software. It introduces basic concepts and practical applications of global positioning systems (GPS) technology in GIS especially in creating GIS software. It introduces basic concepts and practical applications of global positioning systems (GPS) technology in GIS especially in creating GIS-compatible data sets. This course gives hands-on experience with PC and UNIX workstations, tablet digitizers, scanners, printers and plotters. GPS equipment, digital camera systems and all supporting software. Students work with real applications and are expected to complete an individual/small group project during the course.
- GEOG 589 Geographic Information Systems III.....3 FS**
 This course introduces many of the basic concepts of raster modeling in geographic information systems (GIS) with special emphasis on construction and use of digital elevation models (DEMs) in GIS. It provides an in-depth examination of the functions and capabilities of ArcView Desktop GIS extensions (Spatial Analyst and 3D Analyst) and ARC/INFO GRID GIS software. Building on the skills and techniques learned in GIS I and GIS II courses, it gives a conceptual base to many of the quantitative methods associated with raster-based GIS spatial analysis. Topics include raster data formats and sources, data conversion, merging and projecting raster data sets, DEM displays including image drapes and other visualizations, overlay functions, hydrologic modeling tools and applications, visual analyses, friction and dispersion models and change detection studies. Students are expected to complete an individual/small group project in ArcView or ARC/INFO with a raster data component during the course.
- GEOG 590 Seminar1-4 FSSu**
- GEOG 620 Advanced Regional Studies in Geography1-4 F**
 Selected topics in the regional geography of continents, nations, or states. May be repeated for credit. Specific topic to be studied will change each semester.
- GEOG 692 Topics1-4 Su**
- GEOG 710 Evolution in Geographic Thought3 FS**
 The history and development of geography and its theories, schools of thought, and current ideas.
- GEOG 714 Research and Writing3 FS**
 Development of geographic research and writing skills including a survey of data sources and literature, and preparation of reports, papers, articles, and the master's thesis.
- GEOG 732 Geomorphology3 FS**
 Basic concepts of origin and development of land forms. Basic principles underlying the study of land forms; emphasis on processes shaping the natural landscape. Study of erosional and depositional processes operating at the earth's surface and land form resulting from these processes.
- GEOG 734 Climatology.....3 FS**
 Consideration of the exchange of energy and moisture and significance in human's utilization of the earth's surface. Climactic history of the earth. Hypotheses on climactic change. Inadvertent modification of climate.
- GEOG 742 Cultural Geography.....3 FS**
 Consideration of culture in a geographic context including such concepts as cultural origins and diffusion, ecology, landscapes, and regions.
- GEOG 752 Urban Geography3**
 Theoretical explanations of urban spatial patterns. Examination and application of contemporary theories, concepts, and methods to study urban geography problems. Theoretical explanations of urban spatial structure and spatial organization.
- GEOG 765 Advanced Studies in Land Utilization1-4 FS**
 The physical and cultural factors affecting the nature and pattern of land utilization. Local and/or regional utilization, planning, and problems will be studied in detail in relation to the topic.

Key to Course Descriptions

Course Number & Name
 Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

GEOG 770 Advanced Geographic Techniques1-4 F
Selected geographic techniques such as cartography, aerial photograph interpretation, remote sensing, information systems and map interpretation.

GEOG 785 Quantitative Methods in Geography3 FS
Descriptive and Inferential Statistics will be studied in this course. The traditional regression and correlation routines will be addressed as well as probabilities. Statistical routines on the mainframe computer will be utilized in problem solving involving real-world geographic-sociological situations.

GEOG 786 Geographic Information Systems3 S
Practical application of GIS to problems and land-use planning, management of natural resources, transportation, as well as demographic data. Hands-on experience in the making of maps with computers, digitization, the storing and retrieving of geographic data, and the design of simple GIS.

GEOG 788 Research Paper in Geography1-3 FSSu

GEOG 790 Seminar1-4 FS

GEOG 791 Independent Study1-4 FSSu

GEOG 794 Internship1-3 FSSu

GEOG 798 Thesis1-7 FSSu

Planning (PLAN) Course Offerings

PLAN 571 Principles of State, Regional and Community Planning.....3 F
Purpose, structure, and dynamics of the planning process. Identification of different types of planning. Inter-dependencies among persons who contribute to the planning process and are trained in separate academic disciplines. Basic techniques employed within different phases of the planning process. P, enrollment within a minor in planning at the Master's level or consent.

PLAN 572 Techniques of State, Regional and Community Planning.....3 S
Brief review of basic approaches, procedures and methods employed within different phases of the planning process. Coordination required among persons trained in separate academic disciplines in order to carry out these basic techniques. Exercises in the practical application of selected techniques and review of their applications in ongoing to completed planning efforts. P, PLAN 571.



Gerontology

Minor only offered

Dean of Family and Consumer Sciences: Professor Laurie Stenberg Nichols
Coordinator: Associate Professor Renee Oscarson

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — SNF

E-mail: renee.oscarson@sdstate.edu

Phone: 605/688-6418

Fax: 605/688-4888

Program Description

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

Core Requirements

| | | |
|-----------|--|-----|
| AHED 710 | Adult Curriculum and Instruction | 3 |
| BIOL 525 | Biology of Aging | 3 |
| CHRD 571 | Gerontology Issues in Counseling | 3 |
| HDFS 614 | Adult Development | 3 |
| NFS 761 | Nutrition of the Aged | 3 |
| OR | | |
| AHED 711 | Organization and Administration of Adult Education | 3 |
| GERO 591 | Independent Study in Gerontology | 1-3 |
| GERO 592 | Current Topics in Gerontology | 1-3 |

Gerontology (GERO) Course Offerings

| | | |
|----------|-------------------------|--------|
| GERO 591 | Independent Study | 1-3 FS |
| GERO 592 | Topics | 1-3 FS |

Key to Course Descriptions

Course Number & Name Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Graduate School

Graduate Faculty

David Hilderbrand, Interim
Vice President for Research
and Dean of the Graduate
School
Ph.D., University of Missouri,
1971

John J. Ruffolo
Associate Dean
Ph.D., University of
Iowa, 1972

Department Head: David Hilderbrand, Ph.D.
Associate Dean: John J. Ruffolo, Ph.D.

For additional information contact:

Mailing address: SDSU Box 2201

Administration Building — SAD 130

WWW: <http://www3.sdstate.edu>

E-mail: david.hilderbrand@sdstate.edu

Phone: 605/688-4181

Fax: 605/688-6167

Graduate School/Research (GSR) Course Offerings

GSR 601 Research Regulations Compliance.....1 F

The course will consist of lecture/seminars on the philosophy and practice of compliance with governmental regulations in research at SDSU. The course will include completion of educational modules and associated paperwork required for the performance of research at South Dakota State University. The course will also serve as the foundation for SDSU's education program for compliance with current and pending regulatory guidelines. Topics to be covered will include: Animal Care and Use, Human Subjects Research, Recombinant DNA, Radioactive Safety, Laboratory/ Biological Safety, Integrity in Research, Conflict of Interest in Research, Financial Accountability, and Intellectual Property Issues.

GSR 699 Graduate School Tracking.....0 FSSu

Conversion/Transfer (CT)

CT02 888T Conversion/Transfer Grad0-99

Graduate School Transfer (GRAD)

GRAD 600T Graduate Transfer Elective0-99

Hotel and Foodservice Management (HFM) Course Offerings

HFM 580 Travel Studies1-5

This travel-study course is designed to provide extra-mural educational experiences, as approved by and under the direction of a faculty member, and may be in cooperation with faculty and administrators at other institutions. Students will participate in hands-on activities and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

HFM 591 Independent Study1-3

HFM 788 Individual Research and Study1-7

HFM 791 Independent Study1-3 F

HFM 792 Topics1-3

HFM 798 Thesis1-7 F

Women's Studies (WMST) Course Offerings

WMST 519 Women in Media.....3

This course examines contributions of women to the mass media from colonial era to present. It also studies the portrayal of women by the news media and by advertising, and it studies the roles currently played by women in the media and in supporting areas of advertising and public relations. Crosslisted with WMST 418.

WMST 599 Women in Management3

A seminar course designed to expose women students to the techniques of management in a variety of fields. Guest speakers from both business and education will participate.

Health, Physical Education and Recreation

Degree Offered:

M.S. Health, Physical Education and Recreation

- Athletic Training specialization
- Sport Pedagogy emphasis (administration/management or teaching/coaching)
- Sports Science emphasis

Department Head: Fred Oien, Ed.D.

Graduate Coordinator: Matthew Vukovich, Ph.D.

For additional information contact:

Mailing address: SDSU Box 2820

HPER Center — SPE

WWW: <http://www3.sdstate.edu/Academics/CollegeofArtsandScience/HealthPhysical>

[EducationandRecreation/GraduateProgram/Index.cfm](http://www3.sdstate.edu/Academics/CollegeofArtsandScience/HealthPhysical/EducationandRecreation/GraduateProgram/Index.cfm)

E-mail: matthew.vukovich@sdstate.edu

Program Description

The HPER Graduate Program exists to provide post-baccalaureate study opportunities leading to a Master of Science degree in Health, Physical Education and Recreation. The program provides two areas of emphasis: 1) sports science and 2) sports pedagogy. The sports science program is designed to prepare students for competencies in areas of cardiac, pulmonary and muscle physiology, clinical exercise physiology, and strength and conditioning. Research and clinical experience are coordinated through the Applied Physiology Laboratory. The Sports Pedagogy program is designed to provide students with opportunities to prepare for careers as athletic directors or in athletic administration and associated fields of sports information/marketing, or to improve their knowledge and expertise as coaches and teachers in leadership positions. The goal of the program is to provide students with knowledge and experiences which will make them better professionals or which will prepare them for advanced study at the doctoral level.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

See page 19 for descriptions of available options.

Core Requirements

HPER 780 Introduction to Graduate Study and Research in HPER.....1

HPER 783 Research Methods in HPER.....3

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

General Requirements begin on page 16 (Master's Degree).

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

Athletic Training (AT) Course Offerings

AT 541 Athletic Training Techniques I.....3 F

This course is the first of the intermediate athletic training courses designed to meet all of the guidelines and competencies required by the National Athletic Trainers' Association. These courses should be taken in sequence. AT 361 includes: concepts and techniques relative to injury assessment and management, pathology of tissue injury and repair, mechanisms of injury, management of blood borne pathogens/soft tissue injuries/fractures, athletic injuries related to environmental stress and on/off field injuries/ management related to the spine (including a posture and neurological assessment). P, formally admitted to athletic training program; permission.

Graduate Faculty

James Booher

Professor

Ph.D., University of Utah, 1976

Athletic Training, Sports

Medicine

Patty Hacker

Professor

Ph.D., University of Wyoming,

1988

Teacher Education, Coaching

Jeffrey Janot

Assistant Professor

Ph.D., University of New

Mexico, 2001

Exercise Physiology

Fred Oien

Professor

Ed.D., University of

Massachusetts-Amherst, 1979

Athletic Administration

Matthew Vukovich

Associate Professor

Ph.D., Ball State University,

1993

Exercise Physiology

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

AT 542 Athletic Training Techniques II.....3

This course is the second of the intermediate athletic training courses designed to meet all of the guidelines and competencies required by the National Athletic Trainers' Association. These courses should be taken in sequence. AT 362 includes techniques related to the prevention, recognition, and management of athletic injuries to the upper and lower extremities. Related topics include preseason screening, preparticipation physicals, and appropriate weight training techniques.

AT 543 Athletic Training Techniques III3 F

This course is the third of the intermediate athletic training courses designed to meet all of the guidelines and competencies required by the National Athletic Trainers' Association. These courses should be taken in sequence. AT 363 includes a combination of material. One section of the class is devoted to the prevention, recognition, and management of athletic injuries relative to head, face, throat, abdomen, and thorax. The remainder of the class includes material in regards to evaluation and care of general illnesses and dermatological disorders common to athletics, understanding the role of pharmaceuticals in athletics-both legal and banned substances, drug testing procedures, special issues related to women in athletics, and the athletic trainer's role in counseling athletes.

AT 544 Athletic Training Techniques IV3

This course is designed to cover the athletic training competencies in organization and administration. It will cover knowledge, skills and values that an athletic trainer must possess to develop, administer, and manage a health care facility and associated venues that provide health care to athletes and others involved in physical activity. P, permission.

AT 554 Athletic Injuries Assessment-Lower Extremity2 F

This course is designed to have the student athletic trainers develop a sound understanding of the assessment of athletic related injuries and conditions occurring to the lower extremities. The course will incorporate anatomy of the lower extremity, the athletic related injuries or conditions which may occur, and evaluation techniques used to assess this area of the body.

AT 556 Athletic Injuries Assessment-Upper Extremity2

This course is designed to have the student athletic trainers develop a sound understanding of the assessment of athletic related injuries and conditions occurring to the upper extremities. The course will incorporate anatomy of the upper extremity, the athletic related injuries or conditions which may occur, and evaluation techniques used to assess this area of the body.

AT 564 Therapeutic Modalities in Athletic Training2

This course is designed to have the student develop a sound understanding of the use of modalities in the treatment of the injured athlete. The class will be taught through lectures and demonstrations and provide for practical experience.

AT 574 Rehabilitation of Athletic Injuries2 F

This course is designed to have the student develop a sound understanding of the use of exercise in the rehabilitation of the injured athlete. The class will be taught through lectures and demonstrations and provide for practical experience.

Health, Physical Education and Recreation (HPER) Course Offerings

HPER 690 Seminar2 S

HPER 742 Psychological Aspects of Sport and Exercise3 F

Psychological theories and principles applied to physical education, sport, and exercise. Interpretation and analysis of human behavior. Topics include personality, arousal and anxiety, motivation, self-efficacy and self-esteem, attentional focus, audience effects, aggression, leadership, as well as intervention strategies. P, consent.

HPER 745 Sports Medicine2 SSu

A review of the basic fundamentals of athletic training and exposure to recent developments in the sports medicine field. P, undergraduate Prevention and Care of Athletic Injuries or consent.

HPER 760 Motor Learning and Development3 FSSu

The study of human behavior as it relates to the learning and performance of motor skills. The understanding of motor learning as an essential foundation underlying the development of successful instruction and training strategies critical for skill acquisition. Laboratory work. P, consent.

HPER 780 Introduction to Graduate Study and Research1 F

HPER 783 Research Methods in HPER3 SSu

By studying prevalent quantitative and qualitative research techniques, students will become critical consumers and potential producers of research relevant to Health, Physical Education and Recreation. Computer work, development of problems and hypotheses, writing for professional papers. P, STAT 281 or equivalent, or consent.

| | |
|--|-----------------|
| HPER 788 Individual Research and Study in HPER | 1-3 FSSu |
| Directed independent research. May be taken for up to 3 credits. P/F grading, for Plan B students. | |
| HPER 791 Independent Study | 1-3 FSSu |
| HPER 795 Practicum | 1-9 FSSu |
| HPER 796 Field Experience | 1-9 FSSu |
| HPER 798 Thesis | 1-5 FSSu |

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Physical Education (PE) Course Offerings

| | |
|---|-----------------|
| PE 550 Clinical Exercise Physiology | 3 S |
| This course is designed to provide the clinical exercise physiology student with assessment and prescription techniques appropriate to special populations. P, instructor's consent required. | |
| PE 555 ECG and Clinical Stress Testing | 3 Su |
| This course is designed to fill the needs of students who desire the ability to interpret the normal and abnormal, resting and exercise ECG, as well as provide opportunities to learn and practice the basic components of maximal stress testing during a variety of exercise conditions. Since clinical stress testing and ECG interpretation is a vital component of the laboratory skills needed by today's exercise physiologist, emphasis in this course will be focused on understanding and interpreting ECG tracings and related pathophysiology, preparation of the exercise 12-lead ECG, and interpretation of maximal stress test results regarding exercise tolerance for various clinical populations and comparing them to normal individuals. In addition,an overview of other diagnostic procedures that involve the use of exercise will be given. P, PE 350 and PE 400. | |
| PE 593 Workshop | 1-3 FSSu |
| PE 700 Exercise in Health and Disease | 3 |
| Focuses on the current topics of exercise physiology, including relationships between different diseases or conditions and physical activity. Topics may change from year to year. This course will also identify and explain the mechanisms by which exercise may contribute to preventing the above diseases and in rehabilitating individuals with the above diseases. In addition, aspects of performance enhancement, rehabilitation, and/or disease prevention will be the underlying factor. | |
| PE 730 Physical Education in Teacher Education | 3 SSu |
| Readings, lectures, and discussions designed to analyze the process of preparing physical educators for the teaching profession. Includes discussion of external influences, problems and possible solutions, socialization and effective teaching in the field. P, consent. | |
| PE 732 Analysis and Strategies of Teaching and Supervising Physical Education and Sports | 3 FSSu |
| Study and application of theoretical and practical knowledge of effective teaching/coaching, designed to improve teaching and coaching in physical education, including techniques of analysis and supervision. P, consent. | |
| PE 750 Advanced Exercise Physiology | 3 F |
| Physiological basis of factors which influence physical fitness and physical performance; application of physiological measures to fitness programs, critical analysis of current literature;emphasis on bioenergetics, neuromuscular and circulorespiratory function, body composition and physical training. P, undergraduate Exercise Physiology. | |
| PE 751 Laboratory Techniques in Exercise Physiology | 2 F |
| PE 751L Laboratory Techniques in Exercise Physiology Lab | 0 F |
| PE 755 Applied Exercise Physiology | 3 Su |
| Focuses on the applied aspect of exercise physiology. Includes areas of environmental influences on performance, optimizing performance by developing and implementing training programs appropriate to the individual. In addition, training and performance characteristics of adolescent athletes and older adults as well as gender differences will be discussed. P, PE 350 and PE 750. | |
| PE 770 Advanced Administration of Interscholastic Athletics | 2 FSSu |
| Budgets, public relations problems, subsidization,objectives of athletics, staff organization, control of athletics, both interscholastic and intercollegiate, and general policies of athletics. P, consent. | |
| PE 771 Current Trends in HPER and Athletics | 3 SSu |
| The study of trends in athletics that affect the performance, safety, and attitude of athletes; administrative practices; and public perception and support of athletics. | |
| PE 772 Financial Aspects of Sports Management | 3 F |
| A course that gives the student interested in sports administration an opportunity to take an in-depth look into various areas of financial management. Examples of some of these areas but not a complete list, are: fund raising, guarantees, budgeting, scholarship programs, TV and Radio, receipts, and marketing. | |

History

Minor only offered

Graduate Faculty

Michael Funchion
Professor
Ph.D., Loyola University-
Chicago, 1973
U.S. Immigration and Ethnic,
Britain and Ireland

Jerry Sweeney
Professor
Ph.D., Kent State University,
1970
Diplomatic, Military

Department Head: Professor Jerry Sweeney
Graduate Coordinator: Professor Jerry Sweeney

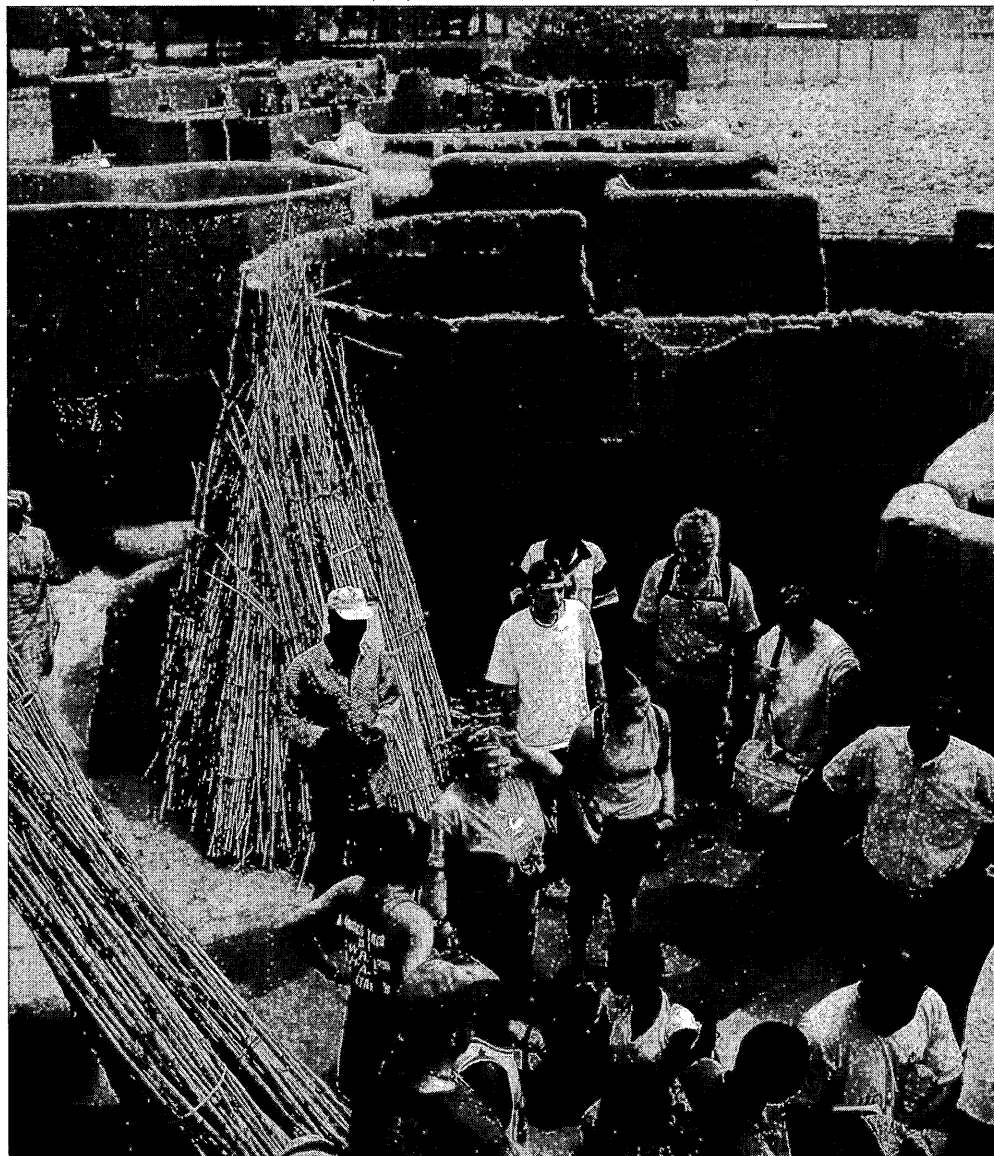
For additional information contact:

Mailing address: SDSU Box 504
Scobey Hall — SSB 322
E-mail: jerry.sweeney@sdstate.edu

Phone: 605/688-4311
Fax: 605/688-5977

History (HIST) Course Offerings

HIST 591 Independent Study1-3 FSSu
HIST 592 Topics1-4 FSu



Horticulture, Forestry, Landscape & Parks

Degree Offered:

M.S. Biological Sciences, *see page 38*

- Horticultural Science specialization

M.S. Plant Science

- Horticultural Crop Management specialization

Department Head: Professor Peter Schaefer

Graduate Coordinator: Professor Peter Schaefer

For additional information contact:

Mailing address: SDSU Box 2140A

Northern Plains Biostress Laboratory — SNP

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

E-mail: peter.schaefer@sdstate.edu

Phone: 605/688-5136

Fax: 605/688-4713

Horticulture (HO) Course Offerings

- HO 580 Environmental Stress Physiology**3
Physiological and cellular response of plants to environmental stresses. P, BOT 327. Crosslisted with BIOL 580 and PS 580. Equivalent to BIOL 580, PS 580.
- HO 592 Topics**.....1-3 FS
- HO 746 Plant Breeding**3 S
Plant Breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects. Crosslisted with PS 746. P, PS 103, BIOL 371, or consent.

Landscape Design (LA) Course Offerings

- LA 560 Landscape Ecology**4 S
Study of the structure, function and management of landscape ecosystems. Integrates the study of plants, animals and the physical environment at larger spatial scales, and application of these concepts to land management issues. P, BIOL 211 or equivalent. Corequisite course LA 560L.
- LA 560L Landscape Ecology Lab**.....0 S

Graduate Faculty

Anne Fennell
Professor of Horticulture,
Forestry, Landscape and
Parks
Ph.D., University of Minnesota-
Minneapolis/ St. Paul, 1985
Molecular Biology, Stress
Physiology, Fruit Crop
Research

W. Carter Johnson
Professor of Horticulture,
Forestry, Landscape and
Parks
Ph.D., North Dakota State
University, 1971
General Ecology with
specialization in Forest and
Wetlands

Peter R. Schaefer
Professor of Horticulture,
Forestry, Landscape and
Parks
Ph.D., Michigan State
University, 1983
Forest Genetics

Leo C. Schleicher
Associate Professor of
Horticulture, Forestry,
Landscape and Parks
Ph.D., Purdue University,
1997
Agronomy with specialization
in Turfgrass Science

Russell L. Stubbles
Professor of Horticulture,
Forestry, Landscape and
Parks
Ph.D., Texas A & M University,
1979
Forest Recreating Planning

Human Development, Consumer and Family Sciences

Degree Offered:

M.S. Family and Consumer Sciences

- Child and Family Studies specialization
- Family Financial Planning specialization

Graduate Faculty

Cindi Penor Ceglian
Associate Professor
Ph.D., South Dakota State
University, 1975
Remarriage and Step-Families

Kay Cutler
Associate Professor
Ph.D. University of Texas, 1995
Early Childhood Education
EC Special Education

Debra DeBates
Assistant Professor
Ph.D., Iowa State University,
1999
Human Development and
Family Studies - Life Span

Bernadine Enevoldsen
Professor
Ph.D., University of Minnesota,
1993
Consumer Affairs, Family
Financial Planning

Scott Gardner
Associate Professor
Ph.D., Texas Tech University,
1995
Family Studies, Marriage and
Family Therapy

DeAnna Gilkerson
Professor
Ph.D., Iowa State University,
1993
Early Childhood Education

Laurie Stenberg Nichols
Professor
Ph.D., The Ohio State
University, 1988
Family and Consumer Sciences
Education, Family Studies

Renee Oscarson
Associate Professor
Ph.D., Purdue University,
1994
Gerontology, Family Studies,
Human Development

Department Head: Professor Andrew Stremmel

Graduate Coordinator: Associate Professor Scott Gardner

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — SNF

WWW: <http://www3.sdstate.edu/Academics/CollegeofFamilyandConsumerSciences>

E-mail: scott.gardner@sdstate.edu

Phone: 605/688-6418

Fax: 605/688-4888

Program Description

Courses offered in Human Development, Consumer and Family Sciences support the Master of Science in Family and Consumer Sciences degree program. Two specializations are available in Child and Family Studies and Family Financial Planning. Students within the Child and Family Studies specializations may choose either Early Childhood Education or Human Development and Family Studies as their area of emphasis or a general departmental emphasis.

Additional Admission Requirements

The Department requires all applicants to submit a current resume and short (2-3 pages) essay indicating professional goals and how completion of a master's degree will assist in meeting these goals. This statement will be used for two purposes: first, to assess the fit between the student's educational/career goals and the academic program; and second, to assess the student's written communication skills. Refer to College of Family and Consumer Sciences section, pages 86-87, for specific details.

General Requirements begin on page 16 (Master's Degree).

