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Academic programs at New Mexico State University are available to all students without regard to age, ancestry, color, disability, gender, national origin, race, religion, sexual orientation, or veteran status.

Any item in this catalog is subject to modification at any time by proper administrative procedure.

The NMSU Graduate Catalog is available online at catalog.nmsu.edu.
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General Information

The University

New Mexico State University is a thriving center of higher education deeply rooted in the multicultural tradition of the Southwest. Situated at the gateway to Mexico, the university's 6,250-acre campus is among the largest in the world.

Founded in 1888 as Las Cruces College, the university was established the next year as a land-grant college by an act of the Legislative Assembly of the Territory of New Mexico in accordance with provisions of the Morrill Act. As New Mexico College of Agriculture and Mechanic Arts, the institution grew steadily over the next 71 years, fulfilling its purpose as a nonsectarian center of learning in the broadest possible service to the state and nation.

The growth and maturity of the institution was formally recognized in 1960 when the constitution of New Mexico was amended to change the name to New Mexico State University. Today, the university's students can major in 77 areas of undergraduate study in six undergraduate colleges. The Graduate School offers degrees through the doctorate, is accredited by The Higher Learning Commission and is a member of the North Central Association of Colleges and Schools (NCA). In addition, many departments and colleges are further accredited by organizations serving their special fields.

New Mexico State University is the state's land-grant university, serving the educational needs of New Mexico's diverse population through comprehensive programs in education, agriculture, engineering, and public service.

In its growth and expansion, the university has achieved distinction in many special fields. It has on its campus one of the three full-time planetary observatories in the nation, as well as one of the largest computer centers in the Southwest. NMSU has over $163 million in total sponsored program expenditures. According to the National Science Foundation, NMSU ranks third among all Hispanic Serving Institutions and first among those without a medical school on the basis of FY 2008 research expenditures.

The university's central campus is located at the southernmost interchange of the Pan American Highway, Interstate 25, in southern New Mexico. Also bordering the campus is Interstate 10, the principal east-west route across the southern United States. The university is adjacent to Las Cruces, New Mexico.

Accreditation

College of Business
The baccalaureate and graduate degree programs in business and accounting are accredited by AACSB International—The Association to Advance Collegiate Schools of Business.

College of Education
The College of Education is accredited by the New Mexico Public Education Department. The Communication Disorders Program within the Department of Special Education/Communication Disorders is accredited by the American Speech-Language and Hearing Association.

The Counseling Psychology Doctorate Program within the Department of Counseling and Educational Psychology is accredited by the American Psychological Association (APA). The Master of Arts in Counseling and Guidance is accredited by the Council on Accreditation of Counseling and Related Educational programs (CACREP).

The university's teacher preparation program was accredited in 1982 by the National Council for the Accreditation of Teacher Education. This program involves several colleges and is directed by the College of Education.

College of Engineering
The Accreditation Board for Engineering and Technology (111 Market Place, Suite 1050, Baltimore, MD 21202-4012) has accredited baccalaureate degree curricula in chemical, civil, electrical, geological, industrial, mechanical and surveying engineering, and for the bachelor and associate degree programs in civil, electronic, and mechanical engineering technology.

College of Health and Social Services
The Master of Public Health (MPH) in Community Health Education, Department of Health Science, is accredited by the Council on Education for Public Health.

The Department of Nursing Graduate Program is accredited by the Commission on Collegiate Nursing Education.

The School of Social Work, is accredited by the Council on Social Work Education.
THE GRADUATE SCHOOL

A number of academic departments of the university have a long history of providing formal graduate study. The first master’s degree was awarded in 1896. In 1921, the president of NMSU appointed a committee to oversee graduate study. The Graduate School was formally established in 1956 with a full-time dean. In 1956, 57 master’s degrees were awarded. In 2011–2012, the following were awarded: 7 specialist in education degrees, 875 master’s degrees; 102 doctoral degrees, and 20 graduate certificates. The Graduate School currently enrolls 3,375 students pursuing advanced degrees.

Fellowships, assistantships, and special loan programs are available in growing numbers and value for students who have achieved good academic records in their undergraduate and/or graduate programs. With the rapidly expanding facilities, laboratories, and library holdings, the Graduate School of New Mexico State University offers unique programs of high quality graduate study. There are 655 regular faculty.

The Graduate School mission is to facilitate the exchange of ideas and the creation of knowledge, while fostering academic excellence. The Graduate School promotes a high-quality learning environment that embraces diversity. New Mexico State University is one of the few research extensive universities that reflect Hispanic, Native American, other American cultures and the world. Our international students from Latin American, Asian, African, and European countries add to the richness of our diversity. The quality of life for our students is of critical importance to the Graduate School and NMSU. We cultivate the marriage of academic, professional, and personal skills while helping students graduate in a timely manner.

The Graduate School and University Admissions strive to provide quality services to students, faculty and staff.

GRADUATE DEGREE PROGRAMS, SPECIALIZATIONS/CONCENTRATIONS, AND APPROVED MINORS

Because graduate degrees are awarded for attainment in scholarship, the requirements stated in this catalog are to be considered as minimal. The major department or the dean of the Graduate School may make additional requirements deemed necessary for each candidate. Each student’s program is subject to the approval of the respective department head. Responsibility for securing approval of the proposed program of study rests with the student.

Frequent consultation with the advisor is essential to satisfactory planning and progress toward a degree.

Graduate degrees, concentrations, approved minors, and the programs in which they are awarded are listed below. Please note that these are official specializations/concentrations for each degree program. The following list supersedes those listed in the department listings of the Graduate Catalog:

Interdisciplinary Master of Art
Interdisciplinary Master of Science
Master of Accountancy
Master of Agriculture
Specialization/Concentration in:
Agribusiness
Domestic Animal Biology
Master of Applied Geography
Master of Arts
Agricultural Extension Education
Anthropology
Art
Communication Disorders
Communication Studies
Counseling and Guidance
Specialization/Concentration in:
Counseling
Guidance and Human Relations
Economics
Specialization/Concentration in:
Public Utility Policy and Regulation
Education
Specialization/Concentration in:
Autism Spectrum Disorders
Bilingual Education
Bilingual/Multicultural Special Education
Bilingual Speech-Language Pathology
Curriculum and Instruction
Early Childhood Education
Early Childhood Special Education
Educational Diagnostics
Educational Learning Technologies
Elementary Licensure Prep
Language, Literacy & Culture
Secondary Licensure Prep
Special Education
Special Education Administration
Special Education/Deaf-Hard of Hearing
Speech-Language Pathology
Teaching English to Speakers of Other Languages
Educational Administration
English
Government
History
Specialization/Concentration in:
Public History
Psychology
Sociology
Spanish
Master of Arts in Teaching
Specialization/Concentration in:
Dance
Math
Science
Spanish
Master of Business Administration
Specialization/Concentration in:
Agribusiness
Finance
Information Systems
Master of Criminal Justice
Master of Fine Arts
Master of Fine Arts in Creative Writing
Master of Music
Master of Public Administration
Master of Public Health
Master of Science
Aerospace Engineering
Agricultural Biology
Agricultural Economics
Animal Science
Applied Statistics
Astronomy
Bioinformatics & Computational Biology
Biology
Chemistry
Computer Science
Family and Consumer Sciences
Geology
Horticulture
Mathematics
Molecular Biology
Physics
  Specialized/Concentration in:
  Space Physics
Plant and Environmental Science
Range Science
Water Science Management
Wildlife Science

Master of Science in Chemical Engineering
Master of Science in Civil Engineering
Master of Science in Electrical Engineering
Master of Science in Industrial Engineering
Master of Science in Mechanical Engineering
Master of Science in Nursing
  Specialization/Concentration in:
  Nursing Administration

Master of Social Work
Specialist in Education
  Curriculum and Instruction
  Specialization/Concentration in:
  Educational Diagnostics
  Special Education Administration
  Special Education/Deaf-Hard of Hearing
  Special Education

Reading
School Psychology

Doctor of Economic Development

Doctor of Nursing Practice
  Specialization/Concentration in:
  Adult/Geriatric Nursing
  Family/Psychiatric Mental Health Nursing
  Public/Community Health Nursing

Doctor of Education
  Curriculum and Instruction
  Educational Administration
  Special Education
  Specialization/Concentration in:
  Bilingual/Multicultural Special Education

Doctor of Philosophy
  Aerospace Engineering
  Animal Science
  Astronomy
  Biology
  Business Administration
  Specialization/Concentration in:
  Management
  Marketing
  Chemistry
  Computer Science
  Counseling Psychology
  Curriculum and Instruction
  Educational Administration
  Engineering
  Specialization/Concentration in:
  Chemical Engineering
  Civil Engineering
  Electrical Engineering
  Industrial Engineering
  Mechanical Engineering
  Interdisciplinary Doctorate
  Mathematics

Molecular Biology
Nursing
Physics
Plant and Environmental Science
Psychology
Range Science
Rhetoric and Professional Communication
Special Education
  Specialization/Concentration in:
  Bilingual/Multicultural Special Education
  Water Science and Management

DUAL AND JOINT DEGREES PROGRAMS
Master of Art in History and Master of Public Administration
Master of Criminal Justice and Master of Public Administration
Master of Public Health and Master of Social Work
Bachelor of Science in Engineering and Master of Business Administration
  (5 year combined program)
Bachelor of Accountancy and Master of Accountancy
  (5 year combined program)
Bachelor of Science and Master of Science in Computer Science
Bachelor of Science and Master of Chemical Engineering
  (5 year combined program)
Bachelor of Science and Master of Civil Engineering
  (5 year combined program)
Bachelor of Science and Master of Science in Electrical Engineering
  (5 year combined program)
Bachelor of Science and Master of Science in Industrial Engineering
  (5 year combined program)
Bachelor of Science and Master of Science in Mechanical Engineering
  (5 year combined program)
Bachelor of Science and Master of Science in Physics

GRADUATE CERTIFICATE PROGRAMS
Cultural Resource Management
Digital Communications
Digital Signal Processing
Electric Energy Systems
Finance
Museum Studies
Online Teaching and Learning Certificate
Public Utility Policy and Regulation
Systems Engineering
Telemetering

APPROVED GRADUATE MINORS AND PROGRAMS
Accounting
  Accounting
  Information Systems
Agricultural Economics and Agricultural Business
  Agricultural Economics
Animal and Range Sciences
  Animal Science
  Range Science
Anthropology
  Anthropology
  Archaeology
  Forensic Anthropology
  Native American Studies

Applied Statistics
  Applied Statistics

Astronomy
  Astronomy

Agricultural Extension Education
  Agricultural Extension Education
  International Agriculture Development and Extension

Center for Latin American and Border Studies
  Latin American Studies

Chemistry and Biochemistry
  Biochemistry
  Chemistry

Communication Studies
  Communication Studies
  Communications and National Security

Computer Science
  Computer Science

Counseling and Guidance
  Interdisciplinary Minor in Spanish Counseling

Curriculum and Instruction
  Bilingual Education
  Curriculum and Instruction
  Early Childhood Special Education
  Education
  Educational Learning Technologies
  Reading

Educational Management and Development
  Educational Administration

Electrical Engineering
  Computer Engineering
  Electrical Engineering

Entomology, Plant Pathology, and Weed Science
  Agricultural Biology

Family and Consumer Sciences
  Family and Consumer Sciences

Finance
  Finance

Geography
  Geographic Information Systems

Government
  Government
  Public Administration
  Security and Intelligence Studies

History
  History

Health Science
  Alcohol and Drug Counseling (interdisciplinary)
  Environmental and Occupational Health
  Gerontology
  Public Health
  US/Mexico Border Health Issues

Hotel, Restaurant and Tourism Management
  Hotel, Restaurant, and Tourism Management

Human Performance, Dance and Recreation
  Adapted Physical Education
  Dance

Languages and Linguistics
  Spanish

Management
  Management

Mathematics
  Mathematics

Mechanical Engineering
  Mechanical Engineering

Molecular Biology
  Bioinformatics (with Computer Science)

Physics
  Physics

Plant and Environmental Sciences
  Horticulture

Psychology
  Psychology

Social Work
  Alcohol and Drug Counseling (interdisciplinary)

Special Education and Communication Disorders
  Communication Disorders
  Deaf Education
  Special Education

Sociology
  Sociology

Special Education and Communication Disorders
  Communication Disorders
  Deaf Education

Women Studies
  Women Studies

INTERDISCIPLINARY GRADUATE PROGRAMS
  Challenges facing society require an interdisciplinary approach in graduate education. To prepare the next generation of scholars, scientists and professionals, New Mexico State University offers a number of interdisciplinary degree programs. Through collaborations among departments, our faculty members have created degree programs and concentrations that will equip graduate students with research tools and professional skills to resolve complex societal problems. Interdisciplinary programs include the integration of courses from two or more fields of study in an approved degree program, concentration or minor area of study. We offer three types of interdisciplinary degree programs as listed below. We also offer several approved concentrations and minors within traditional degree programs.

Specialized Interdisciplinary Degree Programs
  Master of Bioinformatics and Computational Biology
    Please contact the Computer Science department at http://www.cs.nmsu.edu/wp/

  Master of Business Administration within the College of Business
    http://business.nmsu.edu/academics/mba/

  Professional Master of Financial Mathematics
    Please contact the Department of Mathematical Sciences at http://www.math.nmsu.edu/
Individualized Interdisciplinary Degree Programs

This option allows students and faculty to design an individualized program of study that draws on more than one degree program of study that are not offered within our specialized interdisciplinary degree programs. Students receive a degree that is titled interdisciplinary master of art or science or interdisciplinary doctorate.

Please review the Graduate Catalog to review admissions and degree requirements for the master’s and doctoral degree program.

Interdisciplinary Master of Art
Interdisciplinary Master of Science
Interdisciplinary Doctorate

Dual Degree

Dual degree programs give students an opportunity to enroll and complete two separate master degrees. Courses and degree requirements are integrated so that full time students can complete an approved dual degree program in 3 years rather than in 4 years. Below is the list of approved dual degree programs that are offered at the graduate level.

Master of Art in History and Master of Public Administration
Master of Criminal Justice and Master of Public Administration
Master of Public Health and Master of Social Work

Interdisciplinary Concentrations within Degree Programs

Within traditional degree programs, there are concentrations that integrate programs of study from more than one discipline. A list of approved Interdisciplinary concentrations within degree programs are provided below.

Master of Agriculture with a concentration in Agribusiness
Master of Business Administration with a concentration in Agribusiness
Master of Science in Physics with a concentration in Space Physics
Master of Art in History with a concentration in Public History

Interdisciplinary Approved Minors

Departments offer interdisciplinary minors that include courses from more than one field of study. For a full list of approved minors, please see the Graduate Catalog.

Department of Anthropology
Food Science
Center for Latin American and Border Studies
Latin American Studies
Department of Health Sciences and the School of Social Work
Alcohol and Drug Counseling

International Student Application for Admission

An international student that wishes to engage in graduate studies at New Mexico State University must be proficient in the English language. To be considered for regular admission to NMSU, an international student must submit a Test of English as a Foreign Language (TOEFL) with an official score of 550 on the paper-based, or 79 on the internet-based exam. The TOEFL is administered by Educational Testing Service (ETS). To learn more about TOEFL, please visit their web site at: http://www.ets.org.

As an alternative to the TOEFL, NMSU also accepts test scores from the International English Language Testing System (IELTS). A test score of 6.5 or above on IELTS is needed for admission consideration by University Admissions. To learn more about IELTS, please visit their web site: http://www.ielts.org.

Only scores from exams taken within the previous two years and reported directly from the testing service programs to NMSU will be accepted. NMSU’s code for TOEFL score reporting is 4531.

The English language exam requirement may be waived for an international student who holds a degree from an accredited university in the United States, or a country or accredited university where English is the official language of instruction. (Find the list of waiver countries on the NMSU website.) An exchange student that has studied at NMSU for one academic year and has maintained a satisfactory grade-point average is exempt from the English language exam requirement when applying to an NMSU graduate program.

NMSU will accept an international student on a conditional basis who has a TOEFL or IELTS score that falls below regular admission requirements. A student who has an official TOEFL score below 550 on the paper-based or below a 79 on the internet-based or an IELTS official test score below 6.5 may be admitted conditionally by University Admissions. A conditionally admitted international student will need to take the Academic English Proficiency Placement Test offered by the Department of Communication Studies. Based on the placement results, University Admissions and ISSS may require the student to successfully complete one or more English as a foreign language course(s). If completion of one or more courses is required, the student should enroll in the first such course during his or her first semester at NMSU, or prior to taking an assignment as a teaching assistant. Faculty members can appeal decisions concerning the language training needs of a student.

A conditional admission to NMSU may require that an international student enroll in English classes through the Center for English Language Programs (CELP). Depending on a student’s TOEFL or IELTS score and the Placement Test administered upon arrival, the student will be placed in the appropriate level of English instruction. The student will register for 3, 6, 9, or 12 credits for each level
based on his or her English language needs. The number of credits is determined by the Director of CELP. A student conditionally admitted should be aware that the duration of his or her studies may be one, two, or three semesters longer in order to satisfy the English requirement. For more information about the Center for English Language Programs, go to the Office of International and Border Programs website at http://www.nmsu.edu/~ipl/. A conditional student cannot work as a teaching assistant; however, he or she can work as a research assistant. A conditional student can later be classified as a regular student once he or she has successfully completed the required English courses and successfully meet regular admissions requirements.

ADMISSION TO A GRADUATE CERTIFICATE PROGRAM

The graduate certificate program of study is designed to develop or enhance a focused area of expertise. The primary purpose of a graduate certificate program is to provide specific skill training to meet employment needs locally, regionally, nationally, and globally.

A graduate certificate is a focused collection of courses, consisting of 12-18 credits, successfully completed by a student in a given discipline or a set of related disciplines. A graduate certificate is not an official graduate degree of NMSU. A student that successfully completes a certificate program at the graduate level will receive a certificate of completion statement on his or her official transcript and a formal certificate from NMSU University Admissions. A student has three years to complete a graduate certificate program. The graduate certificate program is offered to currently enrolled degree seeking students and students that meet the admissions criteria but enroll solely to obtain a certificate. Completing courses as part of a certificate program does not guarantee admissions into a graduate degree program. Certificate only seeking graduate students who are not enrolled in a master’s, educational specialist or doctoral programs will be admitted with a separate classification called “Graduate Certificate Student.” Enrolled degree seeking students must apply separately for the certificate program prior to completing half of their required degree credits.

A student enrolled in a graduate certificate program cannot transfer credits from another institution towards the completion of the certificate program. However, he or she can transfer credits taken in a graduate certificate program into a graduate degree program provided that the courses lead toward a graduate degree in the focused area of the certificate program. The number of transfer credits will be determined by the program of study. The time limit on course transfer is 5 years after the completion of the certificate.

APPLICATION DATES AND DEADLINES

Contact the graduate degree program for published application deadlines. If the graduate program does not publish a deadline, University Admissions encourages the applicant to apply by March 15th for fall enrollment and by October 15th for spring enrollment to be considered for financial support. University Admissions will continue to accept applications 30 days prior to the first day of classes.

TRANSCRIPTS

An applicant is required to arrange to have one official transcript from each institution previously attended sent directly to University Admissions. If undergraduate work has not been completed at time of application, the student must obtain a transcript complete with degree statement as soon as the degree has been granted. No application materials will be returned to the applicant.

STANDARDIZED TESTS

Certain graduate programs may require standardized test scores for admission. An applicant may be required to take one or more of the following examinations as determined by the academic department: Graduate Record Examination, the Miller Analogies Test, the Graduate Management Admission Test. (See academic department description for required testing.)

READMISSION

An NMSU student who has been out of school for more than two consecutive terms is required to make formal application for readmission. An application should be submitted to University Admissions 30 days prior to the semester the student plans to enroll.

A student who has attended other institutions during the absence is required to submit official transcripts to University Admissions prior to the date of registration and be eligible to return to the college or university last attended. Admission status will be determined by previous NMSU academic standing. Academic performance at other institutions attended during the applicant’s absence from NMSU may be taken into consideration in determining the student’s admission status.

RENEWAL OF APPLICATION FOR ADMISSION

The admission credentials for an applicant who does not register for the semester admitted are retained at University Admissions for a period of one calendar year from the date of application. At the end of this period, credentials are discarded. A student wishing to renew his or her application after the one-year lapse must submit a new application.

DENIED ADMISSION

University Admissions or the department may deny admission if the scholastic record or program of study is judged inadequate. If denied admission by University Admissions, the applicant may seek “undecided” status as described in “Categories of Graduate Students.” If denied by the department, the student may wish to contact the department for additional information. Admission may be denied to an otherwise qualified applicant when the desired program lacks resources to accommodate additional enrollment.

A student who is denied admission to one program and wishes to be considered for another program must complete a new application for the second program. Application documents are retained by University Admissions for one calendar year.

CATEGORIES OF GRADUATE STUDENTS

A student seeking admission to a graduate program is assigned one of the following categories based upon previous academic performance.

Regular Student

An applicant whose scholastic record is satisfactory will be admitted as a regular student. This classification includes:

(a) an applicant whose grade-point average is greater than or equal to 3.0, or a grade-point average greater than or equal to 3.0 in the last half of undergraduate work,
(b) an international applicant whose grade-point average (or its equivalent) is greater than or equal to 3.0,
(c) a continuing graduate student whose grade-point average is greater than or equal to 3.0, or
(d) a student with prior graduate work at another institution whose minimum grade-point average is 3.0.

Provisional Student

An applicant whose scholastic record is not satisfactory is admitted as a provisional student. This classification includes:

(a) a graduate student transferring whose cumulative grade-point average is less than 3.0, or
(b) an applicant whose cumulative grade-point average or grade-point average the last half of undergraduate work is less than 3.0, but who does have a minimum grade-point average of 2.5; or
(c) a beginning graduate student who has qualified for admission by taking nine graded graduate credits as an undeclared student (defined below).

A student admitted provisionally must complete the first three courses totaling 9 credits of graduate work, with a minimum grade-point average of 3.0. A provisional student who does not meet the 3.0 grade-point average after at least 9 credits of graduate work is subject to dismissal. A provisional student is prohibited from working as a teaching assistant, however can work as research assistant for one semester.

A provisional student can be employed for one semester as a grader. Academic departments wishing to hire a provisional student as a grader must submit an official letter requesting permission from the Graduate School.

Undeclared Graduate Student

An applicant who has not decided on a specific graduate degree program and who has an undergraduate minimum grade-point average of 2.5 may be considered for admission as an undeclared master student. An undeclared master student is restricted to transferring 9 hours graduate credit to a degree program. An applicant admitted as an undeclared master is not eligible to receive a graduate teaching assistantship.
Transferring from undeclared master to a degree program requires a new Application for Admission. If the student has nine or more graded graduate credit hours, the cumulative minimum grade-point average must be 3.0 for the request to be considered. If the student transferring to a degree program has fewer than nine graded graduate credits and the undergraduate grade-point average is between 2.5 to 2.9 the recommendation for admission will be provisional student status. If the undergraduate grade-point average is 3.0 or greater, the admission recommendation will be regular student status.

International students with an F-1 visa are not eligible for undeclared master status.

A student who has been denied admission to a graduate program by the department may enroll as an undeclared master in the college of interest and can complete up to nine hours graduate credit (exclusive of directed readings and independent study) with a grade-point average of 3.0 or above. Course restrictions placed by the graduate department may constrain enrollment by an undeclared student. An undeclared master student is restricted to transferring 9 hours graduate credit with a grade B or better into a degree program.

Academic advising for an undeclared master student is obtained from the academic department.

An undeclared PhD student is advised by the graduate school.

Graduate Study by University Seniors (Senior Petitioner)

An undergraduate student who is in the last 15 graded credit hours of a bachelor's degree program and who is completing all requirements for graduation, may take up to 8 credits of graduate level courses numbered from 500 through 599 for credit toward an advanced degree, with the approval of the appropriate academic department, college dean and the graduate dean.

The student must (1) have a cumulative grade-point average of 3.0 or higher or have a grade-point average of 3.0 or higher in the last 45 credits completed; (2) complete the Senior Petitioner Form at University Admissions 30 days prior to registration; (3) if accepted as a senior petitioner, the student must file a Senior Petitioner Course Form for each course by the deadline to add courses for the semester in which the course is to be taken and obtain approval from the graduate instructor, and the undergraduate advisor; and (4) register for the course at University Admissions.

The combined total of graduate and undergraduate courses for the semester may not exceed 17 credits. Senior petitioners must consult with an admission's representative at University Admissions.

As a senior petitioner in a graduate program, the course(s) will become part of the graduate record and will not be used in the calculation of the student's undergraduate grade-point average or credit hours.

For students enrolled in a joint bachelor's and master's degree program see the subsection 'Transfer of Undergraduate Credits to an NMSU Graduate Program' in the 'Requirements for Enrolled Students’ section of the Graduate Catalog.

Nondegree Admission

Non-degree admission is designed to meet the needs of an applicant who does not wish to pursue a degree or who has not yet completed the application process to a specific department. Academic advising for non-degree students is obtained from the academic department. No more than 9 hours graduate credit earned in non-degree status may be transferred to a graduate degree program. NMSU only recognizes graduate credit for non-degree work from The University of New Mexico (UNM). Transfer credit is restricted to 6 credits with the approval of the appropriate department, the college dean, and the graduate dean. A student classified as non-degree is not eligible to receive financial aid, student employment, or institutional tuition waivers; nor is he or she eligible to participate in student government or intercollegiate athletics; and is not eligible to receive benefits from veterans' programs.

Visiting Student

A visiting student is a student taking graduate credit to transfer to his or her parent institution. An ‘Application for Admission’ to University Admissions must be submitted 30 days prior to registration. The student is required to submit unofficial transcripts; however, the academic department must concur and admit a visiting student. Visiting students are not eligible for undeclared status or for graduate assistantships.

Graduate Certificate Student

A student enrolled in a certificate program is not enrolled in any graduate degree seeking program at NMSU. The status will change if he or she applies and is accepted to a graduate degree program. A student enrolled in a graduate certificate program is not eligible for a graduate assistantship.

Out-of-State Students and Legal Jurisdiction

By applying for admission/enrollment, both the student and parents agree that New Mexico law prevails and all litigation will be held in New Mexico federal court or state court in Dona Ana County, New Mexico.

Tuition, Fees and Other Expenses

All costs are given for one term. The University reserves the right to change any of the charges without notice.

Graduate Tuition and Required Fees

<table>
<thead>
<tr>
<th></th>
<th>New Mexico Residents</th>
<th>Non-Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall or Spring Term</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-15 credits</td>
<td>$3,354.00</td>
<td>$10,065.60</td>
</tr>
<tr>
<td>7-11 credits, per credit or over 18 credits</td>
<td>279.50</td>
<td>838.80</td>
</tr>
<tr>
<td>1-6 credits, per credit (6 credit max)</td>
<td>279.50</td>
<td>279.50</td>
</tr>
<tr>
<td>Summer Term</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-12 credits</td>
<td>$2,515.50</td>
<td>$2,515.50</td>
</tr>
<tr>
<td>1-8 credits, per credit or over 12 credits</td>
<td>279.50</td>
<td>279.50</td>
</tr>
</tbody>
</table>

Tuition and fees for auditing classes are the same as above. Short courses, workshops, and institutes are treated as completely separate sessions with varied credit rates.

Additional Fees

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Fee Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>International student admission application fee</td>
<td>$50.00</td>
</tr>
<tr>
<td>International student orientation fee</td>
<td>$50.00</td>
</tr>
<tr>
<td>Distance education course fee (per credit)</td>
<td>$35.00</td>
</tr>
<tr>
<td>AS/NMSU Fee (Fall / Spring 1-11 credit enrollment)</td>
<td>$33.50</td>
</tr>
<tr>
<td>AS/NMSU Fee (Summer 1-8 credit enrollment)</td>
<td>$12.40</td>
</tr>
<tr>
<td>Graduate Wellness/Fitness fee (Fall/Spring 9-11 credits)</td>
<td>$47.50</td>
</tr>
<tr>
<td>Course examination fee (per credit)</td>
<td>279.50</td>
</tr>
<tr>
<td>Certificate degree fee</td>
<td>10.00</td>
</tr>
<tr>
<td>Master or Doctorate degree fee</td>
<td>35.00</td>
</tr>
<tr>
<td>Degree application late filing fee</td>
<td>25.00</td>
</tr>
<tr>
<td>Thesis binding fee (3 copies)</td>
<td>38.50</td>
</tr>
<tr>
<td>Late Registration Fee Base Cost</td>
<td>25.00</td>
</tr>
<tr>
<td>Thesis binding molecular biology / astronomy majors (4 copies)</td>
<td>48.50</td>
</tr>
<tr>
<td>Dissertation microfilming/binding fee (3 copies)</td>
<td>79.00</td>
</tr>
<tr>
<td>Dissertation molecular biology / astronomy majors (4 copies)</td>
<td>89.00</td>
</tr>
</tbody>
</table>

Course Fees (fees assessed per course)

See each term's Registration Guide for a list of courses with additional fees.

Mandatory International Student Fees

All international students are required to have Student Health Center coverage and to purchase the student accident and health insurance unless otherwise covered by comparable health and accident insurance approved by International Student Services. International students will be required to purchase health insurance for spring and summer during spring registration unless they have applied for spring graduation. All International graduate assistants are required to have supplemental health insurance. (See optional fees below.)

Optional Fees

Wellness/Fitness Fee - Rates may increase for 2013-2014

The Wellness/Fitness Fee is included in tuition for Las Cruces Campus full-time students. Options for part-time students enrolled at Las Cruces campus include:

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Fee Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellness/Fitness</td>
<td></td>
</tr>
<tr>
<td>Wellness</td>
<td></td>
</tr>
<tr>
<td>Fitness</td>
<td></td>
</tr>
<tr>
<td>Wellness</td>
<td>$79.00</td>
</tr>
<tr>
<td>Fitness</td>
<td>$40.00</td>
</tr>
<tr>
<td>Term pass for student enrolled in 6-11 credits</td>
<td>$105.00</td>
</tr>
<tr>
<td>Single visit for student enrolled in 1-11 credits</td>
<td>$35.00</td>
</tr>
</tbody>
</table>

The Wellness fee grants access to the Student Health Center with charges accruing for medications, lab work, testing or procedures. The Fitness fee grants access to the Student Activity Center.
Supplemental Health Insurance

Students who have access to the Student Health Center may choose to purchase a commercial insurance policy endorsed by NMSU. This insurance is intended to supplement the Student Health Center service. Dependent coverage is not available through NMSU but may be purchased directly from the insurance company; however, dependents of students are not eligible to use the Student Health Center. Insurance information is available at http://wellness.nmsu.edu/ shc/insurance.html.

Graduate Assistant Health Insurance Benefit Program

New Mexico State University offers health insurance to graduate assistants including teaching assistants, research assistants and graduate assistants employed by student services and other support units on campus. The University covers seventy percent of the cost of the health insurance plan and graduate assistants cover the remaining thirty percent. To be eligible for the Graduate Assistant Health Insurance Benefit Program, graduate assistants must:

a) work at least 10 hours per week for an academic term (.25 FTE) in a salary position of NMSU;

b) be a full-time graduate student enrolled in at least 9 graded credits from NMSU;

c) be in good academic standing; and

d) complete the online NMSU Graduate Assistant Health Insurance Benefit Program enrollment form.

NMSU’s Graduate Assistant Health Insurance Benefit Program is managed by United Healthcare Student Resources. UHCSR is a market leader in student insurance programs. For more information, visit their website, http://www.uhcsr.com. Spouse and children coverage can be obtained by enrolling in a separate plan with UHCSR (see their web site for enrollment information).

International graduate assistants are required to have health insurance. International graduate assistant students can enroll in the Graduate Assistant Health Insurance Benefit Program listed above. For more information, please see http://hr.nmsu.edu/benefits.

Housing Services

See the “Resources For Students” section for room descriptions, accommodations, application process, deposit requirement, regulations, and eligibility. For current rate information, please visit our website at www.nmsu/~housing.

Dining Services

See the “Resources for Students” section for meal plan descriptions, application process, deposit requirement, regulations, and eligibility.

Late Registration Penalties

A late registration penalty of $25 will be assessed for course registrations processed during a term’s late registration time period. Failure to make scheduled payments with the University Accounts Receivable on due dates may result in additional liability.

PAYMENT OF CHARGES

By enrolling in classes at NMSU, a student makes a financial commitment to pay the tuition and fee charges associated with that enrollment. The enrollment action constitutes a financial obligation between the student and NMSU and all proceeds of this agreement will be used for education purposes and constitutes an education loan pursuant to 11 U.S.C. § 523(a) (8). Terms and Conditions of Course Registration are posted on the NMSU website and available in each term’s registration guide. Payments can be made by mail, web, telephone, or in person at the University Accounts Receivable. Cash, checks, money orders and limited types of credit cards are accepted. Term charges can be paid in full or paid by using a payment plan. For payment plan options visit the NMSU website. Fees vary based on the plan. All financial aid received must be paid towards balances owed. Additional penalty charges may be assessed for failure to make payments when due. The University reserves the right to deny a payment plan to any student who has a poor credit rating or who has been negligent in making payments to the University for previous debts. Course reservations may be cancelled if payment arrangements for past due debts are not completed by the deadlines as outlined in a term’s registration guide. Academic credits, transcripts, and diplomas will be withheld until all financial obligations are paid. Students are prohibited from registering for a term until all previous debts due to the University are paid in full.

TUITION ADJUSTMENTS, REFUND, AND FORFEITURES

Any student officially dropping or withdrawing from a course or courses during a term may receive tuition and fee adjustments as outlined in the current registration guide. No tuition adjustments will be made on classes of less than five weeks’ duration. Non-attendance does not constitute official course drop or withdrawal. All charges due to the University must be paid before refunds will be permitted.

In cases of academic or disciplinary suspension, eligibility for tuition adjustments will depend on the conditions of the suspension and will be entirely at the option of the University. Should unforeseen circumstances beyond the reasonable control of the University result in curtailing classes, closing residence facilities, or otherwise withdrawing services that are a normal function of NMSU, refunds of any nature will be at the discretion of the University administration. Residence hall rentals and dining hall charges may be refunded in accordance with schedules adopted by these departments.

DISHONORED FINANCIAL TRANSACTIONS – CHECKS, CREDIT CARDS, ACH TRANSACTIONS

The University charges a penalty on all dishonored cash instruments. Personal checks will not be accepted from students who have had previously dishonored checks.

ESTIMATING OTHER EXPENSES

In addition to the direct costs stated above, other expenses per term may include such items as textbooks and supplies (estimated at $500) and personal expenses (estimated at $360).

COOPERATIVE EDUCATION

Students participating in the Cooperative Education Program who receive academic credit pay the same tuition and fees as regularly enrolled students. Work phase students who are assigned to campus or nearby off-campus work-station may purchase the student wellness/fitness optional fees the same as a part-time student enrolled in 1 to 5 credits.

RESIDENT, NONRESIDENT STATUS

Resident or nonresident status is determined in accordance to a uniform definition established for all New Mexico institutions by the Higher Education Department, State of New Mexico. The NMSU Registrar’s Office administers residency. Active duty members of the Armed Forces, their spouses and minor children not otherwise entitled to claim residency, are eligible for tuition payment at the resident student rates upon presentation of a certification from their commanding officer of assignment to active duty within New Mexico. Certification is required upon initial registration.

Information on the following programs may be obtained from the Office of Admissions:

• Residents of Texas who reside in Texas within 135 miles of the NMSU-Las Cruces campus may be eligible for a special tuition rate for the Las Cruces campus only.

• American Indian nations, tribes and pueblos. All out of state members of an American Indian nation, tribe, and pueblo, located wholly or partially in New Mexico, regardless of the tribe or pueblo’s status with the federal government, shall be eligible to pay the in-state tuition rate. This includes members of the following tribes or pueblos: Jicarilla Apache, Mescalero Apache, Taos pueblo, Picuris pueblo, Okaay Owingeh, Santa Clara pueblo, Nambe pueblo, Navajo tribe, San Ildefonso pueblo, Pojoaque pueblo, Tesuque pueblo, Cochiti pueblo, Jemez pueblo, Santo Domingo pueblo, San Felipe pueblo, Zia pueblo, Santa Ana pueblo, Sandia pueblo, Isleta pueblo, Laguna pueblo, Acoma pueblo, Zuni pueblo, and the Ute Mountain tribe.

• The Western Interstate Commission for Higher Education (WICHE) allows students in western states to enroll in college programs at a special tuition rate.

Students interested in dentistry, veterinary medicine, occupational therapy, optometry, osteopathy, podiatry, forestry, graduate library studies, graduate nursing education, and public health should see the paragraph on Western Interstate Commission for Higher Education in the “Resources for Students” section.
FUNDING OPPORTUNITIES

In selecting individuals for any assistantship or fellowship, and in the administration of appointments, New Mexico State University will not discriminate on grounds of age, ancestry, color, disability, gender, national origin, race, religion, sexual orientation, or veteran status.

The Graduate School offers awards, assistantships, and fellowships to qualified graduate students. All awards require faculty nominations. Current students and admitted students can request the faculty or the department head to nominate them for the awards of the Graduate School. Below is a summary of those awards. For detailed information and the application process and deadlines please consult http://gradschool.nmsu.edu/gradschool/announcements.html.

Most graduate assistantships offered by New Mexico State University are awarded by the students’ academic department. We suggest that you contact the department of study to receive information on graduate assistantships, fellowships, and internships. The student must be admitted to the Graduate School before a request for an assistantship or fellowship will be considered by the department or the Graduate School.

The university limits the number of years a student may be supported on funds from the state of New Mexico. A student should check Graduate Assistant Employment Guidelines of the Graduate School at: http://gradschool.nmsu.edu/ga/index.htm. Departments may place additional limitations on the years of support.

AWARDS OF THE GRADUATE SCHOOL

Information on the Graduate School awards can be found at: http://gradschool.nmsu.edu/gradschool/announcements.html.

Merit-based Enhancement Fellowships for Current Graduate Assistants

To help departments reward outstanding graduate assistants, the Graduate School offers Merit-Based Enhancement Fellowships to graduate assistants who are engaged in the teaching or research mission of New Mexico State University. The amount of the awards is $4,000 for an academic year.

Nominations must come from faculty and are due at the Graduate School on March 1st. Please contact the dean of Graduate School if you have any questions, (575) 646-5745 or lacey@nmsu.edu.

Outstanding Graduate Assistantship Award

We also offer Outstanding Graduate Assistant awards of $2,000 to recognize the contributions of graduate assistants to the teaching and research mission of New Mexico State University. The awards allow faculty to show appreciation for the excellent work of graduate assistants. Current graduate assistants must be nominated by their faculty to be considered for the awards.

The Mike Watts Outstanding Leadership Graduate Fellowships of $2,000

The Graduate School encourages faculty to nominate outstanding graduate assistants for a Mike Watts Outstanding Leadership award. The fellowship is made available through the generosity of the family and friends of Michael E. Watts. The Watts Fellowships are available to graduate assistants from any area of Graduate School

If awarded, the fellowship will be paid as salary supplement to the regular assistantship. Please note that for those students who also receive financial aid, the fellowship can have an impact on the amount of financial aid received. Nominations from faculty are due March 1st. The Graduate School will review the applications and select recipients.

Graduate Assistant Tuition Fellowships

The Graduate School awards tuition fellowships to graduate assistants to help departments recruit outstanding graduate students to their programs.

Master’s degree students will receive up to 2 years of support and doctoral degree students will receive up to three years of support. In order for students to qualify for a second and third year of support, they must maintain their status as graduate assistants for the duration of the tuition fellowship period. These awards are for students receiving 10 hour and 20 hour graduate assistantships. The tuition fellowships do not include fees.

Nominations from faculty are due to the Graduate School by March 1st. Please contact the dean of the Graduate School if you have any questions, (575) 646-5745 or lacey@nmsu.edu.

McNair Graduate Assistantships

The Graduate School wishes to support and recognize the success of the McNair program by offering several McNair Graduate Assistantships for one academic year with a match of one year from a department. Nominations from faculty are due to the Graduate School March 1.

State of New Mexico Department of Higher Education (NMHED) Graduate Scholarship Programs

The State of New Mexico Higher Education Department Graduate Scholarship Program offers Graduate Fellowships/Assistantships for women and minority persons who are citizens or permanent U.S. residents and who are a first year student or a student that is beginning graduate studies in any graduate department at the master’s or doctoral level at NMSU. The selected student must be admitted to a graduate program prior to applying for this award.

NMHED fellowships carry stipends of $7,200 per annum and matched with half-time (10 hours per week) teaching assistantship provided by the student’s department for a total award of $15,600.

The total amount of this award is based on the salary for a 20 hour graduate assistantship and usually increases from year to year, based on raises awarded by the State of New Mexico.

Fellowships are available for two years for master’s students and four years for doctoral students. One of the NMHED fellowships is, when possible, designated for a McNair Scholar. The nomination process can be found at: http://gradschool.nmsu.edu/.

In order for the student to establish financial need, students must complete a Free Application for Federal Student Aid (FAFSA) form available in the Financial Aid Office. This form is not to be returned to the Graduate School. The form must be mailed to the Federal Student Aid Programs address listed on the application or submitted via computer at the Financial Aid Office. The results will be sent to the student and the Financial Aid Office. Students must have a complete file and have been approved for financial aid to be considered for this fellowship. Preference will be given to those students that have a current FAFSA form on file at the NMSU Financial Aid office.

Nominations from faculty should be sent to the Graduate School as soon as possible but no later than March 1st.

Diversity Graduate Assistantships

The diversity awards are allocated to departments on a competitive basis to help increase the diversity and quality of the student body. Matching support is required to win one of these awards for your student. The diversity award can be used to recruit domestic students. Please note that the award is for an academic year. Departments will need to commit funds to the selected student for at least one additional semester, or preferably a year.

The selected student must be admitted to the department prior to applying for the diversity award.

The Graduate School will accept applications from faculty until March 1. Please direct inquiries to the dean of the Graduate School at (575) 646-5745 or lacey@nmsu.edu.

Fellowships

The Graduate School maintains a Fellowship and Grant Information Web page, http://gradschool.nmsu.edu/fellowships/ which provides a database of grants, fellowships, and assistantships for graduate students. The university offers a number of fellowships available to both new and continuing students.

Assistantships

Graduate assistantships in teaching and research are available primarily through the department in which the student is enrolled. Eligibility for teaching assistantships includes (a) acceptance by and subsequent registration in the Graduate School and academic department, (b) classification as a “regular” graduate student, (c) enroll in and successfully complete nine graded credit hours each semester and (d) maintain a 3.0 grade-point average. Full-time status for graduate students is enrollment in nine graded credit hours.

Graduate students accepted on a provisional basis cannot serve as teaching assistants. However, they can serve as research assistants. Eligibility includes (a) acceptance by and subsequent registration in the Graduate School and academic department, (b) classification as a “provisional” graduate student (c) enroll in and successfully complete nine graded credit hours, and (d) funded on research projects of the faculty of NMSU. Provisional students can also be hired as graders for one semester. The department must submit a formal letter to
the Graduate School requesting that the student be allowed to work as a grader. The Graduate School can approve or deny the request. A student seeking appointment as a teaching assistant will be required to demonstrate proficiency in communication skills necessary for satisfactory service in the classroom. All graduate students given an assistantship must attend a mandatory orientation offered by the Graduate School. Departments may also require students to complete workshops/orientations in order to qualify for assistantships.