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

Consumer Affairs (CA) Course Offerings

| | |
|---|---------|
| CA 592 Topics..... | 1-3 FSu |
| CA 595 Practicum..... | 3-6 SSu |
| CA 604 Family Systems | 3 F |
| Research and theory relative to family functioning throughout the life cycle will be studied, especially financial decision making during crisis and conflict. Emphasis will be given to factors that shape family values, attitudes, and behaviors from a multi-cultural perspective. New and emerging issues critical to family functioning will be addressed. | |
| CA 612 Financial Counseling | 3 SSu |
| Theory and research regarding the interactive process between the client and the practitioner, including communication techniques, motivation and esteem building, the counseling environment, ethics, and methods of data intake, verification, and analysis. Other topics include legal issues, compensation, uses of technology to identify resources, information management, and current or emerging issues. | |
| CA 620 Family Economics | 3 SSu |

| | |
|---|-------------|
| CA 640 Fundamentals of Family Financial Planning | 3 F |
| The nature and functioning of financial systems, including currencies, markets, monetary and fiscal policy, and supply/demand for land, labor, 26d capital. Focus will be on the impact of global financial interdependence on individuals and families in the U.S. current and emerging issues, as well as current research and theory relative to financial systems will be discussed. | |
| CA 660 Investing for Family's Future | 3 F |
| An in-depth study of investment options for clients, this course will include common stocks, fixed income securities, convertible securities, and related choices. Relationships between investment options and employee/employer benefit plan choices will be studied. Current and emerging issues, and ethics will be an integral part of the course. | |
| CA 680 Insurance Planning for Families | 3 S |
| An in-depth study of risk management concepts, tools, and strategies for individuals and families, including life insurance; property and casualty insurance liability insurance; accident, disability, health and long-term care insurance; and government-subsidized programs; current and emerging issues, as well as ethical considerations, relative to risk management will be discussed. Case studies will provide experience in selecting insurance products suitable for individuals and families. | |
| CA 704 Estate Planning for Families | 3 S |
| Fundamentals of the estate planning process will be studied, including estate settlement, estate and gift taxes, property ownership and transfer, and powers of appointment. Tools and techniques used in implementing an effective estate plan; ethical considerations in providing estate planning services and new and emerging issues in the field will be explored. Case studies will provide experience in developing estate plans suitable for varied family forms. | |
| CA 715 Housing and Real Estate in FFP..... | 3 Su |
| The role of housing and real estate in the family financial planning process, including taxation, mortgages, financial calculations, legal concerns, and ethical issues related to home ownership and real estate investments. Emphasis on emerging issues in the context of housing and real estate. | |
| CA 725 Family, Employment Benefits and Retirement Planning..... | 3 Su |
| Study of micro and macro considerations for retirement planning. Survey of various types of retirement plans, ethical considerations in providing retirement planning services, assessing and forecasting financial needs in retirement, and integration of retirement plans with governmental benefits. | |
| CA 735 Personal Income Taxation..... | 3 F |
| This course provides in-depth information of income tax practices and procedures including tax regulations, tax return preparation, the tax audit processes, the appeals process, preparation for an administrative or judicial forum, and ethical considerations of taxation. New and emerging issues related to taxation will be covered. Family/individual case studies provide practice in applying and analyzing tax information and recommending appropriate tax strategies. | |
| CA 745 Professional Practices in Financial Planning..... | 3 S |
| Challenges of managing financial planning practices including, but not limited to: business evaluation, personnel, marketing, client services, ethics and technological applications. Relying both on a theoretical as well as an applied approach, students will analyze case studies that provide relevant, practical exposure to practice management issues, with a strong emphasis on current research findings. | |
| CA 755 Financial Planning Case Study | 3 Su |
| This course examines professional issues in financial planning, including ethical considerations, regulation and certifications requirements, communication skills, and professional responsibility. Students are expected to utilize skills obtained in other courses and work experiences in the completion of personal financial case studies, the development of a targeted investment policy, and other related financial planning assignments. | |
| CA 791 Independent Study | 1-3 |
| CA 792 Topics | 1-3 |

Andrew Stremmel
Professor
Ph.D., Purdue University,
1989
Early Childhood Education

Ann Wilson
Professor
Ph.D., Michigan State
University, 1975
Family Ecology and Child
Development

Early Childhood Education (ECE) Course Offerings

| | |
|--|----------------|
| ECE 591 Independent Study | 1-3 S |
| ECE 592 Topics..... | 1-3 SSu |
| ECE 601 Orientation in Graduate Study | 1 FS |
| An orientation to graduate studies in HDCF including exposure to graduate procedures and policies as well as writing skills. Required of graduate students in their first semester. Internet course. Equivalent to HDFS 601. | |
| ECE 665 Parent Education: Theory and Issues | 3 FS |
| ECE 676 Early Childhood Educational Administration and Practices | 1-4 SSu |
| ECE 700 Research Methods | 4 |

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

ECE 700L Research Methods Studio0
 ECE 711 Child Development Theory and Application3 SSu
 ECE 788 Individual Research and Study1-7 FSSu
 ECE 790 Seminar1-3
 ECE 791 Independent Study1-3 FSSu
 ECE 792 Topics1-3
 ECE 794 Internship1-7
 ECE 798 Thesis.....1-7 FSSu

Human Development, Child and Family Studies (HDFS) Course Offerings

HDFS 557 Family Assessment3 FSu
 Designed to introduce students to individual, family and community assessment tools that are used in prevention and intervention programs and approaches. P, senior or graduate student standing.

HDFS 591 Independent Study1-3 S

HDFS 592 Topics1-3 FSSu

HDFS 601 Orientation in Graduate Study1 FS
 An orientation to graduate studies in HDCF including exposure to graduate procedures and policies as well as writing skills. Required of graduate students in their first semester. Internet course. Equivalent to ECE 601.

HDFS 614 Adult Development3 FS
 Study of research, theoretical adult development; physical, intellectual and personality development of the adult integrates issues of individual, family, gender, and career development and provides opportunity for application in working with adults.

HDFS 665 Parent Education: Theory and Issues3 F
 Study of various approaches in parent education to become acquainted with programs and resources available, and to apply the knowledge in working with parents. Will involve the analysis of goals,trends, methods, and models of parent involvement and parent education.

HDFS 700 Research Methods4 Su

HDFS 700L Research Methods Studio0 Su

HDFS 711 Child Development Theory and Application3 Su
 In-depth study of human development. Emphasis upon current theories and their application to an understanding of the developmental growth processes; relationship between cognitive, social,physical and emotional development and behavior; range of normality in growth and behavior. Focus on normal development but with consideration of impact of deviance from normative development on child, family, neighborhood. Equivalent to ECE 711.

HDFS 742 Family Relations3 F
 Current theoretical approaches to family interactions; impact of various forces (social, personal, intrapersonal) upon dynamic aspects of family relationships; patterns and sequences of coalitions and alliances; factors which result in stress and breakdown or enhanced and rewarding relationships. Emphasis upon normal families but families but family problems are also studied.

HDFS 753 Family Public Policy3 S
 The impact of the professional in shaping family policy and effecting positive family policy formation; study of family policy priority issues and alternative strategies.

HDFS 777 Child and Family Counseling.....3 Su
 Theory and philosophy of counseling and therapy with children and families using a family systems approach. P, instructor consent.

HDFS 788 Individual Research and Study1-7 FSSu

HDFS 790 Seminar1-3

HDFS 791 Independent Study1-3 FSSu

HDFS 792 Topics1-3

HDFS 794 Internship1-7

HDFS 798 Thesis1-7 FSSu

Industrial Management

Degree Offered:
M.S. Industrial Management

Department Head: Professor Teresa Hall
Graduate Coordinator: Professor Teresa Hall

For additional information contact:

Mailing address: SDSU Box 2223

Solberg Hall 116 — SSO

WWW: [http://www3.sdstate.edu/academics/CollegeofEngineering/](http://www3.sdstate.edu/academics/CollegeofEngineering/EngineeringTechnologyManagement)

[EngineeringTechnologyManagement](http://www3.sdstate.edu/academics/CollegeofEngineering/EngineeringTechnologyManagement)

E-mail: teresa.hall@sdstate.edu

Phone: 605/688-6417

Fax: 605/688-5041

Program Description

The Master of Science degree in Industrial Management (MSIM), offered through the College of Engineering, is a program for professionals interested in expanding their ability to manage technical functions in an organization as the next logical step in their career path. The program of study offers the student development in core areas that span financial, human resources, information systems, leadership and motivation, and systems management as a way to provide the necessary skills and knowledge tools needed to succeed in today's business environment. Individuals from a variety of disciplines can benefit from the MSIM degree as it has been constructed as a multidisciplinary program with few prerequisites for the courses that have been identified to develop core competence in technical and business systems management.

There are three methods of progress toward the MSIM degree. Students may elect to pursue the traditional thesis route: this is valuable for individuals who anticipate future graduate work toward achieving the terminal degree in a related field. Most students select the research/design paper route: this requirement generally takes the form of a project in collaboration with local or regional industry to solve a problem or to improve a system or process. A third option is a non-thesis program with additional coursework culminating in a Comprehensive Exam. Regardless of the option selected, the student works closely with his/her Major Advisor to develop the program of study plan, make consistent progress toward completion of the degree, and to show proficiency in integrating and applying industrial management concepts through the Final Oral Exam.

Core Requirements

Required courses for the major area of study must contain at least three (3) semester credit hours of work from four (4) of the five (5) following topic areas:

- Finance
- Manufacturing
- Quantitative Analysis Tools
- Management
- Management Information Systems

Suggested courses for each specific core topic area:

Finance

ECON 610 Financial Management3

Management

SOC 533 Leadership and Group Organization3

GE 569 Project Management.....3

ECON 653 Advanced Market Research.....3

ECON 782 Personnel and Labor Relations.....3

EDAD 715 Supervision.....3

CHRD 716 Human Resource Management in Business and Industry.....3

Graduate Faculty

Frank Atuahene

Assistant Professor

Ph.D., Rutgers University, 1998

Civil and Environmental

Engineering

Teresa Hall

Professor

Ph.D., Iowa State University,

1997

Industrial Education and

Technology

Ross Kindermann

Professor

Ph.D., University of Illinois,

1978

Mathematics and Statistics

Huitian Lu

Professor

Ph.D., Texas Tech University,

1998

Industrial Engineering

Key to Course Descriptions

Course Number & Name
 Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Management Information Systems

CSC 572 Artificial Intelligence3
 CSC 576 Computer Graphics.....3
 CSC 630 Principles of Data Base System Design.....3
 CSC 710 Structure and Design of Programming Languages3
 CSC 740 Management Information Systems.....3

Manufacturing

GE 525 Occupational Safety and Health Management.....3
 GE 510 Human Factors in Design.....3
 ECON 660 Operations Management.....3
 ME 662 Quality Control.....3
 HSC 533 Industrial Health3

Quantitative Analysis Tools

STAT 582 Statistics for the Physical Sciences3
 ME 661 Operations Research.....3
 ECON 705 Econometrics3

Additional Admission Requirements

GRE: Not required
 TOEFL: Industrial Management requirement of 550
 Refer to College of Engineering section, pages 80-82, for specific details.

General Engineering (GE) Course Offerings

GE 510 Human Factors in Design3 F
 Human factors engineering (HFE), sometimes called ergonomics, deals with optimizing working and living conditions through designing for human use. The central approach of HFE involves the systematic application of relevant information about user characteristics, behavior and expectations in the design of man-made products, equipment, facilities, and environments. The objectives of HFE are (1) to enhance the effectiveness and efficiency of work and other human activities; and (2) to enhance the product user's comfort, safety, health and satisfaction.

GE 525 Occupational Safety and Health Management3 S
 Industrial accidents are caused by error-making human beings. Safety results achieved only through safety engineering and OSHA compliance are limited. Optimum levels of accident prevention can only be achieved through a coordinated program of both safety engineering and safety management. The focus on modern safety management includes: management's direction of safety, measuring safety performance, behavior modifications, motivating safety performance, profiling, program organization, products safety, and safety in the adjunct fleet.

GE 569 Project Management3 FS
 Topics to be covered will include: Organization, Management Functions, Time Management, Scheduling, Trade-Off Analysis, Planning, Information Systems, Cost Controls, and International PM.

GE 591 Independent Study1-3 FS

GE 592 Topics.....1-3 FSSu

GE 593 Workshop0-3

GE 601 Technical Studies in Industrial Management3
 An overview of the technical aspects of Industrial Management. Limits and derivatives of algebraic functions, definite integrals. Statistical methods and probability relating to engineering applications. Spread sheets and data base management systems as applied to the technical operating aspects in an industrial setting. P, consent of instructor.

GE 603 Designing the Work Place for Production3
 Designing the workplace to support the structuring of interpersonal communication and action in the workspace and to optimize the use of human energy through the total integration of corporate policy and culture with the physical environment. Includes the evaluation of operation procedures, the construction of behavior, computer assisted facilities management, developing control and order in the workplace, perceived stability as corporate support, flexibility as a catalyst to successful innovation.

| | |
|---|-----------------|
| GE 620 Industrial Safety | 3 FS |
| Safety requirements and standards common to all industries and processes are reviewed. Attention is focused on legal safety requirements, particularly the Occupational Safety and Health Administration (OSHA) Standards. Emphasis is placed on how to recognize, evaluate, and control safety hazards associated with common industrial methods and technologies. | |
| GE 691 Independent Study | 1-3 FSSu |
| GE 692 Topics | 1-3 FSSu |
| GE 693 Workshop | 0-3 |
| GE 696 Field Experience | 1-6 |
| GE 788 Research Problems/Projects | 1-2 FSSu |
| GE 791 Independent Study | 1-9 SSu |
| GE 792 Topics | 1-3 FSSu |
| GE 798 Thesis | 1-7 FSSu |

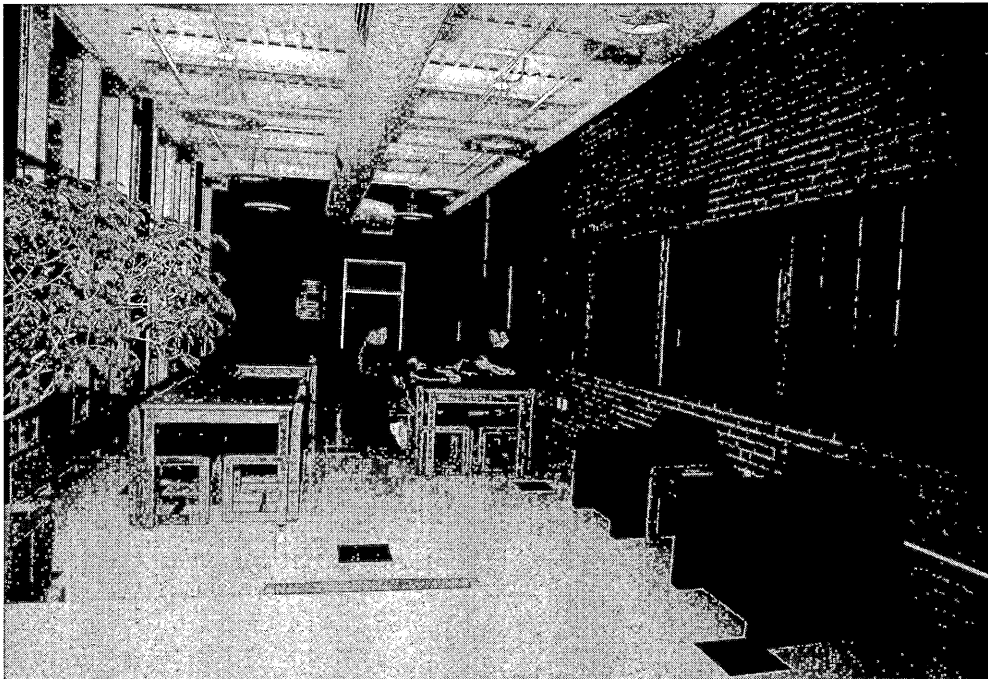
Key to Course Descriptions

Course Number & Name
Credits
F = Fall
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(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Journalism and Mass Communication

Degree Offered:

M.S. Communication Studies and Journalism

(see also *Communication Studies and Theatre*, page 54)

- Journalism specialization

Graduate Faculty

Mary Arnold
Associate Professor
Ph.D., University of Iowa,
1994
Mass Communications

Lyle D. Olson
Professor
Ed.D., Oklahoma State
University, 1988
Scholastic Press, Technical
Writing, Graphics and Design

Department Head: Associate Professor Mary Arnold

Graduate Coordinator: Professor Lyle D. Olson

For additional information contact:

Mailing address: SDSU Box 2235

Phone: 605/688-4171

Yeager Hall — SYE

Fax: 605/688-5034

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

E-mail: mary.arnold@sdstate.edu

lyle.olson@sdstate.edu

Program Description

The graduate major in journalism is designed to provide for 1) professional journalists who wish to broaden their education in communications and social sciences; 2) for individuals with undergraduate degrees in non-journalism specialties who wish to develop their knowledge in mass communication.

Available Options for Graduate Degrees

Master of Science: Option A: Communication Studies

OR

Journalism

Option Descriptions

Communication Studies: Designed to provide advanced studies in the areas of public address, rhetorical theory, radio/television studies, and theatre arts. This option provides further professional preparation and competencies in the area of communication.

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

See page 19 for descriptions of available options.

Core Requirements

MCOM 787 Research Methods in Communications

SPCM 605 Current Approaches to Communication

SPCM 700 Instructional Methods in Communication (for teaching assistants)

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

General Requirements begin on page 16 (Master's Degree).

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

Journalism and Mass Communication (MCOM) Course Offerings

| | |
|--|-----------------|
| MCOM 505 Theories of Communications | 3 |
| Major theories of communication, including media and interpersonal communication. | |
| MCOM 506 Public Opinion and Propaganda | 3 |
| Formation and measurement of public opinion; role of the media; propaganda techniques, agencies, theories. P, senior standing, consent. | |
| MCOM 515 Opinion Writing | 2 S |
| Opinion function of periodicals; great editorials and editorial writers; writing editorials; shaping policy. | |
| MCOM 516 Mass Media in Society | 3 S |
| Rights and responsibilities of the press; relation of the media to individuals and society; role of media in a free society. | |
| MCOM 517 History of Journalism | 3 F |
| Development, impact and importance of individual journalists and media in U.S. | |
| MCOM 519 Women in Media | 3 FS |
| This course examines contributions of women to the mass media from colonial era to present. It also studies the portrayal of women by the news media and by advertising, and it studies the roles currently played by women in the media and in supporting areas of advertising and public relations. Crosslisted with WMST 418. | |
| MCOM 530 Media Law | 3 FS |
| Study of the sources, processes, content and application of law and regulation in the mass communication context and of the ethics of communications practitioners. | |
| MCOM 537 Educational and Corporate TV | 3 |
| Preparation, presentation of educational and instructional materials for radio, TV, and film and classroom use. Crosslisted with MEPR 437-537. | |
| MCOM 574 Media Administration and Management | 3 F |
| Business practices, newspaper, magazine, and broadcast management. | |
| MCOM 575 Public Relations | 3 F |
| Interpreting institutional and industrial policies and programs to the public. | |
| MCOM 576 International and Ethnic Advertising | 3 F |
| This course develops an understanding of international and ethnic advertising and marketing. Students gain experience in marketing decisions that reflect an understanding of intercultural and international markets and explore the social and ethical issues in such marketing. | |
| MCOM 592 Topics | 1-5 FSSu |
| MCOM 693 Workshop | 1-4 Su |
| MCOM 762 Special Problems in Radio, TV or Film | 1-2 FS |
| MCOM 787 Research Methods in Communication | 3 S |
| Application of social science research methods and techniques to the study of interpersonal and mass communication. Elementary statistical procedures. | |
| MCOM 791 Independent Study | 1-3 FSSu |
| MCOM 798 Thesis | 1-7 FSSu |

Speech Communication (SPCM) Course Offerings

| | |
|---|----------------|
| SPCM 510 Organizational Communication | 3 |
| Explores communication processes in organizational contexts, theories of leadership, decision making and conflict, the application of principles that facilitate communication in organizations, and other selected topics. | |
| SPCM 516 Rhetorical Criticism | 3 F |
| Critical evaluation of American speakers from Colonial to contemporary. P, consent. | |
| SPCM 552 General Semantics | 3 |
| Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistic assumptions; and the objective systematization of language. Crosslisted with LING 452-552. Equivalent to LING 552. | |
| SPCM 592 Topics | 1-5 SSu |
| SPCM 605 Current Approaches to Communication | 3 F |

Key to Course Descriptions

Course Number & Name
Credits
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S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
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(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

SPCM 700 Instructional Methods in Communication.....3 F
Problems and issues in teaching the basic communication course, development of communication courses, and issues relevant to communication education.

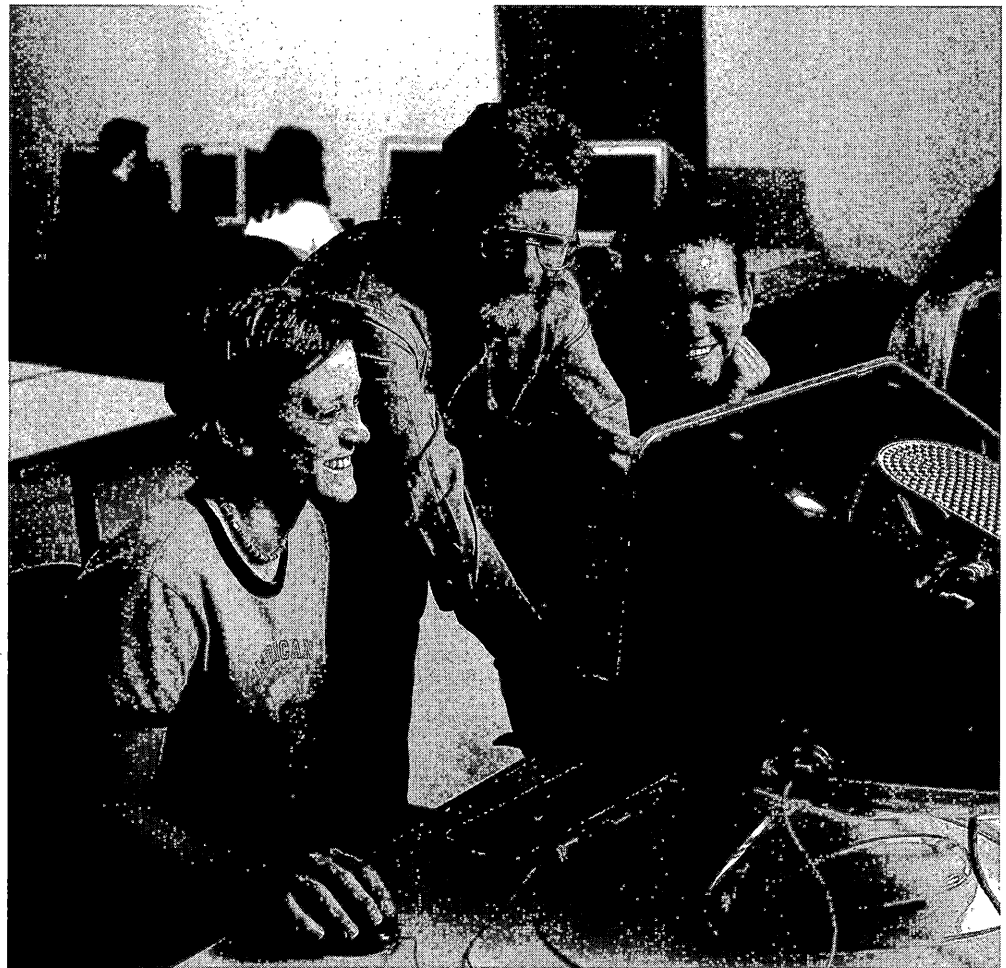
SPCM 707 Speech/English/Drama for Teachers.....1-3
Designed to help teachers develop curriculum materials and curricular/co-curricular instruction of literature and drama.

SPCM 766 Rhetorical Theory3 F
Historical development of rhetorical theory from classical to modern times.

SPCM 791 Independent Study1-2 FSSu

SPCM 792 Topics1-3 F

SPCM 798 Thesis1-7 FSSu



Mathematics and Statistics

Degree Offered:

M.S. Mathematics

Department Head: Professor Kenneth Yocom
Graduate Coordinator: Professor Robert Lacher

For additional information contact:

Mailing address: SDSU Box 2220

Harding Hall — SHH

WWW: <http://www3.sdstate.edu/Academics/CollegeofEngineering/MathematicsandStatistics/>

E-mail: robert.lacher@sdstate.edu

Phone: 605/688-6196

Fax: 605/688-5880

Program Description

The Master of Science in Mathematics prepares graduates for positions in industry, teaching, or doctoral programs.

Available Options for Graduate Degrees

- Master of Science:* Option A
 Option B
 Option C

See page 19 for descriptions of available options.

Core Requirements

All M.S. students must complete at least two of the following sequences:

| | | |
|---------------|---|------|
| MATH 521, 522 | Advanced Calculus I, II..... | 3, 3 |
| MATH 571, 672 | Numerical Analysis I, II..... | 3, 3 |
| MATH 716, 717 | Theory of Algebraic Structures I, II..... | 3, 3 |
| MATH 726, 727 | Real Variables I, II..... | 3, 3 |
| MATH 728, 729 | Complex Variables I, II..... | 3, 3 |

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

General Requirements begin on page 16 (Master's Degree).

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

Mathematics Teaching (MAST) Course Offerings

| | |
|-----------------------|---------|
| MAST 692 Topics | 1-12 Su |
|-----------------------|---------|

Mathematics (MATH) Course Offerings

MATH 523 Advanced Calculus I.....3 F
 Elementary topology of \mathbb{R} and \mathbb{R}^n , continuity, differentiation, and integration of \mathbb{R} and \mathbb{R}^n , infinite series of real numbers, uniform convergence.

MATH 524 Advanced Calculus II.....3 S
 Power series, improper integrals, calculus of transformations from \mathbb{R}^n to \mathbb{R}^n , differential forms, vector analysis.

Graduate Faculty

Ross P. Abraham
 Associate Professor
 Ph.D., University of Houston,
 1997
 Group Theory, Abstract
 Algebra

Kurt D. Cogswell
 Associate Professor
 Ph.D., Northwestern University,
 1996
 Dynamical Systems Real
 Analysis

Ross Kindermann
 Professor
 Ph.D., University of Illinois-
 Urbana, 1978
 Probability, Stochastic
 Processes

Robert J. Lacher
 Professor
 D.A., University of Northern
 Colorado, 1971
 Topology, Statistics, Quality

Daniel J. Schaal
 Associate Professor
 Ph.D., University of Idaho,
 1994
 Ramsey Theory, Combinatorics

Robert C. Schmidt
 Professor
 Ph.D., Iowa State University,
 1987
 Numerical Linear Algebra,
 Numerical Analysis

Kenneth Yocom
 Professor
 Ph.D., University of Wyoming,
 1972
 Number Theory, Abstract
 Algebra

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

| | |
|--|-----------------|
| MATH 530 Fractals and Chaos | 3 FSSu |
| An internet course. In addition to the material covered in MATH 423, more advanced concepts are introduced to prepare the student for an advanced course in chaotic dynamical systems and further work in the field. Additional topics include: invariant measures, Lyapunov exponents, and attractors in two or more dimensions. P, MATH 123. | |
| MATH 561 Introduction to Topology | 3 S |
| A first course in point-set topology, covering the elementary concepts of metric and general topological spaces; closure, interior, boundary, connectedness, compactness, and separation. Special attention is given to continuity of functions. | |
| MATH 566 Projective Geometry | 3 |
| A synthetic and/or analytic approach to geometric properties invariant under projective transformations: Theorems of Desargues, Pascal, Brianchon and applications. P, MATH 125 or consent of instructor. | |
| MATH 571 Numerical Analysis I | 3 FSu |
| Analysis of rounding errors, numerical solutions of nonlinear equations, numerical differentiation, numerical integration, interpolation and approximation, numerical methods for solving linear systems. | |
| MATH 590 Seminar | 1-2 |
| MATH 591 Independent Study | 1-3 FS |
| MATH 592 Topics Course | 1-3 FSSu |
| MATH 672 Numerical Analysis | 3 S |
| Continuation of MATH 571 including approximation theory, matrix iterative methods and boundary value problems for ordinary and partial differential equations. P, MATH 571. | |
| MATH 716 Theory Algebraic Structures I | 3 F |
| Abelian Groups, homomorphisms, permutation groups, Sylow theorems, group representations and characters. P, MATH 413. | |
| MATH 717 Theory Algebraic Structures II | 3 |
| Rings, Modules, Fields, Galois theory, solvable groups, commutative rings and modules. P, MATH 716. | |
| MATH 726 Real Variables I | 3 F |
| Set Theory, The Real Number System, Theory of Functions of a Real Variable, Lebesgue Measure, the Lebesgue Integral, Differentiation and Integration, Metric Spaces, Topological Spaces, Compact Spaces, Banach Spaces, Measure and Integration, The Daniell Integral, Topology, and Mappings of Measure Spaces. | |
| MATH 727 Real Variables II | 3 |
| MATH 728 Complex Variables I | 3 F |
| Algebra of complex numbers, classifications of functions, differentiation, integration, mapping, transformations, infinite series. P, MATH 225. | |
| MATH 729 Complex Variables II | 3 S |
| Continuation of MATH 728, Laurent series, calculus of residues, conformal mapping, analytic continuation, Riemann surfaces, infinite products, special functions. P, MATH 728. | |
| MATH 731 Ordinary Differential Equations | 3 |
| Existence theorems for solutions of ordinary differential equations, theory of linear differential equations and systems of linear differential equations oscillation theory. P, MATH 321. | |
| MATH 732 Partial Differential Equations | 3 F |
| Series, solutions, total differential equations, simultaneous equations, approximate solutions, partial differential equations of first and second orders, application. P, MATH 321. | |
| MATH 770 Numerical Linear Algebra | 3 S |
| Analysis of numerical methods for solving linear systems of equations. Methods for solving underdetermined and overdetermined systems. Methods for numerically calculating eigenvalues and eigenvectors of symmetric and non-symmetric matrices. P, knowledge of programming language and of matrix algebra. | |
| MATH 780 Advanced Mathematics | 1-18 |
| This course is the hub course for the Master of Science Degree in Mathematics. Each term several modules will be offered and students may enroll in one or more of the modules. Modules will include but not be limited to: abstract algebra, real analysis, complex analysis, ordinary differential equations and partial differential equations. Students will meet together one hour each week in a seminar format and will meet one hour per week for each credit of theoretical mathematics in which they are enrolled. Students may enroll in the course as many times as desired provided they do not duplicate any modules. Students in the MS in Mathematics will be required to complete at least 12 credits of MATH 780 as part of their plan of study. | |

| | |
|---|-----------------|
| MATH 784 Applied Probability Theory | 3 F |
| Topics in probability including an introduction to the axiomatic development of probability, random variable and distributions with emphasis on the exponential, binomial and Poisson distributions. Applications to discrete stochastic processes such as Markov chains and queuing theory are covered in some detail. P, MATH 381 or consent or STAT 381. | |
| MATH 788 Research Paper | 1-2 FSSu |
| MATH 790 Seminar | 1 |
| MATH 791 Independent Study | 1-3 FS |
| MATH 792 Topics | 1-3 FS |
| MATH 798 Thesis..... | 1-7 FS |

Statistics (STAT) Course Offerings

| | |
|--|-----------------|
| STAT 510 Programming Using SAS | 2 FS |
| The Base SAS System will be covered as it applies to information storage and retrieval; data input, modification, and programming; report writing, descriptive and simple statistics and file handling. Additional SAS packages will be explored dealing with SAS/FSP (interactive facility for data entry, editing, and retrieval), SAS/ASSIST (menu-driven, task-oriented interface), and SAS/Graph (information and presentation graphics). | |
| STAT 541 Statistical Methods II | 3 FSSu |
| Analysis of variance, various types of regression, and other statistical techniques and distributions. Sections offered in the areas of Biological Science and Social Science. P, STAT 281, MATH 381, or STAT 381, STAT 210 or STAT 410. Credit not given for both STAT 541 and STAT 581. | |
| STAT 545 Nonparametric Statistics..... | 3 F |
| Covers many standard nonparametric methods of analysis. Methods will be compared with one another and with parametric methods where applicable. Attention will be given to: (1) analogies with regression and ANOVA; (2) emphasis on construction of tests tailored to specific problems; and (3) logistic analysis. P, STAT 281, MATH 381 or STAT 381. | |
| STAT 582 Statistics for Physical Science..... | 3 F |
| Introduction to statistical design, one-way completely randomized design, testing contrasts and multiple comparison procedures, simple and multiple linear regression, factorial designs, fractional factorial designs and mixed models. SAS software is used extensively. Prerequisite MATH/STAT 381. Credit will not be given for both STAT 482 and STAT 441. | |
| STAT 590 Seminar | 1-2 |
| STAT 591 Independent Study | 1-3 F |
| STAT 592 Topics | 1-3 |
| STAT 662 Quality Control | 3 S |
| Application of statistical techniques to the control of quality and the development of economical inspection methods. Collection, analysis, and interpretation of operations data; control charts and sampling procedure. P, STAT 281, MATH 381 or STAT 381. Crosslisted with ME 662. | |
| STAT 751 Interpretation of STAT Software Output..... | 2 S |
| Interpretation of statistical software package(s) include statistics such as correlation, means, standard deviation, standard error, t-test, chi-square, simple and multiple linear and curvilinear regression, and balanced and unbalanced analysis of variance. P, STAT 541 or STAT 585, STAT 210 or STAT 410 or consent of instructor. | |
| STAT 761 Experimental Design | 3 S |
| Experimental designs involving confounding, factorial experiments, incomplete block, lattice, incomplete latin square designs, combining experiments, and discriminant analysis. P, STAT 541 or STAT 585. | |
| STAT 780 Advanced Statistical Methods | 1-18 |
| This course is a hub course in statistics for graduate students. Each term several modules will be offered and students may enroll in one or more of the modules. Modules will include but not be limited to: regression methods, multivariate methods, categorical data analysis, interpretation of statistical output, and experimental design. Students will meet together one hour each in a seminar format and will meet one hour per week for each credit of advanced statistical methods in which they are enrolled. Students may enroll in the course as many times as desired provided they do not duplicate any modules. | |
| STAT 791 Independent Study..... | 1-3 |
| STAT 792 Topics | 1-3 FSSu |

Key to Course Descriptions

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F = Fall
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Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Mechanical Engineering

Degree Offered:

M.S. Engineering

- Mechanical Engineering emphasis

Graduate Faculty

Fereidoon Delfanian
Professor
Ph.D., North Dakota State
University, 1995
Computational Fluid Dynamics,
Mechanical Systems

Donell Froehlich
Professor
Ph.D., Cornell University,
1976
Industrial, Mechanical Design

H.S. Ghazi
Professor
Ph.D., The Ohio State
University, 1962
Thermodynamics, Heat
Transfer

Zhong Hu
Assistant Professor
Ph.D., Tsinghua University,
1988
Solid Mechanics, Materials,
Computer Simulation

Alex Moutsoglou
Professor
Ph.D., University of Missouri-
Rolla, 1977
Thermofluid Energy Systems

Charles Remund
Professor
Ph.D., University of Nebraska-
Lincoln, 1988
Thermofluids, Systems

Department Head: Professor Donell Froehlich
Graduate Coordinator: Professor Alex Moutsoglou

For additional information contact:

*Mailing address: SDSU Box 2219
Crothers Engineering Hall — SCEH
WWW: <http://www.sdstate.edu/me20>
E-mail: alex.moutsoglou@sdstate.edu*

*Phone: 605/688-5426
Fax: 605/688-5878*

Program Description

The Mechanical Engineering Department offers courses for the degree Master of Science in Engineering. Also, course offerings can be used in co-major or minor programs for students of other departments. The graduate program in engineering with an emphasis of M.E. concentrates on advanced study, including design and research, in such areas as thermofluid science, solid mechanics and dynamics, and industrial and quality control engineering. Students are encouraged to broaden their education by participating in supporting programs in established departments such as mathematics, computer science and other fields of engineering.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525 paper based or 197 computer based
Refer to College of Engineering section, pages 80-82, for specific details.

General Requirements begin on page 16 (Master's Degree).

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

Mechanical Engineering (ME) Course Offerings

| | |
|--|---------------|
| ME 514 Air Pollution Control | 3 |
| Control of particulates and gaseous pollutants. Design and operating characteristics of gravity settlers, cyclones, electrostatic precipitators, fabric filters, scrubbers, incinerators, adsorption beds and absorption towers. P, ME 311 or consent. | |
| ME 527 Gas Dynamics I | 3 S Su |
| Objectives, applications, and scope of the subject. Methods of fluid dynamics and thermodynamics. Compressible flow in ducts, nozzles and diffusers. Propagation of plane waves; shock dynamics, characteristics, interaction of waves. General theorems of gas dynamics. P, EM 331, MATH 331. | |
| ME 540 Computer-Aided Design | 3 F |
| The use of digital computer as a design tool. Techniques and algorithms which increase the rationality of the design process. Design principles and optimization theory. General approach to constrained optimization. Probabilistic approaches to design. Computer-aided design to reliability specification. Application of computer graphics to engineering design. The emphasis is on extending the designer's potential and not on automating those activities. P, competence in FORTRAN programming and consent. | |
| ME 590 Seminar | 0-2 |
| ME 592 Topics | 1-5 FS |

| | |
|---|-------------|
| ME 603 Thermo-Fluid Energy Systems..... | 3 F |
| Review of viscous fluid, basic modes of heat transfer, thermodynamics, and energy conversion. Discussion of energy sources, uses, conversion, transmission, and economics. Analysis of conventional energy generation, storage, and transmission systems, criteria for design and analysis of energy systems such as nuclear, wind, solar, geothermal, etc. | |
| ME 606 Statistical Thermodynamics..... | 3 |
| Review of classical thermodynamics. Principles of kinetic theory and classical statistical mechanics. Principles of quantum mechanics, quantum statistics, partition functions, and thermodynamic properties. | |
| ME 611 Advanced Heat Transfer I | 3 Su |
| Review of principles of heat conduction. Multidimensional steady and transient heat conduction in cartesian and cylindrical coordinates. Separation of variables and integral transforms. Review of principles of radiation. Spectral and directional radiative properties. Gaseous radiation. Radiative transport equation. | |
| ME 612 Convection Heat Transfer | 3 |
| Scale Analysis. Laminar Boundary Layer flow. Laminar duct flow. Laminar natural convection. Natural convection in enclosures. Turbulent boundary layer flow. Turbulent duct flow. | |
| ME 621 Viscous Flow I | 3 |
| Review of fluid motion with friction. Boundary layer theory. Exact solutions of the Navier-Stokes equations. Creeping flow and the theory of lubrication. Exact similarity solutions and approximate integral methods for boundary layer flow. Wall turbulence. Logarithmic law of the wall. Mixing length model. | |
| ME 628 Gas Dynamics II | 3 |
| Flow with mass addition. Combustion Waves. Generalized one-dimensional flow. Flow with small perturbations. Multidimensional flow. Methods of characteristics applied to steady and unsteady flows. | |
| ME 631 Advanced Analytical Methods | 3 |
| Differential systems related to practical engineering problems. Linear ordinary differential equations. Series solutions; Fourier series. Partial differential equations: parabolic, elliptic, hyperbolic. Integral equations. | |
| ME 635 Modeling and Simulation | 3 |
| A systems approach to the analysis of electrical, mechanical and hydraulic systems. Generalized modeling methods, governing equations, system response, synthesis and design of dynamic systems, and specific applications of modeling technique. Corequisite course: ME 635L. | |
| ME 635L Modeling and Simulation Lab..... | 0 |
| ME 639 Advanced Metallurgy | 3 |
| Crystal lattices and diffraction by crystals. Structure determination, defects, registration by microscopic methods, single crystal orientation and analysis of stress caused by phase transformation. | |
| ME 641 Advanced Stress Analysis in Mechanical Design..... | 3 |
| Introduction to the theory of elasticity. Equilibrium equations, boundary conditions and compatibility relations. Plane stress and strain. Torsion and curved beams. Rectangular and polar-coordinates. Axisymmetric problems. Energy methods. Introduction to Finite Element method. | |
| ME 645 Advanced Machine Design | 3 |
| Experimental, empirical and analytical methods in advanced design. Thermal stresses. Stability. Theories of failure. Creep and fatigue considerations. Introduction to fracture mechanics. Plates and shells. | |
| ME 661 Operations Research..... | 3 FS |
| History and organization of operations research, mathematical and statistical models in industrial decisions. The evaluation of alternatives by means of linear programming, queuing theory, deterministic and stochastic inventory models, game theory and simulation. | |
| ME 662 Quality Control | 3 S |
| Application of statistical techniques to the control of quality and the development of economical inspection methods. Collection analysis, and interpretation of operations data; control charts and sampling procedure. Crosslisted with STAT 662. | |
| ME 663 Topics in Reliability Engineering | 3 |
| Probability concepts and typical models involved in the statistical prediction of reliability. Methods for estimating required parameters from experimental data. Reliability and maintainability techniques in practice, and a survey of recent developments in the field. | |

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

| | |
|--|-----------------|
| ME 665 Systems Analysis | 3 |
| Analysis of industrial problems as systems of servicing stations with deterministic and stochastic inputs and service times using queuing theory as a principal approach. Development of theoretical models. Digital computer simulation of complex systems. | |
| ME 667 Decision Theory | 3 |
| Examination and evaluation of modern techniques of decision making. Mathematical models and measurement theory. Certainty, risk, and uncertainty. | |
| ME 690 Seminar..... | 0 FS |
| ME 691 Independent Study..... | 1-5 FSSu |
| ME 692 Topics | 1-3 FS |
| ME 787 Research | 1-9 Su |
| ME 788 Master's Research Problems/Projects..... | 1-9 FSSu |
| Independent research problems/projects that lead to a research or design paper but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive or intensive. Does not include research courses which are theoretical. | |
| ME 790 Seminar..... | 1 FS |
| ME 791 Independent Study..... | 1-3 FSSu |
| ME 792 Topics | 1-3 FS |
| ME 798 Thesis | 1-7 FSSu |



Modern Languages

Coursework only offered

Department Head: Associate Professor Maria Ramos

For additional information contact:

Mailing address: SDSU Box 2275

Nursing/Family/A&S — SNF

WWW: <http://www3.sdstate.edu/academics/collegeofartsandscience/modernlanguages>

E-mail: maria.ramos@sdstate.edu

Phone: 605/688-5101

Fax: 605/688-6699

Modern Languages (MFL) Course Offerings

- MFL 560 Topics: French, German, and Spanish Literature.....1-4**
An intensive examination of a significant writer(s), period or theme in French, German, or Spanish literature. This course may be repeated for credit if topic is different.
- MFL 591 Independent Study1-3 FSu**
- MFL 592 Topics3 FSu**
- MFL 595 Practicum1-6 Su**
- MFL 596 Field Experience3-12**

French (FREN) Course Offerings

- FREN 591 Independent Study1-3 FSSu**

German (GER) Course Offerings

- GER 591 Independent Study.....1-3**

Spanish (SPAN) Course Offerings

- SPAN 591 Independent Study.....1-6 FSu**

Graduate Faculty

Karen Hardy Cardenas
Professor of Modern Languages
Ph.D., University of Kansas, 1973
Spanish and Spanish American Language, Culture and Literature

Maria Ramos
Associate Professor of Modern Languages
Ph.D., Washington University, 1997
Spanish Language, Literature and Film

Anthony H. Richter
Professor of Modern Languages
Ph.D., Northwestern University, 1971
German Literature, Russian-German Immigrants

Music

Minor only offered

Graduate Faculty

Corliss Johnson
Professor
D.M.A., University of
Colorado-Boulder, 1972
Director of Jazz Activities,
Clarinet

Department Head: Professor Corliss Johnson
Graduate Coordinator: Professor Corliss Johnson

For additional information contact:

Mailing address: SDSU Box 2212

Lincoln Music Center — SLM

WWW: <http://www3.sdstate.edu/academics/collegeofartsandscience/music>

E-mail: corliss.johnson@sdstate.edu

Phone: 605/688-5188

Fax: 605/688-4307

Music (MUS) Course Offerings

| | |
|---------------------------------|----------|
| MUS 591 Independent Study | 1-3 FSSu |
| MUS 592 Topics | 1-5 SSu |



Nursing

Degree Offered:

M.S. Nursing

- Administrator specialization
- Educator specialization
- Family Nurse Practitioner specialization
- Neonatal Nurse Practitioner specialization
- Psychiatric Nurse Practitioner specialization

Dean: Professor Roberta K. Olson

Graduate Nursing Department Head: Professor Roberta Olson

For additional information contact:

Mailing address: SDSU Box 2275

Phone: 605/688-4114

Nursing/Family/A&S — SNF

Fax: 605/688-5827

WWW: <http://www3.sdsu.edu/Academics/CollegeofNursing/GraduateNursing/>

E-mail: sheila.stotz@sdsu.edu

Program Description

The purpose of graduate education in nursing is to prepare professional leaders with specialized knowledge and skills to meet the nation's needs in clinical practice, nursing administration, and nursing education. The aim of the program is to prepare nurses to practice at an advanced level in nursing as a nurse educator, administrator, or clinician which includes clinical nurse specialist, neonatal nurse practitioner, or family nurse practitioner. Achievement of this aim includes study in related fields and the use of research in the examination of nursing problems.

Program Objectives

The graduate of the Master of Science in Nursing program will:

1. Incorporate knowledge and theories from nursing and other supportive disciplines into advanced nursing practice.
2. Display competence within the legal scope of practice for the chosen specialization.
3. Evaluate and utilize research within advanced practice nursing.
4. Use leadership, administration, and teaching strategies to improve nursing practice and health care delivery.
5. Assume accountability to influence health policy, improve health care delivery, address the diversity of health care needs, and advance the nursing profession.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C in NP specializations only

See page 19 for descriptions of available options.

Core Requirements

See sidebar on page 116 for required core courses for all students.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 560

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

1. Bachelor's degree in nursing from an accredited program with an upper division major in nursing with a "B" average (3.0 or higher on a 4.0 point grading system).
2. Current licensure as an RN or eligibility for licensure.
3. Professional nursing liability insurance.

Graduate Faculty

Paula P. Carson
Associate Professor
Ph.D., University of Arizona,
1992

Gloria P. Craig
Associate Professor
Ed.D., Drake University, 1997

Carla Dieter
Assistant Professor
Ed.D., University of South
Dakota, 2001

Nancy Fahrenwald
Assistant Professor
Ph.D., University of Nebraska
Medical Center, Omaha,
2002

Kay Foland
Associate Professor
Ph.D., University of Texas-
Austin, 1989

Margaret Hegge
Distinguished Professor
Ed.D., University of South
Dakota, 1983

Lori D. Hendrickx
Associate Professor
Ed.D., University of Montana,
1998

Cristina Lammers
Associate Professor
MD, 1984, University of
Uruguay
MPH, 1997, University of
Minnesota

Required Core Courses for All Students

- NURS 610 *Advanced Practice: Nursing Introduction to Roles and Issues*
- NURS 620 *Research Methods for Advanced Practice Nurses*
- NURS 670 *Health Policy, Legislation, Economics and Ethics*

Electives

- NURS 625 *Human Sexuality in Health Care*
- NURS 635 *Dying, Death & Bereavement*
- NURS 650 *Management of Acute and Chronic Pain*
- NURS 691 *Special Problems*
- NURS 692 *Special Topics*
- NURS 790 *Seminar in Advanced Nursing*

4. 1500 hours of nursing practice experience.
5. An approved course in statistics.
6. An additional application to the Graduate Nursing program and the Immunization and Physical Examination Form. These documents may be requested from the College of Nursing, SDSU, Box 2275, Brookings, SD 57007. Telephone: 605/688-4114.

Total enrollment in the Master of Science in Nursing program may vary depending upon available clinical facilities and qualified faculty. Applicants are selected competitively from those qualified for the master's program. Applicants should check with the Graduate Nursing office for application deadlines.

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

Post Master's Certificates

Nurse Educator

| | |
|--|---|
| AHED 751 Principles of College Teaching | 3 |
| NURS 631 Advanced Physical Assessment | 3 |
| NURS 710 Curriculum Development in Nursing | 2 |
| NURS 778 Nurse Educator – Practicum | 6 |

Family Nurse Practitioner

| | |
|---|---|
| NURS 631 Advanced Physical Assessment | 3 |
| NURS 765 FNP Practicum I | 5 |
| NURS 771 FNP Practicum II | 7 |
| NURS 776 FNP Seminar | 3 |
| NURS 777 FNP Internship..... | 9 |
| PHA 645 Pharmacotherapeutics | 4 |

Health Science (HSC) Course Offerings

HSC 533 Industrial Health3 F
 Industrial health deals with the scope, objectives, and functions of occupational health programs, examines work related diseases, harmful exposure to chemicals and physical agents which may cause discomfort, stress, inefficiency or disease; emphasis on preventive measures to assure a reasonably healthful work environment.

Nursing (NURS) Course Offerings

NURS 610 Advanced Nurse Practice: Introduction to Roles and Issues3 F
 Introduction to advanced nursing practice. Theoretical basic for education, administration and clinical practice roles, and research as a basic for advanced nursing practice will be emphasized. Rural health care delivery systems, professionals and consumers (individuals and groups) will be included.

NURS 623 Pathophysiology Applied to Advanced Practice Nursing4 FS
 Pathophysiological concepts relevant to the mechanisms of disease that provide the foundation for clinical assessment, decision-making, and management. P or concurrent, NURS 610.

NURS 624 Neonatal Pathophysiology4 F
 Embryology of the major organ systems as well as specific physiologic and pathophysiological processes relevant to the neonate and convalescing infant will be studied. Emphasis placed on the relationship among pathophysiology, clinical nursing problems, and decision-making. P, NURS 610.

NURS 625 Human Sexuality in Health Care3 SSu
 Provides the opportunity to identify, study and discuss those areas in human sexuality which concern human interaction and in particular the work with clients and their families in health care. P, graduate student in nursing; graduate student in other disciplines with consent of instructor.

NURS 626 Research Methods for Advanced Practical Nursing3 S
 The primary focus of this course is the development of knowledge and skills to conduct research. Specific emphasis are: research methods, critique of studies for scientific merit, development and conduct of research, interpretation, dissemination and application of research findings to advanced nursing practice. P, NURS 610.

NURS 630 Advanced Assessment of Neonate2 Su
 Development of systematic assessment skills to evaluate the critically ill neonate and family from physical, physiologic, developmental, behavioral and psychosocial perspective. Assessment, laboratory, and other data will be correlated in the environmental context. P, or concurrent, NURS 610. Corequisite course: NURS 630L.

NURS 630L Advanced Assessment Neonate Clinical Lab0 Su

NURS 631 Advanced Assessment – Lifespan3 FSu
 This course builds on basic skills of individual health assessment. It includes the advanced assessment of physiological and psychological processes relevant to the health of a variety of cultural, gender, and age related groups, including the assessment of selected human pathologies. Skills and tools necessary to identify health care needs and health maintenance protocols will be included. Corequisite course: NURS 631L.

NURS 631L Advanced Assessment – Lifespan Clinical Lab0 FSu

NURS 635 Dying, Death and Bereavement2-3 SSu
 Provides an overview of dying death, and bereavement. Self-examination of these issues will be encouraged. An understanding of the specific needs of both dying and bereaved children and adults and appropriate interventions will be covered. This course will also provide students with an overview of some of the most current research and literature in the areas of dying, death, and bereavement. P, graduate students in nursing, other graduate students with instructor's consent.

NURS 640 Legal and Ethical Accountability in Health Care2 Su
 Study of the ethical positions and legal factors influencing behavior and decision making in healthcare. Emphasis on developing a justifiable ethical framework with consequent rights, responsibilities and conflicts. P, graduate students in nursing and other health professionals with instructor's consent.

NURS 650 Management of Acute and Chronic Pain3 F
 Provides opportunity to identify and discuss management principles of acute and chronic pain with pharmacologic and non-pharmacologic measures.

NURS 655 Health and the Older Adult.....2
 Based on a multidisciplinary perspective, issues and topics affecting the health care of the older adult will be analyzed. P, senior or graduate nursing student, graduate or senior student of other health disciplines or consent of the instructor. Required for Gerontology Emphasis.

NURS 670 Health Policy, Legislation, Economics and Ethics.....3 SSu
 Legislative, legal, ethical, economic, and political issues related to health policy that impact advanced nursing practice will be studied. Current and projected health care issues will be featured. Following an analysis of political viewpoints, change agent and leadership strategies designed to impact current state and national legislation will be included. Economic justification of the Advanced Practice Nursing Role will be emphasized with attention to collaboration, resource procurement, and conflict resolution. Philosophical principles of biomedical ethics and decision-making will be integrated into all topical discussion. P, NURS 610.

NURS 690 Seminar.....1-4

NURS 691 Independent Study1-3 FSSu

NURS 691L Special Problems Clinical0 FS

NURS 692 Topics1-3 FSSu

NURS 699 Computer-Aided Instruction3 SSu
 Explores the psychological underpinnings of computer-aided instruction and will challenge the participants to apply those theories in the development of working products. Students will produce media-rich interactive programs in HTML and to make these products available on the World Wide Web.

NURS 710 Curriculum Development in Nursing2 Su
 Principles of curriculum development and their application to nursing curricula. Selection, organization and evaluation of learning experiences. P, or concurrent, NURS 610, or consent of instructor.

NURS 725 Patient Care Management3
 Identification and analysis of management theories influencing middle management nursing roles in a variety of patient care situations. P, or concurrent, NURS 510, or consent of instructor.

Janet Lord
 Professor
 Ph.D., University of Texas,
 Austin, 1982

Marylou Mylant
 Associate Professor
 Ph.D., University of Texas-
 Austin, 1988

Roberta K. Olson
 Professor
 Ph.D., St. Louis University,
 1984

Carol J. Peterson
 Professor
 Ph.D., University of Minnesota-
 Minneapolis/St. Paul, 1969

Patricia A. Smyer
 Associate Professor
 D.N.Sc., University of
 California, 1994

Dianna Sorenson
 Professor
 Ph.D., University of Arizona,
 1990

Thomas Stenvig
 Associate Professor
 Ph.D., University of Wisconsin,
 Madison, 2001

Lois Tschetter
 Assistant Professor
 Ed.D., University of South
 Dakota, 2001

Howard E. Wey
 Associate Professor
 Ph.D., University of Cincinnati
 College of Medicine, 1980

Functional Role Courses

- NURS 770 *Clinical Nursing Specialist: Practicum*
- NURS 771 *Family Nurse Practitioner: Primary Care*
- NURS 772 *Neonatal Nurse Practitioner: Practicum I*
- NURS 774 *Nurse Administrator: Practicum*
- NURS 776 *Family Nurse Practitioner: Small Group*
- NURS 777 *Family Nurse Practitioner: Practicum*
- NURS 778 *Nurse Educator: Practicum*
- NURS 779 *Neonatal Nurse Practitioner: Practicum II*

NURS 760 Health Promotion and Disease Prevention: Counseling Individual/Family4 F
 Advanced nursing concepts centered on health promotion and therapeutic communication applied to individuals, families, and groups in community-based environments of care will be the focus of this course. Impact of national, state, and local community-based environments of care will be the focus of this course. Impact of national, state, and local community resources and directives for health policy, disease prevention, and health maintenance among individuals, families and community groups. Advanced family assessments and health appraisals will be central to the clinical experiences with an emphasis on the development of individual counseling techniques and skills and family process interpretation. P or concurrent, NURS 623, NURS 631. Corequisite course: NURS 760L.

NURS 760L Health Promotion and Disease Prevention: Counseling Individual/Family Lab0 F

NURS 765 Family Nurse Practitioner Practicum I5 S
 The emphasis of the course is on the application of evidence-based knowledge to clinical practice in primary care settings. Students will strengthen their health history and physical examination skills in the formulation of differential diagnoses and clinical decision-making relative to common primary care conditions and developmental variations such as pregnancy. Development of initial primary care procedural skills along with ordering and interpreting diagnostic testing will be included. This course provides the basis for integrating clinical data with knowledge of pathophysiology to formulate diagnostic hypotheses for clients across the lifespan. P or concurrent NURS 623, 626.

NURS 770 Clinical Nurse Specialist Practicum4-6 FS
 Extension and refinement of advanced nursing practice core competencies and the development of expertise in a clinical specialist role are the foci of this course. Researcher, consultant, leadership, educator, and clinical subrole functions will be used to influence the health care environment and advance the nursing profession. Student goals specific to selected specialty area(s) will be the basis for clinical experiences. students will plan, implement, and evaluate theoretically and research-based interventions to directly and indirectly manage the health of clients and systems in selected specific specialty area(s) through the actualization of synthesized role components. P, completion of core requirements. Corequisite course: NURS 770L.

NURS 770L Clinical Nurse Specialist Practicum Clinical Lab.....0 FS

NURS 771 Family Nurse Practitioner Practicum II.....7 F
 Emphasizes the integration of pathophysiology and specific disease and symptom complexes in the formulation of differential diagnoses and clinical management of acute and chronic health problems.

NURS 772 Neonatal Nurse Practitioner-Practicum I.....6 F
 Integration of principles of prevention, epidemiology, pharmacology, physiology, and pathophysiology in a supervised practicum with neonates and their families. Emphasis placed on the role of clinician with attention to consultant, collaborator, educator, research utilizer, and advocate roles. Procedural, diagnostic reasoning, patient management, and organizational skill development stressed. P, completion of core requirements. Corequisite course: NURS 772L.

NURS 772L Neonatal Nurse Practitioner-Practicum I Clinical Lab0 F

NURS 774 Nurse Administrator: Practicum6 FS
 Provides the opportunity to integrate principles and theories from support courses in health service administration and nursing courses to the administration of a nursing department or agency. Emphasis is placed on advanced nursing practice needed to administer the work of nursing. This is a supervised administrative practicum focused on broad participation in the administrative process in a health care organization. Corequisite course: NURS 774L.

NURS 774L Nurse Administrator: Practicum Clinical Lab0 FS

NURS 776 Family Nurse Practicum III: Small Group Instruction3 S
 Emphasis is placed on the concept synthesis and outcome evaluation of the differential diagnoses and referral to multidisciplinary healthcare team members are emphasized in the development of appropriate interventions for the achievement and maintenance of optimal health. Transition from the student nurse practitioner role to professional practice is facilitated. P, NURS 771. Corequisite course: NURS 777.

NURS 777 Family Nurse Practicum III: Internship.....3-9 SSu
 The clinical internship offers the advanced practice nursing student the opportunity to synthesize and apply theoretical concepts derived from nursing and other health-related disciplines to the clinical practice settings for the provision of primary care to clients across the lifespan. Independent and interdependent clinical decision making is expected and interdisciplinary collaboration and referral are emphasized. Clients are viewed in a personal, cultural, and environment context.

| | |
|--|-----------------|
| NURS 778 Nurse Educator: Practicum | 6 F |
| Extension and refinement of advanced nursing practice core competencies within the development of the nurse education role are the foci of this course. Students will implement and evaluate a variety of educational theories and principles. Corequisite course: NURS 778L. | |
| NURS 778L Nurse Educator: Practicum Clinical Lab | 0 F |
| NURS 779 Neonatal Nurse Practitioner: Practicum II | 12 S |
| Integrates and synthesizes knowledge from foundation and core courses in a longitudinal clinical experience in the neonatal population. Supervised practice will include following a diverse caseload of infants and families providing daily assessment, diagnosis, and medical management from admission through discharge. Additional experiences include parent education, discharge planning, and post-discharge follow-up. P, NURS 772. Corequisite course: NURS 779L. | |
| NURS 779L Neonatal Nurse Practitioner: Practicum II Clinical Lab | 0 S |
| NURS 785 Self Care: The Older Adult | 3 |
| Analysis from a nursing perspective of various factors which alter the self-care of the older adult. P, consent of instructor. | |
| NURS 788 Problems in Nursing Research | 1-2 FSSu |
| Application of the nursing research process with particular emphasis on problems of inquiry in the health care system (Project or non-thesis option). Requires five additional credits of electives. | |
| NURS 790 Seminar..... | 1-3 |
| NURS 798 Thesis | 1-7 FSSu |

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Nutrition, Food Science and Hospitality

Degrees Offered

Ph.D. Biological Sciences

- Human Nutrition and Food Science specialization

M.S. Family and Consumer Sciences

- Nutrition and Food Science specialization

M.S. Biological Sciences

- Human Nutrition and Food Science specialization

Graduate Faculty

Helen Chipman
Professor

Ph.D., Colorado State
University, 1992

Food Science and Human
Nutrition

Georgia W. Crews
Associate Professor

Ph.D., Kansas State University,
2000

Human Nutrition

Kendra K. Kattelman
Associate Professor

Ph.D., University of Missouri,
1993

Nutrition

Padmanaban G. Krishnan
Professor

Ph.D., North Dakota State
University, 1989

Food Science

Bonny L. Specker
Professor

Ph.D., University of Cincinnati,
1983

Epidemiology

Chunyang Wang
Professor

Ph.D., Iowa State University,
1993

Food Science

Department Head: Professor C.Y. Wang

Graduate Coordinator: Professor C.Y. Wang

For additional information contact

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — SNF

WWW: NFSH.sdstate.edu

E-mail: cy.wang@sdstate.edu

Phone: 605/688-5161

Fax: 605/688-5603

Program Description

Courses offered in Nutrition and Food Science support the M.S. degree in Family and Consumer Sciences, and M.S. degree in Biological Sciences, and Ph.D. degree in Biological Sciences.

Additional Admission Requirements

GRE: Not required

TOEFL: Department Requirements of 525

Refer to the following for specific details in each program.

(1) M.S. in Family and Consumer Sciences, page 86

(2) M.S. in Biological Sciences, page 38

(3) Ph.D. in Biological Sciences, page 38

General Requirements begin on page 16 (Master's degree) and 21 (Ph.D.).