All international students seeking a teaching assistantship must demonstrate proficiency in English and competency in pedagogy. Prior to the first semester in which the teaching assistantship is to be received, international students must undergo the NMSU International Teaching Assistant (ITA) screening administered by the Department of Communication Studies on behalf of the Graduate School. Students who pass the screening exam are immediately eligible for assignment to a teaching assistantship. Those who do not pass the screening exam must enroll in and satisfactorily complete COMM 485 before being eligible for a teaching assistantship. To aid those incoming international students who plan to teach in the fall semester, COMM 485 is offered in the summer. International graduate students wishing to hold a teaching assistantship should check with their department to determine when they should arrive on campus to meet the screening requirement. International students who don’t pass the screening exam may be eligible to serve as graders for their academic departments. The academic departments must receive approval from the Graduate School in order to hire these students.

The duties involved normally require about 20 hours per week (full time fall and spring) of the student’s time. By accepting an assistantship, the student is obligated to enroll in and maintain enrollment in a minimum of nine graded credits per semester, but not more than 15 per semester. A graduate assistant may not enroll for more than 15 credits for each fall and spring semesters. Courses taken for audit or undergraduate deficiencies are counted in the maximum total course load; audited classes and courses under 498 cannot be used for the minimum GA course load requirement.

**GRADUATE ASSISTANTS SALARIES AND TAX WITHHOLDING GUIDELINES**

Internal Revenue Service tax withholding guidelines require undergraduate and graduate students employed through New Mexico State University to maintain at least six credit hours of course work during the fall and spring semesters and three credit hours of course work for summer sessions to be eligible for the student FICA tax exemption. Student employees who do not meet this requirement during any given pay period will be subject to Social Security taxes at the rate of 6.2% and Medicare taxes at the rate of 1.45%. Salaries for graduate assistants in 2011-2012 are as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>$16,100</td>
</tr>
<tr>
<td>II</td>
<td>$16,500</td>
</tr>
<tr>
<td>III</td>
<td>$16,900</td>
</tr>
</tbody>
</table>

Level I applies to students pursuing a master’s degree. Level II applies to students (a) pursuing the education specialist or doctoral degree who have passed the qualifying exam or (b) who have a master’s degree in the same or cognate field and the recommendation of the head of their major department. Level III applies to a doctoral student who has passed the comprehensive examination.

Graduate assistants employed at least ten hours per week will be given in-state tuition during the first twelve months of tenure if the hiring process is approved by Human Resources prior to census date (stated by the Office of the Registrar as the third Friday of the semester each spring and fall semester).

If New Mexico resident status has not been established by the time of any reappointment, the graduate assistant may be subject to nonresident tuition rates. Applications for state residency may be obtained in the Office of the Registrar, located in the Educational Services Building.

**SOCIAL SECURITY NUMBERS IN STUDENT RECORDS**

As required by law, social security numbers are collected from prospective and current students who 1) plan to seek employment on campus or 2) wish to receive financial aid. In addition, the university is mandated by federal tax regulations to provide tuition and fee payment information to the student and the Internal Revenue Service, so that applicable educational tax credits may be computed. The social security number will be necessary to submit this tax reporting. The social security number is a confidential record and is maintained as such by the university in accordance with the Family Educational Rights and Privacy Act.

In order to be employed by New Mexico State University all students must have obtained a social security number within eight weeks of being hired or risk losing their assistantship.

When an official social security number is issued to an international student, it is the student’s responsibility to inform Human Resources or the Office of the Registrar as soon as possible.

**HOURLY WORK**

Eligibility for student payroll requires that a graduate student (a) be admitted to the Graduate School as well as to a department, (b) have a GPA of 3.0, and (c) be enrolled for at least nine graded credits. A student may not work more than 20 hours per week during the academic year. Students should check with Student Employment Services, Garcia Annex, Room 204, for current job postings. Students not classified as residents of New Mexico but working at an hourly rate are not eligible to receive in-state tuition.

**FINANCIAL AID**

The mission of the Office of Student Financial Aid and Scholarship Services at New Mexico State University (NMSU) is committed to providing a high level of service to support students in achieving their academic goals by helping to remove the financial barriers to college attendance. The office’s mission is to offer coordinated delivery of comprehensive student aid programs that are supportive of the recruitment and retention of academically talented and diverse students. Although primary responsibility for educational cost rests with the student and his or her family, NMSU, the federal government, and the state of New Mexico all contribute to assist students pursuing higher education.

The Office of Student Financial Aid and Scholarship Services administer a broad spectrum of loans and work-study in an attempt to meet the financial needs of the university’s students. Students and spouses, if applicable, are expected to contribute from their own assets and earnings, including appropriate borrowing against future income. All information provided to the Office of Student Financial Aid is regarded as confidential.

Students applying for financial aid complete a “Free Application for Federal Student Aid” (FAFSA) designed to determine, in accordance with state and federal guidelines, the difference between what the student or family is expected to contribute and the cost of attending NMSU. Among the factors that determine the family’s expected contribution are (1) annual adjusted gross income as reported to the Internal Revenue Service; (2) savings, stocks, or bonds; (3) other assets in the form of a business, farm, or real estate; (4) nontaxable income and benefits; and (5) student’s prior year income and assets. Students applying for financial aid should complete a FAFSA by visiting http://fa.nmsu.edu or http://www.fafsa.ed.gov.

Please refer to http://fa.nmsu.edu for more information on financial aid. A complete listing of programs and policies is available on-line.

**GENERAL ELIGIBILITY REQUIREMENTS**

To receive financial aid a student must:

- Be a U.S. citizen or an eligible non-citizen.
- Enroll at least half time (as defined by federal regulation); this applies to most Title IV programs.
- Enroll in an eligible major.
- Enroll in eligible courses.
- Maintain satisfactory academic progress defined by federal regulations.
- Not be in default on any federal educational loans or owe a refund on a grant.
- Sign a statement of educational purpose, stating that the money will be used toward educational purposes only.

**SOURCES OF FINANCIAL AID**

**Loans.** Available to undergraduate and graduate students with financial need. Federal Perkins Loans are long-term, low-interest loans (5% fixed interest rate) that must be repaid to the university according to federal guidelines. Repayment of Federal Perkins Loans begins nine months after graduation or after enrollment drops below half time.

Federal Stafford Loans are long-term loans available to graduate students. Students receiving an unsubsidized Federal Stafford loan or a Perkins loan must complete the financial literacy and entrance counseling sessions by clicking on...
the links at http://fa.nmsu.edu/financial-aid-how-to-s/index.html before NMSU will issue a check. In addition, students must complete an exit interview upon graduation or withdrawal from the university. Repayment of a Stafford loan begins six months after graduation or six months after enrollment drops below half time. The interest rate on new Stafford loans varies according to the year the loan is disbursed. More information will be available at the time the loan is made.

Work-Study Programs: The Federal Work-Study Program provides employment opportunities for selected students with demonstrated financial need. The New Mexico Work-Study Program also provides employment opportunities for students; however, only New Mexico residents are eligible to participate in the program.

FINANCIAL AID AWARDS

All financial aid awards are based on information provided by the student and spouse, if applicable, availability of funds, and eligibility requirements. Any award may be revised based on changes in enrollment, cost of attendance, outside resources, family contribution, or failure to meet satisfactory academic progress. Withdrawals or reductions in enrollment may affect an award or any future awards. Financial aid will not pay for audited courses or for classes in which credit will not be received.

FINANCIAL AID SATISFACTORY ACADEMIC PROGRESS

Federal regulations require that financial aid recipients meet certain academic standards to be eligible for federal financial aid. To ensure that financial aid recipients are making satisfactory academic progress, academic transcripts are reviewed at the end of each term to determine eligibility for the next term. All terms of attendance are reviewed, including periods in which the student did not receive financial aid. All transfer work is taken into account when satisfactory progress is reviewed. In addition, repeated courses are included in the academic progress calculation.

Grade Point Average: Graduate students must maintain a cumulative grade point average of at least 3.00 (a B average). Grade point values are: A = 4.0, B = 3.0, C = 2.0, D = 1.0, F = 0. Grades of I, CR, PR, NC, W, and AU are not calculated in the GPA.

Completion Rate: Students must complete a minimum of 70 percent of all course work (registered credit hours) attempted at NMSU. Any course with a grade of Withdraw (W), Incomplete (I), Failure (F), Audit (AU), or No Credit (NC) is considered attempted but not completed. Repeats are considered attempted credits.

Maximum Time Frame: Graduate students must complete their program within 150 percent of the credit hours required by the program. Students who have reached the maximum allowable time will be suspended from receiving financial aid. Total attempted hours including repeated courses and transfer course work are included in the student’s maximum time frame calculation.

FINANCIAL AID SUSPENSION

Students are suspended from receiving financial aid if they do not meet satisfactory academic progress standards. Students on financial aid suspension will not receive any form of federal or state financial aid (grants, loans, work study). When all standards of satisfactory progress are met, you may contact your Financial Aid Office to have your financial eligibility reinstated.

THE APPEALS PROCESS

Students suspended from financial aid may appeal the suspension if there are mitigating circumstances affecting their progress. Students who would like to appeal the suspension must submit an appeal form and all required documentation to the Office of Student Financial Aid. A committee will review the appeal and may grant reinstatement of financial aid based on mitigating circumstances that directly contributed to deficient academic performance. Appeals are usually evaluated on a term-by-term basis.

REGISTRATION

Graduate students may register in person at University Admissions or on the Web at https://my.nmsu.edu. No person will be officially registered unless formally admitted to the Graduate School.

CHANGE OF ADDRESS

In order to assure accurate student records, students are responsible for keeping University Admissions and the Office of the Registrar informed of the following: Changes in residence and mailing addresses; current telephone numbers, and primary e-mail addresses. Failure to do so may result in transcripts, diplomas, or other important communications from the university not being received in a timely manner.

The deadlines for registration and for the add/drop period are printed in the Schedule of Classes and are available on-line at http://gradschool.nmsu.edu/deadlines/index.htm.

INTERNATIONAL STUDENTS

English Proficiency

International students that wish to become teaching assistants must prove that they are proficient in the English language. During summer session II preferably or before the start of the first semester of enrollment, each international student who is required to submit a TOEFL (Test of English as a Second Language) or an IELTS (International English Language Testing System) score that wishes to be considered for a teaching assistantship must also take the Academic English Proficiency Test administered by the Department of Communication Studies. Also, students who successfully complete and pass approved English as a Second Language (ELS) course, and who wish to become a teaching assistant must also take the Academic English Proficiency Test administered by the Department of Communication Studies. Based on the recommendation of the Department of Communication Studies, the Graduate School may require the student to successfully complete one or more English as a foreign language course(s) prior to beginning an assignment as a teaching assistant. If completion of one or more courses is required, the student should enroll in the first such course during his or her first semester at NMSU or prior to taking an assignment as a teaching assistant.

Enrollment

All international graduate students on F-1 or J-1 visas are required to comply with Department of Homeland Security regulations governing maintenance of status related to full-time enrollment and making normal progress toward completing a degree. Therefore, all international graduate students are required to enroll in nine or more credits (exclusive of audited work) during fall and spring semesters.

SHORT COURSES AND INSTITUTES

Short courses and institutes are conducted on the campus each summer and during the academic year. Courses numbered 400 and above have been approved to carry graduate credit for these courses. Concurrent enrollment of graduate students in regular and short courses is allowed provided that the combined credits do not exceed 15 in a fall or spring semester.

All short courses carrying one semester credit will be graded on an S/U basis, and these S/U credits will be counted toward the student’s limit of S/U credits.

SUMMER SCHOOL SESSION

During the summer session, the maximum number of graduate credits a graduate student may take is 9. Students who wish to enroll in more than 9 credits in the summer, must write an appeal letter addressed to the Graduate Dean.

APPLICATION FOR A CERTIFICATE

Completion of a Graduate Certificate Program

You must meet several requirements to receive your Graduate Certificate. These requirements are listed below. You can also find more information about receiving your Graduate Certificate at the FAQ – Certificate Programs link: http://gradschool.nmsu.edu/certificates.html.

1. Submit an Application for Certificate to University Admissions, along with the fee of $25. The form can be found at: http://gradschool.nmsu.edu/forms/index.html.

The deadlines for submitting this form are:
- October 1st for December certificate
- February 15th for May certificate
- May 15th for August certificate
Note: Late applications are automatically transferred to the next award period.

2. You must be enrolled or pay the special Exam Fee. You need to be registered for at least one credit during the semester in which you plan to complete your Certificate. If you are not registered, you must pay the Exam Fee: http://gradschool.nmsu.edu/forms/ExamFeeForm.pdf.

3. Approved Program of Study: You must also fill out a Program of Study for your Graduate Certificate Program. These forms are specific to each Graduate Certificate Program and can be found at this website, under Forms for Graduate Certificate Programs: http://gradschool.nmsu.edu/forms-index.html.

4. Grade Point Average of 3.0. You must have an overall GPA of 3.0 to receive your Certificate.

MILITARY, VETERANS & FAMILY MEMBERS

MILITARY AND VETERANS PROGRAMS (MVP)

NMSU is a military-friendly university and an institutional member of the Service members Opportunity Colleges (SOC) Consortium. NMSU Military and Veterans Programs promotes lifelong learning and professional development for veterans, active-duty military and their families, assisting them in their higher education goals by offering:

- Affordable, in-state tuition rates for active-duty military personnel and dependents living at regional military installations
- Affordable, in-state tuition rates for veterans receiving U.S. Department of Veterans Affairs education benefits
- Easily transferable credits that count toward degrees at NMSU
- GoArmyEd participation
- Courses taught online and at locations on and near regional military installations
- Innovative technology and course delivery methods
- A tradition of quality education

NMSU degree programs are approved by the State Approving Agency Directory at the New Mexico Higher Education Department. Eligible students may receive education benefits from the U.S. Department of Veterans’ Affairs.

Responsibility of Veteran Students

Students must be pursuing a degree in a specific program to be eligible for benefits. Admission procedures for veterans and other eligible persons are the same as for all students. Academic advisors must submit degree plans to Military and Veterans Programs prior to certification. For continued certification, students must submit a “Concise Student Schedule” to the MVP office every semester.

Veterans must notify the MVP office when any of the following occurs:

- dropping or adding course(s)
- withdrawing from course(s)
- discontinuing regular class attendance
- changing programs (academic majors)

VA education benefits are payable for regular attendance in courses that are part of the veteran’s program (major) curriculum. VA educational benefits are not payable for:

- classes not attended regularly
- repeating a course for which a passing grade was received
- classes for which credit is received through successful completion of a proficiency test or grade by examination
- classes taken on an audit basis
- classes that are dropped or withdrawn from
- classes that are not part of the veteran’s program (major) curriculum

For further information, contact Military and Veterans Programs at MSC 4740, NMSU, P.O. Box 30001, Las Cruces, NM 88003-8001 or (575) 646-4524. Overview may be viewed at http://military.nmsu.edu or http://nmsu.edu/va.

COSTS

Active-Duty

Active-duty military personnel (Armed Forces) stationed in New Mexico or at Fort Bliss, Texas may complete a “Resident Tuition Application for Active Duty Military” waiver to qualify for in-state tuition. Spouses and minor children of active-duty personnel who are stationed in New Mexico and Fort Bliss, Texas who are not otherwise entitled to claim in-state residency, may apply for in-state tuition by submitting a “Resident Tuition Application for Active-Duty Military” waiver to the NMSU Registrar. Applications are available at the NMSU Registrar’s Office or by contacting Military and Veterans Programs at MSC 4740, NMSU, P.O. Box 30001, Las Cruces, NM 88003-8001 or (575) 646-4524.

Veterans

Veterans receiving U.S. Department of Veterans Affairs education benefits are eligible for in-state tuition through the Veterans In-State Tuition Act by submitting a “Resident Tuition Application for Veterans of the U.S. Armed Forces” waiver. For further information concerning approved programs and application process, eligible persons should contact Military and Veterans Programs at Garcia Annex, room 141, by phone (575) 646-4524, by email at va@nmsu.edu or online at http://nmsu.edu/va.

Veteran students enrolled under the following programs are responsible for their tuition and fees in the same manner as a nonveteran student:

- Montgomery GI Bill-Active Duty (CH30)
- Dependents (CH33)
- Montgomery GI Bill-Selected Reserve (CH1606)
- Reserve Educational Assistance Program (REAP)
- Post 9/11 (CH33)

Tuition and fees of students enrolled under the Vocational Rehabilitation Program (CH31) will be paid by the U.S. Department of Veterans Affairs under contract with the university.

RESOURCES FOR STUDENTS

Servicemembers Opportunity Consortium (SOC)

The NMSU system has been designated a Servicemembers Opportunity Colleges (SOC) Consortium university. As a member of SOC, NMSU has committed itself to fully support and comply with SOC principles and criteria, ensuring that servicemembers and their families share in the postsecondary educational opportunities available to other citizens. Those eligible are provided with appropriately accredited educational programs, courses, and services. Flexibility of programs and procedures particularly in admissions, counseling, credit transfer, course articulation, recognition of other applicable learning experiences, including those gained in the military, scheduling, course format and residency requirements are provided to enhance access of servicemembers and their families to undergraduate education programs. All SOC rules and regulations apply, including:

- Credit for military training and experience – NMSU recognizes and uses ACE Guide in evaluating military training experiences
- Reduced academic residency requirements – 25% maximum for most programs; 30% for 100% online programs
- No final year or semester requirement
- Credit for nationally-recognized testing programs such as CLEP (General and Subject exams), DSST (DANTES Standardized Subject Tests)

For further assistance contact the SOC coordinator through Military and Veterans Programs at MSC 4740, NMSU, P.O. Box 30001, Las Cruces, NM 88003-8001 or (575) 646-4524.

REGULATIONS

Note: These regulations apply to all campuses of NMSU and are effective with the publication of this catalog. Tuition amounts, fees, and similar items subject to annual review and change are all effective with the current catalog.

GoArmyEd

- Soldiers must first be admitted to NMSU before they may enroll in any classes at NMSU. Only enrollments verified through the GoArmyEd portal will be eligible for Tuition Assistance (TA). It is the soldier’s responsibility to process all class withdrawals through both GoArmyEd and NMSU systems in accordance with institutional policies and procedures. For further information, contact Military and Veterans Programs at MSC 4740, NMSU, P.O. Box 30001, Las Cruces, NM 88003-8001 or (575) 646-4524.
Credit For Military Service

New Mexico State University will award academic credit to United States military personnel for courses and Military Occupational Specialties (MOS), based on the American Council of Education Guide (ACE) as well as through national standardized tests, such as CLEP, AP, PEP, and DANTES. Credit for military training is in accordance with NMSU Faculty Senate Legislation Proposition 24-07/08, which was passed in May 2008. Military Training and Military Occupational Specialties (MOS) must have a recommendation evaluation by ACE (in the ACE Guide) for credit to be awarded. Courses accepted for transfer credit are given an NMSU equivalent and become part of the student’s official NMSU transcript and academic record. If a student wishes to appeal a decision regarding the acceptance of military training/education and/or MOS for academic credit, the student must submit a written statement of appeal to the Dean of the College to which the student has applied. The Dean will review the merits of the appeal and render a decision. The decision of the Dean is final.

Only Primary MOS (a) are eligible for academic credit in the initial review and evaluation. Credit for Duty and (b) Secondary MOS may be eligible for academic credit if the student petitions the college’s Associate Dean. Primary MOS is the primary specialty of a soldier and reflects the broadest and most in-depth scope of military experience. Veterans, active-duty personnel, National Guard and Reservists who are current students or students applying for admission to New Mexico State University may be granted academic credit on a case-by-case basis upon evaluation of military transcripts - the Joint Service Transcript and the United States Coast Guard transcripts. Course equivalencies and credit hours awarded for a particular NMSU degree are determined by colleges and/or academic departments. Credit hours may be awarded for specific courses toward degree requirement, or as elective credit. The number of credit hours awarded will be determined by the college and/or academic department.

NOTE: Students submitting military transcripts for credit evaluation must keep in mind the Maximum Time Frame policy. See FINANCIAL AID section.

Veterans’ Attendance And Satisfactory Progress

The U.S. Department of Veterans Affairs requires all veterans receiving VA education benefits to make satisfactory progress and systematic advancement toward an educational objective or be liable for over-payments. Satisfactory progress and regular class attendance are expected of such students.

If a veteran receiving benefits is suspended for academic reasons, benefits are terminated and will be restored only after readmission to NMSU. If the university has liability claims filed against it as a result of a veteran failing to meet compliance requirements of the U.S. Department of Veterans Affairs, the university will not release any academic records on the veteran until such time as the veteran has reimbursed the federal government for funds drawn in violation of those requirements.

A student receiving VA education benefits who is pursuing a degree program offered by New Mexico State University should adhere to the curriculum of that program. Failure to do so will result in the student being certified for less than full-time status or becoming liable for an overpayment.

Military Withdrawal

The following guidelines must be taken by all New Mexico State University students called up for active duty who wish to withdraw from all their classes:

a) Military and Veterans Programs, VA students ordered to Active Duty must provide a copy of orders to the MVP office, Garcia Annex, room 141. To assist in reporting accurate information to the VA Regional Office, student should also provide, in writing, first day of class attendance.

b) NMSU Registrar. All students presenting their orders to the NMSU Registrar’s Office, (575) 646-3411, will receive a military withdrawal from classes and a full tuition and fees refund for that semester.

c) Bookstore. Students who still have their receipts for textbooks purchased the semester in which they are called to active duty will be given a full refund for these textbook purchases when they present their orders. (575) 646-4431.

Military/Veteran Graduate Student Status

Veteran benefits are determined by the number of graded graduate credits of enrollment for a given semester or summer session. Listed below are the credit hours that determine student status for military veterans.

Fall and Spring semester: full-time enrollment includes 9 or more graded credit hours. Students are considered three-fourths time if they are enrolled in 7 to 8 credit hours. Half time enrollment is 5 hours. Veterans enrolled in less than 5 credit hours are reimbursed for tuition and allowable fees only.

There are several sessions within the summer term. For the 10 week summer session, full-time enrollment is 6 credit hours and half time enrollment is 3 credit hours. During the five week sessions, full-time enrollment is 4 graded credit hours.

REGULATIONS AND PROCEDURES FOR STUDENTS

GRADING SYSTEM

Graduate students are expected to apply themselves intensively to the study of the material covered by the courses in which they are enrolled. Accordingly, a high level of performance is required. The student must maintain a grade-point average of at least 3.0 in all graduate courses taken as a graduate student at NMSU. Courses transferred from the undeclared program at NMSU or from other institutions will be included in determining grade-point averages.

Grades

The grades awarded in all courses are indicative of the quality of work done. Their significance is as follows:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Point per Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – For excellent work</td>
<td>4</td>
</tr>
<tr>
<td>B – For better than average work</td>
<td>3</td>
</tr>
<tr>
<td>C – For average work</td>
<td>2</td>
</tr>
<tr>
<td>D – For below average work</td>
<td>1</td>
</tr>
<tr>
<td>F – For failing work</td>
<td>0</td>
</tr>
<tr>
<td>W – Withdrawal</td>
<td>0</td>
</tr>
<tr>
<td>N – Grade not submitted</td>
<td>0</td>
</tr>
<tr>
<td>CR – Credit authorized, but not letter grade</td>
<td>0</td>
</tr>
<tr>
<td>IP – In progress</td>
<td>0</td>
</tr>
<tr>
<td>PR – Progress on graduate thesis</td>
<td>0</td>
</tr>
<tr>
<td>S – Satisfactory work</td>
<td>0</td>
</tr>
<tr>
<td>U – Unsatisfactory work</td>
<td>0</td>
</tr>
<tr>
<td>I – Incomplete</td>
<td>0</td>
</tr>
<tr>
<td>AU – Audit</td>
<td>0</td>
</tr>
</tbody>
</table>

Distinctions within a letter grade may be indicated by the use of plus or minus, and these will become part of the official record.

S Grade

An S grade indicates satisfactory performance.

C, D, and F Grades

Although C grades earned at New Mexico State University may be counted toward the requirements for an advanced degree, this is not considered acceptable graduate-level performance.

Courses in which a student earns only a D or F may never be counted toward a graduate degree, although such grades are calculated in determining the grade-point average. Therefore, any grades of D or F must be compensated for by the necessary hours of A if the student is to have the 3.0 grade-point average required before awarding of the degree.

Incomplete Grade

The grade of Incomplete is given for passable work that could not be completed due to circumstances beyond the student’s control. The following regulations apply to removing or changing an Incomplete grade:

1. Instructors may assign an Incomplete grade only if the student is unable to complete the course due to circumstances beyond the student’s control that develop after the last day to withdraw from the course. Examples of appropriate circumstances include documented illness, documented death or crisis in the student’s immediate family, and similar circumstances. Job related circumstances are generally not appropriate grounds for being assigned an Incomplete. In no case is an Incomplete to be used to avoid the assigning of D, F, or Unsatisfactory grades for marginal or failing work.

2. To assign an I grade, the instructor must complete the “I Grade Information Form” and have the form delivered to the course dean. The instructor will state in writing the steps necessary to complete the remaining
course work or the instructor may indicate that the student will be required to re-enroll in the course to receive credit (in which case the I grade will not be removed). The student will sign this document or the course dean will send a copy of the document to the student’s official permanent address.

3. The student is entitled to have the Incomplete grade removed from the transcript only if the student completes the remaining course work as specified on the “I Grade Information Form,” in a manner satisfactory to the instructor. The work must be completed within 12 months after the Incomplete is assigned and prior to the student’s graduation, or within a shorter period of time specified by the instructor on the “I Grade Information Form.” If the student fails to complete the course work, the instructor may change the Incomplete grade to any appropriate grade (including D, F, or Unsatisfactory) provided that the instructor stated that this would occur on the “I Grade Information Form.”

4. Incomplete grades can be removed from the transcript by the instructor only during the 12-month period following assignment of the Incomplete or prior to the student’s graduation, whichever comes first. To remove an Incomplete, the instructor must complete a “Change of Grade Form” and file the form with the Office of the Registrar. The instructor may assign whatever grade is appropriate for the entire course. This may include grades of D, F, or Unsatisfactory. An Incomplete not changed by the assigning instructor within 12 months and prior to graduation shall remain an Incomplete grade thereafter.

5. A student may re-enroll and receive credit for any course for which an Incomplete grade was previously received, but retaining the course will not result in removal of the Incomplete grade from the student’s transcript. The effect of removing an Incomplete grade on a student’s academic standing (scholastic warning, probation, or suspension) depends on the date the transaction is officially recorded on the student’s academic record. If the transaction is recorded before the student begins another semester, the grade replacing the Incomplete is included in the grade-point average calculation that establishes the student’s academic standing. If the transaction is recorded after the student begins another semester, the grade replacing the Incomplete is based on its inclusion with grades for the semester in which the student is enrolled. Students may appeal an unsatisfactory grade through the procedures described in the “Disciplinary Issues for Graduate Students” section of this catalog.

Independent Studies

Independent study courses (including directed reading and special topics courses which do not carry a subtitle) are for students capable of self-direction who meet the requirements for the S/U option, i.e., if the students are not eligible for the S/U option, they are not eligible for independent study. Each college determines the maximum number of credits that may be earned in independent study courses.

Grading of Research

In grading master’s and doctoral research and thesis work in progress, the instructor reports for each enrollment period the symbol PR (Progress) or U (Unsatisfactory) in place of a grade. “Progress” indicates that the student has devoted an adequate amount of time to the work scheduled but gives no indication of its quality. “Unsatisfactory” indicates that the student has stopped work or is doing work of unacceptable quality. These symbols remain on the student’s transcript permanently. Only those credits graded PR (Progress) accumulate toward the minimum number of credits of research required.

After having submitted a series of PR (Progress) or U (Unsatisfactory) symbols, the instructor shall report a grade at the conclusion of the final oral examination, or no later than the date the thesis is submitted for the signature of the graduate dean. If the thesis or dissertation and the performance in the final oral examination are found to be unacceptable, the instructor shall report S (Satisfactory), which grade applies to the preceding series of registrations graded Progress and Unsatisfactory and denotes the overall quality of the entire series. If the thesis or dissertation and the performance in the final oral examination is found to be unacceptable, the instructor shall report U (Unsatisfactory), which grade applies only to the credits of research for the enrollment period in which the examination is administered.

Students who accumulate a total of two Unsatisfactory grades in courses numbered 598 (approved courses), 599, 600, 699, or 700 will be placed in provisional status. Three Unsatisfactory grades in these courses will result in dismissal from the Graduate School.

Satisfactory and Unsatisfactory Course Option

Grades of Satisfactory and Unsatisfactory (S/U) may be used for courses taken by a regular status graduate student outside the major department, provided that the student’s advisor and the head of the department approve. Departments may designate three credits of departmental courses numbered 500 and above for S/U option grading with the approval of the college dean and the graduate dean. The S/U grade request form must be submitted to the graduate dean at the time of registration for an academic session.

The limitations of the S/U option are as follows: No more than six total credits of S/U courses are permitted on the master’s degree. Doctoral candidates may take six additional credits under the S/U option after application to candidacy. Registration is limited to one course per semester, and courses with Unsatisfactory grades cannot be used in a student’s program.

POLICIES ON GRADUATE COURSES

Numbering of Courses

Courses numbered 100 through 299 are for undergraduate credit only. In no event may courses numbered below 300 be applied toward a graduate degree; 300 through 449 courses are intended primarily for undergraduate level. In some cases, graduate credit may be obtained in courses numbered 300 through 449 with the approval of the student’s advisor, the instructor of the course, the program dean, the student’s department head, and the dean of the Graduate School. To secure such credit, a written request must be filed with the dean of the Graduate School at the time of registration. However, these courses cannot be deficiencies, and not more than four credits toward a degree can be granted for courses numbered below 400. The total of courses numbered 300 through 449 cannot exceed eight credits.

Courses numbered 450 through 499 are designated for seniors and graduate students; 500 through 599 are primarily for graduate students working on the master’s degree; 600 through 700 are primarily for students working on a doctoral degree.

Adding and/or Dropping Courses

It is the student’s responsibility to initiate official withdrawal from a course. Courses may not be added after the last day to add as indicated in the academic calendar (printed on the inside back cover of the Graduate Catalog or on-line at http://gradschool.nmsu.edu/). The last day to drop a course is listed in the Schedule of Classes and the academic calendar. The refund policy and schedule is also noted in the Schedule of Classes.

Auditing Courses

A student officially admitted to the Graduate School may enroll in any class as an auditor with the verbal consent of the instructor, provided the facilities are not required for regular students. Record of enrollment is preserved but no credit is given. Courses being taken as audit will count toward total course load but cannot be used to meet the minimum course load requirements.

Because graduate students can enroll in any undergraduate course under the S/U option, they are discouraged from auditing classes.

Repeating Courses

Any graduate course numbered 450 and above may be repeated. Any computable grade (excluding I, W, AU, CR, S or U) earned for the course will be included in the cumulative grade-point average, but the credit hours may be earned only once.

Substitutions and Waivers

All substitutions or waivers of required courses for degree candidates must be approved before the last day of registration during the semester in which the student expects to obtain the degree.

Challenging Graduate Courses

A graduate student may challenge a graduate course by examination.

Changes in Registration

Registration changes may be processed only in accordance with university regulations and with appropriate signatures. It is the responsibility of the student to initiate official withdrawal from a course.

Forms are available from the academic advisor or in the deans’ offices. Courses may not be added or dropped after the deadline date indicated in the university calendar. For refund policy, see the “Costs” section of the catalog. When a student officially drops a course, the W grade is assigned as follows: 1) No grade is assigned during the registration period.

When a student officially drops a course, the W grade is assigned as follows: 1) No grade is assigned during the registration period.
2) A W grade is assigned to any student who officially drops a course during the first half of its duration. A student may not officially withdraw from a course after this time. All drop forms must be signed and dated by the instructor of the course and the advisor.

3) A grade of W is assigned in all courses to any student officially withdrawing from the university prior to the last three weeks of classes.

Any person attending under Veterans Educational Assistance should notify the Office of Veterans’ Programs if dropping or adding courses changes enrollment status for benefits.

TRANSFER OF GRADUATE CREDITS INTO A DEGREE PROGRAM

A student may transfer graduate credits taken at NMSU as well as graduate credits from another university to New Mexico State University, provided the credits were earned on the campus of an accredited institution. Transferred course work (grades and hours) is maintained separately from NMSU course work.

Immediately after initial enrollment in the Graduate School, students must submit forms to obtain formal permission from the department head, the dean of the college, and the dean of the Graduate School to transfer graduate-level course work. The department has the responsibility to accept or reject any number of transferred credits based on such elements as whether the work fits into a logical program for a degree, if grades of A or B have been earned in the courses proposed for transfer, and any other elements it deems relevant. Credit granted for work done at another institution is tentative until proved by satisfactory work in residence, and the department may also require work to be validated by examination. At the master’s level, students must take at least 50 percent of the course work required for the degree from faculty of New Mexico State University to meet the residency requirements for their degree. Transfer credits must meet the same time-limit requirements (seven years) as graduate classes at accredited universities. Course work taken elsewhere after initiation of Graduate School at NMSU must have prior approval of the department head and the dean of the Graduate School if such work is to be transferred. All requirements as to accreditation, level, grades, and other elements described for initial transfer work will apply.

“Request for Transfer of Credit” forms are available at University Admissions.

TRANSFER OF CREDITS FOR CERTIFICATE PROGRAMS

Students enrolled in certificate programs cannot transfer credits from another institution towards the completion of the certificate program offered by New Mexico State University. However, they can transfer credits taken in a graduate certificate program of NMSU into a graduate degree program of New Mexico State University provided that the courses will lead towards a graduate degree in the focused area of the certificate program. The number of transfer credits will be determined by the program of study. The time limit on course transfer is 5 years after the completion of the certificate.

TRANSFER OF UNDERGRADUATE CREDITS TO A NMSU GRADUATE PROGRAM

A student who is enrolled in a specially designated, pre-approved (by the graduate dean and the applicable academic college dean(s)) joint degree program that leads to the student being awarded both undergraduate and graduate degrees may petition to have two graduate level courses (up to six credits) previously taken for undergraduate credit considered as transfer credits into the student’s graduate degree program.

To be considered for transfer credit, a course must have been taken by the student as a senior, and prior written permission must have been received from the director of the applicable graduate program, the course instructor, and the department head. In addition, only courses in which the student received a grade of B or better will be considered for transfer credit. Credit can be transferred once the student has been accepted into the graduate degree program.

Approved joint undergraduate/graduate degree programs are listed in the section called “Graduate Degree Programs.” “Request for Transfer of Credit” forms are available at University Admissions and on the web page [http://prospective.nmsu.edu/graduate/current/index.html](http://prospective.nmsu.edu/graduate/current/index.html).

LEAVING GRADUATE SCHOOL

Leave of Absence/Continuous Enrollment

Students working on advanced degrees who plan an interruption in studies for a calendar year should address a request for leave of absence through their department head, alerting the dean of the Graduate School. The student must submit a formal letter through their department head to the Dean of the Graduate School. Email will not be accepted. The request should include the beginning date and the anticipated ending date for the period of absence. A graduate student on leave of absence will be expected not to use university facilities and place no demands upon the university faculty and staff, and, therefore will pay no fees. Time spent in leave-of-absence status will not be counted toward time limits.

A graduate student who fails to register for one calendar year without obtaining a leave of absence from the Graduate School will be considered withdrawn from the university. For information on resuming studies after such absence, see “Readmission.”

Withdrawal from NMSU

Withdrawal from any NMSU campus is an official procedure that must be approved as indicated on the withdrawal form. All such withdrawals will be registered on the student’s transcript. It is the student’s responsibility to initiate withdrawal from the university and to obtain necessary signatures. Students who leave without following the official procedure are graded appropriately by the instructor. The withdrawal process is initiated at the Registrar’s Office. Applicable dates are published in the university calendar for all regular sessions.

Medical Withdrawal

A medical withdrawal applies to a student who becomes seriously ill, injured, or hospitalized and is therefore unable to complete an academic term for which they are enrolled. Based on the physician’s information, a determination will be made if the student is eligible for consideration of tuition or other refunds. At the Las Cruces campus, medical withdrawal begins at the Registrar’s Office. At all other campuses, medical withdrawal begins at the Student Services Office.

Military Withdrawal

See the section on Military/Veterans and Family Members for special provisions for servicemembers.

DISCIPLINARY ISSUES FOR GRADUATE STUDENTS

Graduate Student Appeals Board

Each academic year a standing committee, consisting of three members of the graduate faculty and two graduate students, is appointed by the dean of Graduate School to handle grievance complaints including grade appeals. Any graduate who believes that he or she has been unjustly treated within the academic process may proceed as far as necessary in the following steps to resolve his or her grievance. In general, there are three levels at which a grievance can be addressed: a course instructor or advisor, a department head, or the dean of the Graduate School. If the initial grievance is with an instructor or advisor, the process begins at Step 1. If the initial grievance is with a departmental committee, the process begins at Step 3. In all instances, the process must begin at the lowest possible level.

1. Under normal circumstances, the student should discuss the issue with the instructor/advisor.
2. If the student is unable to resolve the issue through consultation with the faculty member, the student must submit a written memorandum detailing the grievance to the course instructor or advisor within 10 calendar days of the beginning of the following full (i.e., fall or spring) semester. The person to whom the memorandum is addressed must respond in writing within 10 calendar days to the student.
3. If the student is not satisfied with the response from Steps 1-2, he or she must submit a written appeal to the department head within ten working days of the initial decision. If the student is initiating the appeal at the departmental level, he or she must do so, in writing, within 10 calendar days of the beginning of the following fall (i.e., fall or spring) semester. The department head must respond in writing within ten working days to the student, the instructor or advisor (if one is involved), and the dean of Graduate School.
4. If the student is not satisfied with the response from Steps 1-3, they must submit a written grade appeal letter to the academic dean’s office of the college where the course is taught. If it is a grievance against a faculty member, then the academic dean’s office where the course is taught would be that of the faculty member’s college. The student has 10 calendar days after receiving the decision of the department head. The associate dean of the given college has 10 days to collect the necessary documents to make a decision on the student’s appeal or grievance. Please note that additional days may be required to collect information from the faculty and/or student involved in the case. The academic
Academic Probation and Suspension

Academic Standing is based on both the student’s semester GPA and cumulative GPA.

Graduate Academic Probation I: A graduate student is placed on Graduate Academic Probation I when a graduate student’s semester GPA is above 3.000 and the cumulative GPA drops below 3.000; or when the semester and cumulative GPA’s drop below 3.000 and the previous academic standing is Graduate Regular Good Standing.

Graduate Academic Probation II: Is issued when a graduate student’s semester GPA is above 3.000 and the cumulative GPA drops below 3.000 and the previous academic standing is Graduate Regular Good Standing.

Graduate Academic Re-admit on Probation I: The student must maintain a semester GPA of 3.000 or higher until the cumulative GPA reaches a 3.0 or higher at which time the graduate student is placed on Good Academic Standing. If the graduate student is unable to maintain a semester GPA of 3.000 or higher and the cumulative remains below 3,000 GPA while under Graduate Academic Probation II, the student will then be placed on Graduate Academic Suspension.

Graduate Academic Suspension: When a graduate student does not achieve a semester GPA of 3.000 or higher, and the graduate cumulative GPA remains below 3.000 while under Graduate Academic Probation II or Graduate Re-admit on Probation II, the graduate student is placed on Graduate Academic Suspension. Graduate students under Graduate Academic Suspension are barred from enrolling in graduate level courses at NMSU while under Graduate Academic Suspension. Graduate students on Graduate Academic Suspension must sit out a minimum of one semester. Graduate students on suspension who wish to continue Graduate School after suspension must re-apply to the Graduate School and petition the Graduate Dean or College Academic Dean to be removed from Graduate Academic Suspension. At this time the graduate academic suspension status will be evaluated for possible removal. Should the suspension be lifted, the graduate student is placed on Graduate Academic Re-admit II or Graduate Re-admit on Probation II until such time that the graduate cumulative GPA equals or exceeds 3.000.

If you have questions about your academic standing, please contact the advising center or Graduate Dean’s office.

Disciplinary Probation and Suspension

Graduate students are subject to the rules and regulations with respect to disciplinary probation and suspension as listed in the “Student Code of Conduct” section of the Student Handbook and in the “Regulations” section of the Undergraduate Catalog. Graduate students who engage in academic misconduct at any of the other campuses of New Mexico State University, including Alamogordo, Carlsbad, Dona Ana and Grants, are also subject to the Student Code of Conduct of NMSU.

Attendance and Student Behavior

The instructor may report any absences to the graduate dean when the number of absences from class (including audited courses) is impairing the work of a student in a course. The graduate dean may drop a student from a class for persistent absence when such action is recommended by the instructor. Similarly, a student may also be dropped from a class for engaging in behavior that interferes with the educational environment of the class.

Students making satisfactory progress in their classes will be excused from classes when they are representing New Mexico State University on a university-sponsored event (e.g., AS/NMSU president representing NMSU at legislative session, student-athletes competing in NMSU-scheduled athletic events, or students attending educational field trips and conferences).

Authorized absences do not relieve the students of their class responsibilities. Prior written notice of the authorized absence will be provided to the instructor by the sponsoring department.

Students not enrolled may visit classes only with the permission of the instructor. Only students who have officially withdrawn from a course may continue to attend the course with the permission of the instructor for the remainder of the semester.

Academic Conduct of Graduate Students

Graduate students at New Mexico State University are expected to observe and maintain the highest academic, ethical, and professional standards of conduct.

Students should consult Section III of the “Student Code of Conduct” in the Student Handbook for more specific information regarding the rules of conduct and definitions of misconduct. In the event these standards of conduct appear to have been breached by violations such as plagiarism (consult the Library’s Web page at http://lib.nmsu.edu/plagiarism), cheating, nondisclosure or misrepresentation of academic credentials, fabrication of data, or other forms of academic misconduct, the procedures set forth below shall be employed to resolve the issues. As mentioned before, graduate students who engage in academic misconduct at any of the other campuses of New Mexico State University, including Alamogordo, Carlsbad, Dona Ana and Grants, are also subject to the Student Code of Conduct of NMSU.

Procedures to Deal with Cases of Alleged Academic Misconduct in Graduate School

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and awards received, and the most recent, previous educational agency or institution attended by the student.

Other information regarding disclosure of student data is posted at the Office of the Registrar in compliance with the act. Requests for withholding directory information must be filed with the Office of the Registrar.

PURGING OF STUDENT FILES

All files of students who have attended NMSU Graduate School are kept for five years following final enrollment and then destroyed. Only archival documentation is retained. The files of students who do not enroll are destroyed after one year.

TRANSCRIPT OF CREDITS

An official transcript is the University’s certified statement of a student’s complete NMSU academic record. It includes coursework, grades, and degrees earned. Credit hours earned through transfer work are not listed in detail, but do appear as cumulative totals.

Transcripts are available as digitally-signed PDFs or printed copies. Transcripts can be ordered online at http://mytranscript.nmsu.edu. A fee is charged for each copy. No transcript will be released if the student is in debt to the university.

The student name appearing on the transcript will be the same as it appears on the student’s official NMSU records. Name changes are processed for current students only. Contact the Office of the Registrar, registrar@nmsu.edu, for additional information.

CHANGE OF ADDRESS

In order to assure accurate student records, students are responsible for keeping University Admissions and the Office of the Registrar informed of the following: Changes in residence and mailing addresses; current telephone numbers, and primary e-mail addresses. Failure to do so may result in transcripts, diplomas, or other important communications from the university not being received in a timely manner.

EVALUATING YOUR ACADEMIC EXPERIENCE

As part of its continuing effort to maintain quality academic programs and to provide strong support services, New Mexico State University routinely conducts surveys. Students may be required to participate in one or more of these activities. The resulting data will be published only in aggregate form.