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

Nutrition, Food Science and Hospitality (NFSH) Course Offerings

NFS 550 Food Analysis4 S
Principles and techniques of physical and chemical analysis of food products. It will include proximate analysis of moisture, protein, lipids and carbohydrates and chemical or instrumental analysis of vitamins, minerals and food additives.

NFS 550L Food Analysis Lab0 S

NFS 551 Advanced Food Processing4 F

This course is designed as a capstone course for undergraduate Food Science students and an introductory course for graduate students in food-related majors. The principles and technologies of food storage, process and packaging will be discussed in depth. Emphasis will be placed in the development of new food products.

NFS 551L Advanced Food Processing Lab0 F

| | |
|---|-----------------|
| NFS 580 Travel Studies | 1-5 |
| This travel-study course is designed to provide extra-mural educational experiences, as approved by and under the direction of a faculty member, and may be in cooperation with faculty and administrators at other institutions. Students will participate in hands-on activities and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report. | |
| NFS 590 Seminar | 1-2 FS |
| NFS 591 Independent Study | 1-3 S |
| NFS 592 Topics | 1-3 SSu |
| NFS 593 Workshop | 1-3 |
| NFS 601 Orientation in Graduate Study | 1 FS |
| An orientation to graduate studies in NFSH including exposure to graduate procedures and policies as well as writing skills. Required of graduate students in their first semester. Internet course. | |
| NFS 634 Techniques in Food and Nutrition Research | 3 FSu |
| Laboratory experience using methods, measurements and instruments for obtaining nutritional data. Topics covered will include methods of conducting field, applied and metabolic studies in food and human nutrition. | |
| NFS 634L Techniques of Food and Nutrition Research Lab | 0 F |
| NFS 660 Maternal and Child Nutrition..... | 3 FS |
| Fundamental principles of nutrition during pregnancy, lactation, infancy, and childhood. Topics include: the physiologic and genetic events that occur during the process of conception, pregnancy and growth; nutritionally critical periods during pregnancy, lactation and growth; implications of nutrition on health, growth and mental/emotional development; development of food habits in children; and the current educational and support programs available to the mother and child. | |
| NFS 662 Sociocultural Aspects of Nutrition | 2 Su |
| The study of diverse dietary patterns and their impact on nutritional health including food attitudes, socioeconomic structures, cultural patterns of food intake and their effect on nutrient composition of the diet. | |
| NFS 702 Macronutrients in Human Nutrition | 5 F |
| The course is an overview of macronutrients, including carbohydrates, lipids and proteins. It will cover recent findings on their functions in human nutrition and health. | |
| NFS 704 Phytochemicals..... | 2 FSSu |
| The course is an overview of phytochemicals (non-nutritive biologically active compounds) from fruits, vegetables, cereals, and oilseeds. It will cover recent findings on chemistry, physiological functions, potential health implications of phytochemicals. It has been developed as an Internet-based course. | |
| NFS 725 Nutrition and Human Performance..... | 3 FS |
| This course is designed to develop an understanding of nutrition, based upon knowledge of the biochemical and physiological process and functions of specific nutrients in meeting nutritional requirements. Emphasis will be placed upon the relationship of optimal nutrition and physical efficiency and performance. | |
| NFS 760 Vitamins and Minerals Human Nutrition | 3 S |
| The study of the functional rolls of vitamins and minerals in human nutrition. Course content will include: identification of essential functions for the vitamins and minerals; health implications of varying amounts vitamins and minerals in the diet; interactions between vitamins; interactions between minerals; vitamin and mineral interactions and the process of establishing nutrient requirements. | |
| NFS 761 Nutrition of the Aged | 3 S |
| Physiological and behavioral changes associated with aging and their impact on nutrition. Effect of nutrition on aging and lifespan. Common health problems of the aged and their implications. | |
| NFS 788 Individual Research and Study..... | 1-7 FSSu |
| NFS 790 Seminar | 1 |
| NFS 791 Independent Study | 1-3 FSSu |
| NFS 792 Topics..... | 1-3 FSSu |
| NFS 794 Internship | 1-7 |
| NFS 798 Thesis | 1-7 FSSu |

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Pharmacy

Degree Offered

Doctor of Pharmacy
Ph.D. Biological Sciences
• Pharmaceutical Sciences

M.S. Biological Sciences
• Pharmaceutical Sciences

Graduate Faculty

Rajender R. Aparasu
Associate Professor
Ph.D., Northeast Louisiana
University, 1995
Social and Administrative
Sciences

James Clem
Associate Professor
Pharm.D., University of Iowa,
1991
Cardiology

Chandradhar Dwivedi
Distinguished Professor
Ph.D., Lucknow University,
1972
Pharmacology

Debra K. Farver
Professor
Pharm.D., University of
Nebraska, 1983
Psychiatry

Xiangming Guan
Associate Professor
Ph.D., University of Kansas,
1991
Medicinal Chemistry

Dennis Hedge
Associate Professor
Pharm.D., University of
Kansas, 1991
Infectious Disease

Jodi Heins
Associate Professor
Pharm.D., University of
Nebraska, 1993
Internal Medicine

Dean: Professor Brian Kaatz

Assistant Dean: Professor Joel Houglum

Pharmaceutical Sciences Department Head: Distinguished Professor Chandradhar Dwivedi

Clinical Pharmacy Department Head: Professor Dennis Hedge

Graduate Coordinator: Associate Professor Xiangming Guan

For additional information contact:

Mailing address: SDSU Box 2202C

Phone: 605/688-6197

Pharmacy — SPH

Fax: 605/688-6232

WWW: <http://www3.sdstate.edu/Academics/CollegeOfPharmacy>

Doctor of Pharmacy

Six-Year Program: The professional degree in Pharmacy. Students interested in this program should consult the General Catalog (undergraduate catalog) for information.

Available Options for Graduate Degrees

Master of Science in Biological Sciences

with specialization in Pharmaceutical Sciences (Thesis option only).

Doctor of Philosophy in Biological Sciences

with specialization in Pharmaceutical Sciences.

Doctor of Pharmacy/Master of Science in Biological Sciences

with specialization in Pharmaceutical Sciences.

For additional information contact:

Mailing address: SDSU Box 2202C

Phone: 605/688-5598

Pharmacy — SPH

Fax: 605/688-5993

WWW: <http://www3.sdstate.edu/Academics/CollegeOfPharmacy/GraduateProgram>

E-mail: xiangming.guan@sdstate.edu

Program Description

The Department of Pharmaceutical Sciences offers courses and research opportunities in medicinal chemistry, pharmaceuticals and pharmacology to fulfill the requirements for the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Biological Sciences with specialization in Pharmaceutical Sciences. The Department also offers a curriculum and research opportunity for Doctor of Pharmacy (Pharm.D.)/M.S. degrees in Biological Sciences with specialization in Pharmaceutical Sciences. The core courses, along with the concentration in a major area of research, provide a valuable broad background in preparation for employment. The major objective of the program is to provide the student an opportunity to gain high quality graduate and research experience.

Master of Science Core Requirements

credits

| | |
|---|-------------|
| 1. PHA 720 (Advanced Medicinal Chemistry)..... | 3 |
| PHA 740 (Advanced Pharmacology)..... | 3 |
| PHA 759 (Advanced Pharmaceutics) | 3 |
| 2. Three credits from the following elective courses or other elective courses as determined by the student's advisory committee. | |
| PHA 725 (Topics in Medicinal Chemistry)..... | 3 |
| PHA 745 (Topics in Pharmacology)..... | 3 |
| PHA 765 (Topics in Pharmaceutics)..... | 3 |
| 3. Three credits from other graduate courses approved by the students' advisory committee. | |
| 4. Six credits must be taken from the following list of courses: | |
| ABS 705 (Research Methodology)..... | 3 |
| ABS 706 (Natural Resources Management)..... | 3 |
| ABE 503 (Energy and Environment)..... | 3 |
| ABE 554 (Advanced Unit Operations in Food/Biomaterials Processing) | 4 |
| CHEM 662 (Principles of Biochemistry) | 3 |
| DS 722 (Advanced Dairy Microbiology) | 3 |
| HO 580 (Environmental Stress Physiology)..... | 3 |
| NFSH 725 (Nutrition and Human Performance)..... | 3 |
| STAT 541 (Statistical Methods II) | 3 |
| VET 524 (Medical and Veterinary Virology)..... | 3 |
| 5. BIOS 790 | Seminar, 2 |
| 6. BIOS 798..... | Thesis, 6-7 |

Doctor of Philosophy Core Requirements

In addition to the core requirements of the M.S. degree, the following are required for the Ph.D. degree in Biological Sciences with specialization in Pharmaceutical Sciences.

| | |
|---|---------------|
| BIOS 890 (Seminar) | 1 credit |
| Major related courses* | 20 credits |
| Minor or supporting courses (including elective courses)* | 15 credits |
| BIOS 898 (Dissertation)..... | 30-40 credits |

* Major related and minor or supporting courses will be determined by the student's advisory committee.

Additional Admission Requirements

GRE: General GRE required
 TOEFL: Minimum score of 570 (paper-based) **OR** 230 (computer-based)

David L. Helgeland
 Associate Professor
 Ed.D., University of South
 Dakota, 2000
 Social and Administrative
 Sciences in Pharmacy

Joel Houghlum
 Professor
 Ph.D., University of Wisconsin-
 Madison, 1979
 Analytical Methods

Tom Johnson
 Assistant Professor
 Pharm.D., North Dakota State
 University, 1997
 Critical Care

Brian Kaatz
 Professor
 Pharm.D., University of
 Minnesota, 1977
 Clinical Pharmacy

Kimberly Messerschmidt
 Associate Professor
 Pharm.D., South Dakota State
 University, 1995
 Internal Medicine

Jane Mort
 Professor
 Pharm.D., University of
 Nebraska-Medical Center,
 1985
 Geriatrics

Suman Mukherjee
 Assistant Professor
 Ph.D., University of Southern
 California, 1997
 Pharmaceutics

Srinath Palakurthi
 Assistant Professor
 Ph.D., Indian Institute of
 Chemical Technology, 2000
 Pharmaceutics

Yahdhu Singh
 Professor
 Ph.D., University of
 Strathclyde, 1979
 Pharmacology

Manisha Sonee
 Assistant Professor
 Ph.D., University of Southern
 California, 1999
 Pharmaceutics

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Pharmacy (PHA) Course Offerings

| | |
|---|---------------|
| PHA 645 Pharmacotherapeutics: Application to Advanced Practice | 4 Su |
| Current drug therapy principles with emphasis on drugs and pharmacotherapeutics used in Family Nurse Practitioner practice. P, FNP program enrollment. | |
| PHA 646 Neonatal Pharmacotherapeutics | 2 Su |
| Principles of pharmacology in relation to unique neonatal physiologic and behavioral responses. Emphasis will be placed on drug administration, reasoned prescribing practices, and therapeutic drug monitoring. Drug categories and specific preparations which are commonly used in the neonate will be reviewed in tandem with disease specific content. | |
| PHA 700 Directed Studies Practice Experience | 4 FSSu |
| PHA 701 Home Health/Hospice Practice Experience | 4 FSSu |
| PHA 702 Indian Health Services Practice Experience | 4 FSSu |
| PHA 703 Pharmacy Administration Practice Experience | 4 FSSu |
| PHA 704 Nutrition Support Practice Experience | 4 FSSu |
| PHA 705 Clinical Research Practice Experience | 4 FSSu |
| PHA 706 Critical Care Practice Experience | 4 FSSu |
| PHA 707 Infectious Disease Practice Experience | 4 FSSu |
| PHA 708 Surgery Practice Experience | 4 FSSu |
| PHA 709 Nephrology Practice Experience | 4 FSSu |
| PHA 710 Pharmacokinetics Practice Experience | 4 FSu |
| PHA 711 Oncology Practice Experience | 4 FSSu |
| PHA 712 Nuclear Pharmacy Practice Experience | 4 FSSu |
| PHA 713 Managed Care Practice Experience | 4 FSSu |
| PHA 714 Community Pharmacy Practice Experience | 6 FSSu |
| Clerkship experience at an affiliated site. P, 6th year standing. | |
| PHA 716 Health-System Pharmacy Practice Experience | 6 FSSu |
| Clerkship experience at an affiliated site. P, 6th year standing. | |
| PHA 717 Community Health and Patient Monitoring Practice Experience | 4 FSSu |
| Clerkship experience in pharmaceutical care in a community pharmacy. | |
| PHA 718 Advanced Clinical Lab Monitoring | 3 |
| Study of clinical laboratory methods and tests with emphasis on drug monitoring and problem solving of drug therapy. Corequisite course: PHA 718L. | |
| PHA 718L Advanced Clinical Lab Monitoring Lab | 0 |
| PHA 720 Advanced Medicinal Chemistry | 3 F |
| Qualitative and quantitative aspects of the design of therapeutic agents. P, PHA 341 or consent. | |
| PHA 723 Ethics in Healthcare Practice | 2 F |
| Overview of ethical principles and theory, with emphasis on the professional-client relationship. P, 5th year standing. | |
| PHA 724 Pharmacoeconomics | 2 S |
| The pharmacoeconomic principles used to evaluate medications, with emphasis on the use of therapeutic outcomes to compare cost effectiveness of therapeutic agents. P, 5th year standing. | |
| PHA 725 Topics in Medicinal Chemistry | 3 Su |
| Selected areas covering more advanced concepts in medicinal chemistry, new research techniques. P, PHA 341 or consent. | |
| PHA 727 U.S. Health Care Systems | 2 F |
| An overview of the health care system in the United States and its impact on pharmacy practice will be addressed. Emphasis will be placed on managed care, non-pharmacist health care providers, pharmacoeconomics, drug utilization, and quality assurance and improvement. P, 5th year standing. | |
| PHA 728 Current Issues in Pharmacy Practice | 3 F |
| Theory and development of pharmaceutical care concepts. Discusses role of a contemporary pharmacy practitioner within the framework of the U.S. health delivery system. Pharmacy ethics is discussed. P, 5th year standing. | |
| PHA 729 Advanced Pharmacy Marketing and Management | 2 F |
| Discussion of strategic marketing and advanced management principles for the pharmacy practitioner. | |

| | |
|--|-------------|
| PHA 740 Advanced Pharmacology | 3 S |
| An advanced and comprehensive study of the therapeutic and toxicological effects of drugs including the mechanism of action. Emphasis will be placed on their rational application to the treatment of disease. P, PHA 443 or consent. | |
| PHA 741 Patient Assessment and Self Care I | 2 |
| Discussion of over-the-counter, herbal, and natural products, common medical conditions amenable to self-treatment, and recognition of situations when self-treatment is appropriate. Pharmaceutical care skills for assessment of humans in health and disease are also developed and applied. P, P3 standing. | |
| PHA 741L Patient Assessment and Self Care I Lab | 0 |
| Corequisite course PHA 741. | |
| PHA 742 Patient Assessment and Self Care II | 2 |
| Continuation of PHA 741. Discussion of over-the-counter, herbal, and natural products, common medical conditions amenable to self-treatment, and recognition of situations when self-treatment is appropriate. Pharmaceutical care skills for assessment of humans in health and disease are also developed and applied. P, P3 standing. | |
| PHA 742L Patient Assessment and Self Care II Lab | 0 |
| Corequisite PHA 742. | |
| PHA 744 End of Life Care | 1 |
| Discussion of the dying process and how to improve end-of-life care for patients and families. An emphasis will be placed on legal and ethical principles relative to end-of-life care, resources available for end-of-life care, financial aspects, pain management, non-pain symptom management, and an overview of cultural and spiritual diversity related to end-of life. P, P3 standing. | |
| PHA 745 Topics in Pharmacology | 3 Su |
| A study of current advanced theories in pharmacology. P, PHA 443 or consent. | |
| PHA 750 Critical Care Therapeutics | 2 S |
| Principles of medication use in the critically ill patient. P, 5th year standing. | |
| PHA 751 Immunotherapeutics | 2 S |
| Therapeutic use and pharmacology of newer immunologic agents, engineered drugs, and biotechnological products. P, 5th year standing. | |
| PHA 752 Drugs of Abuse and Addiction | 2 F |
| Discussion of psychoactive drugs, both legal and illegal, that have potential for abuse. P, 5th year standing. | |
| PHA 753 Women and Children's Health | 2 F |
| Diseases and drug-related issues pertaining to women's and children's health. P, 5th year standing. | |
| PHA 754 Complimentary and Alternative Medicine | 1 S |
| Discussion of alternative, natural, and homeopathic medicines, with emphasis on their appropriate evaluation and use. | |
| PHA 756 Pharmacotherapeutics I | 5 |
| Discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. P, P3 standing. | |
| PHA 757 Pharmacotherapeutics II | 5 |
| This course is a continuation of PHA 756, Pharmacotherapeutics I with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. P, P3 standing. | |
| PHA 758 Pharmacotherapeutics Application Lab I | 1 |
| Application of pharmacotherapeutic concepts and principles to assess diseases, evaluate and solve therapeutic problems, create drug therapy regimens, and develop monitoring plans. An emphasis will be placed on case-based problem solving. P, P3 standing. | |
| PHA 759 Advanced Pharmaceutics | 3 S |
| Theory and application of compartmental models for the study of the time course of drugs in the body.P, PHA 415 or consent. | |
| PHA 760 Clinical Pharmacokinetics | 3 |
| Advanced pharmacokinetic principles, with emphasis on drug dosing on individual patient basis. | |
| PHA 761 Pharmacotherapeutics III | 4 |
| This course is the continuation of PHA 747, Pharmacotherapeutics II with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. P, P3 standing. | |

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
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 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

PHA 762 Pharmacotherapeutics IV.....4
 This course is a continuation of PHA 761, Pharmacotherapeutics II with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. P, P3 standing.

PHA 763 Pharmacotherapeutics V4
 This course is the continuation of PHA 762, Pharmacotherapeutics IV with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions. P, P3 standing.

PHA 764 Pharmacotherapeutics Application Lab II.....1
 Application of pharmacotherapeutic concepts and principles to assess diseases, evaluate and solve therapeutic problems, create drug therapy regimens, and develop monitoring plans. An emphasis will be placed on case-based problem solving. P, P3 standing.

PHA 765 Topics in Pharmaceutics3 Su
 Selected areas covering more advanced concepts in pharmaceutics, new research techniques. P, PHA 415 or consent.

PHA 767 Early Practice Experience V0.5
 This course is the continuation of Early Practice Experience IV and emphasizes pharmaceutical care skill development related to pharmacy practice.

PHA 768 Early Practice Experience VI0.5
 Course is the continuation of Early Practice Experience V and the last course of the early practice experience sequence, which emphasizes pharmaceutical care skill development related to pharmacy practice.

PHA 770 Pediatrics Practice Experience4 FSSu

PHA 771 Geriatrics Practice Experience4 FSSu

PHA 772 Internal Medicine I Practice Experience4 FSSu

PHA 773 Internal Medicine II Practice Experience4 FSSu

PHA 774 Ambulatory Care Practice Experience.....4 FSSu

PHA 775 Psychiatry Practice Experience4 FSSu

PHA 784 Seminar I1 S
 Discussion of current pharmacy and other health care issues and includes developing and delivering a short presentation. P, 5th year standing.

PHA 785 Seminar II1
 Continuation of 784, with emphasis on discussion of clinical pharmacy concepts and professional presentations. P, PHA 784.

PHA 790 Seminar1 Su

PHA 791 Independent Study.....1-3 FSSu

PHA 792 Topics1-3

PHA 798 Thesis in Pharmaceutical Science1-7

Master of Science in Pharmaceutical Sciences: *Inactive Status*

Philosophy & Religion

Coursework only offered

Department Head: Distinguished Professor Robert V. Burns

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB

E-mail: robert.burns@sdstate.edu

Phone: 605/688-4322

Fax: 605/688-6754

Philosophy (PHIL) Course Offerings

PHIL 591 Independent Study1-4 FSSu

Religion (REL) Course Offerings

REL 591 Independent Study1-3 FSu

Graduate Faculty

AnnMarie B. Bahr
Professor of Philosophy and
Religion
Ph.D., Temple University, 1989
World Religions

Dennis D. Bielfeldt
Associate Professor of
Philosophy and Religion
Ph.D., University of Iowa, 1987
Luther and Christian Theology

Greg Peterson
Assistant Professor of
Philosophy and Religion
Ph.D., Denver University/Illiff
School of Theology, 1996
Ethics



Physics

Degree Offered:

M.S. Engineering

• Physics emphasis

Graduate Faculty

Yung Huh

Assistant Professor

Ph.D., Iowa State, 2001

Condensed Matter Physics

Oren Quist

Professor

Ph.D., University of Denver,

1973

Condensed Matter

Joel Rauber

Professor

Ph.D., University of North

Carolina-Chapel Hill, 1985

General Relativity,

Computational Physics

Department Head: Professor Oren Quist

Graduate Coordinator: Professor Oren Quist

For additional information contact:

Mailing address: SDSU Box 2219

Phone: 605/688-5428

Crothers Engineering Hall — SCEH 314

Fax: 605/688-5878

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

E-mail: oren.quist@sdstate.edu

Program Description

The Physics Department at South Dakota State University offers a program leading to the Master of Science in Engineering with a Physics Emphasis. Required course work in physics along with elective courses selected from the departments of Mathematics and Statistics, Computer Science, General Engineering, Electrical Engineering and Mechanical Engineering support a number of career options in industry, education and applied research. Graduates with this degree may also pursue a Ph.D. degree in physics or an engineering discipline. Areas of research concentration include astrophysics, gravitational physics, remote sensing, image processing, condensed matter, materials science, nuclear physics, and theoretical physics.

A Ph.D. in Environmental Engineering with a physics emphasis is available through the College of Engineering. This program has course work and plan of study designed through the Physics Department and likely could be an extension of the M.S. degree described above.

The Physics Department offers the physics content coursework for the *Masters of Education: Curriculum and Instruction; Physics Content Area*, degree. See PHST 601 (page 130, PHST 692) for more details. This curriculum, designed mainly for high school physics teachers, is offered during summer sessions.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

Refer to College of Engineering section, pages 80-82, for specific details.

Physics Core Requirements

There are nineteen credits of core requirements for this degree. These requirements consist of:

six credits in Electricity and Magnetism;

three credits in Statistical Mechanics;

three credits in Theoretical Mechanics;

six credits in Quantum Mechanics, *and*

one credit of Seminar.

Please check with the Physics Department office for specific course offerings that meet these core requirements.

Physics (PHYS) Course Offerings

| | |
|--|-----------------|
| PHYS 521 Electromagnetism | 4 F |
| Principles of electricity and magnetism, with applications to dielectric and magnetic materials. Development of Maxwell's equations, and applications. | |
| PHYS 533 Nuclear and Elementary Particle Physics | 3 |
| Radioactivity, nuclear spectra and structure, nuclear models, elementary particle theories and high energy physics. P, PHYS 471 or consent. | |
| PHYS 539 Solid State Physics | 3 S |
| Electronic processes with reference to electrical properties of metals, semiconductors and insulators. | |
| PHYS 541 Science of Solids | 3 |
| This course covers topics directed at satisfying student interests in areas such as magnetism, semiconductors, superconductors, ferroelectrics, and devices based on these aspects of solids. The role of defects in solids and strength of materials may also be included. P, PHYS 439 or consent. | |
| PHYS 551 Classical Mechanics | 4 S |
| Newton's Laws, motion in one and three dimensions, central forces, harmonic oscillations, non-inertial reference frames, rotations of rigid bodies, and Lagrangian Mechanics. | |
| PHYS 571 Quantum Mechanics | 4 S |
| Nature of space, time and particles. Quantization of translatory motion, rotatory motion, vibratory motion, motion in a Coulombic field. Operators, wave packets, potentials, forces. P, 331 or consent and MATH 321. | |
| PHYS 590 Seminar | 1-2 FSSu |
| PHYS 598 Photonics | 3 |
| PHYS 691 Independent Study | 1-3 FSU |
| PHYS 692 Topics | 1-3 FSSu |
| PHYS 698 Photonics | 3 |
| PHYS 721 Electrodynamics I | 3 FS |
| Electrostatics and magnetostatics, including a study of boundary value problems and the multi-pole expansions, leading to the study of Maxwell's equations. The relationship between special relativity and electromagnetism will also be discussed. P, PHYS 421. | |
| PHYS 723 Electrodynamics II | 3 F |
| The electrodynamics of time varying fields and radiating processes. This will include topics chosen from plane and spherical waves, wave guides, multipole radiation, radiation from moving charges, plasma physics and magneto-hydrodynamics. P, PHYS 721. | |
| PHYS 743 Statistical Mechanics | 3 S |
| Derivations of Boltzmann distribution law, Bose Einstein statistics, Fermi-Dirac statistics, basic theory of gas and liquid states, order-disorder phenomena, the partition function. P, PHYS 341. | |
| PHYS 751 Theoretical Mechanics | 3 FS |
| Further development of Lagrangian and Hamiltonian methods, canonical transformations, rigid body motion, relativistic mechanics. | |
| PHYS 771 Quantum Physics I | 3 FS |
| Basic quantum theory, the Schrodinger equation, matrix mechanics and operator methods as applied to the simple harmonic oscillator, hydrogen atom and other simple potentials. A study of angular momentum operators and the central force problem will be included. | |
| PHYS 773 Quantum Physics II | 3 FS |
| A quantum mechanical treatment of scattering, spin, stationary and time dependent perturbation theory. Other advanced topics such as applications of group theory to quantum mechanics, identical particles and creation and annihilation operators as applied to many particle systems will be studied. | |
| PHYS 775 Tensors and General Relativity | 3 |
| Covariance in physics, basic tensor algebra and calculus, affine connections, the Riemann tensor, field equations, linear approximations. The Schwarzschild solution. P, PHYS 421 or consent. | |
| PHYS 779 Group Theory in Quantum Mechanics | 3 |
| Symmetry transformation, continuous groups, finite groups, applications to valence theory, Lorentz group, fundamental particles. P, PHYS 471. | |

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

PHYS 780 Theoretical Physics0-18 FS
 This course is the hub course for the Master of Science Degree in Engineering, Physics Emphasis. It is a course with credit value depending upon the number of theoretical physics areas in which a student enrolls, and can be repeated as many times as desired depending upon remaining theoretical physics areas in which a student enrolls, and can be repeated as many times as desired depending upon remaining theoretical physics areas. PHYS 780 will meet weekly for one class hour, the hub session, and in addition, one class hour per week for each credit of theoretical physics topic area in which a student enrolls. The weekly hub sessions will be in a seminar format and will enable the discussion of theoretical physics concepts not included in the current specific areas of the course, as well as a forum for allowing the students to discuss and learn the interrelationship between the various theoretical areas. All students registered for one or more theoretical physics areas are required to participate in all of the hub sessions. A student will be required to complete all 18 credits of PHYS 780 to receive the Master of Science in Engineering, Physics Emphasis degree. Additional coursework and/or requirements also need to be completed. Theoretical physics subject areas to be included under the PHYS 780 hub include: Electrodynamics I (3cr), Electrodynamics II (3cr), Statistical Mechanics (3cr), Classical Mechanics (3cr), Quantum Mechanics I (3cr), and Quantum Mechanics II (3cr).

PHYS 787 Research1-9

PHYS 788 Research or Design Paper1-2 FSSu

PHYS 791 Independent Study1-3 FS

PHYS 792 Topics1-3 FSSu

PHYS 798 Thesis1-7 FSSu

Physics Teaching (PHST) Course Offerings

PHST 692 Topics.....0-12 Su



Plant Science

Degrees Offered:

Ph.D. Agronomy

Ph.D. Biological Sciences

- Plant Molecular Biology specialization
- Plant Science specialization

M.S. Plant Science

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

Department Head: Professor Dale Gallenberg
Graduate Coordinator: Professor Howard J. Woodard

For additional information contact:

Mailing address: SDSU, Box 2207A

Agricultural Hall — SAG 004

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

E-mail: howard.woodard@sdstate.edu

Phone: 605/688-4774

Fax: 605/688-4667

Program Description

The Plant Science Department is an integrated department that includes crops, entomology, plant pathology, soils, water management, and weed science. The primary goals of the department are to conduct research in the above areas, to transmit the results to the public, and to help prepare students for a quality life which includes preparation for an occupation in one or more of the above-mentioned disciplines. Specializations in Horticultural Crop Management and Machinery Systems and Water Management are offered in collaboration with the Department of Horticulture, Forestry, Landscape Parks, and the Department of Agriculture and Biosystems Engineering, respectively.

Available Options for Graduate Degrees

Master of Science: Option A Plant Science
Option B Plant Science, non thesis

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

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options.

Core Requirements

M.S. students required to have 2 credits of Graduate Seminar, one oral and one in poster format. All students are required to have teaching experience.

Ph.D. students required to have 3 credits of Graduate Seminar, at least one oral and one in poster format. All students are required to have at least one teaching experience during their Ph.D. program.

Graduate Faculty

Arvid Boe
Professor
Ph.D., South Dakota State
University, 1979
Breeding - Forages

C. Gregg Carlson
Professor
Ph.D., South Dakota State
University, 1978
Geospatial Statistics

Catherine Carter
Professor
Ph.D., University of Kentucky,
1982
Molecular Biology

Michael Catangui
Associate Professor
Ph.D., University of Nebraska,
1992
Entomology - Extension

Thomas Chase
Associate Professor
Ph.D., University of Vermont,
1986
Pathology - Row Crops

David Clay
Professor
Ph.D., University of Minnesota-
Minneapolis/St. Paul, 1988
Soil Biochemistry/Nutrient
Movement

Sharon Clay
Professor
Ph.D., University of Minnesota-
Minneapolis/St. Paul, 1986
Weed Research

James Doolittle
 Professor
 Ph.D., Texas A & M University,
 1991
 Soil Chemistry

Martin Draper
 Associate Professor
 Ph.D., North Dakota State
 University, 1999
 Plant Pathology - Extension

Billy Fuller
 Professor
 Ph.D., Louisiana State
 University, 1987
 Entomology - Field Crops

Dale Gallenberg
 Professor
 Ph.D., Cornell University, 1984
 Pathology - Extension

Ron Gelderman
 Professor
 Ph.D., North Dakota State
 University, 1987
 Soil /Plant Analysis

Amir Ibrahim
 Assistant Professor
 Ph.D., Colorado State
 University, 1998
 Breeding - Winter Wheat

Paul Johnson
 Professor
 Ph.D., University of Wisconsin-
 Madison, 1992
 Entomology - Systematics

Kevin Kephart
 Professor
 Ph.D., Iowa State University of
 Science and Technology, 1986
 Forage Physiology

Robert Kohl
 Professor
 Ph.D., Utah State University,
 1962
 Soil Irrigation and Physics

Marie Langham
 Professor
 Ph.D., Texas A&M University,
 1986
 Plant Pathology - Viruses

Douglas Malo
 Distinguished Professor
 Ph.D., North Dakota State
 University, 1975
 Soil Genesis/Classification

Additional Admission Requirements

GRE: recommended, but not required
 TOEFL: minimum requirement of 560
 Students must be accepted by an advisor before admission is granted.

General Requirements begin on page 16 (Master's Degree) and 21 (Ph.D.).

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

Plant Science (PS) Course Offerings

- PS 512 Environmental Soil Chemistry3 FS**
 Fundamentals of soil chemical properties and processes important for the sound management of soil resources. Topics include sorption/desorption of inorganic and organic compounds, bioavailability of nutrients and contaminants, oxidation/reduction, phase equilibria, soil organic matter, soil mineralogy, ion exchange, and saline/sodic soils. P, take 1 group (take PS 213, PS 213L, CHEM 108, CHEM 108L/take CHEM 120, CHEM 120L).
- PS 515 Mycology2 F**
 Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs. Crosslisted with BIOL 415-515. Corequisite course: PS 515L.
- PS 515L Mycology Lab0**
 Laboratory experience that accompanies PS 515.
- PS 520 Biological Control of Arthropods2 FS**
 Introduction to the principles of biological control of arthropod pest populations through the use of natural enemies, including parasites, parasitoids and predators. Topics will include the history, theory, and practice of biological control, and relevant aspects of the genetics, ecology and behavior of natural enemies. P, PS 305, PS305L. Corequisite course: PS 520L.
- PS 520L Biological Control of Arthropods Lab1 FS**
- PS 521 Soil Microbiology2 S**
 Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these organisms. Crosslisted with MICR 521. Equivalent to MICR 521. P, take 1 group (take BIOL 151, BIOL 152, BIOL 153, BIOL 154/take BOT 201, BOT 202). Corequisite course: PS 521L.
- PS 521L Soil Microbiology Lab1 S**
- PS 531 Applied Insect Ecology2 S**
 An introduction to the principles of insect ecology and their application to pest management tactics. Ecological factors that affect pest and beneficial insects in agricultural environments will be examined. Topics include trophic relationship, population dynamics, sampling and life-table analysis, environmental heterogeneity and dispersal. P, PS 305, PS 305L. Corequisite course: PS 531L.
- PS 531L Applied Insect Ecology Lab1 S**
- PS 546 Agroecology3 FS**
 Agroecology uses the science of ecology to study agricultural systems and solve agricultural problems using comparisons between altered and unaltered ecosystems. Including: nutrient cycling, energy flow, hydrology, climatology, species diversity, and population dynamics. Field trips required.
- PS 550 Field Study of Plant Diseases Diagnosis Lab1 Su**
 Diagnoses of diseases in field and horticultural crops; observing and studying the relationships among hosts, pathogens, and their environments. Emphasis on field disease recognition and laboratory diagnostic techniques. P, consent. Corequisite course: PS 550L.
- PS 550L Field Study of Plant Diseases Diagnosis Lab1 Su**
- PS 553 Advanced Genetics3 F**
 Procedures in genetic studies as they relate to molecular and classical genetic applications. Crosslisted with BIOL 453-553. Equivalent to BIOL 553. P, take BIOL 371.

PS 562 Molecular Biology I2 F
 Charge, Partitioning Migration of Molecules; Protein Structure, Enzymes; DNA Structure and Properties, Prokaryotic and Eucaryotic Conjugation, Transduction and Transformation; DNA Replication and Repair; Genetic Recombination; RNA structure and Properties; RNA Replication and Repair; mRNA Synthesis and Processing; Kinetics; Chromosomes and Chromosome Replication. Crosslisted with BIOL 462/562. Equivalent to BIOL 562. P, take MICR 436, CHEM 361, CHEM 361L.

PS 564 Molecular Biology II2 S
 Structure of the nucleus; endocytosis; genome of mitochondria and chloroplasts; cell growth and division; cancer; immune system; pattern formation; homeoboxes; intracellular transport; gene expression and regulation. Crosslisted with BIOL 464/564. Equivalent to BIOL 564. P, take BIOL 562 or PS 562.

PS 565 Molecular Biology II Lab2 S
 Screening recombinant DNA libraries; DNA sequencing; analysis of proteins; detection of proteins; RNA transfer and hybridization analyses; use of nucleic acid and protein databases. Crosslisted with BIOL 465/565. Equivalent to BIOL 565. P, PS 562 or BIOL 562, PS 564 or BIOL 564.

PS 580 Environmental Stress Physiology3
 Physiology and cellular response of plants to environmental stresses. Crosslisted with HO 480/580 and BIOL 480/580.

PS 592 Topics1-6 FSSu

PS 592L Special Topics Lab1-6 FS

PS 704 Viral and Bacterial Diseases of Plants.....2 S
 Plant diseases caused by viroids, viruses, bacteria and mycoplasma-like organisms including identification, development, symptoms, and control. Advanced laboratory research methods used in isolation, transmission, culture, purification, microscopy, serology and investigation of the nature and properties of important plant pathogens. P, consent. Corequisite course: PS 704L.

PS 704L Viral and Bacterial Diseases of Plants Lab2 S

PS 714 Genetics of Disease Resistance and Host-Plant Pathogen Interactive3 F
 Physiology, genetics, and molecular biology of host-plant pathogen interactions and disease resistance; pathogenic diversity and virulence dynamics of plant pathogens; crop vulnerability and plant disease epidemiology; and breeding plants for disease resistance. P, consent. Corequisite course: PS 714L.

PS 714L Genetics of Disease Resistance and Host-Plant Pathogen Interactive Lab1 F

PS 720 Insect Anatomy and Physiology2 S
 Introduction to the internal anatomy of insects, and the principles of the physiology of insect cells, tissues, organs and systems. P, PS 305, PS 305L. Corequisite course: PS 720L.

PS 720L Insect Anatomy and Physiology Lab1 S

PS 721 Integrated Crop Pest Management3 S
 The biological and ecological basis of integrated pest management for midwestern crop insects and the understanding of economic thresholds are emphasized. Pest scouting techniques for major crop pests and simulated management decisions are discussed.

PS 722 Behavioral Management of Insects2 F
 Principals of insect behavior stressing the role of behavior in designing management tactics. Topics include direct exploitation of behavior for control, sub-lethal behavioral effects of pesticides, and the use of semiochemicals for population monitoring and mating disruption. Methods for sampling, measuring and evaluating insect behaviors will be examined. P, PS 305, PS 305L. Corequisite course: PS 722L.

PS 722L Behavioral Management of Insects Lab.....1 F

PS 732 Field Studies in Pedology2 Su
 Field techniques used in soil classification will be learned by studying soils during a week-long field exercise. Soil genesis and land use applications will be investigated. The impact of soils upon agronomic management and research will be presented. The class may be repeated for a maximum of 4 credits. P, take 1 group (take PS 310, PS 310L/take GEOG 310, GEOG 310L).

PS 733 Advanced Soil Genesis3 S
 Detailed study of the processes of soil genesis and an examination of soil and ecosystems with respect to the soil forming factors of time, parent material, topography, climate and organisms. P, consent.

PS 741 Crop Breeding Techniques.....1 Su
 A techniques course where artificial hybridization of crop plants will be demonstrated and carried out. Background material will be offered with each crop. Both field and horticultural crops are included.

Vance Owens
 Associate Professor
 Ph.D., University of Wisconsin,
 1996
 Forage Crops - Extension

Diane Rickerl
 Professor
 Ph.D., Auburn University,
 1986
 Agroecology

Tom Schumacher
 Professor
 Ph.D., Michigan State
 University, 1982
 Soil Physics and Conservation

Roy Scott
 Professor
 Ph.D., Kansas State University
 of Agriculture and Applied
 Science, 1987
 Breeding - Soybeans

James Smolik
 Professor
 Ph.D., South Dakota State
 University, 1973
 Plant Pathology - Nematodes

Fedora Sutton
 Professor
 Ph.D., Howard University,
 1985
 Molecular Biology

Zeno Wicks, III
 Professor
 Ph.D., North Dakota State
 University, 1979
 Breeding - Corn

Howard Woodard
 Professor
 Ph.D., Rutgers University, 1985
 Soil Fertility

**Adjunct/Courtesy/Joint
Faculty**

Randy Anderson
Professor
Ph.D., University of Wyoming,
1980
Weed Science

Michael Ellsbury
Associate Professor
Ph.D., University of Arizona,
1979
Research Entomology

Donald Evenson
Distinguished Professor of
Chemistry and Biochemistry
Ph.D., University of Colorado,
1968
Cellular Biochemistry

B. Wade French
Assistant Professor
Ph.D., Oklahoma State
University
Research Entomology

Leslie Hammack
Assistant Professor
Ph.D., University of Wisconsin-
Madison, 1974
Research Entomology

Louis Hesler
Associate Professor
Ph.D., University of California
- Davis, 1991
Research Entomology

Alex Kahler
Professor
Ph.D., University of California,
1973
Molecular Biology

Shannon Osborne
Assistant Professor
Ph.D., University of Nebraska,
1999
Soil Fertility

PS 743 Physical Properties of Soil3 F
The exchange of energy and water at soil surfaces, infiltration and redistribution of water and soil physical properties related to plant growth. Emphasis on applications in development and utilization of soil and water resources in a manner consistent with preservation of environmental quality. P, consent.

PS 744 Soil N, P and K3 S
Plant-soil nutrient relationships including nutrient sink development, uptake, transport to roots, labile soil sources, nutrient deficiencies, and their corrections. Emphasis on nitrogen, phosphorus and potassium. P, consent.

PS 745 Soil/Plant Secondary Macronutrients and Micronutrients2 S
Forms and reactions of secondary and micronutrients in soils, their plant functions and requirements, as well as deficiency correction. P, consent.

PS 746 Plant Breeding3 S
Plant Breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects. P, PS 103, PS 103L, BIOL 371.

PS 754 Chemical Properties of Soil3 F
Chemical considerations of the dynamic interactions of soil-water-gas phases as affected by climate, soil age, kinds of minerals or organic matter, added fertilizer elements, and plants. P, Consent of instructor.

PS 756 Quantitative Genetics3 S
Theory and application of quantitative genetic analysis to applied breeding problems; estimation and partitioning of genetic variances; genetic covariance and regression; heritability and selection response; index selection; linkage and quantitative trait loci (QTL) analysis. P, BIOL 371 and STAT 641.

PS 761 Taxonomy of Insects3 F
Collection, identification and classification of insects. Techniques of identifying the groups of economic insect pests that affect the production of feed, food and fiber. Corequisite course: PS 761L.

PS 761L Taxonomy of Insects Lab1 F

PS 763 Environmental and Physiological Aspects of Crop Production2 S
Systems analysis of factors which limit or increase crop production and the potential for qualitative and quantitative adjustments. P, BOT 327, BOT 327L.



| | |
|---|-----------------|
| PS 773 Cytogenetics | 2 F |
| To study the nature and behavior of chromosomes in relation to heredity. P, BIOL 343 and BIOL 343L, or BIOL 371. Corequisite course: PS 773L. | |
| PS 773L Cytogenetics Lab | 1 F |
| PS 781 Plant Science Graduate Seminar | 1 FS |
| PS 783 Crop-Water Relationships | 2 F |
| An examination of the role of water on crop productivity with an emphasis on environmental and physiological factors affecting the absorption, movement and use of water in crops. Water associated stresses will be analyzed in terms of agronomic and physiological mechanisms of adaptation. P, BOT 327, BOT 327L. | |
| PS 785 Soil and Plant Analysis | 2 F |
| The analysis of soil and plant material for constituent elements. Topics include: Material sampling and preparation, extraction and determination method, theoretical principles of analysis, accuracy and precision. Emphasis on common soil and plant test indices. P, consent. Corequisite course: PS 785L. | |
| PS 785L Soil and Plant Analysis Lab | 1 F |
| PS 786 Biometrical Genetics | 3 |
| PS 787 Advanced Plant Breeding | 3 F |
| PS 791 Independent Study | 1-2 FSSu |
| PS 792 Topics | 1-6 FSSu |
| PS 798 Thesis | 1-7 FSSu |
| PS 898D Dissertation-PhD | 1-7 FSSu |

Biological Sciences (BIOS) Course Offerings

| | |
|---|-----------------|
| BIOS 790 Seminar | 1 FS |
| BIOS 792 Topics | 1-6 |
| BIOS 798 Thesis | 1-7 FSSu |
| BIOS 890 Seminar | 1 FSSu |
| BIOS 898D Dissertation-PhD | 1-7 FSSu |



Adjunct/Courtesy/Joint Faculty

- R. Neil Reese*
Professor of Biology and Microbiology
Ph.D., University of Idaho, 1984
Plant Physiology
- Walter Riedell*
Assistant Professor
Ph.D., Southern Illinois University, 1984
Plant Physiology
- Peter Schaefer*
Professor of Horticulture, Forestry, Landscape and Parks
Ph.D., Michigan State University, 1983
Forest Genetics
- Yang Yen*
Associate Professor of Biology and Microbiology
Ph.D., University of Missouri, 1989
Cytogenetics

Political Science

Minor only offered

Graduate Faculty

Robert V. Burns
Distinguished Professor
Ph.D., University of Missouri-
Columbia, 1973
Public Law

Gordon Tolle
Professor
Ph.D., University of Colorado-
Boulder, 1978
Political Philosophy

Department Head: Distinguished Professor Robert V. Burns
Graduate Coordinator: Distinguished Professor Robert V. Burns

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB

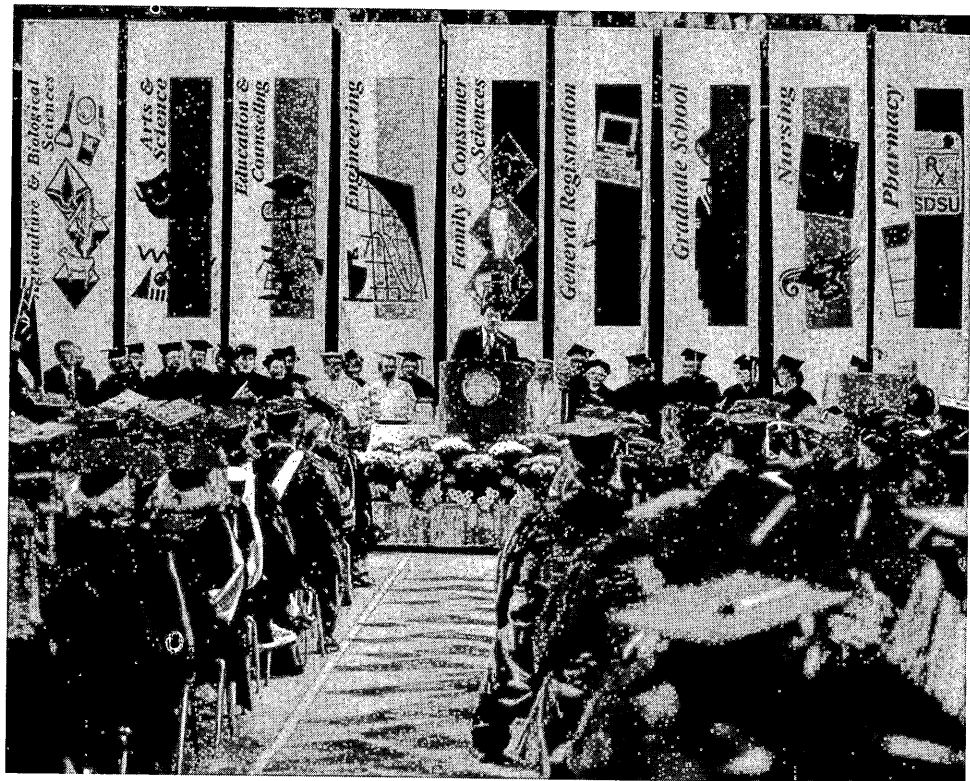
E-mail: robert.burns@sdstate.edu

Phone: 605/688-4909

Fax: 605/688-5977

Political Science (POLS) Course Offerings

| | |
|---------------------------------|----------|
| POLS 591 Independent Study..... | 1-3 FSSu |
| POLS 592 Topics | 1-4 FSu |



Psychology

Coursework only offered

Department Head: Professor Virginia Norris

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB 336

WWW: <http://www3.sdstate.edu/Academics/CollegeofArtsAndScience/Psychology>

E-mail: Virginia.Norris@sdstate.edu

Phone: 605/688-4322

Fax: 605/688-6754

Psychology (PSYC) Course Offerings

- PSYC 540 Forensic Psychology3 F**
Forensic Psychology is the application of the science and profession of psychology to questions and issues relating to law and the legal system. This course is a state-of-the-art survey of central topics at the interface of psychology and the law. The field of forensic psychology encompasses contributions made in a number of different areas – research, clinical practice, public policy, and teaching/training – from a variety of orientations within the field of psychology, such as developmental, social, cognitive, industrial-organizational and clinical.
- PSYC 591 Independent Study.....1-4 FSSu**
- PSYC 592 Topics1-4 FS**



Graduate Faculty

Virginia Norris
Professor
Ph.D., Kent State University,
1991
Health Psychology,
Gerontology

Brady Phelps
Associate Professor
Ph.D., Utah State University,
1992
Behavior Analysis,
Physiological Psychology

Debra Spear
Associate Professor
Ph.D., University of North
Carolina, Greensboro, 1987
Behavior Analysis, Behavioral
Pharmacology, Sensation and
Perception

Bradley Woldt
Associate Professor
Ph.D., University of Montana,
1993
Clinical Psychology

Rural Sociology

Degrees Offered:

Ph.D. Sociology

- Cultural Ecology specialization
- Demography specialization
- Family Studies specialization
- Social Deviance specialization
- Social Organization specialization

M.S. Rural Sociology

- Applied Research specialization
- Criminal Justice specialization
- Demography specialization
- Family Studies specialization
- Planning/Development specialization

Graduate Faculty

Donald Arwood
Professor
Ph.D., South Dakota State
University, 1989
Research Methods,
Demography

Geoffrey Grant
Associate Professor
Ph.D., University of Nebraska,
Lincoln, 1980
Social Organization, Social
Change

Donna Hess
Distinguished Professor
Ph.D., Michigan State
University, 1974
Qualitative Methods, North
American Indians

Diane Kayongo-Male
Professor
Ph.D., Michigan State
University, 1974
Social Theory, Demography

Robert Mendelsohn
Professor
Ph.D., Western Michigan
University, 1973
Social Theory, Social Deviance

Meredith Redlin
Assistant Professor
Ph.D., University of Kentucky,
2000
Rural Community Development,
Race, Class and Gender

Department Head: Distinguished Professor Donna Hess

Graduate Coordinator: Distinguished Professor Donna Hess

For additional information contact:

Mailing address: SDSU Box 504

Scobey Hall — SSB

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

E-mail: donna.hess@sdstate.edu

Phone: 605/688-4132

Fax: 605/688-6354

Program Description

The Master of Science program is designed to prepare students to continue their academic careers in advanced doctoral programs, enter applied fields such as planning, demography, criminal justice, and research, or enter into the teaching profession.

The Ph.D. program in Sociology is designed to prepare students for professional careers in teaching, research and creative activity in academic, government and related areas. Areas of specialization for a major in the Ph.D. program include demography, family studies, cultural ecology, social deviance and social organization.

Available Options for Graduate Degrees

See Page 139 for Options in the Master of Science degree in Rural Sociology.

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options.

Core Requirements

Master of Science: Social Theory, 6 hrs.
Research Methods, 6 hrs.

Doctor of Philosophy: Social Theory, 9 hrs.
Research Methods, 9 hrs.
Profession of Sociology, 3 hrs.
Graduate Statistics, 3 hrs.

Additional Admission Requirements

- GRE: Not required
- TOEFL: Department requirement of 550
- Both M.S. and Ph.D. candidates need a minimum of 24 credits of social science courses, of which 18 must be in Sociology.
- Master of Science: Courses in Research Methods, Social Theory, and Statistics must be completed as part of the previous work, or made up as prerequisites.
- Doctor of Philosophy: Students seeking entrance must have an approved Bachelor's and Master's degree, (thesis option), not necessarily in Sociology.

General Requirements begin on page 16 (Master's Degree) and 21 (Ph.D.).

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

Anthropology (ANTH) Course Offerings

- ANTH 521 Indians of North America**3 FSSu
Provides prospective teachers and those interested in Indian people with a basic knowledge of Indian heritage and culture. Emphasis on the Dakota Indians. Crosslisted with AIS 421. (Fulfills Teacher Ed. Requirement.)
- ANTH 591 Independent Study**1-3 FSSu
- ANTH 592 Topics**1-3

Criminal Justice (CJUS) Course Offerings

- CJUS 591 Independent Study**1-3 F
- CJUS 592 Topics**3 FSSu

Sociology (SOC) Course Offerings

- SOC 502 Social Deviance**3 FSu
This course examines the nature of negatively evaluated behaviors and the process by which customs, rules and normative structure of society are constructed.
- SOC 533 Leadership and Organizations**.....3 FSu
Emphasis is on the emergence of leadership patterns, group dynamics, small groups, and leadership in management.
- SOC 555 Juvenile Delinquency**.....3 FS
A study of the youthful offender and the causes and consequences of delinquent behavior; preventive and rehabilitative programs are also discussed.
- SOC 556 Community Corrections**3 S
An examination of the history of adult and juvenile treatment and punishment. Emphasis is upon contemporary community based treatment as well as traditional prison-based incarceration. The process of sentencing, particularly the role of the pre-sentence investigation (PSI) is covered. Special attention is developed to internship and career possibilities in the corrections arena.
- SOC 560 Advanced Criminology**3 FS
An extensive examination of major criminological issues and theories including sociological definitions of crime.
- SOC 562 Population Studies**.....3
A study of human populations with respect to size, distribution, and structure, with emphasis on theories of population growth and decline, population policies, and impacts on the environment.
- SOC 582 Sociology of Law**3 S
This course focuses on the relationship between law and society. Topics focus on the organization of law in society, law and social control, law as a method of conflict resolution, law as a mechanism of social change, law as a profession, and methods of inquiry in research. The course will also look at alternative dispute resolution techniques, for example mediation. Comparative, and cross-cultural materials will be used throughout the class to emphasize diversity in law.

Ronald Stover
Professor
Ph.D., University of Georgia-
Athens, 1975
Anthropology, Industrial
Sociology

Master of Science Program*

Option A, Thesis
Traditional master's degree program designed to prepare students to enter post-secondary teaching and/or continuation toward the doctorate.

Option B, Internship
Designed to provide students with a practical field experience in chosen area.

Option C, Non-Thesis
Designed for elementary- and secondary-level teachers and others in need of the research emphasis offered in Options A and B.

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

| | |
|--|---------------|
| SOC 585 Applied Sociology | 3 FS |
| This course articulates the use of sociological concepts in practical settings. Applied and clinical approaches will be explored. A theoretical model for applied sociology will be developed and applied to businesses, organizations, medicine, aging, youth, law, communities, criminal justice, recreation, social services, educational facilities, and additional areas of student interest. | |
| SOC 620 Social Organization | 3 S |
| Elements of social organization. Analysis of social groups and complex social organizations. Examination of conditions and factors related to the integration and disintegration of social organizations. P, consent. | |
| SOC 621 Social Stratification | 3 FSu |
| Theories of social stratification. Relationship between social class and education, occupational choice, political preference, religious affiliation and social mobility. P, consent. | |
| SOC 630 Social Change | 3 F |
| Theories concerning factors and processes in social-cultural change. Consideration of various interpretations of social-cultural change in terms of stages, cycles, and trends. P, consent. | |
| SOC 640 Rural Community Development | 3 F |
| Changes occurring in rural areas and their effects upon rural communities. Basic concepts, procedures, and processes for planning in a rural environment. Some alternative approaches to rural planning. National and International perspectives. Consent of instructor. | |
| SOC 709 Evaluation Research | 3 SSu |
| Focus on the conceptualization and design of evaluation studies of various governmental programs. Design includes clarification of objectives, selection of appropriate collection techniques, and specification of target groups. | |
| SOC 710 Research Methods | 3 S |
| Major emphasis will be given to research design, problems of measurement, methods of data collection, and analysis and interpretation of data. An integral part of the course will be the development of a research project dealing with some current sociological problem. P, SOC 307, 308, or consent. | |
| SOC 711 Qualitative Research Methods | 3 F |
| Qualitative research methods of data collection, analysis, and presentation are examined; emphasis on fieldwork involving participant observation and intensive interviewing; includes consideration of the rationale, theoretical underpinnings and limitation of qualitative research. P, consent. | |
| SOC 712 Sociological Theory I | 3 F |
| Critical examination of the main schools of sociological theory beginning with the system of Auguste Comte and ending with World War II. P, SOC 401 or consent. | |
| SOC 713 Sociological Theory II | 3 S |
| Sociological theories and issues from World War II to present. P, SOC 401 or consent. | |
| SOC 714 Theory Construction | 3 |
| Focus on theory-building efforts; criteria for development of theories and general approaches to theory construction are covered. These general approaches are examined in depth; various critical approaches to theory development are reviewed. | |
| SOC 716 Symbolic Interaction | 3 FSSu |
| Focus on major micro-sociological perspective. Basic concepts, assumptions, and key propositions on development of this perspective. Recent applications and critiques of the perspective are examined. | |
| SOC 720 Profession of Sociology | 3 S |
| Course designed for those planning a career in teaching Sociology at the college/university level; course is applied with hands-on experiences in preparation for college teaching. | |
| SOC 762 Applied Demography | 3 F |
| Focus on demographic publications and resources including Census data material; areas included are population, housing, agriculture, economics, vital statistics reports, special surveys and international materials. Emphasis on a variety of applications across disciplines. | |
| SOC 764 Modern Demographic Theory | 3 Su |
| Overview of the explanatory factors and determinants related to the population process of fertility, mortality, and migration. Emphasis on theoretical models that focus on developed and developing countries. | |
| SOC 766 World Population Issues | 3 SSu |
| Focus on policy formulation and program evaluation as related to population issues; the political economy of national and international efforts are considered; planning a micro-and macro-level decision-making is examined; issues covered are population and resources, the value of children, international migration and major health problems. | |

| | |
|---------------------------------|-----------|
| SOC 790 Seminar | 1-4 FS |
| SOC 791 Independent Study | 1-3 FSSu |
| SOC 794 Internship | 1-6 SSu |
| SOC 798 Thesis..... | 1-7 FSSu |
| SOC 898D Dissertation-PhD | 1-12 FSSu |

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Veterinary Science

Degree Offered:

Ph.D. Biological Sciences

- Veterinary Microbiology specialization
- Veterinary Pathobiology specialization

M.S. Animal Sciences

- Veterinary Science specialization

M.S. Biological Sciences

- Veterinary Microbiology specialization
- Veterinary Pathobiology specialization

Graduate Faculty

Christopher Chase

Professor

*D.V.M., Iowa State University,
1980*

*Ph.D., University of Wisconsin,
1990*

Virology/Immunology

Jane Christopher-Hennings

Associate Professor

*D.V.M., University of
Minnesota, 1983*

*M.S., University of Wisconsin,
1990.*

*Molecular Diagnostics and
Research*

William Epperson

Associate Professor

*D.V.M., Ohio State University,
1985*

*M.S., Ohio State University,
1990*

Veterinary Epidemiology

Alan Erickson

Professor

*Ph.D., North Dakota State
University, 1989*

Biochemistry

David Francis

Professor

*Ph.D., University of Missouri-
Columbia, 1978*

Bacteriology

Edward Hamilton

Professor

*D.V.M., Texas A & M
University, 1974*

*M.Agr., Texas A & M
University, 1992*

*Livestock Production
Economics*

Department Head: Professor David H. Zeman

Graduate Coordinator: Professor Christopher Chase

For additional information contact:

Mailing address: SDSU Box 2175

Animal Disease Research — SAR

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

E-mail: christopher.chase@sdstate.edu

Phone: 605/688-5172

Fax: 605/688-6003

Program Description

Graduate education in the department of Veterinary Science is focused on animal health science, with major emphasis in infectious diseases of food-producing domestic species and zoonotic diseases. Research projects range from basic (mechanistic) to applied science. Students are not accepted into the program unless an assistantship can be provided. Funding for assistantships comes from a variety of sources including the South Dakota Agricultural Experiment Station, federal granting agencies, and the animal health product industry.

Available Options for Graduate Degrees

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

See page 21 for descriptions of available options.

Core Requirements

Research in pursuit of the dissertation requirement is expected to address a question of fundamental scientific importance and is expected to generate data of publication quality.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 525

General Requirements begin on page 16 (Master's Degree) and 21 (Ph.D.).