REQUIREMENTS FOR ENROLLED STUDENTS

The following are general requirements applying to all graduate students. Requirements applicable to specific graduate degrees follow this section.

FULL-TIME GRADUATE STUDENT

A full-time graduate student is one enrolled for nine or more credits per semester, other than for tuition purposes and mailing addresses; current telephone numbers, and primary e-mail addresses. Failure to do so may result in transcripts, diplomas, or other important communications from the university not being received in a timely manner.

Graduate students should take into consideration any outside workload and commitments in planning their course load. Full-time graduate students without other commitments normally enroll for nine to 12 graded credits each regular semester; the maximum number of graded credits a graduate student may take in any regular semester is 15. During the summer session, the maximum number of graded credits a graduate student may take is 9. Graduate students may enroll for one additional credit that is not graded (i.e., Audit) for summer, fall, and spring semesters.

COURSE DEFICIENCIES

Students who have been admitted with departmental deficiencies may be required to take diagnostic tests and additional qualifying examinations. They must complete satisfactorily, in a manner specified by the major department, all undergraduate course deficiencies as prescribed by the department responsible for the graduate program. Course deficiencies will be listed on the transcript; however, these deficiencies will not be calculated in the student’s graduate GPA or graduate hours.

With the permission of the student’s advisor and the head of the department, courses to meet undergraduate deficiencies may be taken under an S/U option (with S being a grade satisfactory to the professor). These courses will not affect the maximum number of S/U graduate credits permitted.

SPECIALIZATIONS/CONCENTRATIONS

A specialization is a collection of coursework in a specific area that is part of a degree program of study at NMSU. Only approved specializations/concentrations within a students’ department or program may be noted on a transcript.

Students must file a request for inclusion of an approved specializations/concentration at the time they file their program of study and must identify the specializations/concentration in their application for the degree. Specializations/concentrations will not be added to a transcript after the degree is awarded.

Departments must certify that a student has met the requirements for a specializations/concentration at the time the student successfully completes the final examination.

DECLARATION OF MINOR

Any doctoral applicant for candidacy may declare up to two approved minors in addition to the major area of study. All minors must be approved by the minor department head and the dean of the Graduate School and normally consist of nine credits. Demonstration of competency in the minor area will be required at both comprehensive and final examinations.

COMPLETING A THESIS OR DISSERTATION

The student must ensure that each member of the examining committee receives a copy of the thesis no later than seven working days before the date of the final examination.

The form and style of the thesis or dissertation must comply with the regulations given in the Guidelines for Preparing a Thesis or Dissertation. These guidelines also contain detailed information on the thesis-approval process and binding. See http://gradschool.nmsu.edu/GradGuide. Candidates are encouraged to consult with the graduate reviewer on format, deadlines, and procedures before final typing.

The thesis must be submitted to the graduate reviewer on or before the deadlines posted in the current academic calendar printed inside the back cover of the current Graduate Catalog and at http://gradschool.nmsu.edu/deadlines/deadlines.htm. The thesis or dissertation is not complete until copies have been accepted for binding by the binding section staff in Branson Library.

OUTCOMES ASSESSMENT - Evaluating Your Academic Experience

New Mexico State University is committed to providing its students with a quality education and a supportive learning environment. Assessment is a process of rigorous review followed by implementation of changes to enhance and improve the quality of education students receive at NMSU. For assessment to be effective, students must be actively aware of, and engaged in, assessment activities. Faculty and staff at NMSU will communicate to students the value and implications of assessment. For their part, students will provide feedback on personal, professional and academic development. Students are expected to participate in all types of assessment when asked to do so. Types of assessment activities include class assignments, course projects, exams, exit interviews, standardized tests, surveys, focus groups, etc. Data gathered through these assessments will be published only in aggregate form. Efforts will be made to inform students of assessment results and the program improvements implemented as a result of assessment.

REGISTRATION FOR SUMMER GRADUATION

If the final examination is to be scheduled or the thesis is to be completed during the summer, the student must register for one credit hour during the summer session in which the oral examination will be held or the thesis will be completed.

In order to graduate during a summer session the student must also have filed the “Application for Degree (Diploma)” by the deadline posted in the current Schedule of Classes, or the academic calendar printed on the inside back cover of the current Graduate Catalog, and at http://gradschool.nmsu.edu/deadlines/deadlines.htm.

APPLICATION FOR DEGREE (DIPLOMA)

The student must file an “Application for Degree (Diploma)” by the deadline set forth in the Schedule of Classes. The student must submit the “Application for Degree (Diploma)” to the Office of the Registrar prior to the last day for reg-
The intent for the final semester or summer session in which the student will be completing degree requirements.

Students filing an "Application for Degree (Diploma)" after the deadline will be charged an additional $25 fee. No "Application for Degree (Diploma)" forms are processed after midterm. The Graduate School will not approve Applications for Degrees after the late fee deadline has been reached.

If a student does not complete requirements for the semester for which the "Application for Degree (Diploma)" has been made, then the student must reapply for the degree and pay all applicable fees for the semester in which the degree requirements will be completed.

ATTENDANCE AT COMMENCEMENT

To participate in commencement, eligible candidates must have applied for their degree by the deadline established by the Registrar’s Office (http://nmsu.edu/~registra/delegate.html) and met all final degree requirements set by their department, the Graduate School and University Admissions. In addition, doctoral degree students who wish to participate in commencement must have applied for their degree by the deadline established by the Registrar’s Office, submitted their dissertation title by the deadline set by the Graduate School and met all final degree requirements. The title of the dissertation will be published in the Commencement book provided that all requirements and deadlines were met by the student. Degree recipients from the previous summer session who wish to participate in commencement must attend the fall ceremony. Students who complete all degree requirements in the spring semester attend the spring ceremony.

Participation in commencement does not, in itself, mean that a student is considered an NMSU graduate. In order to receive a graduate degree, a student must fulfill all university requirements. The degree will reflect the graduation date when all requirements were met.

THE MASTER’S DEGREE

New Mexico State University offers both academic and professional master’s degrees.

If the student’s undergraduate program fails to provide a proper foundation for advanced work in the chosen field or department, the student may be required to take classes to correct these deficiencies, consequently resulting in a longer period of residence than would otherwise be required.

AMOUNT AND DISTRIBUTION OF WORK

A minimum of 30 semester credits is required for the master’s degree. Most master’s degrees require at least 15 credits in courses numbered 500 or above, including thesis credit for master’s programs involving a thesis. Master’s programs involving a thesis include no more than six and no fewer than four credits of thesis. (See the section on ‘Thesis’ for further guidelines.)

At least 15 credits for the master’s degree must be for work in courses in the department in which the student was admitted. Additional credits may be selected from other fields to fit into a logical, justifiable program. Courses used to remove deficiencies or satisfy prerequisites cannot be counted as part of the requirements for the master’s degree.

Students must take coursework from a variety of faculty. Students may not take more than half of the minimum credits required for a master’s degree (excluding thesis credits) with the same professor. Short courses of less than one summer session or one semester duration cannot constitute more than one-fourth of the total course requirements for a master’s degree.

PROGRAM OF STUDY

It is recommended that, during the first semester of enrollment, each graduate student beginning studies toward a degree prepare a complete tentative program of study in consultation with the student’s advisor. This tentative program should be kept in the student’s file within the department and is not to be considered an additional $25 fee. No “Application for Admission to Candidacy” forms are processed after midterm. The Graduate School will not approve Applications for Degrees after the late fee deadline has been reached.

If a student does not complete requirements for the semester for which the "Application for Degree (Diploma)" has been made, then the student must reapply for the degree and pay all applicable fees for the semester in which the degree requirements will be completed.

APPLICATION TO CANDIDACY

The admission of a student to the Graduate School does not imply admission to candidacy for an advanced degree. The major department in which the student intends to become a candidate for a master’s degree must be satisfied as to the student’s sound basic training and the ability to pursue studies at the graduate level. Departments may require a comprehensive qualifying examination before officially approving any candidate for the master’s degree.

An "Application for Admission to Candidacy," which formally lists curriculum requirements for the student’s program of studies, must be filled with University Admissions no later than after the completion of 12 credits of graduate work.

At the time of the "Application for Admission to Candidacy" is submitted, the student must have a cumulative graduate grade-point average of 3.0. The application may specify the Graduate Catalog in effect at the time of matriculation, provided that the catalog is not more than seven years old. Otherwise, the current Graduate Catalog will be used. The student’s program listed in the “Application for Admission to Candidacy” must (1) meet the requirements of the chosen catalog, including the regulations of the Graduate School and of the major department, (2) include undergraduate deficiencies and required courses specified on the student’s “Certificate of Admission,” (3) be certified by the student, the student’s advisor, heads of departments offering major and minor fields, and the cognizant deans, and (4) list each course number and abbreviated title with the hours and grades. If the program is not satisfactory in the judgment of the graduate dean, it may be returned to the department for revision. When the "Application for Admission to Candidacy" has been approved by the graduate dean, the student will be formally admitted to candidacy for the master’s degree.

THESIS OR NON-THESIS OPTION

A thesis in the major field is recommended and may be required, at the discretion of the department concerned.

Not more than six nor fewer than four thesis credits may be counted toward the requirements for a master’s degree.

Many departments have a non-thesis option. Please check with the department on the non-thesis option.

CONTINUOUS ENROLLMENT

Having once registered for thesis, a student must continue to register for a minimum of one credit in thesis or graduate course work each regular semester until the thesis is approved by the Graduate School and the copies have been accepted by the binding section in Branson Library. A student who fails to abide by this regulation will be considered withdrawn from the university and, in order to resume studies, must formally apply for readmission and satisfy the requirements in effect at the time of reapplication.

GRADUATE COMMITTEE

The master’s degree committee will consist of a minimum of three faculty members holding at least master’s degrees. The committee chair and one other member must be in the student’s department; however, the home department of one of these two committee members may be outside the student’s department (see Graduate Faculty Guidelines section “Appointments Outside of Home Department”). The third person on the committee must serve as the dean’s representative and cannot be a faculty member of the students’ home department.

The committee chair and the dean’s representative must be members of the graduate faculty (please refer to “Guidelines for Graduate Faculty Appointments”). If the student has an approved minor area of study then either the dean’s representative or a fourth committee member must come from the minor department.

If no minor is declared, the dean’s representative may come from a related area (recommended by the committee chair) or be appointed independently by the dean of the Graduate School.

All students completing a written exam are required to have a dean’s representative that reviews the process of administering the exam. The dean’s representative can sign off on all of the exams of students taking a written exam for the given semester. The dean’s representative must be outside the students’ home department.

The faculty committee of the student is responsible for identifying a dean’s representative and completing the examination forms. A list of graduate faculty is available at the web site of the Graduate School. Faculty can use the list to identify graduate faculty to serve as the dean’s representative.

Departments can nominate individuals with a master’s degree and/or doctoral degree and related experience for a temporary appointment to graduate faculty (please see Appointment to Graduate Faculty of Non-NMSU Employees in the Guidelines on Graduate Faculty Appointments in this Graduate Catalog). Nomination letters must identify specific roles of the individual and the year(s) of service (up to three years per request per individual). The nomination letter must...
receive the endorsement of the academic dean. If granted a temporary appointment to graduate faculty, the individual will be limited to the specific role(s) identified by the department. Departments can request that the individual be allowed to serve as a dean’s representative.

As indicated in the Guidelines for Graduate Faculty Appointments, any qualified member of the graduate faculty may join any graduate program within a department. Applicants will be approved by the graduate program to which they are applying, through a process to be determined by that program, before their application is forwarded to the dean of the Graduate School. Departments may structure committees that include more than the minimum number of members as long as the stated conditions of membership are satisfied. Additional voting and nonvoting members may be any person approved or appointed by the dean of the Graduate School.

FINAL EXAMINATION

Each candidate will be given a final examination conducted by the graduate committee in accordance to the schedule provided by the University Admissions. It is the student’s responsibility to be sure that the form to schedule this examination is submitted to the Graduate School at least ten working days prior to the proposed date for the examination.

At the time of the final examination, a graduate student must have an NMSU cumulative grade-point average of at least 3.0 and must be enrolled in the final semester; or, if the student is writing a thesis, he or she must have completed all course work for the master’s degree.

Students with the nonthesis option may be required to pay a special exam fee in lieu of registering for one credit hour of graduate course work. (See “Tuition, Fees, and Other Expenses.”)

The final examination format shall be determined by the department, with the approval of the graduate dean. If a department does not specify an examination format, the final examination shall consist of an oral defense of the student’s thesis (if one was written) as well as a general examination of the candidate’s field of study.

Any candidate who fails in the final examination may (1) upon recommendation of the advisor and approval of the graduate dean, be granted a second examination after a lapse of at least one semester, or (2) be excluded from further candidacy for the degree. Failure in the second examination disqualifies a candidate from obtaining the degree. Certification that the thesis has been accepted and that the final examination has been passed must be filed with University Admissions not later than one week before the degree is conferred.

TIME LIMIT

The graduate program leading to the master’s degree must be completed within seven years (or eight successive summers) including completion of the master’s thesis or final project. Any course work more than seven years old at the time of the final examination will not be included in the program.

MINORS

A candidate for a master’s degree may select up to two approved minors in addition to the major. A minimum of nine credits of graduate work is necessary for a minor at the master’s level. (See “Graduate Degree Programs, Specializations/Concentrations, and Approved Minors” for a list of approved minors.)

To record a minor on a student’s permanent record, the minor must be listed on the “Application for Admission to Candidacy,” and this form must be signed by the head of the department offering the minor program. At the oral examination, a committee member may move to remove the designation of a minor with the concurrence of the committee.

A minor will not be awarded after the degree has been posted to the transcript.

INTERDISCIPLINARY MASTER’S DEGREE

Interdisciplinary studies at New Mexico State University are intended for students specializing in programs that require the integration of more than one discipline to fully engage in the field of study. Interdisciplinary studies provide a mechanism to address emerging scholarship, innovation, and research and allows graduate students to engage in emerging technologies, optimizing their education outside the traditional disciplinary boundaries. Interdisciplinary study takes advantage of traditional academic training within specific departments yet allows students to customize their own career preparation.

In these programs, a coherent common core is expected and is intended to combine existing courses across disciplines to meet unique objectives. The Master of Science or Master of Arts degrees are awarded for interdisciplinary programs and are carried out under the direction of the student’s graduate committee. The interdisciplinary studies option should not be used in cases where the applicants’ objectives can be realized by admission to a specific department and inclusion of up to two minor areas in the program of study.

Admission

Students follow the regular admission procedures set forth by the Graduate School. In completing the application, the applicant indicates IMAS in the section requesting Department or Program and designates the area of interdisciplinary study in the section requesting “Field or area of advanced study.” A proposal for interdisciplinary studies (see 1 below) must be submitted with the application. A departmental referral form will be generated and sent to the primary department specified in the proposal (see 3 below). Once the student’s graduate committee is designated, the committee can require additional materials such as a statement of interest, letters of recommendation, GRE or GMAT scores, and a personal interview.

Thesis/Non-thesis option

As with any graduate student, the student in interdisciplinary studies can select to follow a thesis or non-thesis option. Students enrolled in the thesis option register for six thesis credits. Students not wishing to follow the thesis option will be required to complete a project report. The project must reflect the interdisciplinary nature of the program in which the student is engaged.

Comprehensive exam

Students in interdisciplinary studies take a comprehensive exam composed of questions designed by the student’s committee. Two individuals in the areas of study plus the dean’s representative outside of the department/program/interdisciplinary study option will be involved. A chair is also identified.

Degree awarded

Students receive a Master of Arts (MA) or Master of Science (MS) and a concentration in the interdisciplinary study area.

Other conditions that apply

1. The student must present a written description of the program concept consisting of (a) objective of the program of study including proposed areas of skill development, proposed courses in more than one graduate degree granting department of NMSU, and (b) a justification for not using an existing departmental degree program. In addition the student needs to designate the degree being sought (Master of Science or Master of Arts) and a name for the interdisciplinary area.

2. The student’s program of study must include a minimum of 30 graduate level credits and a maximum of 36 credits. The student may take six credits in departments that do not grant a graduate degree but the courses must be numbered 450 and above, and be pertinent to the program of study.

3. The majority of the departments involved in the student’s program will be the master’s degree and doctoral degree granting departments. The student is expected to take at least 15 credits in the primary area of study within one department. The department selected by the student will receive a copy of the student’s application for admission from the University.

4. The proposal for the interdisciplinary studies option will be required to complete a project report. The project must reflect the interdisciplinary nature of the program in which the student is engaged.

5. The student will be required to submit the Candidacy Form to University Admissions after 12 credits are satisfactorily completed.

6. The program will meet all requirements of a master’s degree, as listed in the Graduate Catalog, with the interpretation that “major field” includes courses from two or more departments and in the designated interdisciplinary study area.

7. The program of study will include completion of a research thesis or project. The work may be submitted in the form of a publishable manuscript, technical report, thesis or creative option.
8. The student may enroll on a part-time basis keeping in mind that coursework cannot be more than seven years old at the time of the final examination.
9. The student will be administered a final comprehensive exam that is consistent with the department selected for the primary area of study. For example, if a department requires a written exam, the student in the interdisciplinary masters will also be required to take a written exam.
10. The final oral comprehensive exam will consist of questions pertinent to the area of study and the defense of the research thesis or project. In both cases an integrated approach to the areas of study chosen should be followed.
11. All other rules for graduate study at NMSU must be followed.

SECOND MASTER’S DEGREE
A student who has earned one master’s degree at NMSU may be allowed to count a maximum of six semester credits earned on the first degree toward a second master’s degree, if those credits fit into a logical graduate program. The number of shared credits may be increased for dual and joint degree programs.

DUAL AND JOINT DEGREE PROGRAMS
A dual degree program is a program of study whereby courses of study are combined so that students can complete two degree programs in less time than it would take if the programs were independently pursued. Upon graduation, they receive two separate diplomas from each degree program of participating departments and/or institutions. To enroll in a dual, students must complete two separate applications, receive two independent offers of admissions, and meet program and course requirements of both programs of study.
A joint degree program is one where two or more departments interweave their courses and course requirements to create a single degree program. Students are admitted into one program, take courses in each participating department, college or university, but only received one degree and diploma. These degree programs allow departments and/or campuses to take advantage of faculty talents.
Both dual and joint degree programs must have prior approval by the Graduate School. Students must apply and be accepted into graduate programs of each department participating in a specific dual or joint degree program. The list of approved dual and joint degrees can be found in the section “Graduate Degree Programs.”

TEACHER LICENSURE
Students wishing to take graduate courses for licensure or renewal of licensure or for personal enrichment must be fully admitted to a department to do so. Undeclared students may not register for teacher licensure classes. Endorsement is available at both the elementary and secondary levels in bilingual education, TESOL (Teaching of English as a Second Language), reading, and special education. Endorsement is also available in early childhood education at the elementary level. Contact curric-instr@nmsu.edu for more information.

SPECIALIST IN EDUCATION DEGREE
The degree of specialist in education is provided for experienced members of the education profession who have completed the master’s degree (except the school psychology program, which requires the bachelor’s degree) and have maintained a 3.3 grade-point average during pursuit of this degree or its equivalent. Primary emphasis is placed on the development of competencies needed for a professional specialization in a given field. Programs are available in curriculum and instruction, and school psychology. Endorsement is also available in early childhood education at the elementary level. Contact curric-instr@nmsu.edu for more information.

THE DOCTORAL DEGREES

PREPARATION FOR DOCTORAL DEGREE PROGRAMS
Prospective candidates are expected to hold bachelor’s or master’s degrees from accredited institutions, based on curricula that include the prerequisites for graduate study in the department of their subject. To be considered for admission to a doctoral program, the applicant must have a grade-point average of at least 3.0. Prospective candidates are urged to consult the department in which they wish to study for information concerning specific requirements.

DOCTOR OF PHILOSOPHY (Ph.D.)
The degree of doctor of philosophy requires distinguished attainment in both scholarship and original research. The degree is granted chiefly in recognition of the candidate’s high attainments and ability in the special field, as shown by work on the required examinations covering both the general and the special fields, and by the preparation of a dissertation. A candidate for the Ph.D. degree is expected to maintain a higher level of work than the grade-point average of 3.0 that has been established for the candidate for the master’s degree.
DOCTOR OF EDUCATION (Ed.D.)

The degree of doctor of education attests proficiency in a program of graduate study in which the emphasis is upon preparation for competent performance in professional education. This program is intended primarily for students pursuing careers in which teaching, administration, or school services predominate, rather than those in which research predominates. The Ed.D. degree in curriculum and instruction is offered in the Department of Curriculum and Instruction; the degree in educational administration is offered in the Department of Educational Management and Development. The requirements for doctoral degrees in the two departments of the College of Education have the following distinguishing elements:

1. The qualifying examination consists of a written and an oral section, both of which are administered prior to admission to the program. Successful completion of the qualifying examination is tantamount to acceptance of the student for doctoral admission. Residency of at least two consecutive semesters cannot commence until the semester after the qualifying examination is successfully completed.

2. Comprehensive examinations are usually administered three times annually. The written examination tests the major and related areas of concentration. Students are also expected to pass a successful completion of the major and related area examinations, the student takes a comprehensive oral examination. Candidacy follows the successful completion of the orals. A student who fails any part of the comprehensive examination may present him- or herself for re-examination of the failed part of the exam before moving on to the next part.

3. The major area of study must be within the College of Education. A minimum of nine planned and integrated credits constitutes the related area and can be taken in any department of the university with the approval of the student’s committee. The related area must be specifically planned with the major and minor departments in order for the doctoral fields to be mutually supportive. Any transfer credit or predoctoral course work to be included in the related field must have the approval of both the major and minor department at the outset. Specified course work in both research and statistics is required for this degree. Other requirements are described in the departmental sections of this catalog.

DOCTOR OF ECONOMIC DEVELOPMENT

Students enrolled in the Doctor of Economic Development are required to complete and pass their comprehensive examination. Since a dissertation is not required, they are expected to complete an internship experience and a Project paper as defined by their program. They can embark on the Project paper once they have completed and passed their comprehensive exam. Since a dissertation is not required, they are expected to complete an internship experience and a Project paper as defined by their program. They can embark on the Project paper once they have completed and passed their comprehensive examination. They are not required to take 700 level dissertation hours. However, they are expected to complete at least 12 credits at the 600 level including ECDV 694 Internship and ECDV 699 Doctoral Project.

A Project paper must be finalized using a similar submission process as the dissertation (see section Finalizing the Doctoral Dissertation of the Graduate Catalog). On the front page, after the title of the paper, the student should indicate that it is a Project paper. Students completing Projects papers do not need to complete the Earned Doctoral Survey. The Project paper must be submitted to the Graduate School for format review on or before the deadline. The form and style of the paper must comply with the regulations given in the Guidelines for Preparing a Thesis or Dissertation. These guidelines also contain detailed information on the dissertation/project paper-approval process as well as information on binding. Candidates are encouraged to consult with the Graduate School on format, deadlines, and procedures before final typing. The project paper is not complete until copies have been accepted for binding by the staff of Branson Library and until the microfilm agreement form has been completed and received in Branson Library.

INTERDISCIPLINARY DOCTORATE

Students wishing to study in the interdisciplinary doctoral degree program must apply and be accepted into a doctorate-granting department. The following requirements for admission to the interdisciplinary doctorate degree program have been established:

1. A master’s degree or equivalent program of study that includes at least 30 credit hours of graduate course work with a minimum cumulative grade point average of 3.0.

2. Twelve credit hours of graduate course work must be completed at New Mexico State University in order to apply for admission into the interdisciplinary doctorate degree program. Additional course work is required for degree completion.

3. Evidence of outstanding academic achievement in graduate school.

4. A written description of the program concept prepared by the student consisting of (a) areas in which competency is required; (b) proposed readings and course work and how these relate to required competencies; (c) objectives and an outline for thesis research; (d) justification for not using an existing departmental degree program.

5. The student must select an advisor from his or her department to chair the committee and, in consultation with the advisor, structure a committee consisting of at least five faculty members from the graduate faculty list who are willing to work on the interdisciplinary degree program. The committee must include at least two members from each of two doctorate-granting departments. The committee chair will convene a meeting to review and approve the proposed program.

6. University Admissions will send an “Admission Referral” document, signed by all committee members, to the heads of all departments from which the student proposes to use more than eight credits of course work, or from which faculty are requested to serve on the proposed committee.

7. Once the “Admission Referral” document has been approved by all departments, the committee chair will convene a meeting of the committee to review the student’s program and make changes as necessary. In addition, the committee will set the format and date for the qualifying exam. An effort should be made to incorporate the interdisciplinary nature of the program into the qualifying exam.

8. When the student has passed the qualifying exam and the “Admission Referral” memorandum has been approved by the respective department heads, the requirements for admission to the program are satisfied. Formal acceptance into a doctoral program may be required in order to receive financial assistance.

9. The number of courses required for degree completion will vary depending on the student’s program of study. Interdisciplinary doctorate degree students must meet the requirements for residency, registration, the comprehensive examination, the Final Examination, the dissertation, and the declaration of approved minor. Please see the “Doctoral Degrees” section of this catalog to review the full requirements for doctoral degrees.

10. The dissertation work shall include at least 18 credits of a 700-level course.
REQUIREMENTS FOR THE DOCTORAL DEGREES

Qualifying Examination

Doctoral students must pass a qualifying examination. This examination is scheduled by the student’s advisor and is administered by the major department. Its purpose is to determine the areas in which the student shows strength or weakness, as well as the ability to assimilate subject matter presented at the graduate level.

Scheduling the qualifying examination is based on the following criteria: (a) for students who enter the Graduate School with little or no previous graduate experience but wish to proceed directly to the doctorate, the qualifying examination should be taken after 12 credits of graduate work; (b) for students who enter with a master’s degree or equivalent from another university, or another department, the qualifying examination should be taken before the completion of one semester of graduate work.

The department may allow the student’s final examination to serve as the doctoral qualifying examination or may require a separate examination for students who earn their master’s degree at New Mexico State University, and will continue in the same department.

Based on the result of the qualifying examination, the department will take one or more of the following actions: (a) admit the student to further work toward the doctorate; (b) recommend that the program be limited to the master’s degree; (c) recommend a re-evaluation of the student’s progress after the lapse of one semester; or (d) recommend a discontinuation of graduate work. In all cases, University Admissions shall be notified of the results of the qualifying examination.

Upon passing the qualifying examination, the student will be admitted to the doctoral program. The student’s advisor and department head will then appoint the doctoral committee to prepare the student’s preliminary program of study for the doctoral program. This program shall be filed with University Admissions.

Graduate Committee—Doctoral

The doctoral committee will be composed of at least four members of the graduate faculty holding doctoral degrees. The following rules apply to the composition of the committee:

• In addition to the committee chair, at least one other member must be from a discipline within the student’s major area, which may encompass more than one degree-granting department.
• One member of the committee may be from a related area of study other than the student’s declared minor.
• If an approved minor is declared, at least one but not more than two members of the committee must be from the minor area.
• At least three committee members must be members of the graduate faculty in degree-granting departments. Of these three members:
  • The committee chair must be a member of the graduate faculty in the student’s department (See the section “Appointments Outside of Home Department” in the “Guidelines on Graduate Faculty Appointments”).
  • The home department of no more than one of the other two committee members from doctorate-granting departments may be outside the student’s department.

As indicated in the “Guidelines for Graduate Faculty Appointments,” any qualified member of the graduate faculty may join any graduate program within the department. Applicants will be approved by the graduate program to which they are applying, through a process to be determined by that program, before their application is forwarded to the dean of the Graduate School.

One member of the committee must serve as the dean’s representative. The dean’s representative can be either the member from the related area or minor area or an independent member appointed by the dean of the Graduate School but must not be from the student’s department. In programs where more than one department is a participant, the dean’s representative may not be from any of those departments.

Departments may structure committees that include more than the minimum number of members as long as the stated conditions of membership are satisfied. Additional voting and nonvoting members may be any person approved or appointed by the dean of the Graduate School. All members of the committee will attend the comprehensive oral and the final defense for the dissertation. No change in membership of the doctoral committee may be made without prior approval from the dean of the Graduate School.

Program of Study

A student who has completed 12 credits of graduate work beyond the master’s degree, or its equivalent, in residence at New Mexico State University, and has successfully completed the qualifying examination, should file the “Program of Study and Committee for Doctoral Students” form (also called “Program of Study”) for the doctorate before registering for additional courses. This form may be obtained from University Admissions, department offices, or from the website of University Admissions: http://prospective.nmsu.edu/graduate/forms/index.html. The “Program of Study” should be completed in consultation with the advisor and other members of the doctoral committee. This form should include the course number and abbreviated title with the credit hours. For courses already completed, grades must be shown for both major and minor areas. The program recommended by the student’s committee is subject to approval by the head of the major department, the head of the minor department (if applicable), the college dean, and the dean of the Graduate School.

The program of study should be designed to meet the campus residency requirement described in “Residency” and should include a minimum of 30 graduate credits (from NMSU or other approved graduate programs) plus 18 credits of dissertation work (700-level course).

Comprehensive Examination

Before admission to candidacy for a doctoral degree, the student must pass a comprehensive examination intended to test knowledge of the major and any approved minor fields of study. The student will be admitted to the examination after satisfaction of the language requirements (where applicable), after completion of adequate course work to the satisfaction of the major department and the Graduate School, and when considered by the committee to be adequately prepared.

University Admissions shall receive the “Program of Study and Committee for Doctoral Students” and standardized test scores (if required by the department) after the student passes the qualifying examination and before the comprehensive examination. The oral examination form must be on file at University Admissions at least ten working days prior to the proposed date for the examination. The examination must be part written and part oral. The results of the oral examination will be reported to University Admissions.

Any applicant for candidacy who fails the comprehensive examination may, upon recommendation of the committee and approval of the graduate dean, (1) be granted a second examination after a lapse of at least one semester or (2) be terminated from the doctoral program. The student must be duly registered for three credits of graduate course work in the Graduate School during the semester in which the comprehensive examination is taken. A student taking an oral examination during the summer must enroll for at least one credit for that term.

In general, there should be a time lapse of at least one year between the comprehensive and final oral examination. However, due to the type of research required in some departments and the method of administering the written comprehensive in other departments, such a time lapse is not always practical. In all cases there must be one semester between the comprehensive and the final oral examinations.

Time Limit

If more than five years have elapsed since the date of the comprehensive examination, the candidate will be required to take another comprehensive examination before admission to the final examination.

Advancement to Candidacy

A student will be formally advanced to candidacy upon the successful completion of the comprehensive examination, the recommendation of the committee, and the approval of the graduate dean.

A minimum of nine credits must be taken after successful completion of the comprehensive exam. A student may not register for dissertation credits (700) prior to successful completion of the qualifying exam. The dissertation preparation shall total at least 18 credits of courses numbered 700. The doctoral committee can impose additional requirements for courses numbered 700.

A student is admitted to the doctoral program after successful completion of the qualifying examination. After successful completion of the comprehensive examination, a student must continue to register for at least three credits of dissertation or graduate course work each regular semester until the dissertation is approved by the Graduate School and the copies have been accepted by the binding section in Branson Library. A student who fails to abide by this regulation will be considered withdrawn from the university, and, in order to resume stud-
ies, must formally apply for readmission and satisfy the requirements in effect at time of reaplication.

Final Examination
Every student working toward the doctoral degree will submit a dissertation embodying the results of original research. The dissertation is expected to demonstrate the student’s ability in independent investigation and to be a contribution to human knowledge. The dissertation shall display a mastery of the literature of the subject field and present an organized, coherent development of ideas with a clear exposition of results, and provide a critical discussion of the limits and validity of the student's conclusions.

When a complete draft of the dissertation has been prepared, the student’s doctoral committee (appointed after the qualifying examination) will conduct the final examination. The final examination is concerned primarily with the research work of the student as embodied in the dissertation, but it may be much broader and extend over the candidate’s entire field of study. The intention of the final examination is to verify that the candidate has a satisfactory grasp of the major subject as a whole and has a general acquaintance with the fields of knowledge represented by the course of study. The final examination is entirely oral and is open to the public.

The final examination must be completed in accordance with the schedule provided in the academic calendar. The form requesting this examination is to be submitted by the department to University Admissions ten working days before the examination is taken. This form may be found on the Web at http://gradschool.nmsu.edu/forms-index.html and is also available from the Graduate School and departmental offices.

Any candidate who fails the final oral examination may (a) upon recommendation of the committee and approval of the graduate dean be granted a second examination after a lapse of at least one semester; or (b) be terminated from the doctoral program. Failure in the second examination disqualifies the candidate from obtaining the degree.

Registration during Regular Semesters and Summer Session
After successful completion of the comprehensive examination, a student must continue to register for at least three credits of dissertation or graduate course work each spring and fall semester until the dissertation is approved by the Graduate School and the copies have been accepted by the binding section in Branson Library. A student who fails to abide by this regulation will be considered withdrawn from the university and, in order to resume studies, must formally apply for readmission and satisfy the requirements in effect at time of reaplication.

During spring and fall semesters the doctoral candidate must register for three units of dissertation or other graduate course work. The candidate must have also applied for the degree by filing the “Application for Degree (Diploma)” by the deadline specified in the academic calendar.

If the final examination is to be held during the summer or the dissertation is to be completed during the summer, the student must register for one credit hour during the summer session in which the final examination will be held or the dissertation will be completed.

In order to graduate in the summer the student must have filed the “Application for Degree (Diploma)” by the posted deadline for the semester in which degree requirements will be completed.

Finalizing the Doctoral Dissertation
After successful completion of the final examination a copy of the dissertation must be submitted to the Graduate School for format review on or before the deadline. The deadlines are posted to the Graduate School website at http://gradschool.nmsu.edu/deadlines/deadlines.htm.

The form and style of the dissertation must comply with the regulations given in the Guidelines for Preparing a Thesis or Dissertation http://gradschool.nmsu.edu/Guidelines. These guidelines also contain detailed information on the dissertation-approval process and binding. Candidates are encouraged to consult with the Graduate School on format, deadlines, and procedures before final typing.

The dissertation is not complete until copies have been accepted for binding by the binding section staff and until the microfilm agreement form has been completed and received in Branson Library.

Residency
The requirements for the doctoral degree ordinarily cannot be met in less than three years following the bachelor’s degree.

The minimum campus residency requirement for the doctoral degree shall include enrollment in at least two semesters of classes taught by New Mexico State University faculty.

DECLARATION OF APPROVED MINOR
Any doctoral applicant for candidacy may declare up to two approved minors in addition to the major area of study. The list of approved minors can be found in the Graduate Catalog in the section called Graduate Degree Programs, Specializations/Concentrations, and Approved Minors. Demonstration of competency in the minor area will be required at both comprehensive and final examinations.

FOREIGN LANGUAGE REQUIREMENTS
The Graduate School has no foreign language requirement. However, some departments require foreign languages for research. These requirements must be met before comprehensive orals are scheduled. For specific requirements for each doctoral degree, refer to the departmental sections of this catalog.

RESEARCH FACILITIES
The university recognizes and supports the concept of off-campus study and research as a valuable experience for graduate students. These experiences may take the form of internships, intensive study of specialized techniques with personnel at other institutions, and conducting research at specialized research facilities. Arrangements for such off-campus activities should be made with the student’s committee and the graduate dean and should represent opportunities not normally available at this university. When the bulk of a student’s research is to be conducted off-campus, both on- and off-campus advisors should be appointed and periodic meetings with the student’s committee held to ensure timely progress. Such opportunities offer students considerable flexibility in their training and promote valuable contacts between the student, the university, industry, and research institutions. Students are encouraged to pursue these opportunities with their advisors and the graduate dean.

AGRICULTURAL EXPERIMENT STATION
The Agricultural Experiment Station is the research division of the College of Agricultural, Consumer and Environmental Sciences. Faculty, professional personnel, and graduate students conduct basic and applied research concerned with biological, physical, and economic phases of food and fiber production, processing, and distribution; consumer health and nutrition; and the social and economic aspects of rural living. Energy, environmental, and natural resource conservation aspects of these broad disciplines offer many opportunities for the graduate student to undertake meaningful research investigations in both the laboratory and the field.

There are eight departments on the main campus with excellent laboratory facilities for research. In addition, the station maintains 13 field research centers including eight agricultural science centers, a forestry research center, a livestock research center, an animal insect lab, and two research ranches.

The station provides financial support to graduate research assistants and cooperates with research institutes at the university and with various state and federal agencies in providing opportunities for graduate research programs covering a wide scope of student interests. For further information, contact aes-dean@nmsu.edu or visit http://aces.nmsu.edu/aes/.

ARTS AND SCIENCES RESEARCH CENTER
The research center is the coordinating office for all scholarly activities within the College of Arts and Sciences. The primary functions are service to departments and faculty members, and the administration of grants and contracts. The center encourages and stimulates individual research and creative efforts in all areas of the college, and it facilitates the development of potential research programs within the college, and with other colleges, institutes, the Physical Science Laboratory, and external organizations. The center assists individual faculty members by providing small grants of “seed” money. Typically, support services fall within, but are not limited to, the following areas:
include radiochemistry and associated nuclear spectroscopy, environmental state, and private sponsors. CEMRC is housed at Light Hall, a 26,000-square-foot services, technology development, and disseminates information for federal, marketing, and regional planning can be applied to problems relating to economic managerial sciences, business systems, economic and social sciences, mar-

The Department of Biology houses multiple core facilities and individually faculty-maintained research laboratories that have been successful in the acquisition of millions of dollars in research grants from the NIH and NSF, as well as other agencies. The core facilities and equipment include a 454 pyrosequencing facility, real time quantitative PCR, a cell culture facility, an isotopic signature analysis laboratory, insect and invertebrate rearing and microscopy culturing facilities, diverse microscopy laboratories, as well as a well-maintained herbarium and vertebrate museum holding more than 100,000 specimens from our region and beyond. Individual research laboratories are equipped to investigate organismal genomics, transcriptomics, and microbiome analysis; nutrient cycles in plant and soil samples; isotopic signatures from environmental samples; organismal and microbial evolutionary mechanisms and physiology; vaccine development; host-symbiont interactions; cell mitosis and cytokinesis; plant pathology; neuronal and muscular tissues; animal vocalization and behavior; computational modeling of biological phenomena; and molecular systematics.

The Department of Chemistry and Biochemistry has a comprehensive equipment base that supports research in nearly all phases of chemistry. It also has instrumentation dedicated to the department’s teaching mission. Major instruments supporting both missions include five nuclear magnetic resonance (NMR) spectrometers ranging from low field (200 MHz) to high field (500MHz), two atomic absorption spectrometers, several UV-Vis spectrometers, two mass spectrometers (LS/MS) and four gas chromatograph instruments. Details about all instruments located in the department’s facilities can be accessed at http://www.chemistry.nmsu.edu/instrumentation/NMSU_MainInstrument.html. Instrumentation Facilities Manager: Jaime Rodriguez (jarofig@nmsu.edu)

The Bureau of Business Research and Services is a member of the Asso-
ciation of Universities, as well as educational programs in the liberal arts and natural sciences. NMSU’s uniqueness arises from its vision of teaching/learning, research, and extension/outreach functions—interdependent, mutually supportive, and central to its land-grant mission.

August 2013-2014

Contact: Dr. Kevin Boberg (kboberg@cs.nmsu.edu) http://www.nmsu.edu/~artsci/Research/center.html

APACHE POINT OBSERVATORY (APO-ARC)

Apache Point Observatory (APO) is located in the mountains of south-central New Mexico and is operated by New Mexico State University. The observatory is a major astronomical research facility that is home to four telescopes. The largest is a fully equipped 3.5-meter telescope that can be used for optical and infrared imaging, photometry, and spectroscopy. Apache Point Observatory is also the site of the Sloan Digital Sky Survey 2.5-meter telescope, which is running several different wide-field surveys touching on many facets of astronomy. NMSU owns and operates a 1-meter telescope at APO for wide field imaging. There is also a 0.5-meter telescope at the site.

Apache Point Observatory is owned by the Astrophysical Research Consortium (ARC). The consortium members include: New Mexico State University, Princeton University, the University of Colorado, the University of Chicago, the University of Virginia, the University of Washington, the Institute for Advanced Study, and Johns Hopkins University. NMSU manages and operated the observatory for the ARC consortium. Astronomy faculty and graduate students use the facility for various research projects. For further information, e-mail astro@nmsu.edu.

BUREAU OF BUSINESS RESEARCH AND SERVICES

Founded in 1969, the bureau has two basic objectives. The first is to provide business and economic research services to both public and private sectors of the state, the region and the nation. Research capabilities in the behavioral and managerial sciences, business systems, economic and social sciences, marketing, and regional planning can be applied to problems relating to economic growth, business development, and community needs in New Mexico. The second objective of the bureau is to provide management training services to business organizations and associations, to government agencies, and to the public as well. Management development seminars, training programs, and analytical services are designed to meet specific organizational needs.

The Bureau of Business Research and Services is a member of the Association for University Business and Economic Research. Contact: Dr. Kevin Boberg (kboberg@cs.nmsu.edu)

CARLSBAD ENVIRONMENTAL MONITORING & RESEARCH CENTER

Created in 1991 with a grant from the U.S. Department of Energy, the Carlsbad Environmental Monitoring & Research Center (CEMRC), a department of the College of Engineering, environmental research, provides special analytical services, technology development, and disseminates information for federal, state, and private sponsors. CEMRC is housed at Light Hall, a 26,000-square-foot facility located in Carlsbad, in southeast New Mexico. The facility’s laboratories include radiochemistry and associated nuclear spectroscopy, environmental organic and inorganic chemistry, in vivo bioassay, and field sampling. A primary activity of CEMRC is long-term environmental monitoring for contaminants in the region of the Waste Isolation Pilot Plant (WIPP), located near Carlsbad. The data produced from this project are summarized in periodic reports and are presented on the CEMRC web site at www.cemrc.org. Primary research areas of the CEMRC include studies of atmospheric dust and inorganic contaminants, human and ecological risk assessment, and development of radioanalytical and spectroscopic methods for measurement of naturally occurring and human-produced radioactive elements. Results of CEMRC research projects appear in peer-reviewed scientific journals and are presented at national and international meetings.

Contact: Dr. James Conca at (575) 234-5555

CENTER FOR LATIN AMERICAN AND BORDER STUDIES

The Center for Latin American and Border Studies (CLABS) was established in 1979 by the College of Arts and Sciences and is located at the Nason House. CLABS supports Frontera NorteSur, an on-line journal about the U.S.-Mexico border. In addition, CLABS supports the collection at the NMSU library, travel for faculty to conferences, language training in Spanish and Portuguese, lectures by visiting speakers, curriculum development for teachers, the student Latin American organization, and other outreach activities. It is a faculty-governance organization and helps administer the Nason foundation fund. In recent years the center has pursued an active program of research on U.S.-Mexico border policy issues, in cooperation with several universities in Mexico. Contact: Inigo Garcia-Bryce (igarcia@nmsu.edu)
EDUCATIONAL RESEARCH CENTER (EDRC)

The Educational Research Center (EDRC) in the College of Education is the administrative office which supports faculty in obtaining and managing external funding. The academic which supports faculty in obtaining and managing external funding. The academic component of the ERC, under the direction of the Associate Dean for Research, Dr. Karin Wilburg, facilitates faculty involvement in research, publishing and outreach initiatives with the goal of building a strong research agenda for the college. For more information contact kwilburg@nmsu.edu. The business component of the ERC is the Education Research and Budgeting Office (ERB) which assists in proposal submission, account setup and monitoring and provides oversight for the College’s unrestricted, restricted and legislative funds.

EB Director: Juanita Hanman (juamendo@nmsu.edu)

ELECTRON MICROSCOPE CORE LABORATORY

The Electron Microscopy Laboratory (EML) is a campus-wide, core facility providing all levels of technical support and consultation for investigators needing analytical and routine transmission, scanning electron microscopy, and light microscopy services. The integrated imaging facility is administered through the Office of the Vice President for Research and is considered a core research facility. The facility was established to furnish state-of-the-art microscopy instrumentation and techniques to investigators and their students for research and training. The laboratory is located in Skene Hall, RM W152, and W160.

Director: Dr. Peter Cook

ENGINEERING RESEARCH CENTER

Research studies in engineering were started at New Mexico State University as early as 1930. The development since World War II has been relatively rapid and, since 1957, with the appointment of a full-time staff, the Engineering Research Center (ERC) has been well established to serve faculty and students in the College of Engineering as part of the organized research program of the university.

The financial support for ERC research activities comes from local, state, and federal agencies; state appropriations and industry. In 2012, the ERC administered research expenditures of $14.5 million for the year. ERC strives to encourage, foster, and promote research, and assist individual research projects in the college. ERC also administers research funds, integrates multidisciplinary research projects, and facilitates interactions with other university administrative units as well as nonuniversity organizations including local, state, and federal agencies.

GEOCHEMISTRY RESEARCH LABORATORY

The Department of Geological Sciences houses a number of analytical instruments, all of which are available for use by graduate students, undergraduates, and faculty. The department houses a fluorescence spectrometer for geochemical analysis of rocks and other solid materials, a thermal ionization mass spectrometer for analysis of isotopic ratios of solids and liquids, and a laser-induced breakdown spectrometer for the analysis of solid materials. Sample preparation equipment is available to support research on these instruments. In addition, mineral separation equipment including a jaw crusher, Gemini shaker table, Franz magnetic separator, and heavy liquids, is available for geochronologic or other mineralogic research projects.

Director: Dr. Nancy McMillan (nmcmilla@nmsu.edu)

INFORMATION AND COMMUNICATION TECHNOLOGIES

Information and Communication Technologies (ICT) supports all facets of NMSU’s information technology and provides state-of-the-art resources to students. Students have access to a wide variety of Internet resources, including the high-speed research network and computing facilities ranging from PCs to Unix to mainframes. There are 16 university computer labs with major labs in Jacobs Hall and the Computer Center building, some available every hour every day of the year. Labs are equipped with software for word processing, spreadsheets, databases, statistics, desktop publishing, and more. Laser printers furnish students with high-quality output. The campus network, NMSU Net, interconnects all labs with other computing resources across the campus and around the world, providing students with access to research resources, electronic mail, remote archives, electronic bulletin boards, news groups, and web resources. For further information, contact ICT, MSC 3AT, NMSU, PO Box 30001, Las Cruces, NM 88003-8001; phone (575) 646-1840, or send e-mail to help@nmsu.edu.

NMSU’s web home page is located at www.nmsu.edu.

INSTITUTE OF TECTONIC STUDIES (ITS)

The institute was established in July of 1998 in collaboration with the College of Arts and Sciences at New Mexico State University and the Department of Geological Sciences as an independent fiscal entity. The mission of the institute is to pursue the understanding of tectonic processes and the evolution of tectonic provinces. The immediate goal of the institute is to foster the growth of expertise in tectonic studies of all Department of Geological Sciences faculty, graduate students and undergraduate majors.

Director: Dr. Timothy Lawton (tlawton@nmsu.edu)

KNOWLEDGE REPRESENTATION, LOGIC AND ADVANCED PROGRAMMING LABORATORY (KLAB)

The KLAP lab was established in 1994 through an RMI grant from the National Science Foundation and has developed into a focal research laboratory of international reputation. It is housed in the Department of Computer Science. KLAP’s research focus is to advance state-of-the-art knowledge in Artificial Intelligence and High Performance Computing and its application in diverse interdisciplinary domains such as bioinformatics and assistive technologies.

The lab provides a full meeting space (with multimedia projection capabilities), access to high performance computer server and a 40-core Infiniband Beowulf cluster. The lab has hosted international researchers and has graduated approximately 100 graduate students with M.S. and Ph.D. degrees. It has attracted almost $10,000,000 in external funding.

Director: Enrico Pontelli (epontell@cs.nmsu.edu)

NEW MEXICO DEPARTMENT OF AGRICULTURE

The New Mexico Department of Agriculture (NMDA), under the control of the NMSU Board of Regents, is responsible for administering laws and regulations that daily affect the lives of every citizen of the state. These laws and regulations concerning the production, preparation, processing, sale, and use of agricultural products; weights and measures; and petroleum products are designed to assist producers, processors, and consumers. NMDAs marketing program provides guidance to commodity groups in the promotion of agricultural products. A broad consumer service in many areas other than agriculture is provided by the department. NMDAs director is New Mexico’s secretary of agriculture and serves on the governor’s cabinet as a liaison between state government and the agricultural industry. For further information, e-mail: pv@nmda.nmsu.edu.

NMDAs web site is at http://www.nmda.nmsu.edu.

NEW MEXICO WATER RESOURCES RESEARCH INSTITUTE

The New Mexico Water Resources Research Institute (WRRI) at NMSU, established in 1963, was one of the first of 54 water institutes in the United States. The WRRI program encompasses all state universities in New Mexico and public agencies sponsoring water research. The institute serves as a coordinator, assisting researchers in obtaining funds, working with granting agencies, and serving as the administrator for projects. The total budget of approximately $1 million is made available from federal, state, and/or private sources through a variety of grants and contracts. All research projects administered by the institute encourage graduate student participation. As a result, about 30 students a year receive scientific training through institute-sponsored projects. WRRI also sponsors the Annual New Mexico Water Conference, which has provided a public forum for state water issues since 1956. Public participation helps the institute focus its research program on areas of greatest need. The WRRI publishes research results of every project it administers and other miscellaneous reports. The WRRI also maintains a water resources library of more than 11,000 water-related documents on water issues facing New Mexico. E-mail may be sent to pwmwrri@nmsu.edu. The WRRIs home page address is http://wrri.nmsu.edu/.

NEW MEXICO STATE UNIVERSITY LIBRARY

The NMSU Library has research collections of over 1.8 million volumes and global access to research materials it does not own through its document delivery services.

The total library budget exceeds $6.3 million. Find more information at http://lib.nmsu.edu.
OAK RIDGE ASSOCIATED UNIVERSITIES PROGRAM (ORAU)

Since 1991, students and faculty of New Mexico State University benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 98 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education (ORISE), the DOE facility that ORAU operates, undergraduates, graduates, postgraduates, as well as faculty enjoy access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, which is available at http://www.orau.gov/orise/educ.htm, or by calling either of the contacts below.

ORAU’s Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU’s members, private industry, and major federal facilities. Activities include faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards; the Visiting Industrial Scholars Program, consortium research funding initiatives, faculty research and support programs as well as services to chief research officers.

For more information about ORAU and its programs, contact: Vimal Chaitanya

Contact: Dr. Dominic Simon (domsimon@nmsu.edu)

RESEARCH INITIATIVES IN THE COLLEGE OF EDUCATION

The College of Education has research initiatives and labs in the following areas:

Speech and Hearing Center’s Benfer Lab purchased equipment from the endowment for voice and speech science research (Dr. Kathleen Cronin, kacronin@nmsu.edu).

Autism Research Initiative provides educational and research opportunities on the Autism Spectrum Disorder (Dr. Kathleen Cronin, kacronin@nmsu.edu). Alliance for the Advancement of Teaching and Learning in collaboration with the Southwest Regional Educational Lab REL (Institute for Educational Services, IES) provides research for partner school district practitioners on accountability, special education/response to intervention, literacy, leadership development, math and science achievement, and program evaluation (Dr. Eric Lopez, Leric@nmsu.edu).

The Institute for Mathematics and Science Education oversees multiple mathematics and science grants as well as serving as the STEM Outreach Center for K-12 education (Dr. Susan Brown, susanbr@nmsu.edu).

The Counseling and School Psychology Training and Research Center provides counseling services for students, training for graduate students in counseling, school psychology and counseling psychology, and conducts research on counseling outcomes and processes (Dr. Mike Waldc, miwaldc@nmsu.edu).

The Southwest Institute for Early Childhood Studies in Poverty and Educational Equity is the research arm of multiple early childhood and family initiatives in the college (Dr. Candace Kaye, Kcayek@nmsu.edu). A new Reading Research Center was recently established in the NMSU Children’s Village and provides reading diagnostic services including analysis of reading using eye-tracking software.

Director: Dr. Komi Kim (komi@nmsu.edu)

SOUTHWEST INSTITUTE FOR HEALTH DISPARITIES RESEARCH

To address the substantial health disparities that exist in Southern New Mexico and the U.S./Mexican Border Region, New Mexico State University has recently established the Southwest Institute for Health Disparities Research within the College of Health and Social Services. The purpose of the Institute is to assist faculty to secure external funding and conduct research which has the potential to reduce health disparities and improve minority health, provide health-related community outreach programming, provide training for researchers, lay groundwork for additional funded research, and attract highly qualified minority faculty and graduate students to NMSU. Additionally, the Institute serves as the coordinating office for all scholarly activities within the College of Health and Social Services.

SPATIAL APPLICATIONS AND RESEARCH CENTER (SPARC)

The SPARC laboratory was established in 1982 as an applied contract research laboratory for the NMSU Geography Department. SPARC provides a variety of services including planning and research, GIS, image processing, modeling and training. The original purpose of the laboratory was to undertake externally funded projects under the direction of geography faculty and employ students within the department. Thirty-one years later, the laboratory continues to do project related work. It has employed more than 150 students, and provided assistance to more than 35 faculty members inside and outside Geography. The primary clients of the lab have been federal state and local government agencies, with an emphasis on applied transportation, water resource, and environmental research projects. The lab houses 11 high performance workstations, a range of mapping grade GPS units, and a large scanner/plotter. Software available for use includes database software, ERDAS and ENVI image processing software, TransCAD, and the entire suite of ESRI GIS software.

Director: Dr. Christopher Brown (brownchr@nmsu.edu; 575-648-1892)

POSTDOCTORAL FELLOWSHIPS

Those individuals who are exemplary scholars, who have recently been awarded a doctoral degree, but who wish to continue their education and research experience under the direction of a professor at New Mexico State University are classified as postdoctoral. The postdoctoral fellowship is a regular professional appointment normally for one or two years. Under no circumstances will an individual remain in this classification for more than three years. Postdoctoral fellowships are advertised and applications are submitted to the hiring department in compliance with the guidelines for hiring professional staff, but without the requirement for a position description questionnaire. An “E-Hire” staffing authorization request must be submitted to the office of Human
Resources by the hiring department. No offer of employment may be made until approval has been given by Human Resources.

- A postdoctoral fellow has the following privileges:
  - may take six credits in spring and fall semesters, four credits per summer session without tuition charge
  - is eligible to purchase an employee parking permit
  - is eligible for other employee benefits available to regular employees, including annual and sick leave, as well as health, dental, and life insurances
  - may purchase athletic tickets, activity tickets, and gymnasium privileges
  - is eligible for library privileges

Persons classified as postdoctoral fellows pay Social Security and New Mexico State Educational Retirement.

RESOURCES FOR STUDENTS

ACADEMIC

EDGAR R. GARRETT SPEECH AND HEARING CENTER
Combining instruction, practical experience, and service, the center provides training for students in communication disorders and provides service to the community. Students have opportunities to participate in diagnostic evaluations and to provide therapy in the areas of speech, language, and hearing for clients across the lifespan.

Referrals are accepted from all sources (self, medical, school, nonprofessional). The Edgar R. Garrett Speech and Hearing Center is a fee-for-service clinic where university students and their immediate family receive a reduced rate. All services are supervised by professional personnel licensed in New Mexico and holding the Certificate of Clinical Competence in Speech-Language Pathology or Audiology of the American Speech-Language-Hearing Association. Services are provided in English and/or Spanish. For further information, contact the Edgar R. Garrett Speech and Hearing Center, MSC 350-E, New Mexico State University, P. O. Box 3001, Las Cruces, New Mexico 88003-3001, (575) 646-3906; (TTY) (575) 646-6191.

OFFICE OF INTERNATIONAL AND BORDER PROGRAMS (IBP)
The Office of International and Border Programs oversees the comprehensive internationalization of the university. It is the primary unit responsible for the welfare of incoming international students and outgoing education abroad students. IBP also represents the university with U.S. government agencies, foreign governments, international education professional associations, and the private sector concerning international activities. The office also advocates for effective practices, policies, and procedures to internationalize the university. The major program areas of the office are:

- International Development and Cooperation Management - IBP facilitates the interests of faculty who wish to participate in international interdisciplinary projects requiring technical assistance, training or public outreach. This includes project identification, proposal development, project management, and development of international cooperative agreements with international entities or institutions.

US-Mexico Border Programs - IBP has major responsibility for coordinating the university’s involvement in US-Mexico cooperative projects including research, economic development and educational outreach.

Education Abroad Programs and Exchange Student Services – IBP’s Education Abroad Office oversees all study, research, internship, and service abroad programs, as well as coordinates faculty led study abroad programs through its Faculty Led International Programs (FLIP) office. This office also coordinates programs and services for visiting exchange students.

Community Outreach and Public Service - IBP adheres to the land-grant philosophy by providing programs and services to increase international understanding and awareness in the local and campus community, including southern New Mexico and the state of Chihuahua, Mexico.

International Student and Scholar Services (ISSS) – IBP’s ISSS Office is charged with ensuring that the needs of NMSU’s international students and scholars are met. This includes orientation, advising, and institutional compliance with U.S. Department of State and U.S. Department of Homeland Security regulations as they pertain to the F and J visa programs.

STUDY ABROAD PROGRAMS AND EXCHANGE VISITOR SERVICES
This division of International and Border Programs is the international education program development and coordination unit that assists colleges and departments to integrate study abroad into the undergraduate and graduate curriculum. It manages support services for outbound study abroad students and inbound international exchange students and scholars and coordinate all international partner exchange agreements, such as the International Student Exchange Program (ISEP). The division also sponsors the Study Abroad Ambassadors Club, the NMSU Rotaract Service Club and the Global Village Living and Learning Community.

Students on the main campus and at all the branch community colleges in the NMSU system may apply to study abroad while maintaining NMSU student status to receive regular course credit (graded A-F), international distance education language and teacher education credit (graded A-F), and/or transfer credit (graded CR). For exchanges with international partner institutions, students must have completed two full semesters of university study, maintained a 2.75 grade-point-average, and obtained permission of their college to receive transfer credit. For other programs, students must be in good standing academically at NMSU, and receive permission to enroll from the course instructor or program coordinator. International Business majors must receive permission from their department for study abroad to count as required in their degree plan. At least four weeks of a study abroad program may count for 3 credits of Viewing the Wider World (http://studyabroad.nmsu.edu).

The unit is also responsible for implementing the Exchange Visitor Program sponsored by NMSU under authority of the U.S. Department of State in support of the Mutual Educational and Cultural Exchange Act (M Fulbright-Hays Act of 1961). The objective of the Exchange Visitor (J visa) Program is "to increase mutual understanding between the people of the United States and the people of other countries by means of educational and cultural exchanges." J Visa immigration services and other support services are coordinated for incoming exchange students, professors, research scholars, short-term scholars, and specialists invited to NMSU (http://exchangeservices.nmsu.edu).

TESTING SERVICES
Testing Services (575) 528-7294 provides test information and registration materials for the following tests: American College Testing Assessment (ACT); College Level Examination Program (CLEP); General Education Development (GED); Graduate Management Admission Test (GMAT); Graduate Record Exam (GRE); Miller Analogies Test (MAT); PRAXIS Series; Pre-Professional Skills Test (PPST); and New Mexico Teacher Assessments, and others.

WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION
NMSU collaborates with the Western Interstate Commission for Higher Education (WICHE) in recommending graduates of the university for programs in dentistry, graduate library studies, occupational therapy, optometry, podiatry, public health, and veterinary medicine in universities of other western states. The State of New Mexico subsidizes the education of New Mexico residents when approved for training in these fields in other states. This subsidy is a loan-for-service program which permits New Mexico residents to attend state-supported institutions at in-state tuition rates and private institutions at approximately one-third the standard tuition cost if they practice in New Mexico for an equal number of years after graduation. This program is contingent upon funding by the state legislature. For further information write the Certifying Officer for New Mexico, WICHE’s Student Exchange Program, New Mexico Higher Education Department, 2046 Galisteo St., Santa Fe, NM 87505-2100.

INVESTMENT

CAMPUS ACTIVITIES
The Department of Campus Activities offers involvement outside the classroom, an essential complement to a student’s academics. Leadership and personal growth opportunities are offered to graduate students through student organizations, and various leadership workshops.

This office also coordinates activities and events through the Activity Registration process, administers the University Sales and Solicitation Policy, and serves as liaison to the Interfaith Council.

ON-CAMPUS SERVICES

CAMPUS DINING
Graduate students living in campus housing, as well as students who choose not to live on campus, may participate in the Meal Plan program. A variety of plans which combine dining hall entrances with flex money are available. Application procedures and additional information may be obtained from the ID Card Services Office by calling 575-646-4835 or via e-mail at idserv@nmsu.edu, or
Availability of Units for Students with Disabilities

There are a limited number of specially equipped rooms, apartments and family housing units available to students with disabilities (including students who use wheelchairs) who wish to reside in campus housing. These are assigned on a first-come, first-served basis. Specific needs or requirements (e.g., roll-in showers, special door openers, etc.) should be discussed with the Office of Student Access Services and in some areas, the Flex Points included with a meal plan package. Food service location hours are available at http://www.nmsu.edu/~dining, under "Food Guide." Additional information can be obtained by contacting the ID Card Office at 575-646-4835 or NMSU.edu/idsvs.

CORBETT CENTER STUDENT UNION

Corbett Center Student Union (CCSU) serves as the center for campus life, providing programs and services for students and other members of the university community. A place to study, relax, meet with student groups, work or play, CCSU offers students, faculty and staff a variety of services and activities. The home to several administrative offices, Campus Activities, AS/NSMU, the student radio station and student newspaper. Services offered by CCSU include meeting rooms, an auditorium, multiple dining facilities (both retail and residential), ATMs, and computer lab, study areas, post office and a convenience store. For more information call (575) 646-4538 or visit the Web site at http://ccsu.nmsu.edu.

HOUSING AND RESIDENTIAL LIFE

Living on campus is designed to offer many opportunities for campus involvement and social interaction with other students. Graduate Students have the option of living in any of our on-campus facilities, including Residence Halls, Apartments and Student Family Housing units. For more detailed information on the options listed below, visit our web site at www.nmsu.edu/~housing.

Vista del Monte Graduate Community

Our Graduate Community is part of the Vista del Monte Apartment Complex and is a place where graduate students live with and near other graduate students in a community of diverse individuals who share similar academic interests. Two bed-room apartment units include a private bedroom with shared bathroom, kitchen and living area. Apartments are fully furnished. The charge includes all utilities, high speed internet and cable T.V.

Residence Halls

Residence Halls in North Campus are available to students at the freshman through Graduate level. Many options are available, including community bath or suite style rooms with single, double or triple occupancy. All rooms are fully furnished. The charge includes all utilities, high speed internet and cable T.V.

Chamisa and Cervantes Village Apartment Complexes

In these locations, the amenities of apartment living are combined with the convenience of an on-campus location. Individual apartments are designed to accommodate sophomores and above, as well as graduate students. Available options include four bedroom, two bedroom and one bedroom suite apartments. Each apartment occupant has a private bedroom and shared bathroom, kitchen and living area. Apartments are fully furnished. The charge includes all utilities, high speed internet and cable T.V.

Student Family Housing

A variety of affordable and convenient on-campus housing options are available to students with families. To qualify for Student Family Housing, there must be a registered student in the household as part of a family unit. Family units include married couples, domestic partners and parents with dependent children. Consideration is also given to non-traditional family units. Two-story townhouse apartments and single-story houses include two bedrooms, a bath, kitchen, and living room. Four-bedroom apartments include four bedrooms, two bathrooms, a kitchen and living room. All units are unfurnished except for the stove and refrigerator. Washing machine hook-ups are provided in the single story houses and townhouses only. The monthly rent includes all utilities, local phone service, high speed internet and cable TV. Some pets are allowed in parts of student family housing.

Application Acceptance Policy

The University reserves the right to refuse to give a housing assignment to any student. Examples of reasons for refusal include, but are not limited to, individuals who have a criminal history; individuals who have behavioral problems, which may, in the opinion of the university, negatively impact the group-living environment; individuals who have been previously evicted from campus housing; or individuals who have poor rental histories. The university will assign accommodations subject to the space available. The university will not guarantee assignments to a particular building, nor will it guarantee types of accommodations, specific rooms or apartments, roommates or single rooms. The university reserves the right to change or cancel assignments in the interest of order, health, safety or discipline with appropriate written notice. Completed applicants for housing should be submitted as early as possible, preferably one regular semester in advance. Single student housing applications require a prepayment at the time of application. Submission of the housing application indicates acceptance of the terms and conditions of the applicable agreement. The director of housing and residential life is responsible for administration of the housing agreement.

All housing areas require at least part-time enrollment during the regular academic year. Continuing housing residents are not required to enroll during summer sessions.

Completed applications for student family housing should be submitted at least six to eight months in advance. Family housing is assigned from a waiting list based on the date of application. Family housing occupancy is month-to-month, with thirty (30) days notice required to vacation.

For More Information

Specific information on services offered, qualifications, and application procedures may be obtained from the Department of Housing and Residential Life, MSC 3BB, NMSU, P.O. Box 30001, Las Cruces, NM 88003-8001, by phone at (575) 646-2202, or via e-mail at housing@nmsu.edu.

ID CARD SERVICES

The NMSU Aggie Access card is the primary source of student identification for the campus. The I.D. card serves as a membership card for meals, Aggie Cash, as a key in some residential buildings, carries proof of eligibility for access to athletic events and allows for other student services. This information is added to your card after registration for classes and financial arrangements have been completed. Please visit http://www.nmsu.edu/~idcard for more information.

Aggie Cash is a pre-paid account that allows you to use your Aggie Access card to make purchases at locations all over campus. The NMSU Enhanced Aggie Access Card allows your student card to also be your Wells Fargo debit card. The ID Card Services Office in Corbett Center has the information and applications you will need.

INTERNATIONAL STUDENT SERVICES (ISS)

The International Student Services office administers processes and programs at NMSU that relate specifically to international students, coordinates the admissions process for international applicants at NMSU, and serves as the liaison office for international students at NMSU. Direct contacts with U.S. government agencies, foreign governments, and the private sector concerning international students at NMSU are handled through this office. Professional staff in ISS are appointed by NMSU and authorized by the U.S. Department of Homeland Security (DHS) to serve as ‘designated officials’ regarding DHS regulations governing international students.

International Student Services provides a full range of services to international students, including orientation programs, immigration and financial advising, community outreach programming, and international student admission to the university. International students or agencies sponsoring international students receiving special services are expected to pay additional administrative fees, normally not to exceed $550 annually. The current "International Student Special Service Fee Schedule" is available upon request. ISS is responsible for the issuance of I-20 and DS-2019 immigration documents to international students admitted to NMSU. Staff members maintain up-to-date information on all regulations of the Department of Homeland Security governing student visas and help international students retain their legal status while attending NMSU. They coordinate contact between various community groups and the international student population. ISS requires all international students to have Student Health Center coverage and adequate health insurance, including their dependents.

The ISS office is located in Educational Services Building, Room 8. (575) 646-2017. For further information, e-mail gradinfo@nmsu.edu and visit our web page at http://prospective.nmsu.edu/international/.
PARKING OFFICE

A NMSU parking permit is required to park on campus in parking lots or curbside on streets. Parking meters require payment. Free parking is available near the Pan American Center. The campus parking map is available at www.nmsuparking.com. Parking regulations are enforced between the hours of 7:30 a.m. and 4:30 p.m. Disabled parking spaces, emergency/fire zones, service zones and yellow curbs are enforced 24 hours a day. Parking Regulations are available at www.nmsuparking.com.

Information on purchasing a NMSU parking permit is available at: www.nmsuparking.com or at the Parking Office located at 1400 E. University Ave. (southwest corner of the Auxiliary Services building adjacent to the Barnes & Noble at NMSU Bookstore & Café). Monday through Friday from 8:00am to 4:30pm. When visiting, you may park for free in designated spots just south of the building. Aggie Transit is a free campus shuttle service available to all students. Bus route maps are available at www.nmsuparking.com.

Transportation and Parking Services is responsible for issuing parking permits, enforcing parking regulations, developing parking lots, operating the campus motor pool and fleet fueling station as well as maintaining information related to the university fleet.

CAMPUS HEALTH CENTER

The university maintains a well-equipped health center on campus, with a comprehensive laboratory, pharmacy, and x-ray services. Hospitalization is available in the community. Graduate students enrolled for 9 or more credits (4 in a summer session) may use the Campus Health Center. Graduate students enrolled for 6-8 credits (3 in summer session) may choose to pay the wellness fee at registration to become eligible for medical care. For a description of the graduate assistant health insurance benefit see that section earlier in this catalog.

Information on Supplemental Health Insurance can be picked up at the Campus Health Center or by calling (575) 646-5706. For more information regarding the Campus Health Center or the health insurance policy, call the number listed above, e-mail debramon@nmsu.edu, or visit our web page at http://www.nmsu.edu/~shc/.

SUPPORT FOR SUCCESS

CAREER SERVICES

Career Services (CS), located in Garcia Annex, Room 224, supports the career planning efforts of students and alumni. Many candidates for employment utilize this resource as part of a comprehensive plan to develop successful job-search strategies. Pertinent services include individual- and group-advising sessions on topics related to the job-search process. These topics include effective resume writing and job-search correspondence, developing interviewing skills, designing successful job-search strategies, and evaluating offers of employment. Sections of the department’s career library are devoted to these career-planning topics and are available on a drop-in or check-out basis. Employer directories are also available for reference. The work-integrated learning component of the Department is comprised of the Cooperative Education (Co-op)/Internship Program and part-time community employment. In order to gain professionally-related work experience, students are encouraged to seek opportunities for co-op, internships, or summer employment through the work-integrated program.

To promote access to up-to-date career and educational information, the department sponsors several annual career fairs. In September, Career Expo brings numerous employers from business, industry and government to campus. The Public Service Career Showcase, held in November, has as its focus municipal, state, and federal government employers, while the Career Connections and Employment Extravaganza, spring events, provide a look at National and Regional employers. Undergraduate and graduate students use career fairs to gather key information and discuss opportunities for part-time jobs, internships, cooperative education, and professional employment.

Students wishing to further their education may wish to participate in the Graduate and Professional School Fair, which is held every fall semester. This event provides opportunities to discuss admission and degree requirements with representatives from diverse institutions located nationwide. Each spring hundreds of interviews between prospective employers and graduating students pursuing careers in education are conducted at the Educators’ Job Fair. This premier event, co-sponsored by CS and the College of Education, showcases approximately 100 public school districts from the western United States that are actively recruiting teaching and educational specialty personnel.

Career Services provides an added dimension to the career planning activities of candidates who elect to use its resources. The staff actively supports the efforts of students and alumni who are seeking suitable employment commensurate with their education and abilities.

For further information, call (575) 646-1631, e-mail hirenmsu@nmsu.edu, or view our web page: careerservices.nmsu.edu.

COUNSELING CENTER

The Counseling Center provides students and the campus with a variety of services including individual, couples and group counseling, crisis intervention, career exploration, outreach programs, and consultation. We assist students with issues such as relationship conflicts, depression, anxiety, stress management, and self-esteem concerns. All services are strictly confidential and are free. The Counseling Center is located in Garcia Annex Room 100, and is open Monday through Friday, 8:00 a.m. - 5:00 p.m. and other times as needed. The Counseling Center is staffed by professional counselors and psychologists and is accredited by the International Association of Counseling Services, Inc.

The Career Exploration Center, located on the northeast corner of Garcia Annex adjacent to the Counseling Center, provides students with assistance in career choice and selecting an appropriate area of study. An excellent library is available for reference use and check out. For more information check our web site at http://www.nmsu.edu/~counsel/.

WAVE: Wellness, Alcohol, and Violence Education Program is comprised of the Choices program that provides campus organizations, classes and other groups with information concerning the decisions that surround drinking alcohol and provides presentations on sexual assault and violence prevention. The Crisis Assistance Crisis Line (CALL) is a 24-hour crisis line that is available to students and residents in southern New Mexico. To contact the CALL, dial 575-846-CALL.

Social Work Services (accessed through the Counseling Center at 646-2731) provides assistance in locating community resources such as food, shelter, health care, child care, or locating financial assistance when a student’s educational goals are impeded by a lack of such resources.

STUDENT ACCESSIBILITY SERVICES

New Mexico State University is committed to providing information and services that will assist students with disabilities. The Student Accessibility Services Office provides auxiliary services, assistive technology, student advocacy, referral to appropriate sources for accommodation, and other services to aid students with documented disabilities. Services are provided with the goals of assisting students with disabilities to maximize their educational experiences and opportunities, become integrated into the campus community, and to maximize their independence.

All students requesting assistance are encouraged to discuss their needs with the director/coordinator or on before entry into the university and to complete a Petition for Accommodation form, available in Room 244, Corbett Center, (575) 646-1631 (voice), (575) 646-1918 (TTY/Text telephone), (575) 541-3693 (Videophone) or at MSC 4149, P.O. Box 30001, Las Cruces, NM 88003-0001, e-mail sas@nmsu.edu, or on the web at www.nmsu.edu/~ssd/.

Students Accessibility Services (SAS) coordinates university efforts to provide access and opportunity to students with disabilities, including students who have disabilities that are apparent and non-apparent. Students wanting to learn more about services or accommodations available to those with a documented disability should contact the SAS office. Advanced notice in planning services is strongly encouraged. NMSU is committed to providing an accessible institution to all individuals. For more information, please visit the SAS office in Corbett Center: 244, MSC 4149, P.O. Box 30001, Las Cruces, NM 88003-0001, call 575-646-8640. Visit our website at http://www.nmsu.edu/~ssd/ or e-mail sas@nmsu.edu.

STUDENT SPECIAL CARE POLICY

To ensure the safety and well-being of its students, New Mexico State University may, on occasion, require that students receive a particular type of care or treatment (i.e., emergency medical attention, live-in attendants, or vaccinations) as a condition of continued enrollment or eligibility to reside in university-operated housing. When this care or treatment is required by the cognizant university administrator, the student will be obligated to assume any financial responsibility associated with the treatment. Furthermore, the university may, on occasion, contact a student’s parents, legal guardian, or spouse in cases of extreme emergency, or where a possibility of imminent harm exists. This will occur only when, in the judgment of the appropriate official, the best interests of the student and the university will be served.

When practical, the university will, in writing, notify the student of the university’s intention to undertake the steps authorized by this policy. This decision may be appealed by the student to the associate provost for student affairs and community colleges within 24 hours of notification. The appeal should be in writing and clearly state the reason why the student objects to the proposed action.
The associate provost will review the facts in the case and convey a decision to all parties within 48 hours. The decision of the associate provost shall be final.

**STUDENT SUCCESS CENTERS-HARDMAN/ZUHL**

New Mexico State University offers a variety of learning assistance, advising, and tutorial services via two Student Success Centers; Student Success Center-Hardman and Student Success Center-Zuhl. Both Student Success Centers are centrally located on the main campus, Hardman Hall Room 210 and Zuhl Library Second Floor, and provide services to assist NMSU students in reaching their academic potential. Services provided at the Student Success Centers are specific to location and are described below:

The Student Success Center-Hardman (SSC-Hardman) provides study skills assistance in such areas as time management, memory, concentration, note taking, reading, test preparation, test taking, math/science study skills, speed reading, critical thinking, financial literacy, and graduate school and professional skills test preparation. The services are available to students in the following formats:

1. Individualized assistance is provided to any student who walks in at the SSC-Hardman.
2. Degree credit is offered under UNIV 110, Personal Learning Skills; UNIV 112, Academic and Personal Effectiveness; UNIV 113, Speed Reading; UNIV 150, The Freshman Year Experience; UNIV 300, Preparing for the GRE; UNIV 350, Peer Education; and UNIV 395, Independent Study.
3. Learning strategies and study-skills workshops provide quick assistance in one-hour presentations offered throughout the semester.
4. Professional and graduate school workshops provide development in such areas as speed reading, getting into graduate school, preparing for the GRE, GMAT, LSAT, MCAT, or NMTA.
5. SSC-Hardman staff provide outreach presentations on learning and study-skills topics to classes, programs, and organizations on campus.
6. “The Red to Green Money Management Program” is a financial literacy service offering outreach workshops and one on one meetings.

The Center also houses a 16 station student computer lab.

The SSC-Zuhl hosts two support programs:

- The Campus Tutoring Service (CTS) provides walk-in and online tutoring at no charge; and the QuickConnect Early Alert and Intervention Program is an early warning and intervention system, utilized by faculty, focused on first-year students.

**TECHNOLOGY**

**INFORMATION AND COMMUNICATION TECHNOLOGIES**

Information and Communication Technologies (ICT) provides the university community with the computing resources and services that support the educational, research, and public service missions of the university. The resources include NMSU’s central computing systems, the network that supports the systems and the wired and wireless functionality through which the internet is accessed. ICT operates the student computer labs found throughout the main campus, manages computer checkout, network registration of computers required for access to the NMSU network, discounts for purchases of computers and Aggie print at the university. ICT also provides support for NMSU technology users through its Help Desk.

For further information, contact ICT: MSC 3AT, NMSU P.O. Box 30001, Las Cruces, NM 88003-8001, (575) 646-1840 or email help@nmsu.edu. ICT’s web homepage is located at help.nmsu.edu.
AGRICULTURAL AND EXTENSION EDUCATION

Department website: http://aces.nmsu.edu/academics/axed/  
(575) 646-4511  
cclary@nmsu.edu

C.R. Clary, interim department head, Ph.D. (North Carolina State University)– agricultural marketing, leadership, student success; T. J. Dormody, Ph.D. (Cornell)– agricultural education, leadership, and agricultural communications; J. Gleason, Ed.D. (Virginia Tech)– instructional technology, agricultural communications, and multimedia education; F. Hodnett, Ph.D. (New Mexico State)– youth development; youth leadership, youth program development; C. Rosenwangs, Ph.D. (Iowa State)– agricultural mechanics, technology education and youth development; B. Seegers, Ph.D. (Ohio State)– adult and extension education; P. Skelton, Ph.D., (University of Nebraska)– youth development, sustainable agriculture and natural resource management; K. Staar, Ed.D. (North Carolina State University)– agricultural education, teacher preparation, students with special needs; D. VanLeuven, Ph.D. (Oregon State)– statistics and research design

DEGREE: Master of Arts

MAJOR: Agricultural and Extension Education

International Agricultural Development and Extension

The department offers major work for a Master of Arts in Agricultural and Extension Education. The degree can be obtained with emphasis in agricultural or technology teacher education, Extension education, international extension and development, and adult non-formal education. Courses in research methods, teaching methods, and data collection and analysis; a graduate seminar; and a thesis or creative component are required for the major. A nine-credit minor is available to students completing major work in other departments. The Department of Agricultural and Extension Education requires the following items for admission:

• Three letters of recommendation - Applicants should request letters of recommendation from individuals who know them well enough to comment on their professional skills and abilities, and on their ability to complete graduate-level work.
• Career statement - The two-page letter of application should clearly identify applicant’s professional and career goals as well as reasons for pursuing graduate school.
• Personal Interview - Upon receipt of all application materials, a personal interview may be required at the discretion of the Departmental Graduate Committee.

The above requested materials should be sent directly to the department. Do not send to the Graduate School as this will cause a delay on your admission status. A minimum of 30 semester credits (including 4-6 credits of thesis) is required under the thesis plan. A nonthesis plan is available and requires 32 semester credits of course work (includes a focused creative component. Both plans require a final oral examination.

Flexibility in each program allows students to pursue professional interests and to develop specialized competencies in agricultural and Extension education, technology education, and in technical and scientific areas. The department delivers courses in evening, weekend, and distance formats (go to http://distance.nmsu.edu and click on degree programs, and then Agricultural and Extension Education) to accommodate student needs. Previous experience in teaching, Extension, and/or other professional education positions is highly recommended to be considered for graduate teaching assistantships.

AGRICULTURAL AND EXTENSION EDUCATION

AXED 456. Introduction to Research Methods 3 cr.
Introduction to research design and methodology in education and behavioral sciences. Overview of common research designs and data collection strategies. Prepares students to critique published research and understand basic skills including hypothesis development and conducting a literature search. Prerequisite: junior standing.

AXED 460. Methods in Career and Technical Laboratory Instruction 2 cr.
For students planning to teach agricultural or technology education at a secondary or postsecondary level. Focus on planning, delivering, and evaluating instruction in laboratories; and on CPR, first aid, and NCCER certifications. Laboratory safety and tool, equipment, and laboratory management systems are also emphasized. Restricted to AXED Majors.

AXED 466V. John Muir: Lessons in Sustainability 3 cr.
This course examines the life of John Muir in the context of sustainability. Muir was a farmer, inventor, explorer, botanist, glaciologist, conservationist, and noted nature author. He was influential in the National Parks movement and in starting the Sierra Club. Living in the natural world influences his faith and philosophy. By examining his life and the themes that shaped it, students will develop an understanding of what it means to live sustainably and to contribute beyond their personal lives to a sustainable past.

AXED 469. Experiential Learning in Career/Technical Education for Exceptional Learners in a Diverse Society 3 cr.
Addresses the planning, delivering and evaluation of experiential learning activities for students with special needs. Specific strategies for working with students with special needs in a shop or laboratory setting within the Career and Technical Education environment will be included. Taught with AXED 569 and SPED 569. Prerequisite(s): SPED 390. Crosslisted with: SPED 469

AXED 475. Leadership On Agricultural and Natural Resource Issues 3 cr.
Investigates leadership concepts and group dynamics as they relate to a changing world and complex agricultural and natural resource issues. Topics include emotional intelligence, leading change, political leadership, facilitating agreement, team building, and managing conflict in agricultural and natural resource settings.

AXED 480. International Agricultural Development 3 cr.
Introduction to Agricultural topics (products, people, environment, culture, etc.) that affect international development. Topics provide students with awareness, knowledge and understanding of teaching, research and service opportunities for those seeking experience or careers in international agricultural development. Taught with AXED 580.
AXED 485. Agriscience Laboratory Applications 3 cr.

Students learn to set up and teach in a modular agriscience laboratory, utilizing a variety of technologies. Modules covered may vary from semester to semester, but examples are: aquaculture systems, microscopy, tissue culture, soil and water testing, electrophoresis, hydroponics, global positioning systems, robotics, and presentation technologies. Students may develop their own modules and/or experiments. Graduate students will assist in laboratory setup and delivery. Prerequisite: Junior standing or above. Main campus only

AXED 486. Effective Management of Volunteer Programs 3 cr.

For individuals currently involved in, or interested in being involved in, the management and supervision of volunteer programs. Emphasis on practical application, utilizing a research and academic base. Explores the roles, functions, and tasks of volunteers and managers of volunteers including recruitment, orientation and training, supervision, evaluation, recognition and retention.

AXED 488. 4-H Youth Development 1 cr.

On-line course explores 4-H Youth Development as an integral part of the Cooperative Extension Service. Topics to be addressed include mission, philosophy, delivery modes, audiences and partnerships. Course is relevant for anyone interested in pursuing a career in Cooperative Extension.

AXED 489. The FFA Organization: An Overview 1 cr.

Online course addressing the history, mission, philosophy and structure of the New Mexico and National FFA Organizations and their relationship to supervised agriculture experiences and the agricultural education curriculum. Course is relevant for anyone interested in pursuing a career in agricultural education.

AXED 490. Independent Study in Agricultural, Extension, or Technology Education 1-3 cr.

Specific subjects are agreed upon by the student and instructor. Prerequisites: Junior or senior standing and consent of instructor. May be repeated for a maximum of 6 credits.

AXED 491. Undergraduate Research 1-4 cr.

Research experience in agricultural, extension, and technology education with applications to selected issues and problems. Prerequisites: consent of instructor, adviser, and department head.

AXED 500. The Diffusion and Adoption of Agricultural Innovations 3 cr.

Factors that influence rates of diffusion and adoption of innovations. Consequences of adopting or rejecting innovations. Processes by which change agents influence introduction and adoption of innovations. Taught with AXED 400 with differential assignments for graduate students.

AXED 515. Youth Program Development and Management 3 cr.

Designed for professionals involved in youth group activities. Basic concepts in planning, conducting, and managing educational youth programs in a variety of organizations. Same as AXED 415 with differentiated assignments for graduate students.

AXED 525. Graduate Teaching Methods 3 cr.

Examines the teaching and learning process, emphasizing the use of appropriate methods for teaching career and technical education subjects to youth or adults in formal and nonformal educational settings. Includes principles of teaching and learning styles, levels of cognition, syllabus development, lesson planning, teaching using a variety of methods, and evaluating students. For students who have no prior education in teaching methods.

AXED 530. Teaching Adults in Nonformal Settings 3 cr.

The adult and postsecondary learner; adult learning styles and principles; use of community resources and problem-solving techniques; and learning strategies for adults in formal and nonformal education. Same as AXED 430 with differentiated assignments for graduate students.

AXED 536. Keys for Agricultural and Rural Development 3 cr.

Introduction to concepts of development, the process of change, key factors that contribute to agricultural and rural development in a community, and strategies employed to effect change with implications for international students or domestic students planning to work internationally.

AXED 544. Planning and Methods in Nonformal Education 3 cr.

Identifying trends and resources of a community and planning community-based extension and nonformal education programs. Preliminary methods for teaching and evaluating nonformal education programs. Same as AXED 444 with differentiated assignments for graduate students.

AXED 545. Developing Excellent Programs in Career and Technical Education 3 cr.

Students learn to develop excellence in the three components of a successful secondary school program in career and technical education: classroom and laboratory instruction, career and technical student organizations, and career development activities. Community-based program planning, utilizing partners, program marketing, and professional development are addressed as strategies for achieving excellence. Methods of obtaining financing and maintaining accountability of the program are discussed. Same as AXED 445 with differentiated assignments for graduate students.

AXED 548. Directed Teaching in Extension Education 4-9 cr.

Fourteen-week off-campus professional experience in directed teaching and observation provided in selected centers under secondary agricultural and technology supervising teachers. Prerequisites: A teaching methods class and consent of instructor. Same as AXED 448 with reduced credit hours for graduate students. Restricted to AXED Majors.

AXED 565. New Mexico Water Issues 3 cr.

Designed for agricultural and natural resource professionals who must educate others or provide leadership on complex water issues in New Mexico. Students will travel to four distinct geographic and cultural regions of the state and study water policies, issues, and delivery technologies in each region. Specific areas covered will be determined by resource professionals who will present past, current and future issues involved in the distribution of water. Urban impacts on water use will also be investigated.

AXED 569. Experiential Learning in Career/Technical Education for Exceptional Learners in a Diverse Society 3 cr.

Addresses the planning, delivering and evaluation of experiential learning activities for students with special needs. Specific strategies for working with students with special needs in a shop or laboratory setting within the Career and Technical Education environment will be included. Taught with SPED 469 and AXED 469. Prerequisite(s): SPED 350 or SPED 500. Crosslisted with: SPED 569

AXED 571. Data Collection and Analysis 3 cr.