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

Veterinary Science (VET) Course Offerings

| | |
|---|----------|
| VET 503 Animal Diseases and Their Control..... | 3 FS |
| VET 524 Medical and Veterinary Virology | 3 FS |
| Basic course discussing the characterization, structure, and replication of viruses and the pathogenesis of viral disease in man and animals. Laboratory exercises emphasize techniques in virus isolation, characterization, and detection by immunological assays. P, MICR 422 or consent. Crosslisted with MICR 424/524. Equivalent to MICR 524. Corequisite course: VET 524L. | |
| VET 526L Infectious Disease Laboratory | 2 FS |
| VET 591 Independent Study | 1-3 SSu |
| Includes Directed Study, Problems, Readings, Directed Readings, Special Problems, and Special Projects. Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans. Enrollments are usually 10 or fewer students. Meeting depending upon the requirements of the topic. | |
| VET 723 Systemic Physiology | 4 |
| Physiological aspects of tissue cells, hematology, neuroendocrine system, central and autonomic nervous systems, and mycology. Discuss various interrelationships to body system functions and maintenance of homeostasis. P, VET 223 or consent of instructor. Corequisite course: VET 723L. | |
| VET 723 Advanced Mammalian Physiology | 5 F |
| This course is an advanced study of the cellular and molecular mechanisms used by mammals to acquire energy for their cells, to regulate body functions using the nervous and endocrine systems, to integrate the functions of the organs systems in order to maintain homeostasis and health of the animal, and to produce new members of its species. | |
| VET 723L Systemic Physiology Lab | 0 F |
| VET 791 Independent Study | 1-4 FSSu |
| VET 792 Topics | 1-3 FSSu |
| VET 793 Workshop | 1-4 S |

Biological Sciences (BIOS) Course Offerings

| | |
|----------------------------------|----------|
| BIOS 790 Seminar | 1 FS |
| BIOS 792 Topics | 1-6 |
| BIOS 798 Thesis | 1-7 FSSu |
| BIOS 890 Seminar | 1 FSSu |
| BIOS 898D Dissertation-PhD | 1-7 FSSu |

Regg Neiger
Professor
D.V.M., University of
Minnesota, 1974, Ph.D., Iowa
State University, 1987
Pathology and Toxicology

Eric Nelson
Associate Professor
Ph.D., South Dakota State
University, 1993
Molecular Virology

David H. Zeman
Professor
D.V.M., Oklahoma State, 1980
Ph.D., Louisiana State
University, 1986
Pathology

Adjunct/Courtesy/Joint Faculty

David Benfield
Ohio State University
Ph.D., University of Missouri,
1978
Virology

Mike Hildreth
Professor
Biology/Microbiology
Ph.D., Tulane University,
1983
Parasitology

David Hurley
University of Georgia
Ph.D., Penn State University,
1988
Immunology

James Robl
Hematech, Sioux Falls, SD
Ph.D., University of Illinois,
1983
Reproductive Physiology

Robert Rowland
Department of Diagnostic
Medicine and Pathobiology
Kansas State University
Ph.D., University of New
Mexico
Immunology

T. Sathiyaseelan
Hematech, Sioux Falls, SD
Ph.D., University of
Massachusetts, 2000
Immunology

Alan Young
Associate Professor
Ph.D., University of Toronto,
1994
Immunology

Visual Arts

Coursework only offered

Graduate Faculty

Norman P. Gambill
Professor
Ph.D., Syracuse University,
1976
American Studies, Art History,
Film History, Popular
Culture

Department Head: Professor Norman P. Gambill

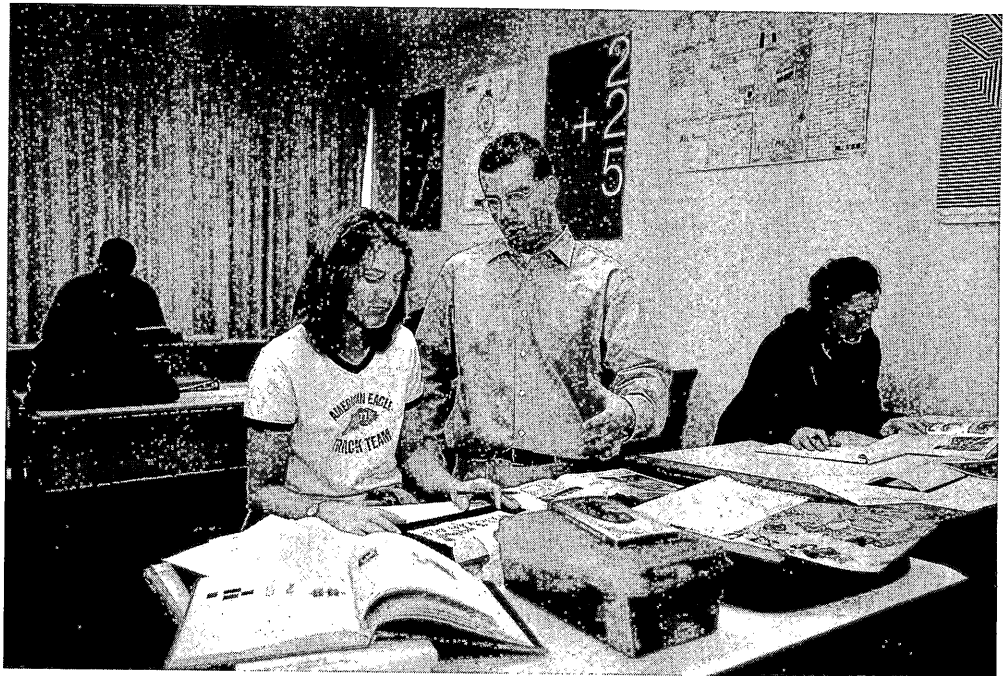
For additional information contact:

*Mailing address: SDSU Box 2802
Grove Hall — SGH
E-mail: artdept@sdstate.edu*

*Phone: 605/688-4103
Fax: 605/688-6769*

Art Education (ARTE) Course Offerings

ARTE 591 Independent Study1-3 SSu



Wildlife and Fisheries Sciences

Degrees Offered:

Ph.D. Biological Sciences, *see page 38*

- Fisheries Science specialization
- Wildlife Science specialization

M.S. Wildlife and Fisheries Sciences

- Fisheries specialization
- Wildlife specialization

Department Head: Professor Charles G. Scalet
Graduate Coordinator: Professor Charles G. Scalet

For additional information contact:

Mailing address: SDSU Box 2140B

Northern Plains Biostress Laboratory — NPB

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

E-mail: charles.scalet@sdstate.edu

Phone: 605/688-6121

Fax: 605/688-4515

Program Description

Department research, and therefore graduate research education, is usually directed toward 1) wildlife-fisheries-agriculture interactions, 2) wetlands, 3) biostress or 4) survey and assessment of wildlife and fisheries resources. The majority of research activity in the Department is of an applied field nature that revolves around habitat, users, and organisms, both game and non-game. The Department houses the S.D. Cooperative Fish and Wildlife Research Unit, which is a cooperative effort among SDSU; the S.D. Department of Game, Fish and Parks; the U.S. Department of the Interior; and the Wildlife Management Institute. In general, students are not accepted into the Department's graduate program unless an assistantship can be provided. The Department cooperates with a variety of internal and external funding entities to support research projects.

Available Options for Graduate Degrees

Master of Science: Option A

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

See pages 19 (M.S.) and 21 (Ph.D.) for descriptions of available options.

Core Requirements

Master of Science: Students are expected to take coursework in statistical methods and graduate seminars.

Doctor of Philosophy: Students must be proficient in statistical methods and computer application. Courses and experience are also required in college-level teaching and graduate and Ph.D. seminars.

Additional Admission Requirements

GRE: Required

TOEFL: Department Requirement of 525

General Requirements begin on page 16 (Master's Degree) and 21 (Ph.D.).

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

Graduate Faculty

Charles R. Berry
Professor

Ph.D., Virginia Polytechnic
Institute and State University,
1976
Fish Physiology

Michael L. Brown
Professor

Ph.D., Texas A & M University,
1993
Fish Culture, Fisheries
Management

Steven R. Chipps
Assistant Professor

Ph.D., University of Idaho,
1997
Aquatic Ecology

Lester D. Flake
Distinguished Professor
Emeritus

Ph.D., Washington State
University, 1971
Wildlife Ecology

Leigh H. Fredrickson
Adjunct Professor

Ph.D., Iowa State University,
1967
Waterfowl and Wetland
Ecology and Management

Kenneth F. Higgins
Professor

Ph.D., North Dakota State
University, 1981
Wildlife Management

Daniel E. Hubbard
Professor

Ph.D., South Dakota State
University, 1988
Wetland Ecology

Jonathan A. Jenks
 Professor
 Ph.D., Oklahoma State
 University, 1991
 Population Dynamics, Wildlife
 Ecology

Kent C. Jensen
 Assistant Professor
 Ph.D., Texas A&M University,
 1990
 Ornithology, Wildlife Ecology

Charles G. Scalet
 Professor
 Ph.D., University of Oklahoma,
 1971
 Fisheries Biology

David W. Willis
 Distinguished Professor
 Ph.D., Colorado State
 University, 1980
 Fisheries Management

*Philosophy Statement for
 Master of Science Degree
 in Wildlife and Fisheries
 Sciences*

*This degree is intended to
 educate students for
 management-level positions
 with state and federal
 agencies, private companies,
 and for the pursuit of higher
 academic degrees.*

*It is our goal to build on the
 foundation that students
 obtained during their
 undergraduate education,
 primarily directing them into
 some more specific area of
 wildlife or fisheries. By using
 specifically identified
 coursework areas and
 mentoring we will strive to
 assist students in developing
 their intellectual capabilities
 in working with natural
 resources and people. In
 addition, each student must
 propose and conduct an
 original scientific
 investigation.*

*An M.S. degree involves a
 full-time commitment normally
 requiring two to three years to
 complete.*

Wildlife and Fisheries Sciences (WL) Course Offerings

- WL 513 Advanced Fisheries Management3 F**
 Principles and techniques of selected practices for reservoir, lake, pond and lotic fisheries management. P, WL 367, WL 412, and/or consent of instructor. Corequisite course: WL 513L.
- WL 513L Advanced Fisheries Management Lab0 F**
- WL 515 Upland Game Ecology and Management3 F**
 Upland game birds and mammals as components of ecosystems. Effects of farming; industry; social change; technology; and federal, state, and private programs on game and non-game species. Techniques for individual species management. P, 411 and/or consent of instructor. Corequisite course: WL 515L.
- WL 515L Upland Game Ecology and Management Lab.....0 F**
- WL 517 Large Mammal Ecology and Management.....3 S**
 Large mammal life histories and distributions. Relationships of nutrition, reproduction, interspecific competition, and predation to management of big game habitat and harvest. Techniques for research and management of large mammals. P, WL 411 and/or consent of instructor. Corequisite course: WL 517L.
- WL 517L Large Mammal Ecology and Management Lab0 S**
- WL 519 Waterfowl Ecology and Management3 F**
 Analysis of ecological and socio-economic factors affecting waterfowl habitat and waterfowl populations. State and federal programs affecting wetland drainage and preservation. Field inspection of waterfowl habitat in the north-central states. P, WL 411 and/or consent of instructor. Corequisite course: WL 519L.
- WL 519L Waterfowl Ecology and Management Lab0 F**
- WL 521 Grassland Fire Ecology3 FSu**
 The course describes the ecological effects of fire on grassland ecosystem components, from soil and vegetation to wildlife and beef cattle. It also provides insight into the history of fires, the people who use them and why, the parts of a fire, how fires behave in relation to fuel and weather, and the conducting and safety of prescribed burns. P, consent of instructor. Crosslisted with RANG 521. Corequisite course: WL 521L.
- WL 521L Grassland Fire Ecology Lab0 FSu**
- WL 523 Fish Culture3 F**
 Extent and potential for aquaculture. Emphasis placed on culture methods of important commercial and sport fishes and invertebrates of North America. P, consent of instructor. Corequisite course: WL 523L.
- WL 523L Fish Culture Lab.....0 F**
- WL 592 Topics1-3 FS**
 Includes current topics, advanced topics and special topics. A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors. Enrollments are usually of 10 or fewer students with significant one-on-one student/teacher involvement.
- WL 592L Special Topics Lab0**
- WL 712 Wetlands Ecology and Management3 F**
 Botanical, zoological, hydrological, pedological, and biogeochemical components of wetland systems are studied. Course includes the management of wetlands for various functional values, government jurisdiction in wetland regulation, and wetland classification. North American wetland systems are discussed with emphasis on northern glaciated prairie wetlands. P, consent of instructor. Corequisite course: WL 712L.
- WL 712L Wetlands Ecology and Management Lab0 F**
- WL 713 Animal Population Dynamics.....3 F**
 Methods of analysis and interpretation of vital statistics of animal populations. Current theories on natural regulation of animal populations. Particular emphasis on vertebrate species of economic and/or recreational importance. Comparison of environmental controls on of various animal groups. P, consent of instructor. Corequisite course: WL 713L.
- WL 713L Animal Population Dynamics Lab0 F**
- WL 714 Fish Structure and Function3 S**
 Emphasis on anatomy, physiology, and histology of fishes and how these areas relate to fish management, water pollution, and fish culture. Economically important game and cultured species are stressed. P, consent of instructor. Corequisite course: WL 714L.
- WL 714L Fish Structure and Function Lab0 S**

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| WL 715 Wildlife Research Design | 3 S |
| Use of the scientific method for designing wildlife research and developing proposals. Familiarization with field and laboratory methods. Practical experience with statistical data analysis. P, consent of instructor. Corequisite course: WL 715L. | |
| WL 715L Wildlife Research Design Lab | 0 S |
| WL 717 Aquatic Trophic Ecology | 3 S |
| Analysis of selected biological processes influencing the organization of aquatic communities. Complex trophic interactions and their effects on the life histories and bioenergetics of aquatic organisms are examined. P, consent of instructor. Corequisite course: WL 717L. | |
| WL 717L Advanced Limnology Lab | 0 S |
| WL 718 Ecology of Aquatic Invertebrates | 3 F |
| The identification of and ecological relationships associated with aquatic invertebrates; aquatic ecosystems of the north-central states are emphasized. P, consent of instructor. Corequisite course: WL 718L. | |
| WL 718L Ecology of Aquatic Invertebrates Lab | 0 F |
| WL 719 Stream Ecology and Management | 3 F |
| Interrelationships of biotic and abiotic components of lotic ecosystems. Hydrologic and geologic influences on lotic habitat and biota will be stressed, as well as watershed management aspects. P, consent of instructor. Corequisite course: WL 719L. | |
| WL 719L Stream Ecology and Management Lab | 0 F |
| WL 790 Seminar | 1 FS |
| WL 791 Independent Study | 1-3 FSSu |
| WL 798 Thesis | 1-7 FSSu |

Biological Sciences (BIOS) Course Offerings

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|---|-----------------|
| BIOS 790 Seminar | 1 FS |
| BIOS 792 Topics | 1-6 |
| BIOS 798 Thesis | 1-7 FSSu |
| BIOS 890 Seminar | 1 FSSu |
| BIOS 898D Dissertation-PhD | 1-7 FSSu |

South Dakota has a great diversity of fisheries and wildlife resources. These resources represent an excellent outdoor laboratory for students interested in natural resources.

The eastern portion of the state, referred to as East River because of its location east of the Missouri River, is primarily farmland interspersed with numerous wetlands, shelterbelts, wooded draws and rivers, and glacial lakes. Primary wildlife and fish species include ring-necked pheasants, gray partridge, songbirds, shorebirds, a wide variety of ducks and geese, white-tailed deer, furbearers, walleyes, northern pike, yellow perch, and others.

The western half of the state (West River) is primarily grazing land, but there is some small grain farming along with prairie rivers, badland areas, and the Black Hills. Wildlife and fish species include salmonids, largemouth bass, pronghorns, mule deer, white-tailed deer, turkeys, sharp-tailed grouse, greater prairie-chickens, numerous raptors, and others.

The state is bisected by the Missouri River and its impoundments. Many fish and wildlife species, both game and nongame, occur in this corridor.

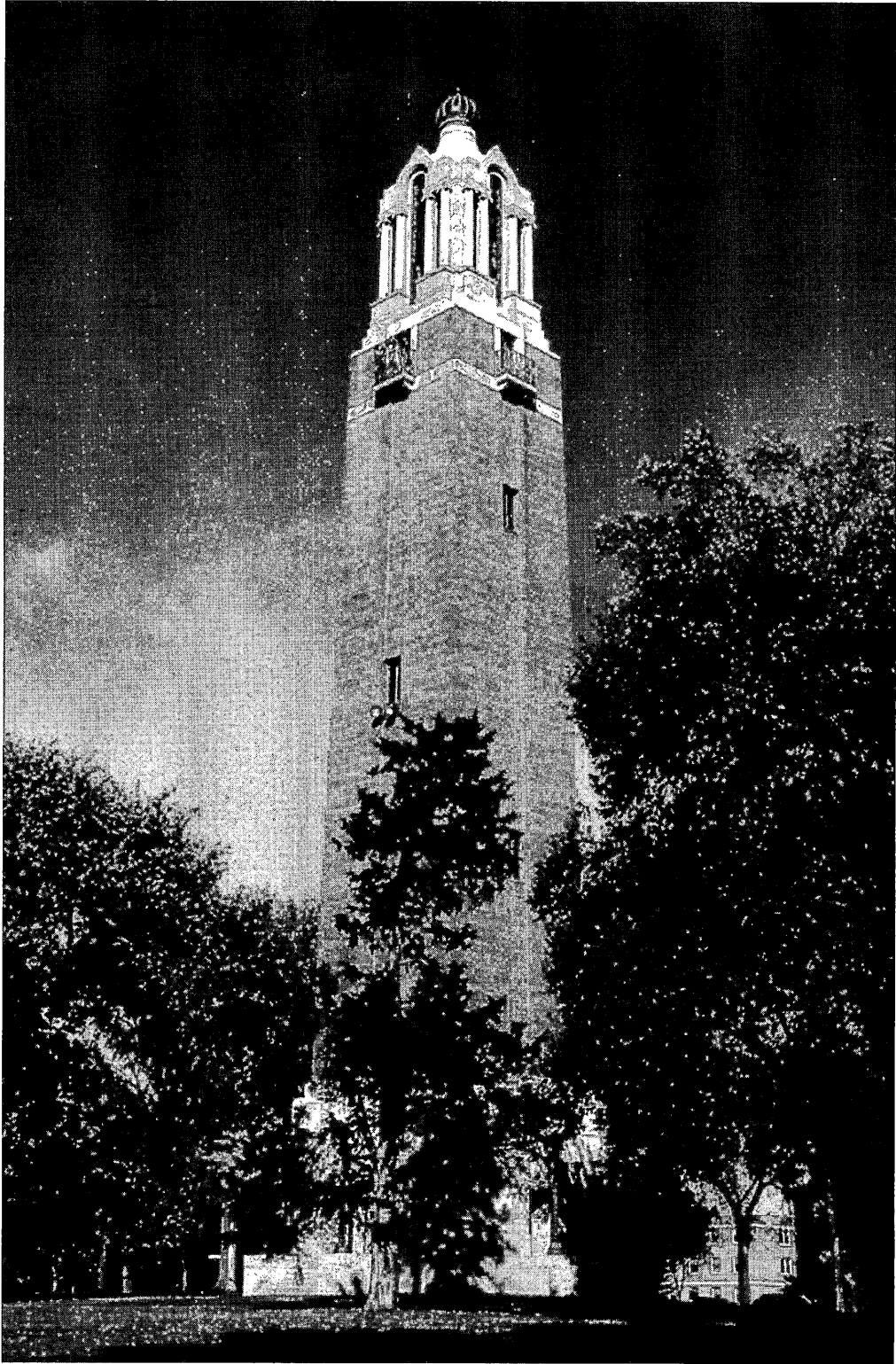
Philosophy Statement for the Ph.D. Degree in Biological Sciences (Wildlife and Fisheries Sciences)

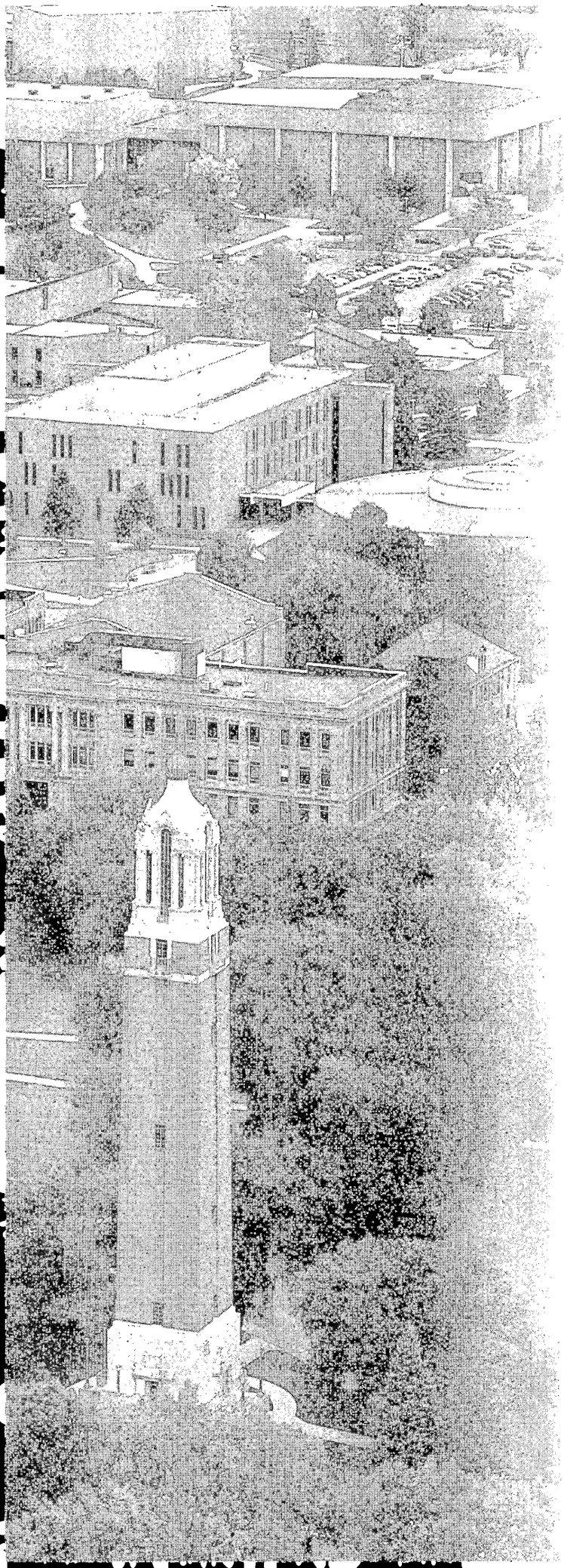
This degree is intended to educate students for upper-level management, research, and administrative positions with state and federal agencies, and private companies. It is also intended to prepare students in the teaching, research, and service component responsibilities needed for faculty positions with universities and colleges.

By building on the educational foundation that these students obtained from bachelor's and master's degree work, we will endeavor to raise them to a higher intellectual plateau. While coursework is involved, this is primarily a research and mentoring educational experience.

This degree requires original thought and research contributions, synthesis and development of information, and contributions to the world and its resources. Through mentoring and other educational experiences we desire to bring spirit, enthusiasm, imagination, and optimism to these students. They must develop independence, mature judgement, and a tolerance of differences among people, but an intolerance to inferior products and nonprofessional attitudes. We will strive to help these students become both operationally and conceptually creative.

A Ph.D. degree involves a full-time commitment normally requiring three to five years of effort beyond the M.S. degree.





GRADUATE FACULTY

- Abraham, Ross P.**, Associate Professor of Mathematics and Statistics, 1997; B.S., Augustana College, 1990; M.A., University of Montana, 1993; Ph.D., University of Houston, 1997.
- Ackman, John D.**, Associate Professor of Communication Studies and Theatre, 1978, 1997; B.S., SDSU, 1978; M.F.A., University of Montana, 1984.
- Adamson, Dwight W.**, Associate Professor of Economics, 1989, 1995; B.A., Washington State University, 1976; M.A., 1983; Ph.D., 1988.
- Adelaine, Michael**, Chief Information Technology Officer, Associate Professor of Agricultural and Biosystems Engineering, 1990, 2000; B.S., Michigan State University, 1974; M.S., University of Nebraska, 1985; Ph.D., 1989.
- Anderson, Gary A.**, Professor of Agricultural and Biosystems Engineering, 1987, 1999; B.S., SDSU, 1975; M.S., Iowa State University, 1985; Ph.D., 1987.
- Anderson, Randy L.**, Adjunct Professor of Plant Science, 2000; B.S., SDSU, 1974; M.S., 1976; Ph.D., University of Wyoming, 1980.
- Andrawis, Alfred S.**, Professor of Electrical Engineering, 1981, 2001; B.S., Alexandria University (Egypt), 1974; M.S., SDSU, 1982; Ph.D., Virginia Polytechnic Institute and State University, 1991.
- Andrawis, Madeleine Y.**, Professor of Electrical Engineering, 1980, 2001; B.S., Cairo University (Egypt), 1977; M.S., SDSU, 1983; Ph.D., Virginia Polytechnic Institute and State University, 1991.
- Arwood, Donald**, Professor of Rural Sociology, 1986, 1999; B.S., SDSU, 1980, M.S., 1982; Ph.D., 1989.
- Baer, Robert**, Professor of Dairy Science, 1982, 1992; B.S., University of Georgia, 1977; M.S., 1979; Ph.D., 1983.
- Bahr, Ann Marie B.**, Professor of Philosophy and Religion, 1988, 1999; B.A., Lawrence University, 1972; M.A., Stanford University, 1975; Ph.D., Temple University, 1989.
- Baron, Mark A.**, Adjunct Assistant Professor, Educational Leadership.
- Bassett, Kurt D.**, Coordinator of IAC Lab and Associate Professor of Mechanical Engineering, 1982, 1997; B.S., SDSU, 1981; M.S., 1983; Ph.D., North Dakota State University, 1995.
- Berg, Donald J.**, Associate Professor of Geography, 1990, 1995; B.A., North Dakota State University, 1964; M.A., 1966; M.A., University of California, 1971; Ph.D., 1976.
- Berry, Jr., Charles R.**, Adjunct Professor of Wildlife and Fisheries Sciences, 1985, 1991; B.S., Randolph-Macon College, 1967; M.S., 1970; Ph.D., Virginia Polytechnic Institute and State University, 1976.
- Beutler, Martin K.**, Director of West River Ag Center and Professor of Economics, 1986, 1998; B.S., Utah State University, 1980; M.S., 1982; Ph.D., Purdue University, 1986.
- Bielfeldt, Dennis D.**, Professor of Philosophy and Religion, 1995, 1999; B.S., SDSU, 1977; M.A., University of Iowa, 1984; Ph.D., 1987.
- Bleakley, Bruce H.**, Professor of Biology and Microbiology, 1991, 1995; B.S., Michigan State University, 1978; M.S., 1981; Ph.D., University of Florida, 1986.
- Boe, Arvid A.**, Professor of Plant Science, 1976, 1991; B.A., Pacific Lutheran University, 1972; M.A., University of South Dakota, 1976; Ph.D., SDSU, 1979.
- Boggs, Donald L.**, Professor and Head of Animal and Range Sciences, 1988, 1998; B.S., University of Illinois, 1975; M.S., Kansas State University, 1977; Ph.D., Michigan State University, 1982.
- Booher, James M.**, Head of Athletic Training and Professor of Health, Physical Education and Recreation, 1967, 1983; B.A., Nebraska Wesleyan University, 1965; M.S., SDSU, 1969; Ph.D., University of Utah, 1976.
- Boris, Gregory A.**, Adjunct Assistant Professor, Educational Leadership.
- Boschee, Floyd**, Adjunct Professor, Educational Leadership.
- Brandt, Bruce E.**, Professor of English, 1979, 1989; B.A., University of Denver, 1969; M.A., 1971; Ph.D., Harvard University, 1977.
- Britzman, Mark J.**, Professor of Education and Counseling, 1987, 1999; B.S., SDSU, 1982; M.Ed., 1984; Ed.D., University of South Dakota, 1987.
- Brown, Lewis F.**, Dean of the College of Engineering, Professor of Electrical Engineering, 1992, 2001; B.S., SDSU, 1984; M.S., Iowa State University, 1986; Ph.D., 1988.
- Brown, Michael L.**, Professor of Wildlife and Fisheries Sciences, 1994, 1998; B.S., Arkansas Technical University, 1986; M.S., Texas A&M University, 1989; Ph.D., 1993.
- Burckhard, Suzette R.**, Assistant Professor of Civil and Environmental Engineering, 1997, 2001; B.S., SDSU, 1986; M.S., Kansas State University, 1992; M.S., 1993; Ph.D., 1997.
- Burns, Robert V.**, Distinguished Professor, Head of Political Science and Philosophy and Religion, Dean of Honors College, 1970, 1994; B.S., SDSU, 1964; M.A., University of Missouri, 1966; Ph.D., 1973.
- Campbell, Emilie M.G.**, Assistant Professor of Animal and Range Sciences, 2000; 2002, B.S., Brigham Young University, 1994; Ph.D., Texas A&M University, 1998.
- Card, Karen A.**, Adjunct Assistant Professor, Educational Leadership.
- Carlson, C. Gregg**, Extension Specialist/Professor of Plant Science, 1974, 1994; B.S., Western Illinois University, 1969; M.S., SDSU, 1972; Ph.D., 1978.
- Carson, Paula P.**, Associate Professor of Nursing, 1983, 1995; B.S., SDSU, 1975; M.S.N., University of Minnesota, 1985; Ph.D., University of Arizona, 1992.
- Carter, Catherine D.**, Associate Professor of Plant Science, 1989; B.M.E., George Peabody College, 1971; B.S., 1975; M.S., 1976; Ph.D., University of Kentucky, 1982.
- Catangui, Michael A.**, Extension Entomologist/Assistant Professor of Plant Science, 1986, 1998; B.S., University of the Philippines, 1982; M.S., SDSU, 1987; Ph.D., University of Nebraska, 1992.
- Chase, Christopher**, Professor, Animal Disease Research and Diagnostic Lab, 1992, 2001; M.S., University of Wisconsin, 1987; Ph.D., 1990; D.V.M., Iowa State University, 1980.
- Chase, Thomas E.**, Associate Professor of Plant Science, 1990, 1995; B.S., State University of New York, 1979; Ph.D., University of Vermont, 1986.
- Cheesbrough, Thomas M.**, Professor and Head of Biology and Microbiology, 1990, 2000; B.S., University of Wyoming, 1976; M.S., 1978; Ph.D., Purdue University, 1982.
- Chipman, Helen**, EFNEP Coordinator and Associate Professor, Extension Family and Consumer Sciences, 1992, 1997; B.S., Utah State University, 1980; M.S., Colorado State University, 1988; Ph.D., 1992.