Introduction to basic concepts of data collection and analysis. Interpretations from observational studies and controlled experiments. Roles of descriptive and inferential statistics in a complete data analysis. Mean, median, standard deviation, and graphical summaries of data. Correlation and simple regression, one- and two-sample tests and confidence intervals. Chi-square tests and basic analysis of variance. Competency in arithmetic and algebra required. An undergraduate statistics course recommended.

AXED 575. Leadership on Agricultural and Natural Resource Issues 3 cr.

Investigates leadership concepts and group dynamics as they relate to a changing world and complex agricultural and natural resource issues. Topics include emotional intelligence, leadership change, political leadership, facilitating agreement, team building, and managing conflict in agricultural and natural resource settings. Taught with AXED 475 with differential assignments for graduate students.
AXED 580. International Agricultural Development 3 cr.
Introduction to agricultural topics (products, people, environment, culture, etc.) that affect international development. Topics provide students with awareness, knowledge and understanding of teaching, research, and service opportunities for those seeking experience or careers in international agricultural development and education. Taught with AXED 480.

AXED 586. Effective Management of Volunteer Programs 3 cr.
For individuals currently involved in, or interested in being involved in, the management and supervision of volunteer programs. Emphasis on practical application, utilizing a research and academic base. Explores the roles, functions, and tasks of volunteers and managers of volunteers including recruitment, orientation and training, supervision, evaluation, recognition and retention. Taught with AXED 486 with differentiated assignments for graduate students.

AXED 590. Special Topics 1-4 cr.
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 6 credits toward degree.

AXED 594. Workshops in Agricultural, Extension, and Technology Education 1-3 cr.
Workshop procedures applied to current trends in agricultural, extension, and technology education. Maximum of 7 credits toward a degree.

AXED 595. Internship/Cooperative Experience 1-6 cr.
Supervised professional on-the-job learning experience. Prerequisite: Consent of instructor. Maximum of 6 credits toward a degree.

AXED 597. Program Evaluation Techniques to assist adult, career and technical, and nonformal personnel in making systematic appraisal of their programs.

AXED 598. Creative Component 1-4 cr.
For none thesis program. Individual investigations or projects, either qualitative or quantitative studies. Prerequisite: consent of instructor. Maximum of 8 credits toward a degree.

AXED 599. Master’s Thesis Thesis. 1-6 cr.

AGRICULTURAL ECONOMICS AND AGRICULTURAL BUSINESS

Department Website: http://aces.nmsu.edu/academics/aeab/
(575) 646-3215
crawford@nmsu.edu

DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRICULTURAL BUSINESS:

Terry L. Crawford, interim department head, Ph.D. (Cornell University)—marketing, policy and pricing, quantitative methods, trade, R.N. Acharya, Ph.D. (Auburn University)—food safety, logistics management, technology adoption, and marketing, S. Archambault, Ph.D. (University of New Mexico)—economic development natural resource, applied economics; L.B. Catlett, Ph.D. (Iowa State)—marketing, futures, economics; J. A. Diemer, Ph.D. (Colorado State)—natural resources, regional economics; C. Falk, Ph.D. (Oklahoma State)—agricultural business, marketing; J. M. Fowler, Ph.D. (Iowa State)—forestry and range economics; W. D. Gorman, Ph.D. (Emeritus/Adjunct) (Oregon State)—agricultural business management, international marketing; P. Gutierrez, Ph.D. (Oklahoma State)—extension, ranch economics, economic development, J. Hawkes, Ph.D. (New Mexico State)—range management; B. H. Hurd, Ph.D. (California-Davis)—water and natural resource economics; J. D. Libbin, Ph.D. (Iowa State)—farm management, production economics; J. Lillywhite, Ph.D. (Purdue)—agribusiness marketing, M. Patrick, Ph.D. (Michigan State University)—economic development; R. Shappi, Ph.D. (Utah State)—agriculture and natural resource policy; L. A. Torell, Ph.D. (Utah State)—range, ranch economics, production economics; P. A. Ward, Ph.D. (Colorado State)—resource economics, welfare economics

DEPARTMENT OF ECONOMICS, APPLIED STATISTICS AND INTERNATIONAL BUSINESS:

R. Adkisson, department head, Ph.D. (Nebraska)—international economics, public finance, institutional economics; Larry Blank, Ph.D. (University of Tennessee, Knoxville)—microeconomic theory, managerial economics and regulatory economics; K. Brook, Ph.D. (Texas-Austin)—macroeconomic theory, monetary policy; D. L. Clason, Ph.D. (Kansas State)—linear models, government statistics; D. L. Daniel, Ph.D. (Southern Methodist)—nonparametrics; C. M. Downes, Ph.D. (University of New Mexico)—environmental/resource economics, development, international business; M. Ellis (Emeritus), Ph.D. (California-Riverside)—comparative economic systems, medical economics; C. Enomoto, Ph.D. (Texas A&M)—econometrics, economic theory; C. A. Erickson, Ph.D. (Arizona State)—monetary theory, macroeconomics; D. A. Gexag, Ph.D. (Wyoming)—public utility economics, industrial organization, W. R. Gould, Ph.D. (North Carolina State)—biological sampling, wildlife and fisheries estimation; Y. L. Lee, Ph.D. (Southern Illinois-Carbondale)—international finance, international trade, international system, economic developments; B. N. Matta, Ph.D. (Emeritus) (Texas-Austin)—labor economics, managerial economics, Randy McFerrin, Ph.D. (Texas A & M University)—micro theory, principles and American economic history, J. T. McGuin, Ph.D. (Wisconsin-Madison)—production economics, resource economics and policy; M. Pan, Ph.D. (Nebraska)—economic development, international economics, applied econometrics, general regional economics; J. T. Peach, Ph.D. (Texas-Austin)—quantitative economics, border studies, economic development; A. V. Poop, Ph.D. (Emeritus) (Northern Illinois) —public finance, N. E. Schmidt, M.S. (New Mexico State)—experimental statistics; R. L. Steiner, Ph.D. (Oklahoma State)—likelihood methods, discrete distributions; D. Van Leeuwen, Ph.D. (Oregon State)—statistics; B. Widner, Ph.D. (Colorado State)—urban/regional, public finance, development; E. S. Willman, Ph.D. (Indiana)—monetary policy, macroeconomic theory

DEGREE: Master of Agriculture
SPECIALIZATION: Agribusiness

DEGREE: Master of Business Administration
SPECIALIZATION: Agribusiness

DEGREE: Master of Science
MAJOR: Agricultural Economics

MINOR: Agricultural Economics

The Department of Agricultural Economics and Agricultural Business cooperates with the Department of Economics, Applied Statistics, and International Business and the College of Business to offer graduate programs in agricultural economics and economics, and a Master of Business Administration with specialization in Agribusiness. The programs are jointly administered by faculty from the two colleges. Graduate degrees include a Master of Science in agricultural economics, a Master of Agriculture with an agribusiness emphasis, and an MBA degree with specialization in agribusiness. The objectives of the 3 programs differ in emphasis. The two departments also offer a doctoral program, Doctor of Economic Development.

• Master of Science (MS) in Agricultural Economics program provides rigorous training in economic theory, applied economic analysis and quantitative methods and is designed to prepare students for professional careers in business, government, and research, and for continued education in pursuit of a Ph.D.

• Master of Business Administration with Specialization in Agribusiness (MBA-AB) prepares students for business and public sector careers in agriculture and the food and fiber industry. Graduates from this program are knowledgeable about U.S. and international food and fiber sectors and hold an AACSB International accredited MBA degree.

• Master of Agriculture (MAG-AB) with Specialization in Agribusiness provides students with backgrounds or interests in agriculture with graduate-level training in agribusiness and applied economics. It is a degree alternative for individuals holding undergraduate degrees in various agricultural and food science fields.

• Doctor of Economic Development (DED) is a professional doctorate designed to provide advanced training for economic development professionals. It is not designed to prepare graduates for academic careers.

All students in these programs must meet the requirements specified in the general regulations and requirements for admission to the Graduate School and to candidacy. To transfer between the three program options requires a change of major form be submitted through the Graduate School and approved by the program to which the application is made.

Teaching and research assistantships are available to qualified applicants on a competitive basis. It is not necessary to have a degree in economics or
agricultural economics to enter the graduate program or to qualify for a teach-}

ing or research assistantships. An application and three letters of reference are required to be considered for any available assistantships. These forms can be obtained from the department.

**DEGREE REQUIREMENTS**

**Master of Science (MS)**

Students entering the MS program are required to have completed inter-

mediate microeconomics and intermediate macroeconomics (completed with a B grade or better), a college-level calculus class, and a course in statistics that included linear regression analysis. Students that have not completed these courses may be admitted with the requirement that they take them as defici-

encies at the beginning of their graduate program. Prospective graduate students must have at least a 3.0 undergraduate GPA and complete the GRE.

Candidates for the Master of Agriculture with Specialization in Agribusiness program must complete a minimum of 33 graduate credit hours. Twenty-one of the credits must have one of the following three prefixes: AEEC, ECON, or ECDV.

Twenty-four of the credits must be associated with course numbers greater than 500. All students in the MS program must successfully complete the following core courses: AEEC 501, AEEC 502, AEEC 540, AEEC 585, and AEEC 589 (4-6 credit hours). Students pursuing the MS degree may not complete the graduate program with more than one C grade in the core courses. If a student receives a grade of C in two of these core classes one of the classes must be repeated with a grade of at least B. In addition to core courses, nine additional credits must be completed from an agricultural economics and agricultural business (AEAB) course block. AEEC 545 must be taken in the graduate program if an agricul-

tural policy course was not taken as an undergraduate. Individual study (AEEC 586) is limited to 3 credits hours. Electives and up to 3 credits from the AEAB course block can be used to pursue a minor. A thesis is generally required, but a non-thesis option can be followed, AEEC 597. An oral defense of the thesis will be scheduled and completed according to the guidelines of the Graduate School. The oral defense must be preceded by an open seminar to present major research findings to faculty, fellow students, and the interested public.

**Master of Business Administration with Specialization in Agribusiness**

Candidates for the Master of Business Administration with specialization in Agribusiness MBA-AB must successfully complete a minimum of 36 graduate credit hours. Admission to the MBA-AB program is through the College of Business. The program includes numerous prerequisites in economics, accounting, and business as defined in the Business Administration and Economics section of this catalog. AEEC 545 must be taken in the MBA-Agribusiness program if an agricultural policy course was not taken at the undergraduate level. A written paper and presentation following the guidelines described for BA 590 is required. MBA-AB students can take the required minimum 43 credit hours to substitute for BA 590. If a thesis (AEEC 599) is written in lieu of taking BA 590 an examining committee and thesis defense must be organized similar to that of the MS degree program. For more information about the requirements for the MBA specialization refer to the section of this catalog.

**Master of Agriculture with Specialization in Agribusiness**

Candidates for the Master of Agriculture (MAG) with specialization in Agri-

business must successfully complete 33 graduate credits. Students entering the Master of Agriculture program are required to have completed intermediate microeconomics and intermediate macroeconomics, a college-level calculus class, and a course in statistics that included linear regression analysis. All prerequisite courses must be completed with a B grade or better. AEEC 545 must be taken in the graduate program if an agricultural policy course was not taken as an undergradu-

ate. Those students not having completed these courses may be admitted with the requirement that the deficiencies be completed at the beginning of their graduate program. Prospective graduate students must have at least a 3.0 undergraduate GPA and complete the GRE or GMAT exam.

All students in the MAG program must successfully complete the following core courses: AEEC 551, AEEC 556, FIN 503, and ACCT 503. Six additional credits must be completed from an agricultural economics and agricultural business block. An internship (AEEC 585, 3 cr.) or individual investigation (AEEC 588, 3 cr.) is also required. A thesis (AEEC 599, 4-6 cr.) is not required but can substitute for the internship or individual investigation. Individual study (AEEC 586) is limited to 3 credits. An oral defense must be scheduled and completed as prescribed by the Graduate School. The defense must be preceded by a public seminar to present major findings, experiences, and contributions of the individual investigation, internship, and/or thesis research to faculty, fellow students, and the interested public.

**DOCTOR OF ECONOMIC DEVELOPMENT (DED)**

The Doctor of Economic Development (DED) is a professional doctorate designed to provide advanced training for economic development professionals. It is not designed to prepare graduates for academic careers.

Candidates for the DED enter the program with the equivalent of a master’s degree. DED students must successfully complete approximately 80 graduate credits beyond the hours required for entry. All students must meet the require-

ments specified in the general regulations and requirements for admission to the Graduate School and to candidacy. DED minimum admission requirements include: (a) related master’s degree or equivalent coursework; (b) one course in intermediate microeconomic theory and one course in macroeconomic theory with minimum grades of B; (c) one course in college-level calculus with a mini-

mum grade of B; and (d) one course in statistics, including simple regression with a minimum grade of B. Additionally, students who have not completed graduate level courses in microeconomic theory, macroeconomic theory, and econom-

ometrics with grades of B or better will be required to successfully complete these courses early in the DED program.

All students in the DED program must successfully complete the following core courses: AEEC 501, AEEC 502, ECON 550, ECON 651, ECON 652, ECON 654, ECON 668, ECON 671, and ECDV 692 (twice). In addition, students will complete ECON 681, ECON 682, and ECDV 683; plus a specialty area (six semester hours); 12-15 semester hours of internship and final project; and sufficient elective credits to fulfill the 80-hour requirement. Comprehensive and oral exams will be given and will determine eligibility to continue in the program and/or to graduate. 

Detailed and updated information is available at the following website http://business.rmu.edu/~ecov/ded/DEDweb.html.

**AGRICULTURAL ECONOMICS**

AG E 450. Advanced Microcomputer Applications in Agriculture 3 cr. (2+2P)

An advanced course in electronic spreadsheets and the concepts and tools of database management emphasizing agricultural application. Same as AEEC 550 with additional work for graduate credit. Cannot receive credit for both AG E 450 and AEEC 550. Prerequisite: AG E 250 or consent of instructor.


Applications course in which self-managed teams develop and present marketing plans for agribusiness firms. Emphasis on integrating the mar-

keting mix, particularly promotional elements. Prerequisites: AG E 305 or MKTG 305 or consent of instructor. Same as MKTG 451.

AG E 452. Food and Agricultural Products Marketing Research Techniques and Written and Oral Presentation Skill 3 cr.

This course focuses on learning marketing research methods applicable to developing new food and agricultural products and repositioning exist-

ing products for new markets. Students will be required to prepare pre-

cise written and oral marketing plans to industry standards and will have opportunities to present written and oral plans at national competitions.

AG E 454. Community Economic Development 3 cr.

In this course students acquire knowledge and understanding of the tools and techniques and the process by which people in a community study the economic conditions of that community, determine its economic needs and unfulfilled opportunities, decide what can and should be done to improve the economic conditions in that community, and then move to achieve agreed-on economic goals and objectives. Prerequisites: ECDV 251G and ECON 252G.

AG E 456. Agribusiness Management 3 cr.

Integration of production, marketing, accounting, finance, agricultural pol-

icy, human behavior, and business environment concepts in management of agricultural businesses using a decision case approach. Prerequisites: Senior standing. Main campus only.

AG E 458. Economics of Making and Marketing Wine 3 cr.

Economics of making and marketing wine for small commercial wineries and amateurs. The class starts with selecting, crushing, and fermenting grapes and all the steps required through bottling the wine. Students must be 21 to enroll in the class. Consent of instructor required.
AG E 470. Real Estate Appraisal 3 cr. (2-2P)
This course addresses issues influencing the value of real estate with some emphasis upon rural properties. Topics include courthouse records, property taxes, appraisal methodology, expert courtroom testimony, condemnation, and legal issues. Students will take field trips and write appraisals. Course material is relevant to students in Finance, Accounting, and Pre-Law, as well as Agriculture. Accredited for hours to apply to both pre-licensing and continuing education requirements of the New Mexico Real Estate Commission for both Appraisers and Real Estate Brokers. Prerequisite(s): Junior or above standing. Crosslisted with: FIN 470

Emphasis on integrating natural and social sciences, analytic methods, and critical reasoning skills to evaluate water resource policy and management issues. Extensive use of data and numerical applications applied to a variety of water resource topics. Familiarity with MS Excel or similar software is desirable. Prerequisite: junior or above standing.

AG E 491. Linear Programming Methods 1 cr.
Methods, techniques, and uses of linear and quadratic programming applications in agricultural economics.

AG E 498. Senior Thesis 3 cr.
Develop a thesis project with a faculty advisor. The senior thesis requires students to work creatively to apply business and economic principles to address a problem of concern. Prerequisites: consent of department head and have senior standing. Restricted to AEAB majors.

AGRICULTURAL ECONOMICS AND ECONOMICS

AEEC 501. Microeconomic Theory 3 cr.
A rigorous re-examination of the pricing mechanism in the goods and factor markets. Development of theoretical tools of general applicability. Prerequisite(s): ECON 371 and ECON 457, or consent of instructor.

AEEC 502. Macroeconomic Theory 3 cr.
Contemporary aggregative theory regarding the interrelationships among national income, employment, the price level, money supply and interest rates, and implications of this theory for public policy in a mixed economy.

AEEC 511. Advanced Futures and Options Markets 3 cr.
Advanced hedging and speculating strategies using futures and options contracts. Coverage includes interest rates, stock indexes, metals, currencies, livestock, and grains. Concepts of price analysis (technical and fundamental) and basis analysis; technical paper is required. Prerequisite: AG E 311, FIN 311, or consent of instructor. Crosslisted with: FIN 511.

AEEC 520. International Agricultural Trade Theory and Policy 3 cr.
Review and analysis of international trade models. Analysis of the effects of trade instruments such as tariffs, quotas, and subsidies on welfare and income distribution. Analysis of bilateral, regional, and multilateral trade agreements and their effect on the agricultural sector from both country-specific and global perspectives. Prerequisite: ECON 371.

AEEC 522. Public Sector Economics I 3 cr.
Introduction to the economic rationale for government intervention in the economy and the effects that intervention on economic agents and the economy in general. Emphasis on the expenditure side of government policy. Prerequisite: ECON 334 or ECON 434. Same as GOVT 522.

AEEC 523. Public Sector Economics II 3 cr.
A continuation of AEEC 522. Concentrates on the economic effects of taxation. Same as GOVT 523.

AEEC 528. Economic Development 3 cr.
A graduate-level exposition of microeconomic and macroeconomic theory of why and how nations allocate resources to grow and develop. Strong emphasis is given to understanding the economic problems facing developing nations.

AEEC 540. Econometrics I 3 cr.
An integration of quantitative and statistical techniques for research and management in economics and business. Prerequisite(s): ECON 457 and ECON 405 or A ST 505.

AEEC 545. Advanced Agricultural Policy 3 cr.
Historical and cultural background of food and agricultural policy in the United States. Analysis of food and agricultural problems, policy-making and implementation. Economic evaluation of specific U.S. food and agricultural policy instruments, their domestic and international impacts. Same as AG E 445V with additional work required at the graduate level. Cannot receive credit for both AG E 445V and AEEC 545. Prerequisite: consent of instructor.

AEEC 550. Advanced Microcomputer Applications in Agriculture 3 cr. (2-2P)
An advanced course in electronic spreadsheets and the concepts and tools of database management emphasizing agricultural applications. Prerequisites: AG E 250, CS 116D or consent of instructor. Taught with A GE 450 with additional work required at the graduate level. Cannot receive credit for both AG E 450 and AEEC 550.

AEEC 551. Advanced Agribusiness Marketing 3 cr.
Applications course in which self-managed teams apply marketing theory in the development and presentation of marketing plans for food and agribusiness firms. Course includes analysis of marketing problems with emphasis on strategic marketing issues changing trade policies, and global competitiveness. Prerequisite: consent of instructor.

AEEC 556. Advanced Agribusiness Management 3 cr.
Integration of production, marketing, accounting, finance, agricultural policy, human behavior, and business environment concepts in management of agricultural businesses using a decision case approach.

Integrating natural and social sciences, analytical methods, and critical reasoning skills to evaluate water resource issues. Extensive use of data and numerical techniques applied to a variety of water resource topics. Familiarity with MS Excel or similar software desirable. Same as AG E 475, with additional work required at graduate level.

AEEC 580. Natural Resources and Environmental Policy 3 cr.
Surveys and analyzes natural resource and environmental policy, both domestic and global, in terms of content and context, policy, processes, policy models, levels of government, and values and ethical positions. Includes public lands policies, private property issues, air and water quality, waste disposal, energy and sustainable development with emphasis on natural resources and agriculture.

AEEC 585. Production Economics 3 cr.
Application of microeconomic theory to problems and decisions of food and agricultural firms. The theoretical foundation of production economics and the theory of the firm are developed. Prerequisites: MATH 142G, ECON 371, and ECON 457.

Covers the integration of free trade, social equity, environmental and transnational corporation’s aspects of agribusiness from a food and global market perspective and within the framework of open systems theory, the socio-ecological perspective (OSTE). Prerequisite: Graduate students only.

AEEC 590. Special Topics 3 cr.
Seminars in selected current topics in the various areas of agricultural economics and economics. Offerings will carry a subtitle. Prerequisite: consent of instructor.

AEEC 591. Agribusiness Management Seminar 1 cr.
One agribusiness topic or firm will be investigated in depth each semester. Production, marketing, accounting, finance, policy, and/or business environment issues will be emphasized. Prerequisite: Consent of instructor. May be repeated for a maximum of 4 credits.

AEEC 593. Internship 1-6 cr.
Supervised professional on-the-job training experience in policy analysis.

AEEC 594. Internship 1-6 cr.
One semester to six months internship with a regulated firm or public utility commission. A faculty member will direct and evaluate the internship. For AEEC regulatory option students only.

AEEC 595. Internship 1-6 cr.
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. No more than 6 credits toward a degree.

AEEC 596. Individual Study 1-3 cr.
Individual study programs. Each offering will carry a subtitle. Maximum of 3 credits in a semester and 6 credits in a program. Prerequisite: consent of instructor.

AEEC 597. Non-Thesis Research Project 1-3 cr.
Individual investigations, either analytical or experimental. Maximum of 3 credits per semester. No more than 3 credits toward a degree.

AEEC 598. Creative Component Project 3-6 cr.
Individual investigations, either analytical or experimental. A minimum of 3 to 6 credits per semester. No more than 6 credits toward degree. Consent of instructor required. Prerequisite(s): Consent of Instructor. Restricted to AEEC majors.
Department website: http://anrs.nmsu.edu
(575) 646-2514
tross@nmsu.edu

T. T. Ross, department head, Ph.D. (North Carolina State—Raleigh)– physiology of reproduction and sheep production; L. B. Abbott, Ph.D. (University of Arizona)– range ecology; K. W. Allred, Ph.D. (Texas A&M)– plant taxonomy; R.L. Ashley, Ph.D. (Colorado State University)– physiology of reproduction; D.W. Bailey, Ph.D. (Colorado State)– range management; A.F. Cibils (Colorado State)– grazing management and ecology; G.M. Fasenka, Ph.D. (North Carolina State University)– companion animal management; A. G. Fernáde (Colorado State)– land use hydrology and water quality hydrology; D. M. Hallford, Ph.D. (Oklahoma State)– physiology of reproduction; J. L. Holechek, Ph.D. (Oregon State)– range ecology; M.E. Hubbert, Ph.D. (University of Alaska-Fairbanks)– ruminant nutrition; S.L. Ivey, Ph.D. (New Mexico State)– ruminant nutrition/microbiology; C. A. Liest, Ph.D. (Kansas State)– ruminant nutrition; K.C. McDaniel, Ph.D. (Texas A&M)– brush management; E.J. Scholijerdes, Ph.D. (University of Wyoming)– ruminant nutrition; S. Soto-Navarro, Ph.D. (New Mexico State)– ruminant nutrition; J.D. Thomas, Ph.D. (University of Missouri-Columbia)– meat science; J.L. Turner, Ph.D. (Kansas State)– equine immunology and physiology; L. M. White, Ph.D. (Clemson)– equine science; M.W. Wise, Ph.D. (University of Nebraska)– physiology of reproduction.

Adjunct faculty: C.D. Allison, Ph.D. (Texas A&M)– range management; D.N. Anderson, Ph.D. (Texas A&M)– animal behavior; R.L. Byford, Ph.D. (Oklahoma State University)– veterinary entomology; K.M. Harvstad, Ph.D. (Utah State)– range animal nutrition; J.E. Herrick, Ph.D. (Ohio State)– soils; D.P. Peters, Ph.D. (Colorado State)– landscape ecology.

ANIMAL SCIENCE

ANSC 450. Equine Assisted Learning 3 cr.
Covers the complex relationship between horses and humans. Students are introduced to human psychological theories and methods of how people and horses can work together and the application of such structured learning settings using horses to achieve learning outcomes. Students will also be introduced to horsemanship including proper use and maintenance of equipment, safety, handling, basic care, behavior of horses and benefits of the horse. Consent of instructor required. Crosslisted with: FCS 450
RGS 516. Rangeland Ecosystem Management 3 cr.
Survey of seminal and current literature in range science as an applied discipline. Includes a broad overview of interdisciplinary topics such as rangeland climates, soils, plant eco-physiology, plant community ecology, hydrology, and livestock grazing management. Applications of range science to the sustainable management of rangeland ecosystems will be emphasized.

RGS 518. Watershed Methods and Management 3 cr.
Management of rangeland and forest watersheds with emphasis on the hydrologic cycle and land use effects on runoff and water quality. Hydrologic monitoring methods problem sets required for graduate credit.

RGS 520. Rangeland Animal Ecology 3 cr.
Rangeland animal nutrition, behavior, and social interactions with special emphasis on rangeland animal responses to plants with antiquity compounds.

RGS 525. Advanced Rangeland Restoration Ecology 3 cr.
Principles and practices of vegetation management and ecological restoration. Course emphasizes problems associated with rangeland degradation, and implementation of rangeland restoration and improvements. Research paper required for graduate credit.

RGS 590. Special Topics 1-4 cr.
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

RGS 598. Special Research Program 1-4 cr.
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree.

RGS 599. Master’s Thesis 0-88 cr.
Thesis.

RGS 600. Doctoral Research 1-88 cr.
Research.

RGS 611. Principles and Evaluation of Rangeland Restoration 3 cr.
Soil-plant-animal-weather relations affecting improvement practices and management of the rangeland ecosystem. Prerequisite: consent of instructor.

RGS 618. Interdisciplinary Modeling: Water & Climate Issues 3 cr.
Students will be working in interdisciplinary teams to apply interdisciplinary modeling approaches which will increase knowledge about water related issues regarding climate change and issues of variability and uncertainty. Students will use a common software to do an interdisciplinary project. Course will be taught every six years at NMSU. Consent of instructor required.

RGS 630. Quantitative Plant Ecology 3 cr.
Applications of quantitative, analytical techniques used to describe and assess rangeland plant communities. Prerequisites: RGS 440 and A ST 505 or equivalent.

RGS 698. Special Research Programs 1-4 cr.
Advanced individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree.

RGS 700. Doctoral Dissertation 0-88 cr.
Dissertation.

ENTOMOLOGY, PLANT PATHOLOGY, AND WEED SCIENCE

DEGREE: Master of Science
MAJOR: Agricultural Biology

MINOR: Agricultural Biology

The complexity of managing insects, plant diseases, and weeds is increasing environmental concerns, costs, and regulations necessitate an integrated approach to management strategies. Future professionals in integrated pest management will be ecologically oriented, trained to manipulate biological and cultural technologies while minimizing chemical control options. The Master of Science degree program in agricultural biology is designed to produce graduates with the academic and research background needed to facilitate effective, innovative, and environmentally sound protection of plants and animals from a wide and varied spectrum of pests. Students will be prepared for careers in research, extension, teaching, private consulting, industry, and government or to continue in a broad range of Ph.D. programs. Specific opportunities will include positions as agricultural consultants, technical and sales representatives for industry, state departments of agriculture and USDA specialists, agricultural extension agents, and industry research and environmental technicians. There is currently a strong need for M.S. graduates trained in these areas, and the demand is expected to increase dramatically.

Students may wish to concentrate their graduate program in entomology, plant pathology, or weed science, or conversely may wish to be broadly trained in all three pest-management disciplines. Most students will be expected to complete a thesis. A non-thesis option is available, depending on prior training and experience and subject to approval by the department head. A nonthesis research option requires completion of a research paper, suitable as judged by the student’s graduate committee, for journal publication. Completion of an undergraduate degree essentially equivalent to that offered by the department is required for admission to the M.S. graduate program. Qualifications for admission will be reviewed by the departmental Graduate Admissions committee. Prospective graduate students must have at least a 3.0 undergraduate GPA, complete the GRE, and submit an official transcript, a letter of intent, and three letters of recommendation.

ENTOMOLOGY, PLANT PATHOLOGY, AND WEED SCIENCE

EPWS 451. Special Topics 1-4 cr.
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. Prerequisite: consent of instructor.

EPWS 452. Applied Pesticide Toxicology 3 cr.
Classification, mode of action, and use of insecticides and related pesticides.

EPWS 455. Advanced Integrated Pest Management 3 cr.
Examination of factors affecting the biology and ecology, population evaluations, and control of insect, disease, and weed pests with an emphasis on integrating management practices. Credit cannot be given for both EPWS 455 and EPWS 505. Prerequisite: either EPWS 303, EPWS 310, EPWS 311, or consent of instructor.

EPWS 456. Biological Control 3 cr.
Principles of plant and animal suppression using living organisms. Integration of biological control organisms with biotic and abiotic factors will be stressed. Credit cannot be given for both EPWS 456 and EPWS 506. Prerequisite: introductory course in entomology.

EPWS 462. Parasitology 3 cr.
Introduction to classification, biology, ecology and management of the major parasites of human, domestic animals and wildlife.

EPWS 462 L Parasitology Lab 1 cr.
Methods of collecting and identifying the major parasites of humans, domestic animals and wildlife. Concurrent enrollment in EPWS 462 is desirable.

EPWS 471. Plant Mineral Nutrition 3 cr.
Same as HORT 471 and AGRO 471.

EPWS 481. Plant Nematology 3 cr. (2+2P)
Biological, ecology and basic identification of soil-inhabiting nematodes, with emphasis on host-parasite relationships and management principles for plant-parasitic genera.

EPWS 486. Plant Virology 3 cr.
An overview of viral pathogens associated with infectious plant disease. Includes pathogens, replication, genetics, transmission, and movement of plant viruses.

Department website: http://epws.nmsu.edu (575) 646-3225

FAMILY AND CONSUMER SCIENCES

Department website: http://aces.nmsu.edu/academics/fcs/
(575) 646-3036

E. Devall, department head, Ph.D.(Georgia)–child and family development; M. F. Abdul-Rahman, Ph.D.(Ohio State)–family resource management; S. Bartley, Ph.D.(Tennessee)–family studies; G. Blanch, Ph.D.(Claremont)–education; P. Bloomquist, Ph.D.(New Mexico State)–education and management development; M. Rock, Ph.D.(Kansas State)–foods and nutrition; M. Chavez, Ph.D.(New Mexico State)–educational management; W. Eastman, Ph.D.(Texas Woman’s)–nutrition and food service systems management; W. Fedio, Ph.D.(University of Alberta-Canada)–food microbiology; N. Flores, Ph.D.(Kansas State)–food science; J. Green, Ed.D.(New Mexico State)–education administration; W. Hamilton, Ed.D.(Montana State)–adult education and administration; S. Kaukel, Ph.D.(Texas Tech)–family and consumer sciences education; K. Mandabach, Ed.D.(Houston)–higher education and technological education; M. Marin, Ph.D.(New Mexico State)–counseling and educational psychology; S. Mcdowell, Ph.D.(Kansas State)–food service and hospitality management; L. McKeel, Ph.D.(Texas Tech)–food science and nutrition; M. Montaner, Ph.D.(Michigan State)–developmental psychology; S.H. Munson-McGee, Ph.D.(University of Delaware)–food processing and engineering; R. Smiley, Ph.D.(Texas Woman’s)–clothing, textiles, and fashion merchandising; B. Stringham, Ph.D.(University of Northern Arizona)–education; C. Turner, Ph.D.(New Mexico State)–curriculum and instruction; K. Vaillancourt, Ph.D.(Virginia Tech)–family studies

DEGREE: Master of Science

MAJOR: Family and Consumer Sciences

MINOR: Family and Consumer Sciences

The candidate for the master’s degree should have an undergraduate degree in a field related to the intended area of specialization. In addition to the Graduate School requirements, the admissions criteria for the Department of Family and Consumer Sciences Graduate Program include letters of reference, standardized test scores, and other materials. Suggested departmental deadlines for review of admission materials are six weeks prior to the first day of the semester of desired start. A complete description of admission requirements should be obtained from the department. The Master of Science degree in Family and Consumer Sciences can be obtained with an emphasis in one of the following areas: hotel, restaurant and tourism management; clothing, textiles and fashion merchandising; family and child science (marriage and family therapy emphasis or teaching and research emphasis); human nutrition and dietetics sciences; food science and technology; family and consumer sciences education; or general family and consumer science. A minor may be taken in a variety of supporting fields that fit the particular interests of the candidate. A minimum of 30 credits (including 6-8 credits of thesis) is required under the thesis plan and is the recommended program for most students. A non-thesis plan is available that requires a minimum of 32 credits of course work with a written comprehensive examination. Both plans require a final oral examination. Students will take 3 credits of statistics and 3 credits of research methodology at the graduate level. Students may be required to take a graduate-level technical writing course based on demonstrated writing ability in initial graduate courses. Students who do not have degrees related to their intended areas of specialization may be required to do some leveling work. Prior to the completion of 12 credits, a program advisory committee will be established to determine, with the student, the courses that will be taken for the degree work.

CLOTHING, TEXTILES, AND FASHION MERCHANDISING

CTFM 460. Cultural Perspectives in Dress
3 cr.
Explores the social, psychological and cultural aspects of dress and appearance which includes the relationship of dress to physical and social environments, aesthetic and personal expression and cultural ideas and values. Prerequisite(s): CTFM 255 and CTFM 366.

CTFM 470. Global Fashion Industry Trends
3 cr.
Exploration of fashion industry trends in a global setting. Current consumer patterns and future trends will be analyzed. Prerequisite(s): Junior, senior, graduate standing, or consent of instructor.

CTFM 474. Fashion Promotion
3 cr.
Application of media to the communication of clothing information to the public. Prerequisite: CTFM 372 or consent of instructor.

CTFM 475. Fashion Buying
3 cr.
Fundamental principles and procedures for successful merchandising of fashion goods, responsibilities of buyers, fashion trends, consumer demands, and merchandising arithmetic. Prerequisite(s): ACCT 251, CTFM 372, and CTFM 474.

CTFM 476. Apparel Design by Draping
3 cr. (1+4P)
Theory and application of design in various fabrics and styles using three-dimensional forms in solving problems of attitude, design, and structure. Prerequisite(s): CTFM 255, CTFM 273, CTFM 373. Restricted to CTFM majors.

CTFM 478. Apparel Design Through Flat Pattern
3 cr.
This course builds upon concepts introduced in Apparel Design by Draping. Examines the process of flat pattern design and includes an expanded section on design analysis. Consent of instructor required. Prerequisite(s): CTFM 273, CTFM 373, CTFM 476. Restricted to CTFM majors.

CTFM 479. Master’s Thesis
0-88 cr.
Thesis.

EPWS 491. Insect Physiology
3 cr.
Introduction to insect physiology including classification, microstructure, sensory systems, behavior, and development. Prerequisite: BIOL 433 or CHEM 211, or consent of instructor.

EPWS 505. Advanced Integrated Pest Management
3 cr.
Prerequisites: EPWS 303 or BIOL 433, CHEM 211, or consent of instructor. Examination of the factors affecting the biology and ecology, population evaluations, and control of insect, disease, and weed pests, with an emphasis on integrating management practices. Credit cannot be given for both EPWS 456 and EPWS 505.

EPWS 506. Biological Control
3 cr.
Principles of plant and animal pest suppression using living organisms. Interaction of biological control organisms with biotic and abiotic factors will be stressed. Individual paper or project required. Prerequisite: introductory course in entomology. Credit cannot be given for both EPWS 456 and EPWS 506.

EPWS 511. Introduction to Weed Science (f)
4 cr. (3+2P)
Covers the principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Includes identification of local weeds. Research paper required for graduate credit. Prerequisite(s): CHEM 111G and BIOL 211G. Crosslisted with: AGRO 511.

EPWS 514. Plant Physiology
2 cr.
Overview of photosynthesis, respiration, water relations of plants, minerals and organic nutrition, growth and development. Prerequisite: BIOL 211G, CHEM 112G. Same as BIOL 514.

EPWS 523. Environmental Toxicology
3 cr.
Same as TOX 523.

EPWS 530. Plant Physiology: Metabolism
3 cr.
Examination of major plant metabolic processes, including photosynthesis, nitrogen metabolism, lipid and secondary plant production metabolism, and how they are related. Prerequisite(s): BIOL/EPWS 314 and CHEM 314, or consent of instructor. Same as AGRO 530, BIOL 530, HORT 530, and MOLB 530.

EPWS 549. Special Problems
1-4 cr.
Individual investigation in specific areas of entomology, plant pathology, and weed science. Maximum of 4 credits per semester and a total of 6 credits.

EPWS 551. Special Topics
1-4 cr.
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

EPWS 573. Fungal Biology
3 cr. (2+2P)
Introduction to the taxonomy, morphology, physiology, and ecology of fungi. Prerequisite: EPWS 310 or consent of instructor. Same as BIOL 573.

EPWS 590. Graduate Seminar
1 cr.
Review of current scientific literature in entomology, plant pathology, and weed science, and verbal presentation of information. No more than 2 credits toward a degree.

EPWS 598. Graduate Internship
1-6 cr.
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.

EPWS 599. Master’s Thesis
0-88 cr.
Thesis.
FCS 450. Equine Assisted Learning        3 cr.
   Advanced study of the dynamic interplay of equine and human relations.
   Students take an in-depth look at the use of experiential learning and its
   application using horses. Students will learn to construct learning set-
   tings using horses to achieve learning outcomes.

FCS 581. Middle Childhood Development in the Family        3 cr.
   Research and theory relevant to the physical, mental, and socio-emotional
development of children from ages five to twelve. Attitudes, knowledge,
   and skills needed for working with school-age children and their families.

FCS 582. Theories of Marriage and Family Therapy        3 cr.
   A balanced study of major theories, research, applications and principles
   of marriage and family therapy. This course will examine major therapy
   models and the theories they are derived from as well as the effective-
   ness of specific therapy models for specific mental health disorders
   through research.

FCS 583. Parenting and Child Guidance        3 cr.
   Theories, principles, and skills essential for parents and professionals
   in guiding children within the family system. Problem prevention techniques
   are stressed.

FCS 584. Family Law and Ethics        3 cr.
   Study of selected aspects of federal and state laws and ethical issues as
   they relate to the family system.

FCS 585. The Family System        3 cr.
   Contemporary family interaction: concepts, composition, resource and
   environment.

FCS 586. Sexuality and Family Dynamics        3 cr.
   Psychosocial and physiological aspects of human sexuality from a life
   span and family systems perspective.

FCS 587. Contemporary Marriage and Family Issues        3 cr.
   Investigation of one of the following topics each semester: dual career
   families, nontraditional relationships, aged in marriage

FCS 589. Family Crises and Rehabilitation        3 cr.
   Examination of the major crises experienced by families. Emphasis on
   family system functioning rather than individual functioning. Preventa-
   tive measures, positive coping strategies, and therapeutic intervention
   approaches examined.

FCS 590. Special Topics        1-4 cr.
   Specific subjects to be announced in the Schedule of Classes. Maximum
   of 4 credits per semester and a total of 8 credits toward a degree.

FCS 592. Strategies in Family Therapy        3 cr.
   Effective intervention strategies in family therapy practice. Live and taped
   role plays of interventions for various family problems required. Construc-
   tive approaches for working with family systems and third-party payers.

FCS 598. Special Research Programs        1-4 cr.
   Individual investigations either analytical or experimental. Maximum of 4
   credits per semester and no more than 6 credits toward a degree.

FCS 599. Master’s Thesis        0-88 cr.
   Thesis

FAMILY AND CONSUMER SCIENCES

FCSC 500. Research Methods        3 cr.
   This course covers the critical evaluation of research literature, develop-
   ment of research proposals and principles of program evaluation.
   Students will be introduced to the application of qualitative or quantitative
   methods. Students will be expected to develop research questions and
   test hypotheses using statistical analysis and a variety of methodologies.

FCSC 598. Special Research Programs        1-4 cr.
   Individual investigations, either analytical or experimental. Maximum of 4
   credits per semester and no more than 6 credits toward a degree.

FCSC 599. Master’s Thesis        0-88 cr.
   May be repeated for unlimited credit, maximum of 6 credits toward a degree.

FAMILY AND CONSUMER SCIENCES EDUCATION

FCSE 492. Special Problems        1-4 cr.
   Individual research study in a selected subject area of family and con-
   sumer sciences. Maximum of 4 credits per semester and 6 credits toward
degree.

FCSE 545. Graduate Study in Vocational Programs for Youth and Adults        3 cr.
   Covers vocational education history and programs and ancillary functions
   of family and consumer sciences. Experience in extension programs and
   teaching. Additional assignments beyond FCSE 445 required for students
   registering in FCSE 545.
FCSE 546. Graduate Study in Teaching Methods I 3 cr. Objectives, content, and organization of family and consumer sciences in high schools; materials and methods of teaching. Additional assignments beyond FCSE 446 required for students registering in FCSE 546.


FCSE 548. Graduate Study in Supervised Teaching in Family and Consumer Sciences 9 cr. Seventy of full-time, supervised teaching in selected schools. Additional assignments beyond FCSE 448 required for students registering in FCSE 548. Prerequisite: FCSE 446 or FCSE 546, and consent of instructor. Corequisites: FCSE 447 or FCSE 547.

FCSE 590. Special Topics 1-4 cr. Specific subjects and credits to be announced in the Schedule of Classes. May be repeated for a maximum of 9 credits toward a degree, 4 credits per semester.

FAMILY RESOURCE MANAGEMENT

FRMG 450. Special Topics 1-4 cr. Specific subjects and credits to be announced in the Schedule of Classes. May be taken for a maximum of 4 credits per semester and a total of 9 credits toward a degree.

FRMG 492. Special Problems 1-4 cr. Individual research study in a selected subject of Family and Consumer Sciences. Maximum of 4 credits per semester and a grand total of 8 credits towards a degree. Consent of Instructor required.

FRMG 590. Special Topics 1-4 cr. Specific subjects and credits to be announced in the Schedule of Classes. May be taken for a maximum of 4 credits per semester and a total of 9 credits toward a degree.

HOTEL, RESTAURANT, AND TOURISM MANAGEMENT

HRTM 450. Special Topics 1-4 cr. Specific subjects to be announced in the Schedule of Classes. Prerequisite: consent of instructor. Maximum of 4 credits per semester and a total grand total of 9 credits.

HRTM 492. Special Problems 1-4 cr. Individual research in a selected subject area of hospitality management. Prerequisite: consent of instructor. Maximum of 4 credits per semester and a total of 6 credits toward a degree.

HRTM 507. Hospitality and Tourism Internship 3 cr. Supervised placement in a hospitality or tourism organization. An in-depth written report of the experience is required. Prerequisite: consent of instructor. Graded S/U.

HRTM 590. Special Topics 1-4 cr. Specific subjects and credits to be announced in the Schedule of Classes. Prerequisite: consent of instructor. Maximum of 4 credits per semester and a total of 9 credits toward a degree.

HRTM 598. Special Research Programs 1-4 cr. Individual investigations, either analytical or experimental. Prerequisite: consent of instructor. Maximum of 4 credits per semester and no more than 6 credits toward a degree.

HRTM 599. Master’s Thesis 0-6 cr. Thesis. Prerequisite: consent of instructor.

FOOD SCIENCE AND TECHNOLOGY

FSTE 450. Special Topics 1-4 cr. Specific subjects and credits to be announced in the Schedule of Classes. Consent of instructor required.

FSTE 475. ACES in the Hole Foods IV 1-4 cr. (2P) Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. Prerequisite(s): FSTE 375. Restricted to FSTE majors.

FSTE 492. Special Problems 1-4 cr. Individual research study in a selected subject of Family and Consumer Sciences. Maximum of 4 credits per semester and a grand total of 8 credits towards a degree. Consent of instructor required.

FSTE 500. ACES in the Hole Foods II 3 cr. (2-2P) The science and technology of brewing unit operations and the ingredients used in beer brewing. That knowledge is then applied to designing and brewing classic world beer styles. Styles investigated change every semester but typically include India Pale Ale, Pale Ale, Stout, Porter, Hefe- weizen, Scottish Ale, and Black IPA. Comprehensive evaluation of the product relative to style guidelines completes the design-brew-evaluate cycle. Students must be at least 21 years of age on the first day of class. Restrictions used in beer brewing. That knowledge is then applied to designing and brewing classic world beer styles. Styles investigated change every semester but typically include India Pale Ale, Pale Ale, Stout, Porter, Hefe- weizen, Scottish Ale, and Black IPA. Comprehensive evaluation of the product relative to style guidelines completes the design-brew-evaluate cycle. Students must be at least 21 years of age on the first day of class.

FSTE 510. Food Preservation 1-4 cr. Processes used in home and commercial food preservation, including canning, freezing, drying, and irradiation. Same as FSTE 310 with additional work required at the graduate level.

FSTE 520. Graduate Study in Food Microbiology 3 cr. (2-3P) Detrimental and beneficial microbiological aspects of food products. Methods of quantification and identification of microorganisms associated with food spoilage and preservation. Additional work required at the graduate level. Prerequisite: BIOL 111G/111L, or BIOL 211G/211L, or BIOL 190, or consent of instructor.

FSTE 521. Graduate Study in Food Chemistry 3 cr. Comprehensive study of the chemical and physiochemical properties of food constituents. Chemical changes involved in the production, processing and storage of food products and basic techniques used to evaluate chemical and physiochemical properties of foods. Additional work required at the graduate level. Prerequisites: CHEM 111G, CHEM 112G, and CHEM 211, or consent of instructor.

FSTE 522. Food Processing Technologies 4 cr. (3-2P) Common food processing unit operations such as raw material preparation, separation, concentration, fermentation, pasteurization, sterilization, extrusion, dehydration, baking, freezing, chilling, freezing, controlled atmosphere storage, water, waste and energy management, packaging, materials handling and storage and process control. Application of principles to processing food in a laboratory setting. Additional work beyond that for FSTE 423 required at the graduate level. Prerequisite(s): FSTE 528.


FSTE 525. Graduate Study in Food Analysis 3 cr. (2-3P) Covers basic chemical and physical techniques used in establishing nutritional properties and overall acceptance of food products. Additional work required at the graduate level. Prerequisite(s): CHEM 111 or consent of instructor.

FSTE 526. Graduate Study in Dairy Products Manufacturing 3 cr. Physical, chemical, microbiological and sensory properties of milk and dairy products. Capstone course which includes a variety of techniques used in previous classes to evaluate milk and dairy products. Additional work required at the graduate level. Prerequisite(s): FSTE 320, FSTE 325, and HNFS 420, or consent of instructor.

FSTE 528. Introduction to Food Engineering 4 cr. (3-2P) Basic engineering principles including mass and energy balances, fluid flow, heat transfer and chemical kinetics and their application to food processing unit operations. Video and laboratory participation are used to enhance course content and relevance. Additional work beyond that for FSTE 328 required at the graduate level. Prerequisite(s): MATH 142G or consent of instructor.

FSTE 529. Product Development 3 cr. (2-3P) Application of chemical, physical, nutritional and psychological principles and experimental methods to the development and evaluation of a food product for a specified food product development competition. Prerequisite(s): FSTE 320 and FSTE 425.

FSTE 531. Food Preservation 3 cr. Processes used in home and commercial food preservation, including canning, freezing, drying, and irradiation. Same as FSTE 310 with additional work required at the graduate level.

FSTE 532. Designing and Brewing Great Beers of the World 3 cr. (2-2P) The science and technology of brewing unit operations and the ingredients used in beer brewing. That knowledge is then applied to designing and brewing classic world beer styles. Styles investigated change every semester but typically include India Pale Ale, Pale Ale, Stout, Porter, Hefe- weizen, Scottish Ale, and Black IPA. Comprehensive evaluation of the product relative to style guidelines completes the design-brew-evaluate cycle. Students must be at least 21 years of age on the first day of class.

FSTE 547. Experimental Foods 3 cr. Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. Consent of instructor required. Restricted to FSTE majors.

FSTE 560. Rumen Microbiology (so) 3 cr. Covers basic chemical and physical techniques used in establishing nutritional properties and overall acceptance of food products. Additional work required at the graduate level. Prerequisite(s): CHEM 111 or consent of instructor.

FSTE 575. ACES in the Hole Foods 1-4 cr. (2-2P) Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. Consent of instructor required. Restricted to FSTE majors.
HNDS 551. Graduate Study in Community Nutrition        3 cr.
HNDS 546. Diet Therapy I        3 cr.
HNDS 549. Diet Therapy II        3 cr.
HNDS 548. Graduate Studies in Advanced Nutrition        3 cr.
HNDS 516. Nutrition and Culture        3 cr.
HNDS 507. Laboratory Techniques in Nutrition        4 cr. (2+6P)
HNDS 506. Geriatric Nutrition        3 cr.
HNDS 530. Graduate Studies in Food Service Organization and Management        3 cr.
HNDS 510. Graduate Study in Sports Nutrition        3 cr.
HNDS 501. Advanced Animal Nutrition (so)        3 cr.
Prerequisite: CHEM 211 or consent of instructor. Same as ANSC 501.
HNDS 504. Maternal, Infant, and Child Nutrition        3 cr.
HNDS 506. Laboratory Techniques in Nutrition        4 cr. (2-6P)
Methodology and experimental procedures in measuring nutrient require-
ments and values of diets. Prerequisites: ANSC 422 and CHEM 321, or
consent of instructor. Same as ANSC 507.
HNDS 510. Graduate Study in Sports Nutrition        3 cr.
Role of nutrition and nutrients in physical performance of competitive and
recreational sports participants. Additional work required at the graduate
level. Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of
instructor.
Same as ANSC 512.
HNDS 516. Nutrition and Culture        3 cr.
Cultural aspects of health, food, and nutrition for most ethnic groups of the
United States. Covers traditional versus contemporary food habits
along with the history and beliefs that influence such habits. Students in
this class will be given additional assignments and grading scale will be
different from HNDS 416.
HNDS 517. Graduate Seminar        1 cr.
Current topics. Same as ANSC 515. Prerequisite: consent of instructor.
HNDS 522. Animal Nutrition (so)        3 cr.
Prerequisite: CHEM 211. Same as ANSC 522.
HNDS 530. Graduate Studies in Food Service Organization and Management        3 cr.
Personnel, financial, and general management in institutional and commer-
cial food service operations. Additional work required at the graduate level.
HNDS 546. Diet Therapy I        3 cr.
Special diets and physiological basis for their use. Laws and regulations
concerning the practice of dietetics. Additional assignments beyond
HNFS 446 required for students registering in HNDS 546. Prerequisites:
BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.
HNDS 548. Graduate Studies in Advanced Nutrition        3 cr.
Covers biochemistry and physiology applied to nutrition. Students
enrolled in the 500-level class will be required to complete additional
assignments beyond what is required for HNDS 448. Prerequisite(s): BIOL
254, BCHE 341, and HNDS 251, or consent of instructor. Restricted to:
Main campus only.
HNDS 549. Diet Therapy II        3 cr.
Continuation of HNDS 548. Prerequisites: HNDS 546 or consent of instructor.
HNDS 551. Graduate Study in Community Nutrition        3 cr.
Overview on the practice of community nutrition to include program planning,
needs assessment, program implementation and program evaluation. Role
of public and private agencies in nutrition programs that impact on nutrition
of individuals and groups in the community. Additional work required at the
graduate level. Prerequisite: HNDS 550 or consent of instructor.
HNDS 555. Nutritional Toxicology        3 cr.
Same as TOX 455 and ANSC 555.
HNDS 561. Dietetic Internship: Supervised Practice in CES        3 cr. (6P)
Provides dietetic interns with a minimum of 250 clock hours of supervised
practice in Community Nutrition in Cooperative Extension Service set-
tings. Dietetic interns will work under the guidance of faculty and Coop-
erative Extension Service professionals. Consent of instructor required.
Prerequisite(s): Acceptance into Dietetic Internship. Restricted to HNDS
majors.
HNDS 562. Dietetic Internship: Supervised Practice in Community
Nutrition        1-3 cr. (2P)
Provides dietetic interns with a minimum of 250 clock hours of supervised
practice in community nutrition. Dietetic interns work under the guid-
ance of faculty and community nutrition professionals. Students must
complete a total of 3 credit hours of HNDS 562. Consent of instructor
required. Prerequisite(s): Acceptance into Dietetic Internship. Restricted
to Dietetic interns majors.
HNDS 563. Community Nutrition for Dietetic Interns        3 cr.
Advanced topics in community nutrition to include conducting commu-
nity nutrition needs assessments, program planning and grant writing.
Consent of instructor required. Prerequisite(s): Acceptance into Dietetic
Internship. Restricted to HNDS majors.
HNDS 564. Dietetic Internship: Supervised Practice in Food Service
Management        1-4 cr. (2P)
Provides dietetic interns with a minimum of 300 clock hours of supervised
practice in foodservice management. Dietetic interns work under the
guidance of faculty and foodservice management professionals. Stu-
dents must complete a total of 4 credit hours of HNDS 564. Consent of
instructor required. Prerequisite(s): Acceptance into Dietetic Internship.
Restricted to Dietetic interns majors.
HNDS 565. Foodservice Management for Dietetic Interns        2 cr.
Advanced topics in foodservice systems management to include business
planning and marketing. Consent of instructor required. Prerequisite(s):
Acceptance into Dietetic Internship. Restricted to HNFS majors.
HNDS 566. Dietetic Internship: Supervised Practice in Clinical Dietetics        6 cr. (12P)
Provides dietetic interns with a minimum of 500 clock hours of super-
vised practice in clinical dietetics. Dietetic interns work under the
guidance of faculty and dietetics professionals. Consent of instruc-
tor required. Prerequisite(s): Acceptance into Dietetic Internship.
Restricted to HNFS majors.
HNDS 567. Nutrition Care Process for Dietetic Interns        3 cr.
Advanced topics in nutrition care process and model to include medical
nutrition therapy and evidence-based research and outcomes assess-
ment in clinical dietetics. Consent of instructor required. Prerequisite(s):
Acceptance into Dietetic Internship. Restricted to HNDS majors.
HNDS 568. Dietetic Internship Seminar II        3 cr.
Completion of dietetic internship portfolio and preparation for the
national registration examination for dietitians. Consent of instruc-
tor required. Prerequisite(s): Acceptance into Dietetic Internship.
Restricted to HNFS majors.
HNDS 590. Special Topics        1-4 cr.
Specific subjects to be announced in the Schedule of Classes. Maximum of
4 credits per semester and a total of 8 credits towards a degree.
HNDS 598. Special Research Programs        1-4 cr.
Individual investigations either analytical or experimental. Maximum of
4 credits per semester and no more than 6 credits towards a degree.
HNDS 621. Metabolic Functions and Dysfunctions        3 cr.
Same as ANSC 621.
HNDS 625. Nutrient Metabolism I: Mineral, Vitamin, and Nitrogen
Metabolism        4 cr.
Same as ANSC 625.
HNDS 626. Nutrient Metabolism II: Carbohydrates, Lipids, and Energetics (se)        4 cr.
Same as ANSC 626.
ECOLOGY

Students electing a minor are required to take at least 8 credits in the minor involving a thesis or research project. This includes 4 to 6 credits of research (FWCE 598). Successful applicants will be selected from those who meet the criteria of the Graduate School, and who appear to have professional promise as indicated by personal history and letters of recommendation. Applicant forms, application fee and transcripts should be submitted online to the Graduate Record Exam (GRE), with at least 450 in the quantitative parts. It is preferred that at least two letters come from university instructors along with official GRE scores. Applicants should also contact a faculty member in the department that they would like to work with as an advisor, and letters of recommendation. All applications must be submitted directly to the department. Applicants may petition to have up to 3 credits of special topics courses (FWCE 548) apply to one of the three areas. Courses other than those listed may be acceptable, given permission by the student’s supervisory committee.

Quantitative Methods: Eligible courses

- A ST 503, SAS Basics .........................................................................................................2
- A ST 506, Statistical Inference II .....................................................................................3
- A ST 507, Advanced Regression .....................................................................................3
- A ST 523, Biological Sampling ......................................................................................3
- A ST 590, Special Topics ..........................................................................................4-6
- FWCE 598, Thesis Research ..........................................................................................

Organismal Biology: Eligible courses

- BIOL 467, Evolution ........................................................................................................3
- BIOL 484, Animal Communications .............................................................................3
- BIOL 488, Genetic Aspects of Population Biology ........................................................3
- BIOL 567, Individuals and Populations ........................................................................3
- BIOL 568, Communities and Ecosystems ....................................................................3
- BIOL 569, Evolutionary Ecology ....................................................................................3
- BIOL 570, Ecological Biogeography .............................................................................3
- BIOL 587, Behavioral Ecology ......................................................................................3
- FWCE 466, Advanced Management of Mammals .......................................................3
- FWCE 482, Ichthyology ..................................................................................................3
- FWCE 532, Environmental Biology of Fishes .................................................................3

Ecological Techniques: Eligible courses

- FWCE 464, Management of Terrestrial and Aquatic Systems .....................................4
- FWCE 534, Aquatic Contaminants and Toxicology .......................................................3
- FWCE 522, Research Methods .....................................................................................3
- FWCE 537, Wildlife Damage Management ..................................................................3
- GEOG 487, GIS Practicum ............................................................................................3
- GEOG 521, GIS Applications .........................................................................................3
- RGSC 452, Rangeland Analysis ....................................................................................4
- RGSC 518, Watershed Methods and Management .......................................................3

Independent Study: Eligible courses

- FWCE 548, Special Topics .............................................................................................up to 3
- FWCE 598, Thesis Research ..........................................................................................4-6
- FWCE 599, Thesis ..........................................................................................................4-6

Graduate work in the department is intended to prepare students for careers in research, teaching, extension, and management. Facilities available to graduate students include two ranches of approximately 90,000 acres, a large suite of shared laboratories, and a large fish culture facility. We actively cooperate with state and federal natural resource management agencies, and graduate students have access to national forests and extensive public lands, as well as the Jornada Basin Long-Term Ecological Research site and associated databases (see http://jornada-www.nmsu.edu for details). Additional research opportunities for graduate students are available in the New Mexico Cooperative Fish and Wildlife Research Unit, located in the department since 1988.

Additional information on the graduate program and faculty is available at http://aces.nmsu.edu/academics/fws/
FISH, WILDLIFE AND CONSERVATION ECOLOGY

FWCE 450. Specific Topics 1-4 cr.
Specific subjects and credits as announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. Consent of instructor required.

FWCE 456. Environmental Risks and Decisions 3 cr.
Risk assessment and decision analysis in the context of environmental and conservation issues. Concepts of risk perception and uncertainty; precautionary principle; the roles of experts and stakeholders; the use of conceptual and probabilistic models in risk assessment. Pre/ Corequisites: MATH 142G or MATH 191G, A ST 311, FWCE 301.

FWCE 457. Ecological Biometry 3 cr.
Use of ecological data to test scientific hypotheses. Statistical and stochastic models for environmental data, data visualization, likelihood-based and information-based model selection. Emphasis on open-source software tools. Prerequisites: MATH 142G or 191G, A ST 311, FWCE 301.

FWCE 458. Aquatic Ecology 4 cr.
Plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Prerequisites: FWCE 301 or BIOL 301, CHEM 112G, MATH 142G.

FWCE 462. Conservation Biology 3 cr.
An examination of the patterns of biological diversity, the processes that generate and maintain it, as well as the forces that are eroding it. Aspects will include the value of biodiversity, factors driving extinction, national and international law and policy. Prerequisites: BIOL 111G and BIOL 111L. Pre/Corequisites: FWCE 301.

FWCE 464. Management of Aquatic and Terrestrial Ecosystems 4 cr. (3-2P)
Principles and methods for managing aquatic and terrestrial ecosystems and their fish and wildlife resources. Emphasis on quantitative techniques, data collection and analysis for management of systems at a landscape spatial scale. Prerequisites: FWCE 301 or FWCE 302, FWCE 330, A ST 311.

FWCE 466. Advanced Wildlife Management of Mammals 3 cr.
Ecological principles, production and harvest, habitat management, and techniques of mammal management.

FWCE 467. Herpetology 4 cr.
Systematics, taxonomy, ecology, behavior, and conservation of amphibians and reptiles. Field trips required. Prerequisites: FWCE 330.

FWCE 488. Conservation Genetics 3 cr.
Classification, morphology, identification, life history, and ecology of fishes. Prerequisites: FWCE 330 or consent of instructor.

FWCE 496. Advanced Limnology (s) 3 cr.
Principles and methods for managing aquatic and terrestrial ecosystems and their fish and wildlife resources. Emphasis on quantitative techniques, data collection and analysis for management of systems at a landscape spatial scale. Prerequisite: FWCE 301 or FWCE 302, FWCE 330, A ST 311.

FWCE 509. Population Ecology (s) 3 cr.
Individual investigations, either analytical or experimental. Maximum of 3 credits per semester. No more than 6 credits of this course and FWCE 598, combined, toward a degree.

FWCE 510. Population Ecology (s) 3 cr.
Quantitative analysis of vital statistics and mechanisms promoting stability in wild populations. Theory and application of the tables and population models.

FWCE 515. Graduate Seminar 1 cr.
Current topics. May be repeated for unlimited credit.

FWCE 522. Fishery and Wildlife Research Methods (f) 3 cr.
Methods of research in fishery and wildlife management to include conceptual analysis of research problems; proposal preparation; presentation of results. Prerequisite: A ST 461 or consent of instructor.

FWCE 532. Environmental Biology of Fishes 4 cr. (3-3P)
What makes a fish a fish. Mechanisms of circulation, gas exchange, osmotic and ionic regulation, swimming, reproduction, and chemoception. Students are responsible for all requirements for FWCE 432 plus additional work.

FWCE 534. Aquatic Contaminants and Toxicology 4 cr. (3-3P)
Basic principles and methodologies of aquatic toxicity testing. Routes of exposure and modes of action. Environmental legislation and ecological risk assessment. Students are responsible for all requirements for FWCE 434 plus additional work.

FWCE 535. Special Topics 1-4 cr.
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

FWCE 536. Advanced Avian Ecology 3 cr.
Focuses on current topics and literature in avian ecology including systematics, mating systems, behavior, physiology, movement patterns and conservation. Includes required overnight field trips. Prerequisite(s): Graduate standing or consent of instructor.

FWCE 537. Wildlife Damage Management 3 cr.
Introduction to basic need and appropriate methods for resolving human-wildlife conflicts and management of animal damage. Socioeconomic, ecological, and political factors. Field trips required. Taught with FWCE 437.

FWCE 540. Wildlife Habitat Relationships 3 cr.
The study of wildlife-habitat relationships primarily seeks to describe how the distribution and abundance of resources used for food, cover and security, and constraints on the use of these resources influence the distribution of animals. This course will cover aspects of animal behavior related to how animals select habitat, theoretical models of habitat selection, the influence of inter- and intra-specific interactions on habitat selection, habitat quality, study designs for wildlife-habitat studies, modeling habitat selection and data analyses.

FWCE 545. Advanced Fish and Wildlife Habitat Management (f) 4 cr. (3-2P)
Principles and methods for managing aquatic and terrestrial habitats for use by fish and wildlife. Quantitative methods and computer programs for evaluating habitats. Field trips and use of computer programs by students are required. Prerequisite: WLSC 522 or consent of instructor.

FWCE 548. Graduate Problems 1-3 cr.
Individual studies in fishery and wildlife sciences. Maximum of 3 credits per semester. No more than 6 credits of this course and FWCE 598, combined, toward a degree.

FWCE 558. Nonthesis Project 1-6 cr.
Independent study to satisfy nonthesis project requirement. Maximum of 6 credits toward degree. Available only to nonthesis students.

FWCE 560. Wildlife Ethology (s) 3 cr.
Comparative vertebrate behavior including social organization, dominance, marking, territoriality, and mother/offspring relationships and their management implications. Introduction to sociobiology. Prerequisite: consent of instructor.

FWCE 578. Advanced Limnology (s) (a) 3 cr.
Concepts in aquatic production ecology and analytical methods for lake and flowing waters. Prerequisite: consent of instructor.

FWCE 585. Fish and Wildlife Planning (f) 3 cr.
Covers planning methodologies and concepts for fishery and wildlife professionals.

FWCE 595. Internship 1-6 cr.
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. No more than 6 credits toward the degree.

FWCE 598. Special Research Programs 1-3 cr.
Individual investigations, either analytical or experimental. Maximum of 3 credits per semester. No more than 6 credits of this course and FWCE 598, combined, toward a degree. Not available to students in the nonthesis program.

FWCE 599. Master’s Thesis 0-88 cr.
Theoretical and experimental research.
More than ever, we are linked in an interconnected world: both in agriculture and sustainability of environmental systems. The department has programs in plant sciences, environmental science, soil science, water management, natural resources management, and turf management. Students trained in these areas are in demand for U.S. and international positions. This demand is at all levels of training—B.S., M.S., and Ph.D. Therefore, the course work and original research in Plant and Environmental Sciences leading to the Master of Science and Doctor of Philosophy are designed for and have proven to be successful in preparing students for commercial companies, educational institutions, governmental agencies, and private production enterprises.

The student may emphasize study in several discipline areas described in the following pages. The agronomy section emphasizes sustainable crop production, plant-pest/disease/weed interactions, soil-water-plant relations, crop physiology, and breeding and genetics of cotton, alfalfa, maize and peanuts. The genetics section places special emphasis on genetic basis of agronomic or horticultural traits, applied bioinformatics, gene regulation and genomics. The environmental and soil science sections emphasize environmental quality and ecosystem services, bioremediation, recycling of organic wastes and wastewater, water use efficiency, soil-plant relations, soil-geomorphology and desert ecology, and the fertility, chemistry, physics, and microbiology of soils, including forest soils. The horticulture section emphasizes the creative use of plants by humans, and studies on the technical advancements in the husbandry of most economic commodity groups of fruits, vegetables, or ornamentals as well as managed turf. Emphasis may be in breeding and genetics of chile or onions, plant growth and development, nutrition, dormancy and cold hardiness, plant stress (water and/or salinity) response, fruit and vegetable physiology, forestry, and turfgrass.

Most students will be expected to complete a thesis. The research detailed in a thesis should be of a scope and quality to merit publication in a refereed journal. Depending on prior training and experience, a non-thesis option is available subject to approval by a departmental committee. The non-thesis option requires completion of a research project and paper of limited scope. In both the thesis and non-thesis options, suitability of the research project and resulting thesis or paper will be judged by the student’s graduate committee. A minor is recommended and may be taken in chemistry, biology, molecular biology, environmental management, applied statistics, toxicology or other areas.

Prerequisite to major graduate work is completion of a curriculum essentially equivalent to that required by the department for the B.S. degree at New Mexico State University.

Qualifications for admission will be reviewed by the departmental graduate faculty. Applications should include a letter of interest. A 3.0 undergraduate grade-point average is needed for admission to study for the M.S. degree and a 3.2 grade-point average for Ph.D. studies. The department requires the GRE scores and three letters of recommendation, as well as the student’s letter of interest as an admission requirement. Final acceptance requires that a graduate faculty member in the applicant’s area of interest accept the student into their program.

A student planning a program leading to a Ph.D. must satisfy one of the following departmental requirements approved by the doctoral committee.

1. A thorough knowledge of a language other than English
2. A reading ability in two foreign languages
3. Reading ability in one foreign language and proficiency with a research tool
4. Reading ability in one foreign language and one semester of supervised teaching experience
5. Proficiency with a research tool and one semester of supervised teaching
6. Two semesters of supervised teaching

A number of graduate assistantships are available each year. Inquiries should be addressed to the department.

AGRONOMY

AGRO 450. Special Topics

Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree.

AGRO 462. Plant Breeding

Principles and practices involved with the genetic improvement of plants. Prerequisites: ANSC/AGRO/BIOL/HORT 305. Same as HORT 462.

AGRO 471. Plant Mineral Nutrition

Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are absorbed, translocated, and utilized throughout the plant. Prerequisite: EPWS/BIOL 314, or concurrent enrollment, or consent of instructor. Same as HORT 471 and EPWS 471.

AGRO 483. Sustainable Production of Agronomic Crops

Characteristics and objectives of sustainable agricultural systems with application to the production, utilization, and improvement of cereal grain, fiber, forage and oilseed crops. Corequisite(s): AGRO 365 or HORT 365.

AGRO 492. Diagnosing Plant Disorders

Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Prerequisites: EPWS 303 and EPWS 310. Same as EPWS 492 and HORT 492.

AGRO 500. Special Topics

Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

AGRO 505. Research Orientation

Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: HORT 505 and SOIL 505.

AGRO 506. Plant Genetics

Advanced treatment of the principles of classical genetics and heredity with emphasis on the nature and action of the gene including molecular analysis. Prerequisite: AGRO 305 or consent of instructor. CHEM 345 recommended. Same as HORT 506.

AGRO 511. Introduction to Weed Science (II)

Covers the principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Includes identification of local weeds. Research paper required for graduate credit. Prerequisites: CHEM 1110 and BIOL 190 or BIOL 211G, or consent of instructor. Same as EPWS 511.

AGRO 514. Soil-Plant Relationships

Physical, chemical, and biological soil environment as it affects plant and crop growth. Prerequisites: BIOL 314, SOIL 252. Same as HORT 514 and SOIL 514.

AGRO 515. Crop Physiology

Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Prerequisites: EPWS/BIOL 314 or consent of instructor. Crosslisted with: HORT 515
AGRO 516. Molecular Analysis of Complex Traits 3 cr.
Provide a comprehensive overview of molecular genetic analysis of complex phenomena, including case histories/experiments in plants, animals and humans. Emphasize technological developments in DNA marker technologies and their application to molecular quantitative genetics. Explore the efficient application of these technologies in the future to complex genetic systems, breeding, and other areas of life sciences. Prerequisite: AGRO 305 or consent of instructor. Same as HORT 516.

AGRO 533. Environmental Physiology of Plants 3 cr.
Integral responses of plants and crop productivity to naturally occurring and modified environmental factors such as radiation, temperatures, water vapor, carbon dioxide, and air flow. Prerequisite: BIOL 314 or consent of instructor. Same as BIOL/HORT 533.

AGRO 590. Graduate Seminar 1 cr.
Review of current scientific literature in agronomy, horticulture, and soil science. Same as HORT/SOIL 590.

AGRO 595. Internship 1-6 cr.
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree. Same as SOIL 595.

AGRO 597. University Teaching Experience 1-3 cr.
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Restricted to: Main campus only. Restricted to Agronomy and Horticulture Graduate Students. Crosslisted with: HORT 597 and SOIL 597

AGRO 598. Special Research Programs 1-6 cr.
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. More than 9 credits toward degree. Same as SOIL 598.

AGRO 599. Master’s Thesis 0-88 cr.
Thesis.

AGRO 600. Doctoral Research 1-88 cr.
Research.

AGRO 609. Breeding for Plant Disease Resistance 3 cr.
A practically-oriented course of lectures and discussion on concepts and principles of breeding for disease and pest resistance. Labs familiarize students with preparation, quantification, and application of inoculum to hosts. Same as HORT 609.

AGRO 610. Advanced Crop Breeding 4 cr. (3-3P)
Applications of breeding principles to crop improvement. Emphasis on breeding methodologies using modern techniques, including biotechnology. Prerequisite: AGRO 462 or consent of instructor. Same as HORT 610.

AGRO 620. Instrumentation in Agronomy 3 cr.
Use of instruments used in research in all areas of agronomy including gas chromatography, high performance liquid chromatography, neutron soil moisture probe, and other instruments. Same as HORT/SOIL 620.

AGRO 670. Biometrical Genetics and Plant Breeding 3 cr.
A statistical approach to gene action and population parameters as applied to plant improvement. Prerequisite: AGRO 462 or consent of instructor. Same as HORT 670.

AGRO 685. Plant Genetic Engineering 3 cr.
Analysis of plant genome structure and potential applications of emerging molecular techniques to the genetic improvement of plants. Prerequisites: HORT/AGRO 586 and AGRO/HORT 596 or CHEM 545, or consent of instructor. Same as HORT/BIOL 686.

AGRO 694. Doctoral Seminar 1 cr.
Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. Prerequisite: doctoral level graduate students. Same as SOIL 694.

AGRO 696. Doctoral Proposal 1 cr.
Current research proposal written by doctoral level graduate students. Not more than 1 credits toward the degree. Prerequisite: doctoral level graduate students. Same as SOIL 696.

AGRO 697. University Teaching Experience 1-3 cr.
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: HORT 697 and SOIL 697.

AGRO 698. Topics in Agronomy 1-6 cr.
Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

AGRO 700. Doctoral Dissertation 0-88 cr.
Dissertation. 

ENVIRONMENTAL SCIENCE

E S 452. Geohydrology 3 cr.
Origin, occurrence, and movement of fluids in porous media and assessment of aquifer characteristics. Development and conservation of ground water resources, design of well fields. Prerequisite(s): C E 160 or GEOL 1116, and C E 231. Crosslisted with: GEOL 462 and C E 462.

E S 459. Aquatic Ecology 4 cr.
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Prerequisite(s): (E S,WLSC or BIOL 301), CHEM 1120, (MATH 1420 or MATH 1910). Crosslisted with: WLSC 459.

E S 460. Introduction to Air Pollution 3 cr.
An introduction to the physics and chemistry of tropospheric air pollution including sources of air pollution, local and long-range transport, instrumentation, regulatory requirements, control technology. Prerequisite(s): PHYS 215, CH EM 112, MATH 191.

E S 462. Sampling and Analysis of Environmental Contaminants 3 cr. (1-6P)
Theory, application, methodology, and instrumentation used in the sampling and analysis of environmental contaminants. Prerequisites: E S 256. Same as ENV E 462.

E S 470. Environmental Impacts of Land Use 3 cr.
Capstone course for the environmental science major. Case studies of environmental problems impacting land. Prerequisites: E S 256, E S 462, E S 370.

E S 599. Master’s Thesis 1-88 cr.

E S 700. Doctoral Dissertation 1-88 cr.

GENETICS

GENE 450. Special Topics 1-3 cr.
Specific subjects to be announced in the schedule of classes. Maximum of 3 credits per semester and a total of 3 credits toward a degree. Consent of instructor required.

GENE 452. Applied Bioinformatics 3 cr.
Survey and application of publicly available bioinformatic tools that treat genomic DNA, cDNA, and protein sequences, RNA abundance, as well as tools that allow inference based on phylogenetic relationships. Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315 and GENE 320, and BCH 341, or BCH 395.

GENE 486. Genes and Genomes 3 cr.
Extensive coverage of nuclear and organelle genome structure in plants and animals, genome restructuring including duplication, aneuploidy, chromosome translocations and inversions, comparative genomics, and molecular systematics. Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315, and GENE 320.

GENE 488. Gene Regulation 3 cr.
Extensive coverage of signal transduction processes and approaches used to monitor large scale changes in gene regulation and protein synthesis that occur during development and in response to environmental changes. Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315.

HORTICULTURE

HORT 450. Special Topics 1-4 cr.
Specific subjects as announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 8 credits.

HORT 462. Plant Breeding 3 cr.
Principles and practices involved with the genetic improvement of plants. Prerequisites: ANSC/AGRO/BIOL/HORT 305. Same as AGRO 462.

HORT 465. Landscape Construction and Maintenance 4 cr. (3-3P)
Application of landscape design and construction principles to build and maintain residential, small commercial and selected public managed landscapes. Prerequisite(s): HORT 307 or consent of instructor.
HORT 471. Plant Mineral Nutrition 3 cr.
Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are acquired, absorbed, translocated, and utilized throughout the plant. Prerequisite: EPWS/BIOL 314, or concurrent enrollment, or consent of instructor. Same as AGRO/EPWS 471.

HORT 479. Advanced Turfgrass Science 3 cr.
Extensive reviews of turfgrass sciences including ecology, physiology, entomology, pathology, weed science, and soil science. Prerequisite: HORT 376 or consent of instructor.

HORT 484. Ornamental Plant Production and Management 4 cr. (3+3P)
Covers the principles and practices of greenhouse and nursery crop production and management. Greenhouse irrigation and water quality, fertilization, containers and media, lighting, CO2 enrichment, growth control, and crop scheduling. Prerequisite: HORT/AGRO 365 or consent of instructor.

HORT 485. Vegetable Crop Management 4 cr. (3+3P)
Physiological, environmental and cultural aspects of vegetable crop production. Corequisite(s): AGRO 365 or HORT 365, or consent of instructor.

HORT 488. Greenhouse Management 4 cr. (3+3P)
Principles and practices involved in greenhouse structures and construction, site considerations, covering materials, heating and cooling systems, greenhouse crop production techniques, and case studies. Prerequisite: HORT/AGRO 365 or consent of instructor.

HORT 492. Diagnosing Plant Disorders 3 cr. (2+2P)
Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Prerequisites: EPWS 303 and EPWS 310. Same as EPWS 492 and AGRO 492.

HORT 500. Special Topics 1-4 cr.
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

HORT 505. Research Orientation 4 cr. (3+2P)
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: AGRO 505 and SOIL 505

HORT 506. Plant Genetics 3 cr.
Advanced treatment of the principles of classical genetics and heredity with emphasis on the nature and action of the gene including molecular analysis. Prerequisite: AGRO 205 or consent of instructor. CHEM 345 recommended. Same as AGRO/BIOL 506.

HORT 514. Soil-Plant Relationships 3 cr.
Physical, chemical, and biological soil environment as it affects plant and crop growth. Prerequisites: BIOL 314, SOIL 252. Same as AGRO/SOIL 514.

HORT 515. Crop Physiology 3 cr.
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Prerequisite(s): EPWS/BIOL 314 or consent of instructor. Crosslisted with: AGRO 515

HORT 516. Molecular Analysis of Complex Traits 3 cr.
Provide a comprehensive overview of molecular genetic analysis of complex phenotypes, including case histories/experiments in plants, animals and humans. Emphasize technological developments in DNA marker technologies and their application to molecular quantitative genetics. Explore the efficient application of these technologies in the future to complex genetic systems, breeding, and other areas of life sciences. Prerequisite: AGRO 305 or consent of instructor. Same as AGRO/BIOL 516.

HORT 533. Environmental Physiology of Plants 3 cr.
Integral responses of plants and crop productivity to naturally occurring and modified environmental factors such as radiation, temperatures, water vapor, carbon dioxide, and air flow. Prerequisite: BIOL 314 or consent of instructor. Same as AGRO/BIOL 533.

HORT 590. Graduate Seminar 1 cr.
Review of current scientific literature in agronomy, horticulture, and soil science. Same as AGRO/SOIL 590.

HORT 595. Internship 1-6 cr.
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.

HORT 597. University Teaching Experience 1-3 cr.
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 597 and SOIL 597

HORT 598. Special Research Programs 1-6 cr.
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits toward a degree. Prerequisite: consent of instructor.

HORT 599. Master’s Thesis 0-88 cr.
Thesis.

HORT 609. Breeding for Plant Disease Resistance 3 cr.
A practically-oriented course of lectures and discussion on concepts and principles of breeding for disease and pest resistance. Labs familiarize students with preparation, quantification, and application of inoculum to hosts. Same as AGRO 609.

HORT 610. Advanced Crop Breeding 4 cr. (3+3P)
Applications of breeding principles to crop improvement. Emphasis on breeding methodologies using modern techniques, including biotechnology. Prerequisite: AGRO 462 or consent of instructor. Same as AGRO 610.

HORT 620. Instrumentation in Agronomy 3 cr.
Use of instruments used in research in all areas of agronomy including gas chromatography, high performance liquid chromatography, neutron soil moisture probe, and other instruments. Same as AGRO/SOIL 620.

HORT 670. Biometrical Genetics and Plant Breeding 3 cr.
A statistical approach to gene action and population parameters as applied to plant improvement. Prerequisite: AGRO 462 or consent of instructor. Same as AGRO 670.

HORT 685. Plant Genetic Engineering 3 cr.
Analysis of plant genome structure and potential applications of emerging molecular technologies to the genetic improvement of plants. Prerequisites: HORT/AGRO 585 and AGRO/HORT 506 or CHEM 545, or consent of instructor. Same as AGRO/BIOL 685.

HORT 697. University Teaching Experience 1-3 cr.
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 697 and SOIL 697

SOIL 450. Special Topics 1-4 cr.
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits towards a degree.

SOIL 456. Irrigation and Drainage 3 cr.
Principles and practices required for irrigation to exist as a permanent economy. Equipment and methods for measurement and control of water.

SOIL 472. Soil Morphology and Classification 4 cr. (2+2P)
Terminology used to describe soils. Soil classification systems of the world with emphasis on systems used in the United States. Theory of classification and taxonomy as applied to soils. Prerequisite: SOIL 252. Same as GEOG 472.

SOIL 476. Soil Microbiology 3 cr.
Nature and physiology of soil microorganisms, how they affect plant growth and recycle nutrients. Land farming, bioremediation and other environmental problems as influenced by soil microorganisms. SOIL 252 and BIOL 311 recommended. Same as BIOL 476.

SOIL 476L. Soil Microbiology Laboratory 1 cr. (3P)
Enumeration of soil microorganisms, their activities, and transformations they mediate. Prerequisites: SOIL 476 or concurrent enrollment. Same as BIOL 476L.

SOIL 477. Environmental Soil Physics 3 cr.
A description of the physical characteristics of porous media including soil. Examination of processes describing the transport of water, chemicals, heat and gases through porous media with application to environmental quality, waste management, and crop production.

SOIL 477L. Environmental Soil Physics Laboratory 1 cr.
Concurrent enrollment with SOIL 477 recommended. Hands on experience with techniques for characterizing soil physical properties such as particle size distribution, bulk density, water retention, hydraulic conductivity and solute transport. Demonstrations of field and laboratory techniques for measuring moisture content, soil water potential, gas/air flow and thermal conductivity. Prerequisite: SOIL 252.

SOIL 479. Environmental Soil Chemistry 3 cr.
Basic elements of soil chemistry including discussion of clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479. Prerequisites: SOIL 252L or GEOL 380, or three semesters of chemistry. Same as GEOL 479.
SOIL 500. Special Topics 1-4 cr.
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

SOIL 505. Research Orientation 4 cr. (3-2P)
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: AGRO 505 and HORT 505

SOIL 514. Soil-Plant Relationships 3 cr.
Physical, chemical, and biological soil environment as it affects plant and crop growth. Prerequisites: BIOL 314, SOIL 252. Same as AGRO/HORT 514

SOIL 590. Graduate Seminar 1 cr.
Review of current scientific literature in agronomy, horticulture, and soil science. Same as AGRO/HORT 590.

SOIL 597. University Teaching Experience 1-3 cr.
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 597 and HORT 597

SOIL 598. Special Research Programs 1-6 cr.
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

SOIL 600. Doctoral Research 1-98 cr.

SOIL 620. Instrumentation in Agronomy 3 cr.
Use of instruments used in research in all areas of agronomy including gas chromatography, high performance liquid chromatography, neutron soil moisture probe, and other instruments. Same as AGRO/HORT.

SOIL 630. Advanced Soil Classification 3 cr.
Philosophy and organization of various soil classification systems, some international in scope, with emphasis on the new USDA system and classroom and field experience in using this system. Prerequisite: SOIL 472 or consent of instructor.

SOIL 640. Advanced Soil Microbiology 3 cr.
Advanced topics in soil microbiology and biochemistry, including carbon cycling, nitrogen cycling, humus formation and nature, and microbial-plant root interactions. Consent of instructor required.

SOIL 650. Advanced Topics 1-3 cr.
Colloquium on contemporary topics associated with agriculture, environmental science and engineering. Multidisciplinary topics will be chosen to encourage participation of students from diverse disciplines. Prerequisite: consent of instructor. May be repeated for a maximum of 9 credits.

SOIL 651. Advanced Soil Chemistry 3 cr.
Advanced treatment of soil chemistry phenomena with emphasis on arid zone soils. Particular attention is given to reactions involved in environmental pollution and management of wastes. Prerequisite: SOIL 424 or SOIL 479

SOIL 652. Advanced Soil Physics 3 cr.
Advanced treatment of soil physics, modeling, includes working on an existing/new research project, modeling existing or new data, step by step guide on the use of some 1-D and 2-D models. Specific areas of specialization will be field scale variability of soil properties, water flow, solute transport, and plant water relations. Prerequisite(s): SOIL 477 and computer literacy, or consent of instructor.

SOIL 655. Moisture Heat Contaminant Transport Modeling 3 cr.
Provides clear coverage of the basic principles of heat, moisture and contaminant transport through porous media, and a step-by-step guidance and hands on application on the use of some spreadsheet based and physically based one- and two-dimensional transport models. A similar course does not exist in the college for students that can encourage them to pursue modeling as a means of solving vadose zone and groundwater contamination and remediation problems. Consent of instructor required. Pre/Corequisite(s): Graduate student with at least two 400.

SOIL 694. Doctoral Seminar 1 cr.
Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. Prerequisite: doctoral level graduate students. Same as AGRO 694.

SOIL 696. Doctoral Proposal 1 cr.
Current research proposal written by doctoral level graduate students. Not more than 1 credit toward the degree. Prerequisite: doctoral level graduate students. Same as AGRO 696.