- Chipp, Steven R.**, Adjunct Assistant Professor of Wildlife and Fisheries Sciences, 1999; B.S., Davis and Elkins College, 1990; M.S., West Virginia University, 1992; Ph.D., University of Idaho, 1997.
- Christopher-Hennings, Jane**, Associate Professor of Animal Disease Research and Diagnostic Lab, 1990, 2000; B.S., University of Wisconsin, 1975; M.S., 1990; D.B.M., University of Minnesota, 1983.
- Clapper, Jeffrey A.**, Assistant Professor of Animal and Range Sciences, 1997; B.S., Ohio State University, 1982; M.S., 1987; Ph.D., Purdue University, 1992.
- Clay, David E.**, Professor of Plant Science, 1989, 2001; B.S., University of Wisconsin, 1976; M.S., University of Idaho, 1984; Ph.D., University of Minnesota, 1988.
- Clay, Sharon A.**, Professor of Plant Science, 1989, 1998; B.S., University of Wisconsin, 1977; M.S., University of Idaho, 1982; Ph.D., University of Minnesota, 1986.
- Clem, James**, Associate Professor of Clinical Pharmacy, 1992, 1997; 2001; B.S., University of Iowa, 1989; Pharm.D., 1991.
- Cogswell, Kurt D.**, Associate Professor of Mathematics and Statistics, 1997, 2001; B.S., Massachusetts Institute of Technology, 1978; M.S., North Dakota State University, 1991; Ph.D., Northwestern University, 1996.
- Cole-Dai, Jihong**, Assistant Professor of Chemistry and Biochemistry, 2000; B.S., University of Science and Technology of China, 1982; M.S., University of Maryland, 1984; Ph.D., 1987.
- Craig, Gloria P.**, Associate Professor of Nursing and Head of Nursing Student Services, 1998, 2000; B.S.N., Buena Vista College, 1989; M.S.N., Drake University, 1993; Ed.S., 1996; Ed.D., 1997.
- Creal, Tim**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, 2001; B.S., Black Hills State University, 1978; M.S., SDSU, 1990; Ed.S., University of South Dakota, 1994; Ed.D., 1996.
- Crews, Georgia W.**, Associate Professor of Nutrition, Food Science and Hospitality, 1984; 2002; B.S., Middle Tennessee State University, 1968; M.S., University of Tennessee, 1970; Ph.D., Kansas State University, 2000.
- Boris, Gregory A.**, Adjunct Assistant Professor, Educational Leadership.
- Crosswait, Bruce**, Adjunct Assistant Professor, Educational Leadership.
- Cumber, Carol J.**, Professor of Economics, 1990, 1998; B.A., North Dakota State University, 1979; M.B.A., 1984; Ph.D., SDSU, 1994.
- Cutler, Kay Marie-Zenk**, Assistant Professor of Human Development, Consumer and Family Sciences, 1997; B.A., University of Minnesota, 1989; Ph.D., University of Texas, 1995.
- Danker, Kathleen A.**, Professor of English, 1990, 2001; B.A., University of Nebraska, 1971; M.A., 1974; Ph.D., 1985.
- Dave, Rajiv I.**, Associate Professor of Dairy Science, 1999; B.S., Gujarat Agricultural University, 1986; M.S., 1991; Ph.D., Victoria University of Technology, 1998.
- DeBoer, Delvin**, Professor of Civil and Environmental Engineering, 1978, 1997; B.S., SDSU, 1978; M.S., 1980; Ph.D., Iowa State University, 1990.
- Delfanian, Fereidoon**, Professor of Mechanical Engineering, 1979, 2001; B.S., SDSU, 1977; M.S., 1980; Ph.D., North Dakota State University, 1995.
- Dieter, Carla J.**, Assistant Professor of Nursing and Family Nurse Practitioner, Student Health Services, 1984, 2001; 2002; B.S.N., University of Nebraska, 1978; M.S., SDSU, 1989; Ed.D., University of South Dakota, 2001.
- Dieter, Charles**, Associate Professor of Biology and Microbiology, 1987, 2000; B.S., Concordia Teachers College, 1977; M.S., SDSU, 1987; Ph.D., 1993.
- Dobbs, Thomas L.**, Professor of Economics, 1978, 1982; B.S., SDSU, 1965; Ph.D., University of Maryland, 1969.
- Donovan, Kathleen**, Professor and Head of English, 1994, 2000; B.A., Spalding College, 1968; M.A., University of Nebraska, 1988; Ph.D., University of Arizona, 1994.
- Doolittle, James J.**, Professor of Plant Science, 1991, 2001; B.S., Purdue University, 1982; M.S., Texas A&M University, 1986; Ph.D., 1991.
- Draper, Martin A.**, Associate Professor of Plant Science, 1997, 2001; B.S., Iowa State University, 1982; M.S., North Dakota State University, 1985; Ph.D., 1999.
- Dwivedi, Chandradhar**, Distinguished Professor of Pharmaceutical Sciences and Head of Pharmaceutical Sciences, 1987, 2000; B.S., Gorakhpur University, 1964; M.S., 1966; Ph.D., Lacknow University, 1972.
- Ellsbury, Michael M.**, Adjunct Associate Professor of Plant Science, 1992; B.A., University of Colorado, 1970; M.S., 1974; Ph.D., University of Arizona, 1979.
- Engstrom, Royce C.**, Adjunct Professor of Chemistry and Biochemistry, 1995; B.S., University of Nebraska, 1975; Ph.D., University of Wisconsin, 1979.
- Enevoldsen, Bernadine L.**, Professor of Human Development, Consumer and Family Sciences, 1964, 2001; B.S., SDSU, 1964; M.S., 1986; Ph.D., University of Minnesota, 1993.
- Epperson, William**, Professor of Veterinary Science, 1994, 1998; 2001; B.S., Ohio State University, 1985; M.S., 1990; D.V.M., 1985.
- Erickson, Alan K.**, Professor of Veterinary Science, 1990, 1998; B.A., Minot State College, 1983; B.A., 1984; Ph.D., North Dakota State University, 1989.
- Erion, Ralph L.**, Professor and Acting Head in Education and Counseling, 1985, 1996; B.A., Inter American University, 1972; M.A.Ed., 1975; Ph.D., Texas A&M University, 1985.
- Evans, David A.**, Professor of English and Writer in Residence, 1968, 1978; B.A., Morningside College, 1962; M.A., University of Iowa, 1964; M.F.A., University of Arkansas, 1976.
- Evenson, Donald P.**, Distinguished Professor of Chemistry, 1981, 1996; B.A., Augustana College, 1964; Ph.D., University of Colorado, 1968.
- Fausti, Scott W.**, Professor of Economics, 1991, 1996; B.A., North Dakota State University, 1986; M.S., University of Illinois, 1988; Ph.D., 1991.
- Fellner, Michael J.**, Assistant Professor of Education and Counseling, Rapid City Site, 2001; B.A., University of New York, 1967; M.A., Temple University, 1969; Ph.D., University of Texas, 1973.
- Fennell, Anne**, Associate Professor of Horticulture, Forestry, Landscape and Parks, 1992, 1997; B.S., Iowa State University, 1979; M.S., University of Minnesota, 1982; Ph.D., 1985.
- Ferguson, Jerry L.**, Professor of Communication Studies and Theatre, 1970, 1982; B.S., SDSU, 1964; M.A., University of South Dakota, 1965; Ph.D., Southern Illinois University, 1973.
- Flynn, M. L.**, Professor of English, 1990, 2000; Ph.B., DePaul University, 1969; M.A., University of Missouri, 1977; Ph.D., 1985.

- Foland, Kay L.**, Associate Professor of Nursing, 1982, 1999; B.S., SDSU, 1980; M.S.N., University of Nebraska, 1982; Ph.D., University of Texas, 1989.
- Francis, David H.**, Professor of Veterinary Science, 1978, 1988; B.S., Brigham Young University, 1971; M.S., 1974; Ph.D., University of Missouri, 1978.
- French, B. Wade**, Adjunct Assistant Professor of Plant Science, 2000; B.S., University of Oklahoma, 1981; M.S., Brock University, 1986; Ph.D., Oklahoma State University, 1998.
- French, Jeannie K.**, Professor of Visual Arts, 1990, 1998; B.A., University of Wisconsin, 1974; M.F.A., 1983; M.A., SDSU, 1997.
- Froehlich, Donell P.**, Professor and Head of Mechanical Engineering, 1982, 1992; B.S., SDSU, 1972; M.S., 1973; Ph.D., Cornell University, 1976.
- Fuller, Billy W.**, Professor of Plant Science, 1988, 2000; B.S., Auburn University, 1976; M.Ed., Auburn University, 1978; M.S., Clemson University, 1982; Ph.D., Louisiana State University, 1987.
- Funchion, Michael F.**, Professor of History, 1973, 1983; B.A., Iona College, 1966; M.A., Loyola University, 1968; Ph.D., 1973.
- Galipeau, David W.**, Professor of Electrical Engineering, 1992, 2001; B.E., University of Rhode Island, 1971; M.S., University of Maine, 1989; Ph.D., 1992.
- Gallenberg, Dale J.**, Professor and Head of Plant Science, 1984, 1996; B.S., University of Wisconsin, 1978; M.S., Cornell University, 1982; Ph.D., 1984.
- Gambill, Norman**, Professor and Head of Visual Arts, 1984; B.A., Emory University, 1962; M.A., University of Iowa, 1966; Ph.D., Syracuse University, 1976.
- Gardner, Scott**, Associate Professor of Human Development, Consumer and Family Sciences, 1996, 1997; B.S., Brigham Young University, 1989; M.S., University of Georgia, 1991; Ph.D., Texas Technical University, 1995.
- Garnos, Michael L.**, Assistant Professor of Education and Counseling, 2000; B.A., Dakota Wesleyan University, 1970; M.S., Mankato State University, 1979; Ed.D., University of Northern Colorado, 1993.
- Gelderman, Ronald H.**, Manager of Soil Lab and Professor of Plant Science, 1973, 1998; B.S., SDSU, 1972; M.S., 1976; Ph.D., University of North Dakota, 1987.
- Ghazi, Hassan S.**, Professor of Mechanical Engineering, 1984, 1986; B.S., Purdue University, 1954; M.S., Ohio State University, 1956; Ph.D., 1962.
- Gibbons, William**, Professor of Biology and Microbiology, 1980, 1997; B.S., SDSU, 1980; B.S., 1980; M.S., 1982; Ph.D., 1987.
- Gibson, Susan A.**, Associate Professor of Biology and Microbiology, 1993, 1999; B.S., University of Oklahoma, 1974; M.S., 1981; Ph.D., 1989.
- Gilkerson, Deanna S.**, Professor of Human Development, Consumer and Family Sciences, 1977, 2000; B.S., SDSU, 1975; M.S., University of Nebraska, 1978; Ph.D., Iowa State University, 1993.
- Gilmanov, Tagir G.**, Assistant Professor of Biology and Microbiology, 1997; M.S., Moscow State University (Russia), 1972; Ph.D., 1976.
- Granholt, Nels H.**, Distinguished Professor of Biology and Microbiology, 1968, 1978; B.A., University of Massachusetts, 1964; Ph.D., Iowa State University, 1968.
- Grant, Geoffrey W.**, Associate Professor of Rural Sociology, 1977, 1986; B.A., Carroll College, 1964; M.A., University of Nebraska, 1969; Ph.D., 1980.
- Gritzner, Charles F.**, Distinguished Professor of Geography, 1980, 1995; B.A., Arizona State University, 1958; M.A., Louisiana State University, 1960; Ph.D., 1969.
- Gritzner, Janet H.**, Professor of Geography, 1980, 1996; B.A., University of Maryland, 1965; M.A., 1970; Ph.D., Louisiana State University, 1978.
- Guan, Xiangming**, Associate Professor of Pharmaceutical Sciences, 1995, 2000; B.S., Zhejiang Medical University, 1982; M.S., University of Kansas, 1988; Ph.D., 1991.
- Hacker, Patricia E.**, Professor of Health, Physical Education and Recreation, 1991, 1995; B.Ed., Glenville State College, 1973; M.S., West Virginia University, 1983; Ph.D., University of Wyoming, 1988.
- Halaweish, Fathi T.**, Assistant Professor of Chemistry and Biochemistry, 1995, 1998; B.S., University of Mansoura (Egypt), 1976; M.S., 1981; Ph.D., Institute of Science & Technology (United Kingdom), 1987.
- Haleta, Laurie L.**, Professor and Head of Communication Studies and Theatre, 1977, 2001; B.S., SDSU, 1977; M.A., 1983; Ph.D., University of Nebraska, 1994.
- Hamilton, Edward D.**, Professor of Animal Disease Research and Diagnostic Lab, 1997, 2001; B.S., Texas A&M University, 1973; D.V.M., 1974.; M.S., 1992.
- Hammack, Leslie**, Adjunct Assistant Professor of Plant Science, 2002; B.S., State University of New York, 1966; M.S., University of Wisconsin, 1970; Ph.D., 1974.
- Harper, Ruth**, Professor of Education and Counseling, 1994, 1998; B.A., Cornell College, 1973; M.S.Ed., University of Wisconsin, 1977; Ph.D., Kansas State University, 1987.
- Heath, Jay A.**, Adjunct Professor, Educational Leadership.
- Hedge, Dennis**, Associate Professor of Clinical Pharmacy, 1992, 1997; 2001; Pharm.D., University of Kansas, 1991.
- Hegland, Jane E.**, Associate Professor and Head of Apparel Merchandising and Interior Design, 2001; 2001; B.A., Saint Olaf College, 1985; M.A., University of Minnesota, 1991; Ph.D., 1995.
- Heins, Jodi R.**, Associate Professor of Clinical Pharmacy, 1994, 1999; Pharm.D., University of Nebraska, 1993.
- Helder, Dennis L.**, Professor and Acting Head of Electrical Engineering and Director of Engineering Research, 1983, 1999; B.S., SDSU, 1979; B.S., 1980; M.S., 1985; Ph.D., North Dakota State University, 1991.
- Hellickson, Mylo A.**, Professor of Agricultural and Biosystems Engineering, 1969, 1982; B.S., North Dakota State University, 1964; M.S., 1966; Ph.D., West Virginia University, 1969.
- Helling, Mary Kay**, Assistant Vice President for Academic Affairs, Professor of Human Development, Consumer and Family Sciences, 1978, 2001; B.S., SDSU, 1977; M.S., 1982; Ph.D., Purdue University, 1992.
- Hendrickx, Lori D.**, Associate Professor of Nursing, Graduate Nursing, 1998, 1999; B.S.N., University of North Dakota, 1981; M.S.N., University of Wisconsin, 1989; Ed.D., University of Montana, 1998.
- Henning, David R.**, Alfred Chair – Associate Professor of Dairy Science, 1990, 1994; B.S., University of Illinois, 1962; Ph.D., Oregon State University, 1966.
- Hesler, Louis S.**, Adjunct Associate Professor of Plant Science, 1993, 1999; B.S., Texas Christian University, 1984; M.S., Texas A&M University, 1986; Ph.D., University of California, 1991.

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- Hietpas, Steven**, Professor of Electrical Engineering, 1994, 1998; B.S., Montana State University, 1984; M.S., 1991; Ph.D., 1994.
- Higgins, Kenneth F.**, Adjunct Professor of Wildlife and Fisheries Sciences, 1985, 1994; B.S., Colorado State University, 1965; M.S., SDSU, 1968; Ph.D., North Dakota State University, 1981.
- Hilderbrand, David**, Interim Vice President for Research and Dean of the Graduate School, Professor of Chemistry, 1974, 1998; B.A., Southwest Baptist College, 1967; M.A., University of Missouri, 1969; Ph.D., 1971.
- Hildreth, Michael**, Professor of Biology and Microbiology, 1987, 1997; B.A., Westmar College, 1977; Ph.D., Tulane University, 1983.
- Hippen, Arnold R.**, David H. Henry Sustained Professorship / Associate Professor of Dairy Science, 1998, 1999; B.S., Iowa State University, 1991; M.S., 1996; Ph.D., 1997.
- Holmes, Robert A.**, Adjunct Assistant Professor of Education and Counseling, Rapid City Site, 2001; B.A., University of New York, 1970; M.S.W., 1977.
- Hood-Weaver, Bonnie**, Adjunct Assistant Professor of Education and Counseling, 2001; B.S., Castleton State College, 1967; M.Ed., University of New Hampshire, 1975; Ed.D., University of Massachusetts, 1986.
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- Hubbard, Daniel E.**, Professor of Wildlife and Fisheries Sciences, 1980, 2000; B.S., Michigan State University, 1975; M.S., SDSU, 1979; Ph.D., 1988.
- Humburg, Daniel S.**, Associate Professor of Agricultural and Biosystems Engineering, 1985, 1996; B.S., University of Wisconsin, 1982; M.S., SDSU, 1987; Ph.D., University of Illinois, 1991.
- Ibrahim, Amir Mohamed Hussein**, Associate Professor of Plant Science, 2000; 2001; B.S., 1991; M.S., 1994; Ph.D., Colorado State University, 1998.
- Janssen, Larry L.**, Professor of Economics, 1978, 1989; B.S., University of Nebraska, 1971; M.S., Oklahoma State University, 1974; Ph.D., University of Nebraska, 1978.
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- Jin, Yue**, Associate Professor of Plant Science, 1995, 1999; B.S., Inner-Mongolia College of Agriculture, 1982; M.S., North Dakota State University, 1988; M.S., 1990; Ph.D., 1990.
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- Johnson, Patricia S.**, Professor of Animal and Range Sciences, 1986, 1997; B.A., Fort Lewis College, 1974; B.S., 1975; M.S., Utah State University, 1978; Ph.D., 1987.
- Johnson, Paul J.**, Associate Professor of Plant Science, 1993, 1997; B.S., Oregon State University, 1982; M.S., University of Idaho, 1987; Ph.D., University of Wisconsin, 1992.
- Johnson, Thomas J.**, Associate Professor of Clinical Pharmacy, 1998; 2001; Pharm.D., North Dakota State University, 1997.
- Johnson, W. Carter**, Professor of Horticulture, Forestry, Landscape and Parks, 1989; B.S., Augustana College, 1968; Ph.D., North Dakota State University, 1971.
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- Marshall, Donald M.**, Professor of Animal and Range Sciences, 1984, 1995; B.S., University of Missouri, 1979; M.S., Oklahoma State University, 1981; Ph.D., 1984.
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- Miller, Matthew L.**, Assistant Professor of Chemistry and Biochemistry, 2001; 2002; B.S., University of South Dakota, 1985; M.S., Purdue University, 1998; Ph.D., 2001.
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- Reese, R. Neil**, Professor of Biology and Microbiology, 1988, 1998; B.S., Utah State University, 1977; M.S., University of Idaho, 1980; Ph.D., 1984.
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- Reid, Richard A.**, Assistant Dean of Engineering and Professor of Civil and Environmental Engineering, 1995, 1999; B.S., Citadel Military College of Science, 1981; M.S., Georgia Institute of Technology, 1987; Ph.D., 1995.
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- Richter, Anthony H.**, Professor of Modern Languages, 1971, 1981; B.A., Northwestern University, 1965; M.A.T., 1966; Ph.D., 1971.
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- Ruffolo, John J.**, Associate Dean of the Graduate School and Professor of Biology and Microbiology, 1999; B.S., Loyola University, 1966; M.S., University of Iowa, 1969; Ph.D., 1972.
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- Schmidt, Robert C.**, Professor of Mathematics and Statistics, 1981, 1996; B.S., SDSU, 1979; M.S., Iowa State University, 1981; Ph.D., 1987.
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- Shane, Richard C.**, Professor and Head of Economics, 1977, 1997; B.S., SDSU, 1969; M.S., University of Arizona, 1971; Ph.D., Washington State University, 1978.
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- Yocum, Kenneth L.**, Professor and Head of Mathematics and Statistics, 1962, 1980; B.S., SD School of Mines and Technology, 1960; M.S., University of Wyoming, 1962; Ph.D., 1972.
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- Alexander, Ruth A.**, Professor Emerita of English, 1952, 1990; B.A., Michigan State University, 1945; M.A., University of Minnesota, 1947; Ph.D., Michigan State University, 1952.
- Allen, Herbert R.**, Professor Emeritus of Economics, 1963, 1987; B.S., Iowa State University, 1950; M.S., 1952; Ph.D., SDSU, 1968.
- Anderson, Arthur W.**, Professor Emeritus, Extension Economist, 1947, 1985; B.S., University of Minnesota, 1938; M.S., 1942.
- Bailey, Harold S.**, Vice President for Academic Affairs Emeritus, Distinguished Professor of Higher Education, 1951, 1985; B.S., Massachusetts College of Pharmacy, 1944; M.S., 1948; Ph.D., Purdue University, 1951.
- Bailey, James**, Professor Emeritus of Animal and Range Sciences, 1968, 1986; D.V.M., Iowa State University, 1946.
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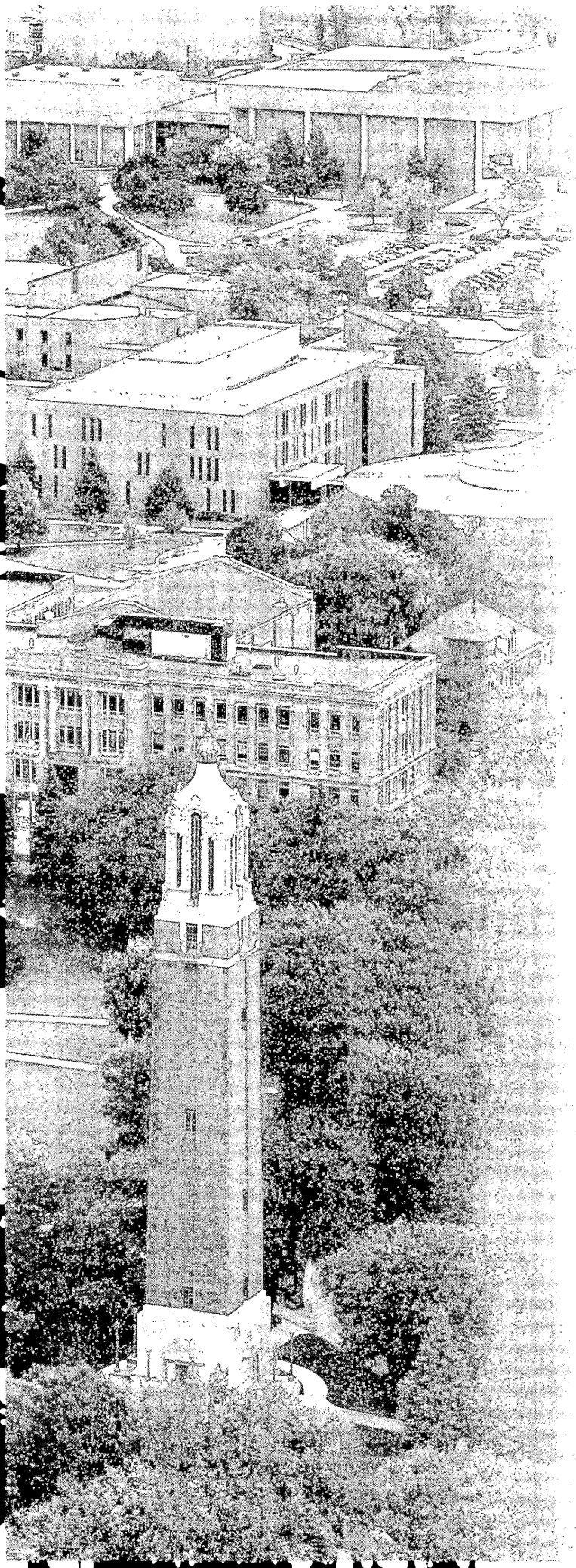
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- Hogan, Edward P.**, Professor Emeritus of Geography, 1967, 1999; B.S., Saint Louis University, 1961; M.A., 1962; Ph.D., 1969.
- Hollen, Evelyn**, Professor Emerita of Nutrition, Food Science & Hospitality, 1954; B.S., Iowa State University, 1934; M.S., SDSU, 1942; Ph.D., Iowa State University, 1963.
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- Horton, Maurice L.**, Professor Emeritus of Plant Science, 1964, 1978; B.S., Purdue University, 1953; M.S., 1959; Ph.D., Iowa State University, 1962.
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- Johnson, Genevieve B.**, Professor Emerita of Nursing, 1956, 1984; B.S., SDSU, 1944; B.S., Vanderbilt University, 1945; M.S., Columbia University, 1955; Ed.D., 1969.
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- Johnson, James R.**, Professor Emeritus of Animal and Range Sciences, 1966, 2001; B.S., Montana State University, 1964; M.S., 1966; Ph.D., Oregon State University, 1974.
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- Kenefick, Donald G.**, Professor Emeritus of Plant Science and Biochemistry, 1959, 1971; B.S., University of Wisconsin, 1951; Ph.D., Michigan State University, 1959.

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- Klug, Darlien G.**, Assistant Professor Emerita of Library, 1949, 1974; B.A., Yankton College, 1930; M.S., SDSU, 1961.
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- Kortan, Laverne J.**, Professor Emeritus of Animal Science, 1945, 1982; B.S., SDSU, 1942; M.S., 1955.
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- Lewis, James K.**, Professor Emeritus of Animal Science, 1950, 1983; B.S., Colorado State University, 1948; M.S., Montana State University, 1950.
- Libel, George W.**, Professor Emeritus of Animal and Range Sciences, 1968, 2001; B.S., University of Nebraska, 1966; M.S., 1968; Ph.D., SDSU, 1974.
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- Lingren, Charles K.**, Professor Emeritus of Educational Leadership, 1976, 1999; B.A., University of Northern Iowa, 1958; M.A., University of Iowa, 1968; Ph.D., 1975.
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- Morrill, Keith**, Associate Professor Emeritus of Biology, 1968, 1975; B.S., SDSU, 1959; M.A., University of South Dakota, 1963.
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- Peterson, Gary**, Professor Emeritus of Biology and Microbiology, 1973, 1983; B.S., University of Utah, 1965; M.S., Emporia State University, 1969; D.A., University of Northern Colorado, 1971.
- Peterson, Ronald M.**, Professor Emeritus of Horticulture-Forestry, 1953, 1987; B.S., Colorado State University, 1947; M.S., University of California, 1949; Ph.D., University of Minnesota, 1953.
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- Richardson, Marilyn**, Associate Professor Emerita of Health, Physical Education and Recreation, 1963, 1994; B.A., Brigham Young University, 1956; M.A., Pennsylvania State University, 1963.
- Rollag, Dwayne A.**, P.E., Professor and Head of Civil and Environmental Engineering, 1965, 1979; B.S., University of Minnesota, 1959; M.S., SDSU, 1966; Ph.D., Purdue University, 1975.
- Romans, John R.**, Professor Emeritus of Animal and Range Sciences, 1962, 1997; B.S., Iowa State University, 1955; M.S., SDSU, 1964; Ph.D., 1967.
- Rose, Madeleine S.**, Associate Professor Emerita of Nutrition, Food Science & Hospitality, 1990, 2000; B.S., University of California, 1970; M.S., University of Maryland, 1972; Ph.D., Texas Woman's University, 1985.
- Rose, Robert**, Associate Professor Emeritus of Nutrition, Food Science & Hospitality, 1988, 2000; B.S., SDSU, 1970; M.S., University of Maryland, 1972; Ph.D., Texas Woman's University, 1991.
- Rue, Rolland R.**, Professor Emeritus of Chemistry and Biochemistry, 1962, 1983; B.A., Macalester College, 1957; Ph.D., Iowa State University, 1962.
- Sander, Duane**, Dean and Professor Emeritus of Electrical Engineering, 1967, 1999; B.S., S.D. School of Mines and Technology, 1960; M.S., Iowa State University, 1962; Ph.D., 1964.
- Sanderson, Cecil**, Professor Emeritus of Extension, 1937, 1984; B.S., SDSU, 1937; M.S., 1964.
- Sandfort, John F.**, Professor Emeritus of Mechanical Engineering, 1958, 1977; B.S., Ohio State University, 1933; B.S., 1934; M.S. Iowa State University, 1947.
- Satterlee, James L.**, Professor Emeritus and Head of Rural Sociology, 1962, 1976; B.S., SDSU, 1962, M.S., 1963; Ph.D., 1970.
- Sauer, Howard M.**, Professor Emeritus of Rural Sociology, 1938, 1973; B.A., Drake University, 1929; M.A., Iowa State University, 1931.
- Schliessmann, Michael R.**, Professor Emeritus of Communication Studies and Theatre, 1973, 2001; B.S., SDSU, 1973, M.S., 1974; Ph.D., University of Kansas, 1981.
- Scholten, Marvin**, Professor Emeritus of Education, 1956, 1985; B.A., University of Minnesota, 1949; M.A., University of South Dakota, 1950; Ed.D., 1967.
- Semeniuk, Alexandra O.**, Professor Emerita of Textiles, Clothing, and Interior Design, 1959, 1980; B.S., SDSU, 1955; M.S., 1961.
- Shank, D. Boyd**, Professor Emeritus of Plant Science, 1946; 1980; B.S., University of Nebraska, 1935; Ph.D., Iowa State University, 1941.
- Shubeck, Fred E.**, Professor Emeritus of Plant Science, 1951, 1985; B.S., SDSU, 1940; Ph.D., University of Minnesota, 1951.

- Skubic, Louis G.**, Professor Emeritus of General Engineering, 1953, 1985; B.S., University of Minnesota, 1947; M.A., 1953.
- Slyter, Lowell**, Professor Emeritus of Animal and Range Sciences, 1970, 2001; B.S., Kansas State University, 1964; M.S., University of Nebraska, 1966; Ph.D., Kansas State University, 1969.
- Sogn, Arthur B.**, Associate Professor of Economics Extension Emeritus, 1968, 1974; B.S., SDSU, 1948; M.S., 1959.
- Sorenson, Jerry A.**, Professor Emeritus of General Engineering Technology, 1984, 2000; B.S.E., University of South Dakota, 1963; M.Ed., University of Illinois, 1967.
- Spinar, Leo H.**, Professor Emeritus of Chemistry and Biochemistry, 1966, 1970; B.A., University of South Dakota, 1951; M.S., University of Wisconsin, 1953; Ph.D., 1958.
- Steinley, Gary L.**, Professor Emeritus of Education, 1979, 1992; B.S., Black Hills State College, 1963; M.A., California State University, 1967; Ph.D., University of Utah, 1970.
- Stoflet-Gouldin, Dorothy**, Professor Emerita of Textiles, Clothing and Interior Design, 1962, 1977; B.A., Coe College, 1933; M.S., Iowa State University, 1948.
- Stuart, Signe**, Professor Emerita of Visual Arts, 1972, 1974; B.A., University of Connecticut, 1959; M.A., University of New Mexico, 1960.
- Svec, Harry R.**, Assistant Professor Emeritus of General Engineering, 1940, 1958.
- Swanson, Robert N.**, Professor Emeritus of Veterinary Science, 1965, 1996; B.S., Ft. Hays Kansas State College, 1953; M.S., Kansas State University, 1960; D.V.M., 1960; Ph.D., 1964.
- Taylor, Donald C.**, Professor Emeritus of Economics, 1980, 1996; B.S. Cornell University, 1959; M.S., University of Minnesota, 1964; Ph.D., 1965.
- Thompson, John E.**, Professor Emeritus of Economics, 1952, 1985; B.S., University of South Dakota, 1950, M.S., SDSU, 1953; Ph.D., University of Wisconsin, 1960.
- Trapp, Lansford E.**, Assistant Professor Emeritus of Mathematics, 1967, 1983; B.S., SDSU, 1948; M.S., Kansas State University, 1950.
- Tucker, William L.**, Agricultural Experiment Station Statistician/Professor Emeritus of Mathematics and Statistics, 1963, 1972; B.S., University of Kentucky, 1952; M.S., North Carolina State University, 1957; Ph.D., 1963.
- Vandever, Jan J.**, Professor Emerita of Mathematics and Statistics, 1981, 1990; B.S., Monmouth College, 1967; M.Ed., Rutgers University, 1971; M.A.T., Colorado State University, 1973; Ph.D., University of North Dakota, 1976.
- Wadsworth, Jr., William S.**, Professor Emeritus of Chemistry, 1962, 1970; B.S. Trinity College, 1950; M.S., 1952; Ph.D., Pennsylvania State University, 1955.
- Wagner, Mary K.**, Assistant Professor Emerita of Rural Sociology, 1990, 1996; B.A., University of South Dakota, 1954; M.Ed., SDSU, 1974; Ph.D., 1978.
- Wagner, Robert T.**, President Emeritus, Professor Emeritus of Rural Sociology, Distinguished Regental Professor of Higher Education, 1970, 1997; B.A., Augustana College, 1954; M.Div., Seabury Western Theological Seminary, 1957; S.T.M., 1970; Ph.D., SDSU, 1972; L.H.D., Augustana College, 1994; D.P.S., SDSU, 1997; D.D., 2000.
- Wahlstrom, Richard C.**, Distinguished Professor Emeritus of Animal and Range Sciences, 1952, 1988; B.S., University of Nebraska, 1948; M.S., University of Illinois, 1950; Ph.D., 1952.
- Walker, Darwin E.**, Professor Emeritus of Music, 1973, 1979; B.S., Northern State University, 1959; M.A., University of Northern Colorado, 1968; Ed.D., 1972.
- Walstrom, Robert J.**, Professor Emeritus of Plant Science, 1955, 1988; B.S., University of Nebraska, 1947; M.S., 1949; Ph.D., Iowa State University, 1955.
- Wells, Darrell G.**, Professor Emeritus of Plant Science, 1962, 1985; B.S., SDSU, 1941; M.S., State College of Washington, 1943; Ph.D., University of Wisconsin, 1949.
- West, George A.**, Professor Emeritus of English, 1969, 2000; B.S., SDSU, 1965; M.A., University of Nebraska, 1967; Ph.D., 1972.
- Westin, Frederick C.**, Professor Emeritus of Plant Science, 1947, 1986; B.S., University of Wisconsin, 1941; M.S., 1947; Ph.D., 1952.
- White, Everett M.**, Professor of Plant Science, 1954, 1990; B.S., Iowa State University, 1948; M.S., 1950; Ph.D., 1953.
- Whitehead, Eugene I.**, Professor Emeritus of Chemistry, 1941, 1983; B.S., SDSU, 1939; M.S., 1941.
- Widvey, Harold W.**, Professor Emeritus of Communication Studies and Theatre, 1972, 1978; B.S.Ed., Northern State University, 1957; M.S.Ed., 1961; Ph.D., University of Nebraska, 1971.
- Widvey, Lois I.**, Distinguished Professor Emerita of Education, 1973, 1998; B.S., Northern State University, 1955; M.S.Ed., 1958; Ed.D., University of Nebraska, 1971.
- Wiersma, John L.**, Professor Emeritus of Agricultural and Biosystems Engineering, 1943, 1983; B.S., SDSU, 1943; M.S., 1950; Ph.D., University of California, 1970.
- Williams, Perry W.**, Professor Emeritus of Physics, 1945, 1979; B.A., Dakota Wesleyan University, 1936; M.S., SDSU, 1940.
- Williamson, Edward**, Associate Professor Emeritus of Plant Science, 1947, 1990; B.S., SDSU, 1947; M.S., 1952.
- Williamson, Warren E.**, Professor Emeritus of Health, Physical Education and Recreation, 1956, 1987; B.S., SDSU, 1951; M.S., 1954; Dir. in Rec., Indiana University, 1969.
- Wills, Rena**, Professor Emerita of Nutrition, Food Science & Hospitality, 1952, 1976; B.S., Iowa State University, 1940; M.S., 1946.
- Witherington, Paul**, Professor Emeritus of English, 1970, 1993; B.A., Baylor University, 1954; M.A., University of Texas, 1960; Ph.D., 1964.
- Yarbrough, Jerry W.**, Professor Emeritus of English, 1968, 1976; B.A., Abilene Christian University, 1960; M.A., University of Texas, 1962; Ph.D., 1968.
- Yost, Josie L.**, Associate Professor Emerita of Textiles, Clothing, and Interior Design, 1973; B.S., Syracuse University, 1960; M.A., 1962.



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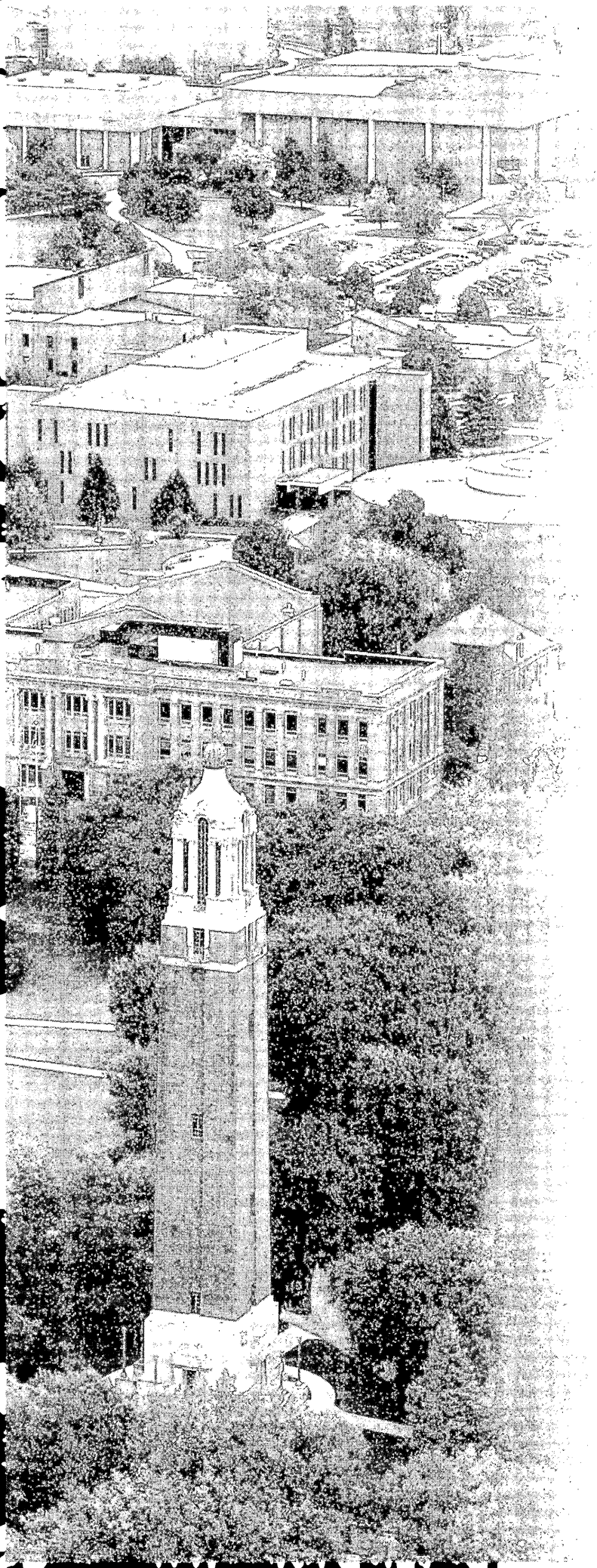
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APPLICATION MATERIALS

Application for Admission

Application for Admission to a Degree Program

Processing of an application will begin only when the application form, application fee, transcripts, letters of recommendation, and test data as required by department are received in the Graduate School. If an applicant fails to complete the application file for the term proposed to begin graduate work, a new date of entry will need to be specified.

Complete application files will include:

1. Complete, signed application form. Please fill in requested information by typing or printing in ink. An application form is included at the back of this catalog.
2. \$35.00 application fee. This fee is charged to degree-seeking students only, and is non-refundable regardless of what action is taken on the application for admission.
3. Official transcripts from each higher education institution attended. The Graduate School will access all South Dakota regental transcripts, but the student must furnish all those from non-regental institutions. The earned Bachelor's Degree must be noted on the undergraduate transcript. When an incomplete transcript is furnished in support of the application, a complete transcript will be required by the end of the first semester of coursework.
4. Letters of recommendation. Two letters of recommendation are required from persons acquainted with the applicant's academic record. Three letters are required of applicants into the Nursing or Family Financial Planning programs. For CHRD, please contact the department for the recommendation forms. Signed letters of recommendation may be submitted on plain paper or letterhead, if desired, or recommenders may use the forms included in the back of this catalog.
5. The GRE test is required of all applicants into Biology, Chemistry (strongly recommended), English, Microbiology, Pharmaceutical Sciences, Plant Science, and Wildlife and Fisheries.
6. Some programs require additional admission materials. Applicants should consult the specific requirements for each program.
7. The TOEFL score is required of all international students. This score must be an original score, a copy of a verifiable score, or a certified copy of the original score sheet.
8. Proof of immunity for Measles (Rubeola) and Rubella are required for all new, re-admit, and transfer students at all state institutions. (If you were born before January 01, 1957, you are exempt from this requirement.) Please contact Student Health Services at 605/688-6146 for further information.
9. Applications and all related documents should be mailed to:

Graduate School
South Dakota State University
Administration Bldg., Room 130
Box 2201
Brookings, SD 57007-1998



Graduate School Admission — Degree Seeking

South Dakota State University, Graduate School, Box 2201, Brookings SD 57007-1998

Applying as a graduate student for the first time at SDSU Reapplying

BIOGRAPHICAL INFORMATION

Legal Name _____
 LAST FIRST MIDDLE FORMER PREFERRED NAME

Permanent Address _____
 Street, RFD, or Box City State or Country Zip Code

Local Address _____
 (all SDSU correspondence will be sent to this address) Street, RFD, or Box City State or Country Zip Code

Home Phone _____ Work Phone _____ E-mail Address _____

Social Security Number _____ Birth Date _____

Emergency Contact _____
 Name Daytime Phone Number Relationship

Citizenship: USA Resident Alien Other (specify citizenship) _____ Country of Birth _____

Have you obtained a visa? Yes No If yes, type of visa: _____ Date of initial entry into the U.S. _____

Have you lived in South Dakota for the past 12 months? Yes No If no, please explain _____

If you are a South Dakota resident, but you have not lived in South Dakota for the past 12 months, please explain _____

EDUCATIONAL BACKGROUND

| | | |
|---------------------------------------|--------|---------------|
| University Granting Bachelor's Degree | Degree | Date Received |
| University Granting Master's Degree | Degree | Date Received |

List ALL Colleges/Universities Attended:

| | | | |
|-------------|------|-------|----------------|
| School Name | City | State | Dates Attended |
| | | | |
| | | | |

Standardized admissions tests taken (GRE, MAT, TOEFL) minimum TOEFL of 525 required _____

| | | |
|--------------|------------------------|-------|
| Name of Test | Latest date test taken | Score |
| | | |

Have you ever been dismissed from any college? Yes No If yes, when and for what reason? _____

Have you ever applied for admission to another graduate school? Yes No If yes, what college? _____ Were you admitted? Yes No

PROFESSIONAL OBJECTIVE

Term graduate work desired _____
 Indicate Spring/Summer/Fall Year

Are you planning to work on a master's or doctoral degree at SDSU? Master's Doctoral Campus Location _____

What program of study do you plan to pursue? _____ Major Department _____

Have you previously applied as a graduate student at SDSU? Yes No If yes, when? _____

ADDITIONAL INFORMATION

This information is used for institutional research and Federal reports. Your responses will in no way affect your admission. Please circle your answers.

SEX: Male Female DISABILITY: Audio Visual Learning Disabled Mobility-Ambulatory Mobility-Wheelchair

MARITAL STATUS: Married Unmarried ETHNIC GROUP: American Indian Asian African American Hispanic White Other Unknown

Providing your social security number is voluntary. Refusal to disclose this information will not affect your eligibility for admission. The number will be used solely for record-keeping purposes to provide positive identification. If you are admitted, your social security number will appear upon your official transcript; thus, it may be disclosed to outside parties, but only under those conditions that permit disclosure of the transcript.

SDSU offers all educational programs, materials, and service to all people without regard to age, race, color, religion, sex, handicap, or national origin. SDSU is an Equal Opportunity/Affirmative Action Employer.

All answers I have given on this application are complete and accurate to the best of my knowledge. If admitted, I agree to observe the rules and regulations South Dakota State University and to pay all fees and charges assessed.

Signature _____ Date _____



Graduate Admission/Registration — Non-Degree

South Dakota State University, Graduate School, Box 2201, Brookings SD 57007-1998

Legal Name _____
Last First Middle Former Name(s)

Preferred First Name _____ Social Security Number _____ - _____ - _____ Birth Date _____

PERMANENT MAILING ADDRESS

_____ Street City State Zip

Home Phone (____) _____ - _____ Work Phone (____) _____ - _____ E-mail Address _____

EMERGENCY CONTACT

Name _____ Relationship to you _____

_____ Street City State Zip

Telephone (____) _____ - _____

RESIDENCY

Have you lived in South Dakota for the past 12 months? Yes No

If you are a South Dakota resident, but you have not lived in South Dakota for the past 12 months, please explain _____

The following information is optional. The information is used in compliance with Title VI of the Civil Rights Act of 1964. Your responses in no way affect your admission.

Gender Male Female
Ethnic Group American Indian or Alaskan Native Asian or Pacific Islander Black, not of Hispanic Origin Hispanic
 White, not of Hispanic origin Other Do not wish to respond
Citizenship USA Resident Alien Other (Specify Citizenship) _____ Country of Birth _____

EDUCATIONAL DATA

A bachelor's degree from an ACCREDITED institution is a prerequisite for pursuing graduate work. (Coursework numbered 500 and above.)

Institution Bachelor's Degree Earned: _____
School City State Date Obtained

Have you ever enrolled in graduate school at a South Dakota public university? Yes No If yes, where? _____

Semester you wish to enroll: Fall _____ Spring _____ Summer _____
Will you be pursuing a degree? Yes No, I am applying as a non-degree student.

If yes, what degree and program? _____
Have you ever enrolled in graduate classes at SDSU? Yes No If so, when? _____

If you are pursuing a degree, please fill out the back of this form.

For Office Use Only:
_____ Admissions _____ Records
Total Money Rec'd: \$ _____
 Check Credit Card

COURSE INFORMATION – please check the class(es) you are registering for in the appropriate box(es).

| 5 Digit Course Number | Dept. | Course Number | Section | Course Title | Credit Hours | Campus Location |
|-----------------------|-------|---------------|---------|--------------|--------------|-----------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |

All answers I have given on this application are complete and accurate to the best of my knowledge. If admitted, I agree to observe the rules and regulations of South Dakota State University and to pay all fees and charges assessed thereunder.

Signature _____ Date _____



Graduate School Personal Reference Form

South Dakota State University, Graduate School, Box 2201, Brookings SD 57007-1998

To the Applicant:

This form should be given to professors who are able to comment on your qualifications for graduate study. You should not request a recommendation from a non-academic person unless you have been away from academic institutions for some time. In that case, you should request the recommendation from someone knowing your academic ability.

A. Applicant's Name _____ Degree Sought _____

B. Applicant's Social Security Number _____ Graduate Program _____

C. List the courses you took under the direction of the person completing this form, if applicable.

| Course Number | Course Title | When Taken | Grade |
|---------------|--------------|------------|-------|
| | | | |
| | | | |
| | | | |

D. List recommender's name: _____
Describe your personal contact with the recommender:

Applicant's Waiver of Right to Access

The Family Educational Rights and Privacy Act of 1974, as amended, (PL 93-380), allows a candidate for admission to waive his or her right of access to confidential letters or statements written in his or her behalf if the recommendation is used solely for the purposes of admission and if the candidate, upon request, is notified of the names of all persons making such recommendations in his or her behalf. The University does not require that you make such a waiver as a condition for admission. However, under the legislation you have the option of signing such a waiver as follows:

I hereby voluntarily waive, do not waive my right to examine this confidential evaluation.

Name _____ Date _____ Signature _____
Please Print

To the Person Completing This Form:

The applicant named above has applied for admission to the Graduate School of South Dakota State University. Please complete this personal reference form and return it as soon as possible. If you have not had the applicant as a student, you may prefer to write a separate letter and attach it to this form. If you do not know this student well, please feel free to say so; such frankness will not prejudice the candidate's chance of admission.

- I have verified that the courses listed in item C were taken under my direction. Yes No
- I do not know the student well enough to give him or her a recommendation. (If you check this box, you do not need to complete the rest of this form.)
- Please check the educational level of the representative group with whom the applicant is compared:
 College Juniors College Seniors First-Year Graduate Students Advanced Graduate Students
- I would be pleased to have the applicant working under my direction as a: Research Assistant Administrative Assistant
 Teaching Assistant Fellowship

(continue on back)

5. Summary Evaluation: In comparison with a representative group of students in the same field who have had approximately the same amount of experience and training, how do you rate the applicant in general research and scholarly ability?

- Truly Exceptional** Equivalent to the very best you have known, a person who, in your experience, appears only every few years.
- Outstanding** Comparable to the best student in the current class. Highest 5%.
- Very Good** Next highest 5%.
- Good** Ability easily identifiable, but not in upper 10%. Probably in upper 15%. Certainly upper 25%.
- Above Average** Probably upper 25%.
- Average** Upper 50%.
- Below Average** Lower 50%, but recommended.

6. Some gifted individuals make mediocre scholastic records. Is the applicant's scholastic record, if you know it, an accurate index of his or her scholastic ability? Y No Don't know

If your answer is "No," please explain briefly, possibly giving consideration to the applicant's performance in independent study or in research participation programs.

7. Do you know of any matters related to character and responsibility or to physical and mental health which should be considered by an admissions committee or will have to be taken into account in planning for the applicant's graduate work?

8. What is your estimate of the applicant's promise as a graduate student? Give views on such matters as his/her accomplishments, intellectual independence, research interests, capacity for analytical thinking, ability to work with others, ability to organize and express ideas clearly (orally or in writing), drive, and motivation.

9. Recommendations for Admission

Master's Program

Doctoral Program

I strongly recommend for

I recommend for

I recommend with reservations for

I do not recommend for

Signature of recommender _____

Date _____

Name _____

Title _____

Print or type

Institution _____

Address _____

Telephone _____



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|---------------|--------------|------------|-------|
| | | | |
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| | | | |

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Please Print

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(continue on back)

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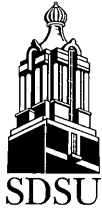
| 9. Recommendations for Admission | Master's Program | Doctoral Program |
|-----------------------------------|--------------------------|--------------------------|
| I strongly recommend for | <input type="checkbox"/> | <input type="checkbox"/> |
| I recommend for | <input type="checkbox"/> | <input type="checkbox"/> |
| I recommend with reservations for | <input type="checkbox"/> | <input type="checkbox"/> |
| I do not recommend for | <input type="checkbox"/> | <input type="checkbox"/> |

Signature of recommender _____ Date _____

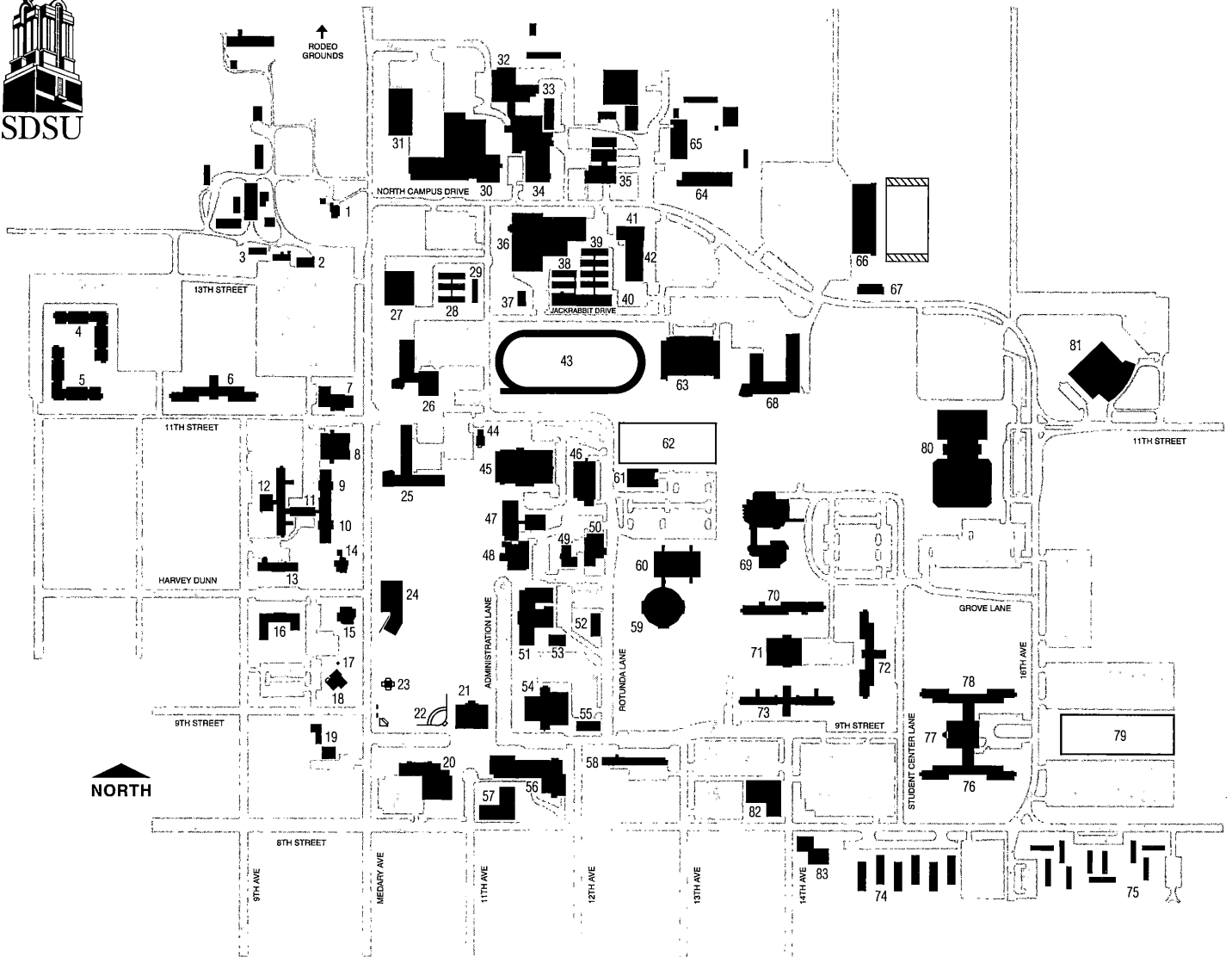
Name _____ Title _____
Print or type

Institution _____

Address _____ Telephone _____



SDSU CAMPUS MAP



| | | | | | |
|---|----|---|----|---|----|
| Administration Building (Doner Auditorium) | 51 | Grove Hall | 71 | Sexauer Field | 43 |
| Ag Vehicle Storage (Surplus Property Storage) | 3 | Guilford C. Gross Pharmacy Building | 48 | Shepard Hall | 47 |
| Agricultural Communications Center (Ag Comm) | 53 | Hansen Hall | 6 | Solberg Hall | 54 |
| Agricultural Engineering | 68 | Harding Hall | 58 | South Dakota Art Museum | 24 |
| Agricultural Hall | 25 | Heat / Power Laboratory | 49 | South Dakota State University Foundation | 19 |
| Agricultural Heritage Museum | 7 | Hilton M. Briggs Library | 63 | Stanley J. Marshall HPER Center (Frost Arena) | 80 |
| Sorenson Center (SOR) | 15 | Horticulture & Forestry | 41 | State Court | 74 |
| Animal Disease Research & Diagnostic Laboratory | 34 | Horticulture Greenhouse | 42 | State Village | 75 |
| Animal Resource Wing | 32 | Industrial Arts Building | 55 | Student Health (West Hall) | 13 |
| Animal Science Arena | 31 | Intramural Building | 45 | Sylvan Theatre | 22 |
| Animal Science Complex | 30 | Larson Commons (Food Service) | 77 | Tompkins Alumni Center (SDSU Alumni Association) | 18 |
| Bailey Hall | 4 | Library (Hilton M. Briggs Library) | 63 | Tompkins Alumni Center Clock Tower | 17 |
| Berg Hall | 5 | Lincoln Music Center (Peterson Recital Hall) | 21 | United Campus Ministries | 57 |
| Binnewies Hall | 76 | Mathews Hall | 70 | United Lutheran Center | 83 |
| Briggs Library | 63 | Medary Commons (CAP Center, Food Service) | 8 | University Police Department (SOR) | 15 |
| Brown Hall | 73 | Memorial Park | 62 | University Relations (CMC) | 52 |
| Catholic Campus Parish | 82 | Motor Pool Complex | 2 | University Stores & Services | 65 |
| Central Heating Plant | 50 | Northern Plains Biostress Laboratory | 36 | University Student Union | |
| Communications Center (University Relations) | 52 | Nursing, Family & Consumer Sciences, & Arts & Science Building (NFA) | 60 | (Volstorff Ballroom, Food Service, Dept. of Student | |
| Coolidge Sylvan Theatre | 22 | Performing Arts Center | 81 | Activities, & Bookstore) | 69 |
| Coughlin-Alumni Stadium | 66 | Peterson Recital Hall (Lincoln Music Center) | 21 | Veterinary Isolation Building | 33 |
| Coughlin-Alumni Stadium Locker Room | 67 | Physical Plant Shops | 64 | Waneta Hall | 12 |
| Coughlin Campanile | 23 | Physiology Laboratory | 37 | Wecota Annex | 11 |
| Crothers Engineering Hall | 56 | Pierson Hall | 72 | Wecota Hall | 10 |
| Dairy Microbiology | 26 | Plant Science Building | 40 | Wenona Hall | 9 |
| Dean of Agriculture Residence (Former) | 1 | Plant Science Seedhouse | 27 | West Hall (Student Health) | 13 |
| DePuy Military Hall | 61 | Plant Science West Greenhouses | 38 | West Headhouse & West Greenhouses | 28 |
| East Headhouse | 39 | Print Lab | 46 | Wheat Commission Greenhouse | 29 |
| East Tennis Courts | 79 | Pugsley Continuing Education Center (RDTN Studios/Classrooms, Christie Ballroom) | 20 | Woodbine Cottage (President's Residence) | 14 |
| Ethel Austin Martin Building (Biology Annex) | 44 | Rotunda for Arts & Science | 59 | Yeager Hall (US Post Office, Central Mail, Print Lab) | 46 |
| Foundation (SDSU) | 19 | Scobey Hall | 16 | Young Hall | 78 |
| Foundation Seed Conditioning Plant | 35 | | | | |
| Frost Arena (Stanley J. Marshall HPER Center) | 80 | | | | |



South Dakota State University

*Graduate School
Box 2201
Brookings, SD 57007*