SOIL 697. University Teaching Experience 1-3 cr.
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 697 and HORT 697

SOIL 698. Topics in Agronomy 1-4 cr.
Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

WATER SCIENCE AND MANAGEMENT

Coordinating Institute
Water Resources Research Institute, 575-646-4337

Sponsoring Departments
Agricultural Economics and Agricultural Business, 575-646-3169
Animal and Range Sciences, 575-646-2515
Civil and Geological Engineering, 575-646-3801
Geography, 575-646-3509

Plant and Environmental Sciences, 575-646-3405

Affiliated Faculty
– Tilahun Adera, Ph.D. (Oregon State); A. Salim Bawazir, Ph.D. (NMSU)
– Max P. Blesieeves, M.S. (California State-Los Angeles); Winkie Boeving, Ph.D. (Louisiana State); Chris Brown, Ph.D. (San Diego State/California-Santa Barbara); Susan Brown, Ph.D. (NMSU); Colleen A. Caldwell, Ph.D. (Tennessee State); David E. Cowley, Ph.D. (Wisconsin-Madison); Michael N. DeMars, Ph.D. (Kansas State); Shuang-Deng, Ph.D. (Cincinnati); David W. DuBois, Ph.D. (Nebraska-Reno); Daniel P. Dugas, Ph.D. (Oregon); Constanze L. Falk, Ph.D. (Oklahoma State); A.G. Sam Fernald, Ph.D. (Colorado State); Jose Z. Garcia, Ph.D. (New Mexico); Abbas Ghassemi, Ph.D. (NMSU); Ryan M. Goss, Ph.D. (Nebraska-Lincoln); William R. Gould, Ph.D. (North Carolina State); Steven J. Guban, Ph.D. (Minnesota); Adrian T. Hanson, Ph.D. (Iowa State); Jeffrey Herrick, Ph.D. (Ohio State); Brian H. Hund, Ph.D. (California-Davis); Michael D. Johnson, Ph.D. (NMSU); Nirmala N. Khandan, Ph.D. (Drexel); J. Philip King, Ph.D. (Colorado State); Antonio S. Lara, Ph.D. (NMSU); Tim F. Lavott, Ph.D. (Arizona); Bernd Liebauer, Ph.D. (Hohenheim University, Germany); William Lindenmayer, Ph.D. (Minnesota); Greg H. Mack, Ph.D. (Indiana-Bloomington); J. Thomas McGuckin, Ph.D. (Wisconsin-Madison); John G. Mexal, Ph.D. (Colorado State); Martha C. Mitchell, Ph.D. (Minnesota), H. Curtis Monger, Ph.D. (NMSU); Mick O’Neill, Ph.D. (Arizona); Lambie Pangan, Ph.D. (Stanford); Jim T. Peach, Ph.D. (Texas-Austin); Gino A. Picchioni, Ph.D. (Texas AM); Anthony V. Popp, Ph.D. (Northern Illinois); Richard C. Pratt, Ph.D. (Purdue); Albert Rango, Ph.D. (Colorado State); David A. Rockstraw, Ph.D. (Alabama); Rossanna Salerno, Ph.D. (University of Guelph-Canada), Zohrab A. Samani, Ph.D. (Utah State); Jill Schroeder, Ph.D. (Georgia); Manoj K. Shukla, Ph.D. (University of Agricultural Sciences-Vennero, Austria); Rhonda K. Skaggs, Ph.D. (Utah State); Geoffrey D. Smith, Ph.D. (North Carolina State); Robert G. Smith, Ph.D. (Purdue); Robston St. Hilaire, Ph.D. (Iowa State); Megan Starbuck, Ph.D. (New Mexico); Caib M. Steele, Ph.D. (King’s College, University of London-UK); Kenny Stevens, M.S. (NMSU); Blair L. Stringam, Ph.D. (Utah State); April L. Uleroy, Ph.D. (California-Riverside); Adrian Urciule, Ph.D. (University of Guelph-Canada); Jacob Urquidi, Ph.D. (Texas Tech); Hugo Vichls-Lincot, M.D., Ph.D. (UNAM; Utah State); Frank A. Ward, Ph.D. (Colorado State); Benjamin Widner, Ph.D. (Colorado State)

Degree: Master of Science
Major: Water Science and Management

Degree: Doctor of Philosophy
Major: Water Science and Management

The Water Science and Management Program
New Mexico faces serious challenges concerning the supply, development, quality, management, and administration of water resources; responses to the challenges will have major impacts on the regional economy, environmental quality, and the quality of life of the residents of New Mexico. A major need exists to train the next generation of water resource researchers, educators, and managers to address these challenges, both inside and outside New Mexico. To help meet these needs, an interdisciplinary program in Water Science & Management (WSM) has been developed at NMSU by the departments of Agricultural Economics and Agricultural Business, Animal and Range Science, Civil Engineering, Geography, and Plant and Environmental Sciences. The pri-
many purposes of the interdisciplinary master’s and doctoral degree programs in WSM are to provide graduate education for addressing state, national, and international water issues, and to train the next generation of water professionals needed to meet the challenges noted above. A Master of Science WSM degree can be earned with 26 credits of formal course work, plus additional thesis research credits, and a Doctor of Philosophy WSM can be earned with 30-40 credits of formal course work beyond the masters, plus additional dissertation research credits.

Five fields of study are offered in the program and are detailed below (specific classes for each area are detailed in the following section):

- **Agricultural Water Resources** relates to the major use of ground and surface water in providing safe and secure food systems while ensuring ecosystem services. This field of study includes water allocation, water conservation, and water management issues facing urban water supply and irrigated agriculture.

- **Watershed, Riparian, and Aquatic Systems** includes the processes of organizing and guiding land and other resources used in a river basin to provide desired goods and services without adversely affecting soil and water resources. Watershed, riparian, and aquatic system management involves an array of nonstructural (vegetation management) practices, as well as an array of structural (engineering) activities, when conditions warrant.

- **Water Quality and Treatment** includes processes used to make water acceptable for desired end-uses. These can include use as drinking water, industrial processes, agricultural uses, and environmental management. The goal of water treatment processes is to remove existing contaminants in the water or reduce the concentration of such contaminants so the water becomes fit for its desired end-use.

- **Water Economics and Policy** examines the demand for water by all its competing uses, including irrigated agriculture, energy, urban supply, and environmental restoration and management. Policies are examined for their influence on water supplies, water demands, and economic values of water reallocations among agricultural, environmental, energy, and urban uses. It examines the role of water markets, water user decisions, institutional adjustments, and water-related policies with respect to resource costs, water quality, profitability, and environmental effects.

- **Water Informatics** is an interdisciplinary science primarily concerned with the collection, classification, manipulation, storage, retrieval and especially the dissemination of water information, including both human and machine readable documents. Examples of human readable documents include maps, field data sheets, operational schedules, and long term asset management plans with narrative text. Machine readable documents include files for geographic information systems (GIS), Global Positioning Systems (GPS), relational database management systems, and emerging applications.

Admission Requirements for the Master of Science in water science and management include all general requirements for a graduate degree as set forth in the NMSU Catalog, plus the following:

- Possession of a bachelor’s degree from an accredited university grade point average of 3.5 or higher on a 4.0 scale. However, students with grade point averages between 3.0 and 3.5 will be given consideration. This degree being preparatory to the Water Science and Management degree.

- Three letters of recommendation submitted directly from persons who know the applicant professionally, including a recommendation from the candidate’s current employer/sponsor. These letters should provide evidence of professional ability, research experience, and the potential for professional development.

- A brief resume or curriculum vitae to not exceed five pages that summarize the candidate’s background and qualifications.

- Supplemental materials may include GRE scores, which may be required by certain departments.

Admission Requirements for the Doctor of Philosophy (Ph.D.) in water science and management include all general requirements for a graduate degree as set forth in the NMSU Catalog, plus the following:

- Possession of a master’s degree from an accredited university with a grade point average of 3.5 or higher on a 4.0 scale. However, students with grade point averages between 3.0 and 3.5 will be given consideration. This degree being preparatory to the Water Science and Management doctorate.

- Three letters of recommendation submitted directly from persons who know the applicant professionally, including a recommendation from the candidate’s current employer/sponsor. These letters should provide evidence of professional ability, research experience, and the potential for professional development.

- In addition, applicants to the Ph.D. program should provide evidence of research experience. This could include a master’s thesis, a professional paper, peer reviewed manuscripts, consulting reports, or other evidence of experience conducting research.

- A letter of intent or statement of purpose that addresses individual professional and personal goals related to water science and management and discusses how these goals fit within the degree programs at NMSU. It is expected that the candidate will have made contact with prospective advisor(s) at NMSU and speak to how he or she would work with said advisor(s) to advance their research and study.

- A brief resume or curriculum vitae to not exceed five pages that summarize the candidate’s background and qualifications.

- Supplemental materials may include GRE scores, which may be required by certain departments.

**Curriculum for the Proposed Program**

**Core Courses** – the following courses are core courses required for the Master of Science and Doctor of Philosophy programs, respectively.

**Master’s Degree** – This degree is designed primarily for students who wish to complement their primary discipline by obtaining scientific, technical, and managerial expertise in water. The Master’s degree can be earned with 26 credits of formal course work, plus six additional thesis research credits, as detailed below.

- **AG E 475 Water Resource Management and Policy (3 credits)**
- **RGSC 518 Watershed Methods and Management, OR SOIL 456 Irrigation and Drainage (3 credits)**
- **A ST 505 Statistical Inference I (4 credits)**
- **Seminar (1 credit)**
- **Electives from designated water list for the relevant field of study (10 credits)**
- **Free electives in consultation with the student’s committee (5 credits)**
- **Thesis (6 credits)**

**Doctoral Degree** – This degree is designed to give students a thorough and comprehensive knowledge of water science and hydrology and training in methods of research. The Ph.D. degree can be earned in about 30-40 credits of formal course work beyond the Masters Degree, plus additional dissertation research credits, for a minimum total of 75 credits beyond the B.S. degree, as detailed below.

- **AEEC 575 Advanced Water Resource Management and Policy (3 credits)**
- **RGSC 518 Watershed Methods and Management, OR SDIL 456 Irrigation and Drainage (3 credits)**
- **CE 557 Water Resources Development (3 credits)**
- **TOX 523 Environmental Toxicology (3 credits)**
- **GEOG 578, Fundamentals of Geographic Information Systems (4 credits) OR GEOG 521 GIS Applications (3 credits)**
- **A ST 505 Statistical Inference I OR C E 582 Statistical Hydrology (3-4 credits)**
- **Seminar (Two different departments) (2 credits)**
- **Electives from designated water list for the relevant field of study (10 credits)**
- **Free electives in consultation with the student’s committee (5 credits)**
- **Dissertation (18 credits)**

**Water Science & Management Graduate Courses** – The following courses are courses deemed likely to support each of the five fields of study, but this list is not meant to be all inclusive. Variations from or additions to this list may be made by the candidate, subject to the approval by the thesis or dissertation committee chairperson.

**Agricultural Water Resources**

- A EN 459 Design of Water Wells/Pumping Systems..................................................3
- A EN 475 Soil and Water Conservation.................................................................3
- A EN 478 Irrigation and Drainage Engineering.......................................................3
- AGRO 620 Instrumentation in Agronomy ..............................................................3
- C E 452 Geohydrology.....................................................................................3
C E 483 Hydraulic Structures .................................................................3
C E 485 Design of Earth Dams .............................................................3
C E 506 Advanced Soil Mechanics ....................................................3
C E 525 Advanced Analysis of Engineering Systems .......................3
E E 531 Open Channel Hydraulics ....................................................3
C E 537 Water Resources Development ...........................................3
C E 581 Ground Water Hydrology ....................................................3
C E 582 Statistical Hydrology ............................................................3
C E 681 Topics in Hydrodynamics I .................................................3
C E 682 Topics in Hydrodynamics II ................................................3
GEOG 467 Transportation Geography.............................................3
GEOG 552 Landscape Ecology .........................................................3
GEOG 553 Applied Geomorphology ...............................................3
GEOG 474 Groundwater Geology ....................................................3
GEOG 515 Advanced Principles of Geochemical Equilbria ..........3
GEOG 560 Geochemistry of Diagenetic and Hydrochemical Systems3
M E 530 Intermediate Fluid Mechanics .........................................3
M E 533 Computational and Theoretical Fluid Mechanics .......3
M E 535 Turbulence and Chaos .......................................................3
SOIL 456 Irrigation and Drainage ....................................................3
SOIL 477 Environmental Soil Physics .............................................3
SOIL 477L Environmental Soil Physics Laboratory .........................1
SOIL 479 Environmental Soil Chemistry ........................................3
SOIL 651 Advanced Soil Chemistry .................................................3
SOIL 652 Advanced Soil Physics ....................................................3

Watersheds, and Aquatic and Riparian Wetlands
AEEC 580 Natural Resources and Environmental Policy ..............3
BIOL 517 Seminar in Physiological Ecology .................................3
BIOL 533 Environmental Physiology of Plants ..............................3
C E 483 Surface Water Hydrology ................................................3
C E 557 Water Resources Development .......................................3
C E 581 Ground Water Hydrology ................................................3
C E 682 Topics Hydrodynamics II ..................................................3
PWCE 409 Aquatic Ecology ............................................................4
PWCE 482 Ichthyology .................................................................4
PWCE 532 Environmental Biology of Fishes ................................4
PWCE 534 Aquatic Contaminants and Toxicology .......................4
PWCE 578 Advanced Limnology ....................................................4
GEOG 452 Geohydrology .............................................................4
GEOG 577 GIS Capstone ..............................................................4
RGSC 519 Watershed Methods and Management .....................3
SOIL 456 Irrigation and Drainage ................................................3
SOIL 472 Soil Morphology and Classification ..........................4
SOIL 477 Environmental Soil Physics .........................................4
SOIL 477L Environmental Soil Physics Laboratory .................1
SOIL 652 Advanced Soil Physics ................................................3

Water Quality & Treatment
BIOL 477 Applied and Environmental Microbiology ..................4
CHEM 472 Analytical Methods for Toxic Organics and Metal Ions in the Environment .................................................................3
ENVE 456 Environmental Engineering Design .........................3
ENVE 462 Sampling and Analysis of Environmental Contaminants3
ENVE 551 Unit Process/Operation of Water Treatment ..............3
ENVE 551L Unit Process/Operation of Water Treatment Laboratory 1
ENVE 552 Unit Process/Operation of Wastewater Treatment Laboratory ............................................................1
ENVE 552L Unit Process/Operation of Wastewater Treatment Laboratory ............................................................1
ENVE 553 Chemical Theories of Environmental Engineering ....3
ENVE 554 Microbiological Theories of Environmental Engineering3
ENVE 557 Surface Water Quality Modeling ..................................3
ENVE 558 Advanced Waste Management ....................................3
ENVE 630 Fate and Transport of Environmental Contaminants ....3
ENVE 631 Topics in Environmental Engineering I ..................3
ENVE 632 Topics in Environmental Engineering II .................3
ENVE 520 Environmental Fate of Pesticides ............................3
PWCE 534 Aquatic Contaminants and Toxicology .....................4
MPH 554 Environmental Epidemiology ..................................3
TOX 523 Environmental Toxicology ........................................3

Water Economics and Policy
AXED 485 Agriscience and Technology Education Laboratory Applications ..........2
AEEC 580 Natural Resources and Environmental Policy .............3
ECON 495 Public Utilities Regulation ........................................3
HLS 452 Environmental Health ................................................3
ECDV 651 Economic Development Theory ................................3
ECDV 661 Regional Economic Modeling I ................................3
ECDV 662 Regional Economic Modeling II ................................3
ECDV 664 Population Economics ..............................................3
ECDV 668 Economic Development Finance ............................3
ECDV 671 Sustainable Economic Development .....................3
MPH 550 Environmental Public Health Issues ..........................3
MPH 565 International Health Issues ........................................3
MPH 567 Rural Health Issues ...................................................3
MPH 569 U.S.-Mexico Border Health Issues ............................3

Water Informatics
GEOG 521 Geographic Information Science Applications and Modeling 3
GEOG 571 Cartography and Geographic Information Systems ..........3
GEOG 572 Geodatabase Design ..................................................3
GEOG 573 Introduction to Remote Sensing ................................3
GEOG 577 GIS Capstone ............................................................3
GEOG 578 Fundamentals of Geographic Information Systems ....4
GEOG 581 GIS Design ...............................................................3
GEOG 582 Advanced Remote Sensing .......................................4
GEOG 585 Advanced Spatial Analysis ....................................3
GEOG 586 Geospatial Techniques for Natural Resources Assessment3

Course Descriptions:
Course descriptions can be found in the corresponding home department section of this catalog.

WATER SCIENCE AND MANAGEMENT
WSAM 599. Masters Thesis ..............................................................1-88 cr.

WSAM 700. Doctoral Dissertation ..........................................................0-88 cr.
The M.A. program in anthropology is designed for students who are interested in the traditional subdisciplines of anthropology and in selected areas of applied anthropology. The program is directed both toward students who intend to take a terminal M.A. degree and students who intend to enter a Ph.D. program.

A bachelor's degree in anthropology is not required for entry into the program. Nevertheless, students who lack the equivalent of ANTH 301, 315, 320, and 365 may be required to take these courses or corresponding sections of ANTH 520.

PROGRAM REQUIREMENTS

Students selecting the thesis option must complete 33 hours of basic course work, as described below, plus 6 hours of thesis credit. Students selecting the non-thesis option must complete 39 hours of course work including an internship or special research project for 6 credits. These 39 hours consist of 33 hours of basic course work, as described below, plus an additional 6 hours of electives selected in consultation with the anthropology graduate student advisor.

The 33 hours of basic course work for students selecting either the thesis or non-thesis options are distributed as follows:

ANTH 505, Issues in Anthropological Practice
Students will be required to take a core theory course in their respective subfield and one additional core theory course in another subdiscipline: Students in the archaeology subfield must complete ANTH 585 (Method and Theory in Archaeology), earning a grade of B or better. Students in the biological anthropology subfield must complete ANTH 513 (Biological Anthropology), earning a grade of B or better. Students in the cultural anthropology and anthropological linguistics subfields must complete ANTH 500 (Seminar in Anthropological Theory), earning a grade of B or better. Students will be required to take an additional topical/methodological/areal course in their respective subfield, earning a grade of B or better.

A. Students in the archaeology subfield will choose from the following options:
ANTH 507, Advanced Studies in Archaeology
ANTH 510, Southwestern Anthropology
ANTH 511, Mesoamerican Anthropology
ANTH 514, Advanced Issues in the Archaeology of Religion
ANTH 516, Advanced Archaeology of the American Southwest
ANTH 517, Advanced Topics in Mesoamerican Archaeology
ANTH 518, Advanced Historical Archaeology
ANTH 519, Advanced Topics in Prehistoric Archaeology
ANTH 526, Conquest of the New World
ANTH 540, Cultural Resource Management
ANTH 577, Faunal Analysis
ANTH 578, Advanced Lab Methods in Archaeology

B. Students in the biological anthropology subfield will choose from the following options:
ANTH 506, Advanced Studies in Physical Anthropology
ANTH 531, Issues in Nutritional Anthropology
ANTH 534, Advanced Human Evolution
ANTH 537, Applied Medical Anthropology
ANTH 572, Advanced Primate Behavior and Ecology
ANTH 573, Advanced Primate Adaptation and Evolution
ANTH 574, Advanced Forensic Anthropology

C. Students in the cultural anthropology and anthropological linguistics subfields will choose from the following options:
ANTH 455, Federal Indian Policy
ANTH 500, Issues in Anthropological Linguistics
ANTH 509, Advanced Studies in Anthropological Linguistics
ANTH 516, Advanced Archaeology of the American Southwest
ANTH 518, Advanced Historical Archaeology
ANTH 519, Advanced Topics in Prehistoric Archaeology
ANTH 526, Conquest of the New World
ANTH 540, Cultural Resource Management
ANTH 577, Faunal Analysis
ANTH 578, Advanced Lab Methods in Archaeology
ANTH 525, Issues in Language and Culture
ANTH 528, Conquest of the New World
ANTH 531, Issues in Nutritional Anthropology
ANTH 532, Advanced Issues in the Anthropology of Religion
ANTH 533, Advanced Issues in Women, Gender, and Culture
ANTH 535, Economic Anthropology
ANTH 538, Anthropology of Development
ANTH 538, Plants, Culture, and Sustainable Development
ANTH 539, Culture and Foodways

Students will earn an additional 21 credits, at least 15 of which must be in anthropology. Finally, students will earn 6 credits of thesis (ANTH 599), internship (ANTH 597), special research problems (ANTH 598), or additional courses.

**ADMISSION REQUIREMENTS**

To be considered for admission to the M.A. program in anthropology, submit the following:

- Application form and fees
- Official undergraduate and graduate transcripts from all colleges and universities attended
- A letter from the candidate addressing his or her interests and graduate school objectives
- Letters of recommendation from three persons familiar with the candidate’s academic record
- An undergraduate grade-point average of 3.0 or higher

Application materials are available on the Anthropology website [http://www.nmsu.edu/~anthro/](http://www.nmsu.edu/~anthro/)

Please email gradadv@nmsu.edu for further information.

**GRADUATE MINOR IN NATIVE AMERICAN STUDIES—PROGRAM REQUIREMENTS**

The purpose of the Native American Studies Graduate Minor are to:

- Provide an opportunity for all students to learn about Native American cultures and societies.
- Facilitate research and other creative activities that concern Native American peoples and that have potential benefit for them.
- Serve the University and State of New Mexico in ways that support and illuminate the rich heritage of Native American peoples.

NAS focuses on Native American cultures and societies, deals with contemporary and historical experiences of American Indians, and examines the contributions of Indigenous peoples to life in the United States and other American nations. This specialization field has developed in reaction to Western academic views of Native Americans and to the frequently restrictive, assimilationist approach within universities to issues concerning Native peoples. NAS contributes to a new understanding of Native American cultures and societies from contemporary and historical perspectives.

To qualify for a graduate minor in Native American Studies—Anthropology, students are required to complete 9 credit hours (3 classes) of graduate level courses. To record a minor on a student’s transcript, the minor must be listed on the “Application for Admission to Candidacy,” and the Native American Studies advisor in the Department of Anthropology must sign this form. Core courses for the minor are as follows:

- ANTH 541, Issues in Native American Studies
- ANTH 543, Indigenous Ways of Knowing
- ANTH 455, Federal Indian Policy

Alternative and support classes are identified below in the list of cognate classes, and one class or alternative classes may be substituted with the approval of the student’s M.A. chair and the Coordinator for the Graduate Minor in Native American Studies.

**Cognate Area Courses**

- ENGL 557, American Indian Literatures
- GOVT 524, American Indian Politics
- HIST 509, Native American History
- MSW 564, Social Work with Native American Populations

**ANTHROPOLOGY**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>ANTH 448 H</td>
<td>Directed Reading Honors</td>
<td>1-3 cr.</td>
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Same as ANTH 449. Additional work to be arranged. May be repeated for a maximum of 6 credits.

ANTH 452, Practica Fauna Analysis 1 cr.
Advanced laboratory exercises in the identification of animal bone recovered from paleontological and archaeological contexts. Prerequisite: consent of instructor. May be repeated for a maximum of 3 credits.

ANTH 455, Federal Indian Policy 3 cr.
Federal Indian policy and its impact on Native Americans. This course will provide basic understanding of how federal Indian policy impacts almost all activities and situations with Native Americans. Course will also look at issues such as sovereignty and how it impacts most interactions with tribal groups.

ANTH 458, Anthropology of Reproduction 3 cr.
Human life cycle is studied from biological, evolutionary, cross-species, and cross-cultural perspectives. Coverage of pregnancy, birth, infancy, childhood, puberty, adulthood, menopause, aging, senescence, and death. Prerequisite: ANTH 501 or consent of instructor.

ANTH 459, Peru: From Incas to Inca Kola 3 cr.
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Crosslisted with: HIST 459

ANTH 467, Archaeology of the American Southwest 3 cr.
Description and analysis of prehistoric archaeology of the American Southwest including paleo-environmental reconstruction, culture change, and relations with contemporary cultures. Prerequisite: ANTH 315.

ANTH 472, Primate Behavior and Ecology 3 cr.
Survey of the social behavior and ecology of nonhuman primates.

ANTH 473, Primate Adaptation and Evolution 3 cr.
Survey of the adaptations and evolutionary history of nonhuman primates. Prerequisite: ANTH 355 or consent of instructor.

ANTH 473 L, Primate Evolution Laboratory 1 cr. (1P)
Laboratory with exercises on non-human primate adaptation and evolution. Consent of instructor required. Prerequisite(s): ANTH 355 or consent of instructor.

ANTH 474, Human Osteology 3 cr.
A survey of the functional, developmental, and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology. Prerequisite: ANTH 355, 370 or equivalent.

ANTH 474 L, Human Osteology Lab 1 cr. (1P)
Laboratory for ANTH 474. Experiences and activities related to identifying teeth and bones of the human skeleton. Prerequisites: ANTH 355, 370 or equivalent.

ANTH 477, Faunal Analysis 3 cr.
Detailed study and analysis of taphonomic processes affecting animal bone recovered from archaeological and paleontological contexts. Prerequisite: either ANTH 315, ANTH 355, or BIOL 330.

ANTH 485, Field Experience 1-3 cr.
Anthropological or archaeological field work experience in private, state, and federal agencies. Must spend 30 hours in a field setting per credit hour earned. Prerequisite: complete 12 ANTH credits and consent of instructor. May be repeated for a maximum of 6 credits.

ANTH 488, Archaeological Field School Advanced 1-6 cr.
Archaeological field methods, including excavations of prehistoric sites, record keeping, mapping and analysis of data. Consent of Instructor required.

ANTH 489, Special Topics 1-6 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. Prerequisite(s): Junior or above standing.

ANTH 500, Seminar in Anthropological Theory 3 cr.
Detailed focus on specific areas of anthropological theory. Course subtitled in the Schedule of Classes. Course may be repeated. Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 501, Concepts in Anthropology 3 cr.
Survey of concepts and theories central to the subdisciplines of anthropology.

ANTH 502, Fundamentals of Anthropology 1-4 cr.
Review of fundamental knowledge and theories in biological, cultural, or linguistic anthropology or archaeology. Graded S/U.
ANTH 504. Cultures of Africa 3 cr.
Explores the rich history and cultural diversity of the continent of Africa. The course first examines the historical processes that shaped modern Africa, including the evolution of modern humans in Africa, the origins of agriculture and pastoralism, the formation of indigenous African states, the slave trade, and European colonialism. The course also looks at contemporary African societies, including hunter-gatherer, pastoral, and farming/fishing peoples. In addition, contemporary issues facing modern Africa such as famine and agricultural policy, the status of women, and environmental challenges such as deforestation are discussed. Taught with ANTH 404. Crosslisted with: HIST 504

ANTH 505. Issues in Anthropological Practice 3 cr.
Anthropological approaches to research design, implementation, and dissemination. Restricted to: Main campus only.

ANTH 506. Advanced Studies in Physical Anthropology 1-3 cr.
Lectures, seminars, or laboratory research in selected topics. May be repeated for a maximum of 12 credits. Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 507. Advanced Studies in Archaeology 1-3 cr.
Lectures, seminars, field or laboratory research in selected topics. May be repeated for a maximum of 12 credits. Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 511. Mesoamerican Archaeology 3 cr.
Examination of major theoretical and applied issues in Mesoamerican archaeology. Includes exercises and activities to learn the human fossil record. Advanced laboratory in human evolution, includes exercises and activities to learn the human fossil record.

ANTH 512. Analytical Methods in Anthropology 3 cr.
Quantitative analytical methods of anthropology examined in detail. Applied problem sets include physical and cultural anthropology, linguistics, and archaeology. Prerequisite: graduate standing or consent of instructor.

ANTH 513. Biological Anthropology 3 cr.
Examination of major theoretical and methodological issues in biological anthropology.

ANTH 514. Advanced Issues in the Archaeology of Religion 3 cr.
Explores the methods and theories used to study prehistoric religion.

ANTH 515. Applied Anthropology 3 cr.
Examines the intellectual roots of applied anthropology and early case studies of anthropologists working as administrators. Examines the ethical and methodological approaches that applied anthropologists employ. Examination of case studies that show the role of applied anthropologists in improving human service delivery, cultural preservation, planning and implementing programs of participatory change, advocacy, and economic development. Taught with ANTH 415.

ANTH 516. Advanced Archaeology of the American Southwest 3 cr.
Advanced topics in Southwestern archaeology including ritual architecture, environmental reconstruction, violence, site formation processes, and experiment and research.

ANTH 517. Advanced Topics in Mesoamerican Archaeology 3 cr.
Specific subjects in Mesoamerican archaeology to be announced in the Schedule of Classes. Prerequisite: graduate standing. May be repeated for a maximum of 6 credits.

ANTH 518. Advanced Historical Archaeology 3 cr.
Advanced methods and theoretical concepts regarding the archaeology of historical periods.

ANTH 519. Advanced Topics in Prehistoric Archaeology 3 cr.
Seminar on specialized research archaeology. Prerequisite: graduate standing.

ANTH 520. Ethnographic Field Methods 3 cr.
Basic methodologies used in conducting qualitative ethnographic research. Projects in participant observation, ethnographic interviews, life history interviews, folk taxonomy construction, and coding of field notes.

ANTH 522. Archaeological Field School-Graduates 2-6 cr.
Techniques of archaeological data collection, analysis, and interpretation. Emphasis on archaeological field work in the Southwest.
ANTH 542. Indigenous Ways of Knowing 3 cr.
This course examines Indigenous knowledge and ways of knowing as a means to gain an appreciation of an epistemology and ontology that may be outside the boundaries of Eurocentric theory, concepts, and principles. Knowledge development through mythology and story telling is viewed from the nature of difference rather than comparative analysis.

ANTH 545. Advanced Museology I 3 cr.
Museum philosophy, history, administration, and collection management. Emphasis on collecting, cataloging, care, and exhibition, as well as ethics, public responsibility, and grantmanship.

ANTH 547. Museum Field Methods 3 cr.
Basic methodologies used in conducting museum research away from the museum, including collections evaluation, collections acquisition, donor interviews, educational outreach, and development.

ANTH 548. Museums & Society 3 cr.
Examines theoretical frameworks that shape museum administration, exhibits and collections development. Examines themes of gender, space, place, multiculturalism, national and international politics in museum contexts.

ANTH 559. Peru: From Incas to Inca Kola 3 cr.
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Same as GDVT 559 and HIST 559.

ANTH 572. Advanced Primate Behavior and Ecology 3 cr.
Advanced review of non-human primate social behavior and ecology.

ANTH 573. Advanced Primate Adaptation and Evolution 3 cr.
Advanced review of non-human primate adaptation and evolution.

ANTH 573 L. Advanced Primate Adaptation and Evolution Laboratory 1 cr. (1P)
Laboratory with exercises on non-human primate adaptation and evolution.

ANTH 574. Advanced Human Osteology 3 cr.
Advanced Human Osteology surveying the functional, developmental and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology.

ANTH 574 L. Advanced Osteology Laboratory 1 cr. (2P)
Laboratory for ANTH 574. Experiences and activities related to identifying teeth and bones of the human skeleton.

ANTH 576. Lithic Technology Organization 3 cr.
Advanced seminars and laboratory exercises to learn and develop techniques and methods that will help us determine how to interpret behavioral and cultural information from lithic (stone tool) data. Consent of Instructor required.

ANTH 577. Faunal Analysis 3 cr.
Detailed study and analysis of taphonomic processes affecting animal bone recovered from archaeological and paleontological contexts.

ANTH 578. Advanced Lab Methods in Archaeology 3 cr.
Examination of advanced laboratory techniques used in the analysis of archaeological materials.

ANTH 579. Anthropological Research Design 3 cr.
Implementing research projects in anthropology, including the writing of grant proposals and research papers.

ANTH 581. Graduate Study in Cultural Conservation 4 cr. (3+2P)
Same as ENGL 581, HIST 581.

ANTH 585. Method and Theory in Archaeology 3 cr.
Focus on major methodological and theoretical aspects of contemporary archeology.

ANTH 587. Field Work in Latin America 3-12 cr.
Covers anthropological field methods in Latin America that also incorporate in-field lab analysis. Prerequisite: consent of instructor. No S/U grading.

ANTH 589. Practicum in Anthropology 1-6 cr.
Internship in local, state, national, and international settings, applying anthropological concepts and theories in real-world situations. May be repeated for a maximum of 6 credits toward a degree. Consent of instructor required. Graded: S/U. Prerequisite(s): graduate standing. Restricted to ANTH majors.

ANTH 596. Readings 1-6 cr.
Individual study of selected readings and topics. May be repeated for a maximum of 6 credits. Consent of instructor required.

ANTH 597. Internship 1-9 cr.
Anthropological or archaeological internship in private, state, or federal agency. May be repeated for a maximum of 18 credits. Consent of instructor required. Prerequisite(s): graduate standing. Restricted to ANTH majors.

ANTH 598. Special Research Problems 1-6 cr.
Individual analytic or experimental investigations. May be repeated under different subtitles for a maximum of 6 credits. Consent of instructor required. Prerequisite(s): graduate standing. Restricted to ANTH majors.

ANTH 599. Master’s Thesis
Thesis. Consent of instructor required. Prerequisite(s): graduate standing. Restricted to ANTH majors.

ART

Department website: www.nmsu.edu/~artdept
(575) 646-1705
artdept@nmsu.edu

J. Barello, department head; M.F.A. (University of Wisconsin-Milwaukee)–matics; T. Cole-Dorn; M.F.A. (New Mexico State University)–painting and drawing; C. Cully, M.F.A. (University of Arizona)–painting and drawing; P. Rice, M.F.A. (University of Arizona)–graphic design; J. Fitzsimmons, M.F.A. (New Mexico State University)–art history; M. Goehring, Ph.D. (Case Western)–art history; S. Marinis, M.A. Art Conservation; Universidad Complutense de Madrid, Spain and M.A. Anthropology (New Mexico State University)–Art Conservator; K. Reka, M.F.A. (Indiana University)–graphic design; R. Stevens, M.F.A. (Syracuse University)–sculpture; T. Taylor, Ph.D. (Boston University)–art history/interim gallery director; E. Zerer, M.F.A., Ph.D. (University of Georgia)–art history; A. Jaffe, M.F.A. (University of Montana-Missoula)–professor emeritus; L. Ocepek, M.F.A. (University of Iowa)–professor emeritus; J. Rose, M.F.A. (Yale University)–professor emeritus; J. St. Aubyn, M.F.A. (University of New Mexico)–professor emeritus

DEGREE: Master of Arts
MAJOR: Art
EMPHASIS: Art History

DEGREE: Master of Fine Arts
MAJOR: Art
EMPHASIS: Studio Art

DEGREE: Master of Arts
EMPHASIS: Art History

An emphasis in art history requires a minimum of 33 credits of art history courses, 6 of which may be thesis credits. Of the required minimum, 6 credits of related courses may be substituted with the approval of the department head and the student’s major advisor.

Reading proficiency in a foreign language is also required and should be acquired prior to the beginning of thesis research for which it will be employed. A reading proficiency exam will be arranged in conjunction with the major advisor. Admission to the M.A. program with an emphasis in art history is based on an accredited B.A. or B.S. degree (or equivalent) with a major in art history, including at least 33 art history credits and 9 studio credits. Undergraduate deficiencies must be completed before advancement to candidacy.

Candidacy and Thesis Committee Selection

Upon satisfactory completion of all required course work (except thesis credits) and foreign language requirement, the student will prepare a thesis proposal under the direction of the major professor. The student will then select the second member of his or her thesis committee and submit the proposal to this committee member for approval. With the backing of these two advisors, the student must then present the proposal to the department faculty. After a successful presentation, the student will advance to candidacy and select the third committee member, who may be from outside the art department.
Admission

All applicants for admission to the M.A. program must submit
1. A polished undergraduate research paper
2. A written statement of intent
3. Letters of recommendation from three qualified people of the applicant's choice

Research papers, statement of intent, and letters of recommendation should be sent to the Department of Art. Applications and official undergraduate transcripts should be sent directly to the Graduate School. Psychometric test scores are not required.

Application Deadline

The final submission date for all application materials and teaching assistantship applications is January 20 for the fall and spring semesters.

DEGREE: Master of Arts
Emphasis: Studio Art

Art requirements for an M.F.A. degree with an emphasis in studio art include a minimum of 60 credits of academic work, usually completed in three years. Of those 60 credits, 9 must be taken in art history, 6 in non-art courses numbered 450 or above, 6 in thesis work, 3 in graduate seminar: art theory, criticism, historiography and 12 in ART 596. In order to remain in good standing in the MFA program, a student must maintain an average GPA of 3.0. A grade of C or lower in an Art Department graduate course is considered failing. In the event that a student fails a required course, they must repeat the class in order to get credit for it. If a student is awarded a graduate assistantship, he or she must maintain an average GPA of 3.0.

Program Requirements (60 cr.)

Art history courses ................................................................. 9 cr.
Non-art courses .................................................................... 6 cr.
Studio thesis ........................................................................ 6 cr.
Graduate Seminar: Art Theory, Criticism, Historiography (ART 579) .......... 3 cr.
Graduate Studio Seminar: ART 596 ....................................... 12-18 cr.
Studio Electives ..................................................................... 18-24 cr.

Semester Reviews

At the end of the first two semesters, each graduate student’s creative production will be reviewed by the assembled faculty. Participation in semester reviews are required for successful completion of graduate level studio courses.

Candidacy

Candidacy occurs during the third semester of study in residency. Candidacy consists of a formal review of the student’s work by the assembled graduate faculty. The graduate faculty advances the student to his or her final 3 semesters of study by a majority vote. If the faculty does not advance the student, candidacy may be repeated one additional time at the end of the next consecutive semester. The final three semesters of thesis work will commence from that point. Students who are not successful in their second candidacy attempt will be disenrolled from the MFA program.

Thesis Committee

At the end of the third semester and after a successful candidacy the student will propose his or her thesis committee, consisting of three art department graduate faculty members, and one faculty member from outside the department.

Thesis Exhibition

The studio thesis will culminate in an exhibition of the candidate’s creative works and a written thesis statement. A successful oral examination and defense of the thesis and exhibition is required for graduation. Two copies of the thesis and a photographic record of the final exhibition are required; other requirements may be determined by the graduate faculty. Students who do not satisfactorily complete their oral examination may not participate in the thesis exhibition.

Thesis exhibitions for the M.F.A. degree will be held in the spring semester in the University Art Gallery. Students who wish to graduate at mid-year are required to find an exhibition space other than the NMSU Art Gallery that meets with the approval of the graduate committee. In this case the student is responsible for making all arrangements for the thesis exhibition.

Admission

Admission to the M.F.A. program in studio art is based on an accredited B.A., B.S., or B.F.A. degree (or equivalent) with a major in art, including at least 45 credits in studio art courses and 15 credits in art history. Any deficiencies must be corrected by undergraduate course work to be completed before advancement to candidacy. Exceptions to these requirements will be considered by the graduate committee. Students with an earned M.A. may be considered with the consent of the faculty, for advancement to candidacy for the M.F.A. degree upon completion of one semester or 9 credits in residence at NMSU. The number of transferable credits from a previous graduate program will be determined by the department head and the graduate advisor before consideration for candidacy.

All applicants for admission to the M.F.A. program in studio art must submit
1. A CD/DVD with a PDF or jpeg portfolio of 20 images and an image list that identifies each piece by title, date, media and size
2. A written statement of intent, including scholarly and professional goals and the applicant’s interest in studying at NMSU
3. Letters of recommendation from three qualified people of the applicant’s choice
4. Official undergraduate transcripts

Admission to the M.F.A. program in studio art will be decided upon consideration of all materials. Application guidelines are available on the Departmental website. The majority of teaching assistantships and studio spaces are awarded in the fall. Psychometric test scores are not required.

Application Deadline

The final submission date for all application materials and teaching assistantship applications is January 20 for the fall and spring semesters.

ART

ART 450. Drawing Workshop .................. 3 cr.
Critique class on drawings done outside of class. Emphasis on development of conceptual and technical skills. May be repeated up to 12 credits. Prerequisite(s): ART 350.

ART 451. Time-Based Media .................. 3 cr.
Advance figure drawing class with emphasis on developing technical and conceptual skills. Prerequisite: ART 350. May be repeated up to 27 credits. Restricted to ART majors.

ART 454. Design Discourse .................. 3 cr.
Discussion of issues related to visual communications and graphic design. Research and semester-long studio project supplement readings and discussion. May be repeated for a maximum of 6 credits. Prerequisite(s): ART 356.

ART 455. Special Topics in Graphic Design 3 cr. (2+4P)
Advanced graphic projects. Topics will be announced in the course schedule. Special semester long focus may include conceptual development, professional practices, advanced typography, portfolio development and client-based projects through New Mexico Studio Design, Book Arts. May be repeated up to 18 credits. Prerequisite(s): 6 credits of ART 355.

ART 456. Advanced Graphic Design: Portfolio Development and Professional Practice .................. 3 cr. (2+4P)
Advanced graphic design projects with an emphasis on conceptual development, portfolio preparation, and professional practices. Prerequisite: ART 455. May be repeated for a maximum of 12 credits. Restricted to majors.

ART 457. Advanced Typographic Design and the Computer 3 cr.
Advanced projects exploring use of typography in visual communication. Electronic and conventional print applications emphasized. May be repeated for a maximum of 6 credits. Prerequisite(s): ART 255 and ART 256.

ART 458. The New Mexico Studio of Design 3 cr.
An advanced graphic design studio providing a design service for nonprofit community organizations. Client-based projects produced by students from concept to completion. May be repeated for a maximum of 6 credits. Prerequisite(s): ART 355.

ART 459. Advanced Digital Illustration 3 cr. (2+4P)
Illustration course for graphic designers emphasizing the creation of editorial, informational, and cultural illustrations, using vector and bitmap computer programs. Prerequisite: ART 359, or consent of instructor. May be repeated for a maximum of 6 credits.

ART 460. Painting Workshop .................. 3 cr.
Media, materials and advanced technical problems of contemporary painting. May be taken up to 6 credits. Prerequisite(s): ART 350 and ART 361.

ART 461. Painting Workshop II .................. 3 cr. (2+4P)
Advanced issues in contemporary painting. May be repeated for a maximum of 6 credits. Restricted to majors. Prerequisite(s): ART 460.
ART 465. Special Topics in Sculpture 3 cr. (2+4P) Students will develop content and vision through a series of self-styled projects. A rotation of thematic classes will introduce students to processes and ideas that are relevant to contemporary art. Students will develop their creative and conceptual skills through interpretive assignments. An interdisciplinary approach to art making is encouraged. Topics will be announced in the course schedule. Special semester-long focus may include: Artists’ Maps, Installation Art, Art in context: Sculpture and the 1960’s, and the 1970’s. May be repeated up to 18 credits. Prerequisite(s): 3 credits of ART 365 or permission of the instructor.

ART 470. Special Topics in Photography 3 cr. (2+4P) Advanced exploration of photography as an art medium and development of students’ personal photographic practices. Topics will be announced in the course schedule. Special semester-long focus may include: non-silver processes, view camera, studio lighting, images in sequence and the photography book, landscape, portraiture, and the constructed image. May be repeated up to 18 credits. Prerequisite(s): ART 370, ART 373.

ART 471. Digital Video and Narrative Concepts 3 cr. (2+4P) Topics will be announced in the course schedule. Special semester-long focus may include a seminar designed to introduce the student to the practice of time-based art, its applications within an interdisciplinary art practice, as well as its historical, critical and theoretical context. May be repeated up to 18 credits. Prerequisite(s): 12 credits at 300 level.

ART 473. Photography Workshop 3-6 cr. Project-based critique seminar for advanced BFA students. Regular critique sessions and readings required. Participation in the annual BFA exhibition for graduating seniors required.

ART 474. Advanced Ceramic Tile 3 cr. (2+4P) Instruction in a variety of ceramic tile-making techniques with considerable exploration of surface finishing. Assignments focus on tile paintings and murals with an emphasis on content. Prerequisite: ART 297. May be repeated for a maximum of 9 credits.

ART 475. Special Topics in Ceramics 3 cr. (2+4P) This course provides a platform for dialogue and exploration of students art work within the context of the role of ceramics in today’s world. Topics will be announced in the course schedule. Special semester-long focus may include topics such as discussions of contemporary issues, exhibits, professional practice, or specific techniques and directions. May be repeated up to 18 credits. Prerequisite(s): 6 credits of ART 375, or consent of instructor.

ART 476. Advanced Museum/Gallery Research Internship 1-3 cr. Advanced research internship in museum or gallery. Requirements determined by instructor in cooperation with supervising museum/gallery professional. For art history credit. Prerequisite: ART 376 and consent of instructor. May be repeated for a maximum of 9 credits.

ART 477. Independent Research Problems in Art History 1-9 cr. Advanced research on special problems to be conducted under supervision of art history faculty. May be taken up to 12 credits. Consent of instructor required. Prerequisite(s): ART 295G, ART 296G, ART 297 and one 300 level art history course and consent of instructor.

ART 478. Seminar: Selected Topics in Art History 3 cr. Reading, research, and discussion of advanced problems. May be taken up to 12 credits. Consent of instructor required. Prerequisite(s): ART 295G, ART 296G, ART 297 and one 300 level art history course and consent of instructor.

ART 479. Art Theory, Criticism, and Historiography 3 cr. Theories and methodologies in art history and art criticism. Consent of instructor required. Prerequisite(s): ART 295G, ART 296G, ART 297 and one 300 level art history course and consent of instructor.

ART 480. Special Topics in Printmaking 3 cr. (2+4P) Special topics in printmaking. Emphasizing conceptual approaches to printmaking and development of individual content. Topics will be announced in the course schedule. May be repeated up to 18 credits. Prerequisite(s): 6 credits of ART 380.

ART 485. Special Topics in Jewelry/Metals 3 cr. (2+4P) Advanced exploration of processes and conceptual approaches to metal. Topics will be announced in the course schedule. Special semester-long focus may include: non-traditional materials, coloration processes, casting, die-forming and construction, ornamentation and the human body, and 3D modeling. May be repeated up to 18 credits. Prerequisite(s): 6 credits of ART 385.

ART 490. Museum Conservation Internship 1-6 cr. The goal of this internship is to provide a student with a practical learning experience in museum collection conservation so that they can relate their experience to what they learn in the classroom about preventive conservation techniques and policies. It will provide the student an opportunity to learn skills and knowledge needed in working with museum collections. Tasks and projects will be assigned by the instructor.

ART 494. Special Topics in Studio 3 cr. Specific subjects and credits to be announced in the Schedule of Classes. No more than 9 credits toward a degree.

ART 495. Undergraduate Studio Thesis 3 cr. Special research and independent study leading to undergraduate thesis exhibition. Prerequisite: consent of instructor. Restricted to majors. Course may not be audited.

ART 496. Fundamentals of Studio Management 1 cr. Advanced studio course designed to introduce students to the fundamentals of studio management. Includes training in proper tools use and maintenance; safety procedures; and practical experience with studio oversight. Concurrent registration in advanced studio course of the same media area required. Prerequisite: consent of instructor. May be repeated for a maximum of 3 credits. Restricted to majors. Graded S/U.

ART 497. Readings in Art History 3 cr. In-depth study of art historical writing. May be taken up to 12 credits. Consent of instructor required. Prerequisite(s): ART 295G, ART 296G, ART 297 and one 300 level art history course.

ART 499. Problems in Studio 1-6 cr. Individual study in specialized studio areas not covered by other advanced courses. Consent of instructor required. May be repeated for a maximum of 12 credits.

ART 500. Special Topics in Art History Advanced 3 cr. Specific subjects to be announced in the Schedule of Classes. Prerequisite: graduate status. May be repeated for a maximum of 12 credits.

ART 501. Museum Conservation Techniques I 3 cr. (3P) Examines the philosophy of museum conservation of works of art in all media and in all contexts. Includes discussions of the theory of conservation as well as student laboratory projects involving testing and conservation objects. Enrollment limited to 5. First of three consecutive courses. Restricted to majors. Same as ART 401 with additional or differentiated assignments for graduate students.

ART 502. Museum Conservation Techniques II 3 cr. (2+3P) Museum Conservation of art work at the graduate level. Examines the philosophy of museum conservation of works of art in all media and in all contexts. Includes discussions of the theory of conservation as well as student laboratory projects involving testing and conservation of objects. Enrollment limited to five. Second of three consecutive courses. (This new elective course meets additional interest area.) Prerequisite: ART 501 and consent of instructor.

ART 503. Preventive Conservation/Collections Care 3 cr. Museum conservation of art work at the graduate level. Taught with ART 403 with differentiated assignments for graduate students.

ART 504. The Classical Style in the Western Tradition 3 cr. Analysis of the emergence of Greco-Roman style in the Ancient world and its interpretation and reception in the Western European art tradition up to the contemporary period; taught with ART 302. Consent of instructor required.

ART 505. Medieval Art 3 cr. History of painting, stained glass, sculpture, architecture and manuscript illumination in Europe from the Early Christian period to the end of the Gothic period; taught with ART 305. Consent of instructor required. Prerequisite(s): ART 295G; Graduate Standing.

ART 506. Medieval Manuscript Illumination 3 cr. History of manuscript production and illumination in Western Europe from the Early Christian period to the middle of the 10th century; taught with ART 306. Consent of instructor required. Prerequisite(s): ART 295 and ART 305 or ART 505.

ART 510. Advanced Native American Art 3 cr. Cross-cultural introduction to art of the prehistoric and historic native people of the North, Central, and South America. The artistic expression and the function of art considered in diverse cultural and environmental contexts. Prerequisite: graduate standing.

ART 511. Art of China 3 cr. Survey of the art of China from the Pre-historic period to modern day; taught with ART 311. Prerequisite(s): Graduate Standing.
ART 520. Art and Architecture in Pre-Columbian Mesoamerica 3 cr.
Analysis of the art and culture of the Mesoamerican peoples before the arrival of Columbus in the New World. Includes in-depth formal and historical analysis of architecture, sculpture, painting, pottery and metal works of Mixtec, Toltec, the Aztec, Maya, and other cultures and civilizations. Prerequisite: graduate standing.

ART 521. Pre-Columbian Art and Architecture of the Andes 3 cr.
Examines the arts and history of pre-Columbian Andean cultures in a cultural context. Analysis of their architecture, sculpture, pottery, jewelry, textiles, and featherwork. Prerequisite: graduate standing.

ART 523. Italian Renaissance Art 3 cr.
History of painting, sculpture and architecture in Italy from the 14th century to the end of the 16th century; taught with ART 323. Consent of instructor required. Prerequisite(s): Graduate standing.

ART 525. Northern Renaissance Art 3 cr.
History of painting, manuscript illumination and graphics in Northern Europe from the late 14th century to the mid-16th century; taught with ART 325. Consent of instructor required. Prerequisite(s): ART 295G, ART 296G and Graduate standing.

ART 528. Art and Architecture in Northern Europe 3 cr.
Architecture, painting, and sculpture in Flanders, Holland, France, England, and Germany as indigenous developments and as expressions of the Italian Baroque. Prerequisite: graduate standing.

ART 529. Survey of Western Architecture 3 cr.
Survey of history of Western architecture from prehistoric time to the present. Prerequisite(s): Graduate standing.

ART 530. Modern Architecture 3 cr.
Study of the architecture of the later eighteenth, nineteenth and twentieth centuries in the context of technological, social and stylistic changes. Focus on the works of Louis Sullivan, Frank Lloyd Wright, and European architects of the International Style, and the current reaction. Prerequisite: graduate standing.

ART 533. Baroque Art and Architecture in Italy, Spain, and Hispanic Latin America 3 cr.
Concentration on Italian and Spanish Baroque architecture, painting, and sculpture, as well as the art and architecture of Spanish vice-royalties of the Americas. Prerequisite: graduate standing.

ART 536. The African American in Art 3 cr.
Traces the inclusion of African American subjects and producers of art in the U.S. from the nations beginnings to the present. Slavery, civil rights, and racial pride are discussed as academic and avant-garde traditions in African American art. Fulfill requirements of ART 336 plus graduate-level research. Prerequisite(s): ART 297 or consent of instructor. Graduate standing.

ART 537. American Art to 1900 3 cr.
Covers the history of painting, sculpture, architecture, and other arts in the United States from the colonial period to 1900. Prerequisite: graduate standing.

ART 538. Late Eighteenth- and Nineteenth-Century European Art 3 cr.
History of painting, sculpture, architecture, and other arts created in Europe from 1789 to 1900. Prerequisite: graduate standing.

ART 539. Advanced History of Photography 3 cr.
Course studies history, theory and use of photographic practices in art, especially from formal introduction of the process in 1839 to the present. Prerequisite(s): ART 295G, ART 296G, and ART 297; Graduate standing.

ART 542. Twentieth-Century Art I, 1900–1945 3 cr.
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1900 to 1945. Prerequisite: graduate standing.

ART 543. Twentieth-Century Art II, 1945–Present 3 cr.
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1945 to the present. Comprehensive research paper required. Prerequisite: graduate standing.

ART 544. Art and Life in Renaissance Italy 3 cr.
Examines how Italian Renaissance textual and visual culture offered Europe new ways of seeing and portraying itself, 1500–1550. Topics include: Florence, Venice, Rome, Leonardo, Michelangelo, Titian, humanism, the Medici, and republican and courtly culture. Prerequisite(s): ART 295, 296, 297. Same as HIST 542.

ART 549. Advanced Figure Drawing 3 cr. (2-4P)
Advanced figure drawing class with emphasis on developing technical and conceptual skills. Prerequisite: ART 449

ART 550. Drawing Workshop 3 cr.
A critique class based on drawing done outside of class. Emphasis on development of technical and conceptual skills. Restricted to graduate art students. May be repeated up to 27 credits.

ART 555. Graphic Design 3 cr.
May be repeated up to 27 credits.

ART 560. Painting Workshop 3-9 cr.
Advanced work with painting skills. Emphasis on critical analysis and development of body of work. Restricted to graduate art students. May be repeated up to 27 credits.

ART 565. Sculpture Media 3-9 cr.
May be repeated up to 27 credits.

ART 566. Digital Photography, Image Capture and Output 3 cr. (2-4P)
Introduction to digital workflow in photography. Topics include digital camera operation, RAW file processing, scanning, color management and printing. Course will emphasize concepts of ideation and thematic coherence. May be repeated up to 6 credits.

ART 568. Advanced Large Format Photography and Advanced Printing 3 cr.
Introduction to the 4x5 view camera, advanced printing techniques, zone system and hybrid darkrooms. Emphasis on development of advanced skills in technical process, ideation, content generation and critical inquiry. Consent of instructor required. Prerequisite(s): ART 270, ART 271, ART 274.

ART 569. The Constructed Image 3 cr.
Covers advanced work with manipulation of conventional photographic materials and issues of post visualization. Emphasis on creation of an extended body of work. Prerequisite: consent of instructor. Restricted to majors.

ART 570. Advanced Introduction to Photography 3-9 cr.
Introduction to photography with digital cameras. Basic camera operation, picture composition, image processing and digital workflow. Image culture and the role of the still, lens-made image in contemporary society. Students must come equipped with an appropriate laptop computer, software and digital camera (consult with instructor). Consent of instructor required. Prerequisite(s): ART 270.

ART 571. Advanced Introduction to Film and Darkroom 3 cr.
Introduction to silver based photographic materials, film development, enlargement printing and darkroom work. Students will work with a range of cameras including: medium format, toy and pinhole. Emphasis on understanding the syntax of silver halide photographic materials. Development of conceptual vocabulary and the creation of images with thematic unity. May be repeated for a maximum of 6 credits. Consent of instructor required. Prerequisite(s): ART 271.

ART 573. Non-Silver Photographic Processes 3 cr.
Advanced work with historic photographic processes. Emphasis on creation of an extended body of work. Taught with ART 373. Consent of instructor required. Prerequisite(s): ART 270, ART 271, ART 274. Restricted to ART majors.

ART 576. Ceramic Arts 3-9 cr.
May be repeated up to 27 credits.

ART 576. Museum/Gallery Research Internship 1-9 cr.
Research internship in museum or gallery. Requirements determined by instructor in cooperation with supervising museum/gallery professional. Prerequisite: graduate standing. May be repeated for a maximum of 9 credits.

ART 577. Independent Research Problems in Art History 1-9 cr.
Advanced research on special problems to be conducted under supervision of art history faculty. May be repeated for a maximum of 9 credits. Consent of instructor required. Prerequisite(s): Graduate standing.

ART 578. Seminar: Selected Topics in Art History 3 cr.
Reading, research, and discussion of advanced problems. Prerequisite: graduate standing. May be repeated for a maximum of 9 credits.

ART 579. Graduate Seminar: Art Theory, Criticism, Historiography 3 cr.
Theories and methodologies in art history and art criticism. Prerequisite: graduate standing.

ART 580. Printmaking Workshop 3-6 cr.
May be repeated for a maximum of 33 credits. Prerequisite(s): Graduate standing.

ART 582. Advanced Digital Capture and Output 3-9 cr.
ART 583. Advanced Studio to Photograph 3 cr.
Studio photography and lighting technique. Advanced exploration of
formal methods, visual narrative, staged imagery and location work.
Emphasis on independent projects and development of thematic unity.
Reading and critique.

ART 585. Metals and Jewelry Design 3-9 cr.
May be repeated up to 27 credits.

ART 587. Exhibition Studies 3 cr.
Exhibition theory through practice. Gallery operations and management;
collecting, conservation, exhibiting, and public responsibility.

ART 589. Visual Culture of the 1950s 3 cr.
Focuses on major cultural trends and historical events in 1950s America.
Emphasis on art, films, and pop culture phenomena of the period.
Prerequisite(s): Either ART 297, ART 342, or consent of instructor. Gradu-
ate standing.

ART 590. Visual Culture of the 1960s 3 cr.
Focuses on major cultural trends and historical events in 1960s America.
Emphasis on art, films, and pop culture phenomena of the period.
Prerequisite(s): Either ART 297, ART 343, or consent of instructor. Gradu-
ate standing.

ART 591. Visual Culture of the 1970s 3 cr.
Focuses on major cultural trends and historical events in 1970s America.
Emphasis on art, films, and pop culture phenomena of the period.
Prerequisite(s): Either ART 297, ART 343, or consent of instructor. Gradu-
ate standing.

ART 592. Visual Culture of the 1980s 3 cr.
Focuses on major cultural trends and historical events in 1980s America.
Emphasis on art, films, and pop culture phenomena of the period.
Prerequisite(s): Either ART 297, ART 343, or consent of instructor. Gradu-
ate standing.

ART 593. History of Collage 3 cr.
Examines theory and practice of collage, assembly, and montage in 2 and
3-dimensional, 20th century art. Emphasis on the art of the Schwitters,
Picasso, Cornell, Hoch, Ernst, Ryan, Rauschenberg, and Schapiro. Fulfill
all requirements of ART 390 plus graduate-level research.
Prerequisite(s): Either ART 297, ART 342, or consent of instructor. Graduate
standing.

ART 594. History of Collage 1 cr.
Individualized study in specialized studio areas not covered by other
advanced courses. May be repeated for a maximum of 21 credits. Con-
sent of instructor required.

ART 596. Graduate Studio Seminar 3 cr.
Explores issues in contemporary art making and their relationship to
personal work. Presentation of research in oral, visual, and written form.
May be repeated for a maximum of 18 credits. Restricted to majors.
Prerequisite(s): Graduate standing.

ART 597. Readings in Art History 3 cr.
In-depth study of historical writing about art. Prerequisite: graduate
standing. May be repeated for a maximum of 9 credits.

ART 598. Studio Thesis 1-88 cr.
Special research in studio, leading to an exhibition and written thesis
statement.

ART 599. Art History Thesis 0-88 cr.
Art history master’s thesis research. May be repeated for unlimited credit.
Restricted to master’s level art history students. Consent of instructor
required. Prerequisite(s): Graduate standing.

ASTRONOMY

Department website: http://astronomy.nmsu.edu/
(575) 646-4438
holtz@nmsu.edu

J. Holtzman, department head, Ph.D. (California–Santa Cruz)– celestial populations
in galaxies; R. F. Beebe, Ph.D. (Indiana-Bloomington)– planetary astronomy and
stellar spectra; N. Chanover, Ph.D. (New Mexico State)– planetary astronomy;
C. Churchill, Ph.D. (California–Santa Cruz)– galaxies and intergalactic medium;
T. Harrison, Ph.D. (Minnesota)– cataclysmic variables and gamma-ray burst
sources; J. Jackiewicz, Ph.D. (Boston College)– helioseismology, theoretical
condensed matter physics; A. Klypin, Ph.D. (Moscow)– cosmology; R. T. J. McA-
teer, Ph.D. (Queen’s University, Belfast)– solar physics; Sun-Earth connection;
B. J. McNamara, Ph.D. (California–Santa Cruz)– stellar photometry, star clusters,
and gamma-ray astronomy; J. Murphy, Ph.D. (U. Washington)– planetary atmo-
spheres and exploration; N. Vogt, Ph.D. (Cornell)– galaxy evolution; R. Walterbos,
Ph.D. (Leiden)– interstellar medium, star formation, and structure and evolution
of galaxies; W. Webber, Ph.D. (Iowa)– high energy astrophysics

DEGREE: Master of Science
MAJOR: Astronomy

DEGREE: Doctor of Philosophy
MAJOR: Astronomy

MINOR: Astronomy

The Department of Astronomy offers graduate work leading to the Doctor
of Philosophy and Master of Science degrees. An undergraduate astronomy
minor degree is offered as well. To be admitted as a regular student to the NMSU
Graduate School as a major in astronomy, a student must present a suitable
undergraduate background with emphasis (12-16 credits) on junior-senior level
physics, and mathematics. The prospective student is also required to take apri-
tude and physics (or approved specialized field) sections of the Graduate Record
Examination (GRE).

Information on assistantships and fellowships in teaching and research
can be obtained from the department.

Each entering graduate student will be assigned a committee that will
qualify for continuation in doctoral studies.

It is possible, through arrangement with the Department of Physics, to
obtain a Master of Science degree in physics during progress toward the Ph.D.
in astronomy. See the “Department of Physics” section in this catalog for details
of that program.

The M.S. degree in astronomy is closely connected with the astronomy Ph.D. pro-
gram, and questions concerning requirements should be directed to the department.
Qualifying, Comprehensive and Final examinations are described else-
where in this catalog. Questions concerning styles of the examinations should be
directed to the department head.

The department has access to several different observing facilities. The
first is the Apache Point 3.5-m telescope, which is run by the Astrophysical
Research Consortium and operated by NMSU. The second is a 1-m telescope
also at Apache Point, which is solely owned by NMSU and has a wide-field
CCD-imaging system. The third observatory at Tortugas Mountain has a 24-inch
telecope with a CCD imager. The department is also a participant in the Sloan
Digital Sky Survey project at Apache Point Observatory. The department is home
to NASA’s Planetary Data System’s Planetary Atmosphere Node, at which solar
system exploration data are archived.

ASTRONOMY

ASTR 461. Astronomy for Teachers 3 cr.
Illustration and presentation of concepts of astronomy in different subject
areas to broaden teacher preparation for science education in public
schools.

ASTR 500. Seminar 1 cr.
Organized group study treating selected topics.

ASTR 505. Astronomy and Astrophysics I (f) 3 cr.
Application of physical principles to problems in modern astronomy.
Emphasis will be on radiation mechanics and radiation transfer in astro-
nomical systems. Prerequisite: consent of instructor.

ASTR 506. Astronomy and Astrophysics II (s) 3 cr.
A sequel to ASTR 505 with emphasis on basic dynamics and (magneto-
hydrodynamics. Prerequisite: consent of instructor.

ASTR 508. Astronomy for Educators 3 cr.
Assists K-12 teacher in developing pedagogy and content knowledge in the
subject of astronomy. Addresses New Mexico benchmarks and standards.
ASTR 535. Observational Techniques I (f) 3 cr.
Up-to-date introduction to modern observational astronomy in a two-semester sequence. Topics include: introduction to computers, error analysis in data, the different types of optical telescopes, and optical and infrared photography, image processing, and detectors.

ASTR 536. Observational Techniques in Astronomy II (s) 3 cr.
Sequel to ASTR 535. The second half of the course emphasizes observational techniques in spectroscopy, radio astronomy, and high energy astrophysics. Prerequisite: ASTR 535.

ASTR 545. Stellar Spectroscopy 3 cr.
This course covers the physics of stellar atmospheres with emphasis on using spectra as a diagnostic tool for understanding the properties of stars. Topics include spectral classification, radiative transfer, gas equilibrium physics, line and continuum opacities, adiabatic and superadiabatic convection, and extraction of observed quantities from spectra for deducing physical conditions of the source.

ASTR 555. Galaxies I 3 cr.
Fundamentals of the properties of galaxies and the components that they are made of: stars and stellar populations, gas and dust, central black holes, and dark matter. Introduction to basic concepts of galaxy formation.

ASTR 565. Stellar Interiors 3 cr.
Internal constitutions of stars, computation of stellar models, and stellar evolution. Prerequisite: consent of instructor.

ASTR 575. Computational Astrophysics 3 cr.
Scientific programming in the C language for astronomical applications. Explore key algorithms and standard techniques for imaging and spectroscopic data analysis. Topics include pointers, data structures, dynamic memory allocation, and least squares fitting, grid and iterative search methods, LCG random number generators, Monte Carlo simulations, numerical integration, and astronomical image and spectrum manipulation. Applications to real astronomical datasets are emphasized.

ASTR 598. Special Research Programs 1-6 cr.
Individual investigations, either analytical or experimental.

ASTR 599. Master's Thesis 0-88 cr.
Master's level research in astrophysics or observational astronomy.

ASTR 600. Pre-dissertation Research 1-88 cr.
Research.

ASTR 605. Interstellar Medium 3 cr.
Problems associated with gas and dust in the galaxy and with diffuse and planetary nebulae.

ASTR 610. Radio Astronomy 3 cr.
Techniques and observations stressing the operational approach to measurement and how the observations are intimately intertwined with modern astrophysics. Prerequisite: consent of instructor.

ASTR 616. Galaxies II 3 cr.
Advanced topics in galaxies. Includes a detailed description and understanding of the Milky Way and topics in galaxy formation and evolution. Consent of Instructor required. Prerequisite(s): Consent of instructor.

ASTR 620. Planetary Science I 3 cr.
Evaluation and analysis of observational data on solar system objects to determine their nature and physical conditions, with emphasis upon atmospheres (composition, structure, thermodynamics, evolution, etc.)

ASTR 621. Planetary Science II 3 cr.
The physical processes involved in planetary system formation are addressed. Specific foci include molecular cloud collapse, disk processes, and competing theories of planet formation within disks. Additional topics to be discussed may include: the solar wind, planetary magnetic fields, planetary ring processes, and mineralogy.

ASTR 625. Cosmology 3 cr.
Discussion of our current knowledge of the structure of the universe and current research methods. Topics include the distance scale, clustering of galaxies, large-scale structure, metrics, dark matter, and cosmological probes such as distant quasars, radio galaxies, and gravitational lenses. Prerequisite: consent of instructor.
To be admitted as a regular student to the Graduate School for a non-thesis Master of Science in biology, an applicant must submit to the Department of Biology a one-page statement of educational objectives in lieu of item 1 above, and must also submit items 2, 4, and 5 above. Students interested in the accelerated non-thesis Master of Science must have also completed undergraduate courses in genetics and biochemistry.

Prospective students who are U.S. citizens or permanent residents must also apply for admission to NMSU through the Graduate School. Prospective students who are not in one of these two categories must apply through International Student and Scholar service.

Graduate Record Examination scores are not required by the Department, but if available the Department may use them to help assign the award of graduate assistantships to entering students. These assistantships are awarded based on departmental needs and student merit; in general they are reserved for Ph.D. and thesis Master of Science students, and are not available to non-thesis Master of Science students.

For the accelerated non-thesis Master of Science students, the courses are designed to prepare students for biotechnology-related careers in basic and applied research; in product development and testing; and in policy-making, regulation, and law enforcement. The program of study includes practical training in molecular biology, genomics and bioinformatics, statistical analysis, business, bioethics, and professional development skills. Additional graduate coursework will provide students with further expertise in their individual areas of interest, including cell, molecular, and microbial biology; environmental, ecological, and evolutionary biology; and general and integrative biology. Students who complete this training will be prepared for successful employment in academic, corporate, and government settings.

For other Master of Science studies and for the Ph.D., students can choose among the Department’s three core programs of formal course work: Ecology and Evolutionary Biology, Cell and Organisms Biology, and Microbiology. Masters of Science thesis students and Ph.D. students in the Ecology and Evolutionary Biology core program should consult with their faculty advisor in developing a curriculum plan.

The Cell and Organismal Biology core program is appropriate for all graduate students who wish to emphasize those areas of biology that integrate function and structure in cells, tissues, and organisms. The graduate curriculum includes required and elective courses in cell and molecular biology, neurobiology, developmental biology, and physiology. Our goal is to prepare students for careers in this field through research experiences and formal coursework as well as through seminars and discussion groups.

The Microbiology core curriculum is appropriate for graduate students who wish to specialize in areas of biology that study the various processes that occur in microbes (bacteria, viruses, fungi, and protists) as well as intracellular processes. The program of study includes practical training. The biochemical basis for gene mutation, recombination, and expression are addressed throughout the class, but the class will also consider the mechanisms used to control disease emergence and why they succeed or fail. Prerequisite(s): MATH 121G, Introductory Genetics (BIOL 305 or equivalent) or consent of instructor.

BIOL 467. Evolution 3 cr.
Covers theory, historical background, population variation, natural selection, adaptation, speciation. May not be offered spring semester, even-numbered years. Prerequisite(s): BIOL 111G or BIOL 190; BIOL 305, and MATH 121G.

BIOL 469. Biology of Emerging Infectious Diseases 3 cr.
This class will investigate the evolutionary and ecological drivers of disease emergence. The effect of emerging diseases on human health will be addressed throughout the class, but the class will also consider the consequences of disease emergence for the health of wildlife and plant populations. Additionally, the class will consider the mechanisms used to control disease emergence and why they succeed or fail. Prerequisite(s): MATH 121G, Introductory Genetics (BIOL 305 or equivalent) or consent of instructor.

BIOL 470. Developmental Biology 3 cr.
The purpose of this course is to introduce students to the principles that govern the development of a single fertilized egg cell into a complex multicellular organism. These principles, and often the molecular mechanisms by which they are accomplished, appear to be universal for all multicellular organisms including both plants and animals. We will explore issues such as how cells become committed to particular cell fates and how this commitment is maintained; how organs acquire particular shapes, sizes and positions; the developmental causes of some human diseases; how the environment affects development; and, how changes in development provide the material basis for evolutionary change. Prerequisite(s): BIOL 211G, BIOL 305, and MATH 121G.

BIOL 471. Molecular and Cellular Mycology 3 cr.
Exploration of the world of fungi with emphasis on fungal molecular biology and development. Including discussion of fungal taxonomy and genomics. Prerequisite(s): MATH 121G and BIOL 311 required, BCHE 341 or BCHE 395 recommended, or consent of instructor.

BIOL 472. Primate Behavior and Ecology 3 cr.
Survey of the social behavior and ecology of nonhuman primates.

BIOL 473. Ecology of Microorganisms 3 cr. (2+3P)
The metabolic interactions of microorganisms in the environment, with emphasis on their roles in ecological processes. Prerequisite(s): MATH 121G, BIOL 311 or consent of instructor.

BIOL 474. Immunology 3 cr.
Basic concepts of the immune response. Prerequisite(s): MATH 121G, BIOL 305, and CHEM 211 or CHEM 313.

BIOL 475. Virology 3 cr.
Mechanisms of viral infections of animals and man. Prerequisite(s): MATH 121G, BIOL 311, and either BCHE 341 or BCHE 395.

BIOL 476. Soil Microbiology 3 cr.
Same as SOIL 476.

BIOL 478 L. Soil Microbiology Laboratory 1 cr. (3P)

BIOL 477. Applied and Environmental Microbiology 4 cr.
A lecture-laboratory course on the microorganisms and the reactions they mediate which either impact the environment or have industrial applications. Reading of current literature will be emphasized. Topics include bioremediation, water quality, and aspects of industrial and food microbiology. Prerequisite(s): MATH 121G, BIOL 311, and 311L, or consent of instructor.

BIOL 478. Molecular Biology of Microorganisms 3 cr.
The biochemical basis for gene mutation, recombination, and expression with emphasis on prokaryotes. Includes fundamentals of recombinant DNA technology. Prerequisite(s): MATH 121G, BIOL 305 and BIOL 311. Pre/Corequisite(s): BCHE 341 and BCHE 395.

BIOL 479. Medical Microbiology 3 cr.
An in-depth overview of microbial pathogens associated with human infectious disease. Etiological agents, pathogenesis, and processes leading to the disease state and the therapies of infectious disease. Prerequisite(s): MATH 121G and BIOL 311 required, BIOL 474 recommended.

BIOL 479 L. Medical Microbiology Laboratory 1 cr.
Overview of common procedures used by medical microbiologists to identify agents of disease or microbial pathogen traits. Prerequisite(s): MATH 121G, BIOL 311. Pre/Corequisite(s): BIOL 479.

BIOL 480. Animal Behavior 3 cr.
A survey of the field of animal behavior. BIOL 322 recommended. Prerequisite(s): MATH 121G, BIOL 111G or BIOL 190, and junior-level standing.
BIOL 480. L. Animal Behavior Laboratory 1 cr. (2P) Laboratory and field experiences in animal behavior. Prerequisites: BIOL 454, BIOL 302, BIOL 110, and BIOL 305. Taught with: BIOL 454.

BIOL 481. Animal Communication 3 cr. An examination of how animals produce and perceive signals, what factors influence the form of signals in different sensory modalities, and how conflicts between senders and receivers affect signaling strategies. Weekly discussion from the primary literature and group research products. Prerequisite: BIOL 121G.

BIOL 482. Principles of Conservation Genetics 3 cr. Fundamentals of the genetics of small populations. Genetic technologies used in studying small populations. Application of genetics and evolution to the conservation of biological populations. Prerequisite(s): BIOL 121G and BIOL 305.

BIOL 483. Genetics of Populations 2 cr. Basic theory of population genetics and how that theory has guided and been influenced by studies of natural populations. Prerequisite(s): BIOL 121G and BIOL 305 or equivalent.

BIOL 484. Neurobiology 3 cr. Fundamentals of neurobiology with an emphasis on properties of neurons and glia, principles of synaptic transmission, development of nervous system and organization of motor and sensory systems. Prerequisite: BIOL 211, BIOL 305, MATH 142G, or MATH 191G, and CHEM 211 or CHEM 313.

BIOL 486. Biology Research Programs 1-3 cr. Directed studies and research experiences, by arrangement with instructor. May be repeated for a maximum of 6 credits.

BIOL 503. Advanced Primate Adaptation and Evolution 3 cr. An in-depth look at primate adaptations and their evolution. Topics include physiological responses of individuals to their environment, life history theory, and spatially-explicit models of population and metapopulation dynamics. Prerequisite(s): BIOL 302 or equivalent.

BIOL 504. Animal Physiology 3 cr. An in-depth look at cellular processes and structures at the molecular level. Emphasis is placed on formal student presentations and discussions of current literature. Prerequisite: BIOL 277 or equivalent.

BIOL 505. Molecular Cell Biology 3 cr. An in-depth look at cellular processes and structures at the molecular level. Emphasis is placed on formal student presentations and discussions of current literature. Prerequisite: BIOL 277 or equivalent.

BIOL 506. Molecular Cell Biology 3 cr. An in-depth look at cellular processes and structures at the molecular level. Emphasis is placed on formal student presentations and discussions of current literature. Prerequisite: BIOL 277 or equivalent.

BIOL 507. Plant Systematics 4 cr. Principles and methods, classification, and identification of representative plant families. In addition student collections will emphasize independent identification of difficult groups. Prerequisite: BIOL 110. Not open to students who have taken BIOL 312 or equivalent.

BIOL 508. Biology for Educators 3 cr. Assists K-12 teachers in developing pedagogy and content knowledge in biology. The document “New Mexico Science Content Standards, Benchmarks, and Performance Standards” provides a focus for the content area covered and methodologies emphasized.


BIOL 514. Plant Physiology 2 cr. Same as EPWS 514. Prerequisites: BIOL 211G and CHEM 112G.

BIOL 520. Molecular Biology 3 cr. An in-depth look at cellular processes and structures at the molecular level. Emphasis is placed on formal student presentations and discussions of current literature. Prerequisite: BIOL 277 or equivalent.

BIOL 522. Mechanisms of Microbial Pathogenicity 3 cr. Comparative study of various human pathogens, including bacteria, viruses and mycoplasma. Evaluation of effects and responses of the host to infection. Prerequisite: BIOL 479.

BIOL 527. Symbiosis 3 cr. In-depth treatment of the ecology, evolution, and mechanisms that are found in symbiotic systems. Prerequisite: graduate status.
BIOL 571. Advanced Molecular and Cellular Mycology 3 cr.
Exploration of the world of fungi with emphasis on fungal molecular biology and development, including discussion of fungal taxonomy and genomics, using current literature. Consent of instructor required.

BIOL 572. Advanced Primate Behavior and Ecology 3 cr.
Advanced review of non-human primate social behavior and ecology.

BIOL 573. Fungal Biology 3 cr. (3-2P)
Same as EPWS 572. Prerequisite: EPWS 310 or BIOL 311, or consent of instructor.

BIOL 574. Advanced Human Osteology 3 cr.
Advanced human osteology surveying the functional, developmental and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology.

BIOL 574 L. Human Osteology Laboratory 1 cr. (2P)
Laboratory for BIOL 574 and ANTH 574. Experiences and activities related to identifying teeth and bones of the human skeleton.

BIOL 577. Advanced Topics in Environmental Microbiology 3 cr.
Methods used in molecular ecology and the study of diverse microbial habitats such as the rhizosphere and animal rumen. Class participation expected. Prerequisite: BIOL 473, BIOL 477 or consent of instructor.

BIOL 581. Physiology of Animals 3 cr.
Comprehensive treatment of integrative physiology of animals, emphasizing tissues, organ systems, and regulatory control, including neuroendocrine function, circulation, respiration, and excretion. Term paper required. Prerequisite: BIOL 211G, BIOL 111G, BIOL 377 recommended.

BIOL 582. Molecular Systematics 3 cr.
Laboratory oriented course emphasizing the application of molecular biological techniques to traditional life, natural history, and evolutionary biology. Curriculum includes methods of DNA characterization as applied to pedigree analysis, phylogenetic estimation, and population genetics. Weekly discussion of assigned readings from primary literature. Prerequisite: consent of instructor.

BIOL 587. Behavioral and Evolutionary Ecology 3 cr.
This course will investigate the causes and consequences of phenotypic variation and the adaptive value of phenotypic traits.

BIOL 588. Principles of Evolutionary Genetics 3 cr.
Fundamentals of genetic properties of natural populations. Application of genetics to the study of evolutionary change.

BIOL 589. Speciation and Adaptation 3 cr.
Examination of the two great themes of evolutionary biology from the perspectives of paleontology, developmental biology, and genetics. Begins with an historical overview of research on these evolutionary processes, but moves rapidly into contemporary issues. Emphasis on empirical studies and the primary literature.

BIOL 590. Advanced Neurobiology 1-3 cr.
Detailed examination of the principles underlying nervous system organization and function. Emphasis on recent advances in multidisciplinary, integrated approaches to study the nervous system. Prerequisites: either BIOL 490, BIOL 520, or equivalent, and consent of instructor. May be repeated under different subtitles for a maximum of 9 credits.

BIOL 591. Special Research Programs 1-9 cr.
Individual investigations either analytical or experimental.

BIOL 599. Master's Thesis 0-88 cr.
Thesis.

BIOL 600. Doctoral Research 1-88 cr.
Research.

BIOL 610. Seminar 1-3 cr.
Reviews of significant contributions from the zoological, botanical, and microbiological sciences to the broader aspects of biology. May be repeated for a maximum of 6 credits.

BIOL 612. Microbiology Seminar 1 cr.
Seminar to aid graduate students in assessment and presentation of classical and current topics in microbiology.

BIOL 620. Advanced Studies in Microbial Physiology 1-2 cr.
Special topics, lectures, and/or laboratory work in various specialties within the field of microbial physiology.

BIOL 621. Advanced Studies in Plant Ecology 1-3 cr.
Detailed appraisal of current theories and methods involving community and factorial plant ecology.

BIOL 622. Advanced Studies in Plant Morphology 1-3 cr.
Comparative investigations of internal and external structures of vascular plants, including ultrastructures.

BIOL 627. Advanced Studies in Plant Physiology 1-3 cr.
Seminars, lectures, and/or laboratory work in specialties in the field of plant physiology.

BIOL 629. Advanced Studies in Plant Biosystematics 1-3 cr.
Critical study of selected taxa.

BIOL 631. Advanced Studies in Genetics 1-3 cr.
Lectures, directed study, and discussions in current cytogenetic and cytokinetic research.

BIOL 632. Advanced Studies in Cell Biology 1-3 cr.
Lectures, seminars, or laboratory research on eukaryotic cell biology or viruses.

BIOL 634. Advanced Studies in Medical Microbiology 1-3 cr.
Lectures, seminars, discussions, or laboratory research dealing with disease-causing microorganisms. Prerequisites: BIOL 479 or equivalent and consent of instructor.

BIOL 638. Advanced Studies in Soil Microbiology 1-3 cr.
Analysis of microbiological balances in natural soils as affected by physical factors of the soil, crop exudates and residues and other organisms.

BIOL 640. Advanced Studies in Animal Physiology 1-3 cr.
Lectures, seminars, discussions, or laboratory research in animal physiology.

Lectures, directed study, and discussions of such topics as population theory, species diversity, biosystematics, ethology, genetics of speciation, and other aspects of evolutionary biology.

BIOL 645. Advanced Studies in Ecosystem Analysis 1-3 cr.
Lectures, directed study, discussion, and modeling of ecosystem structure and function.

Lectures, seminars, and/or laboratory work dealing with physiological, population, and/or community ecology of arthropods.

BIOL 697. University Teaching Experience 1-3 cr.
Certain graduate students will be permitted to teach up to one-third of one of the biology courses. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student's lectures.

BIOL 698. Selected Topics 1-3 cr.
Selected topics for doctoral students.

BIOL 700. Doctoral Dissertation 0-88 cr.
Dissertation.

GENETICS

GENE 450. Special Topics 1-3 cr.
Specific subjects to be announced in the schedule of classes. Maximum of 3 credits per semester and a total of 3 credits toward a degree. Consent of instructor required.

GENE 452. Applied Bioinformatics 3 cr.
Survey and application of publicly available bioinformatic tools that treat genomic DNA, cDNA, and protein sequences, RNA abundance, as well as tools that allow inference based on phylogenetic relationships. Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315 and GENE 320, and BCHE 341, or BCHE 395.

GENE 486. Genes and Genomes 3 cr.
Extensive coverage of nuclear and organelle genome structure in plants and animals, genome restructing including duplication, aneuploidy, chromosome translocations and inversions, comparative genomics, and molecular systematics. Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315, and GENE 520.

GENE 488. Gene Regulation 3 cr.
Extensive coverage of signal transduction processes and approaches used to monitor large scale changes in gene regulation and protein synthesis that occur during development and in response to environmental changes. Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315.
CHEMISTRY AND BIOCHEMISTRY

Department website: http://www.chemistry.nmsu.edu/
(575) 646-2505
wquintan@nmsu.edu


DEGREE: Master of Science
MAJOR: Chemistry

DEGREE: Doctor of Philosophy
MAJOR: Chemistry

MINOR: Biochemistry
MINOR: Chemistry

The Department of Chemistry and Biochemistry offers programs leading to the M.S. and Ph.D. degrees in the areas of physical, organic, inorganic, biological, and analytical chemistry. Admission to these programs without deficiency is based on an undergraduate program essentially equivalent to that pursued by a chemistry or biochemistry major at this university. An entering student is encouraged to take the Graduate Record Examination (aptitude) to increase his or her chances for financial support. All foreign students must take GRE and TOEFL and must demonstrate adequate English speaking and writing skills.

Students who wish may take a minor in chemical toxicology or molecular biology. The core course work required of students entering with no previous graduate study in chemistry or biochemistry consists of basic core courses completed in one of the following options: (i) two courses chosen respectively from two of the five major areas represented in the department apart from a student’s elected field of thesis research; or (ii) one course chosen from the five major areas apart from the student’s elected field of thesis research plus one graduate-level course in a discipline outside the Department of Chemistry and Biochemistry. A master’s candidate will plan an appropriate program of further study with his or her advisor and is also required to prepare a thesis. The thesis requirement may be waived upon application to the department head, after completion of the doctoral comprehensive examination requirements. A chemistry student who successfully completes the Ph.D. qualifying examination will begin writing the cumulative examinations, which constitute the written portion of the comprehensive examination. A biochemistry student who successfully completes the Ph.D. qualifying examination will begin preparation of a research proposal which will be orally defended for completion of the comprehensive examination. After completion of the qualifying exam, a doctoral committee is formed to assist the student in planning a program appropriate to his or her background and goals.

Since research is central in both the master’s and doctoral programs, the early selection of a research advisor is encouraged. The student is expected to participate in the colloquia and seminar programs. Financial support is available to graduate students in chemistry and biochemistry through numerous teaching and research assistantships as well as federally supported traineeships and fellowships. Inquiries regarding these opportunities should be directed to the head of the department.

CHEMISTRY

CHEM 451. Special Topics
1-3 cr.
Specific subjects to be announced in the Schedule of Classes. Prerequisite: consent of instructor. May be repeated for a maximum of 12 credits.

CHEM 455. Independent Studies
1-3 cr.
Independent studies directed by consulting faculty. Prerequisite: consent of instructor.

CHEM 456. Inorganic Structure and Bonding
3 cr.
Theoretical principles and a systematic study of the periodic table. Prerequisite: CHEM 356 or CHEM 431 or CHEM 433.

CHEM 466. Advanced Organic Chemistry
3 cr.
Recent developments in synthesis and theoretical principles of organic chemistry. Prerequisite: CHEM 314.

CHEM 466 H. Advanced Organic Chemistry Honors
3 cr.
Same as CHEM 466. Additional work to be arranged.

CHEM 471. Instrumental Methods of Analysis
4 cr. (3+3P)
Analytical techniques, including optical and procedures. Prerequisites: CHEM 371 and either PHYS 212G or PHYS 216G.

CHEM 472. Analytical Methods for Toxic Organics and Metal Ions in the Environment
3 cr. (2+3P)
Laboratory course with lectures on principles of analytical techniques related to environmental monitoring of pollutants and waste management. Prerequisite: CHEM 371 or CE 462 or consent of instructor.

CHEM 500. Seminar in Inorganic Chemistry
1 cr.
Current topics. May be repeated.

CHEM 506. Atomic and Molecular Structure in Inorganic Chemistry
3 cr.
Theories of ionic and molecular bonding.

CHEM 507. Chemistry of the Elements
3 cr.
Discussion of the reactions and structures of inorganic compounds.

CHEM 508. Main Group Chemistry
3 cr.
Chemistry, structure and bonding of main group elements are covered along with some spectroscopy.

CHEM 509. Transition Metal Chemistry
3 cr.
The chemistry, bonding theory, spectroscopy and industrial applications of the transition metals will be covered.

CHEM 510. Seminar in Organic Chemistry
1 cr.
Current topics. May be repeated.

CHEM 514. Organic Structure Determination
3 cr.
Modern spectroscopic techniques for characterization of organic compounds.

CHEM 515. Modern Organic Chemistry
3 cr.
Recent developments in synthesis and theoretical principles of organic chemistry.

CHEM 516. Physical Organic Chemistry
3 cr.
Physical organic chemistry.

CHEM 517. Synthetic Organic Chemistry
3 cr.
Synthetic methods in organic chemistry.

CHEM 518. Chemistry for Educators
This is a course for Graduate Masters of Arts in teaching.

CHEM 520. Seminar in Analytical Chemistry
1 cr.
Current topics. May be repeated.

CHEM 521. Chemical Instrumentation
3 cr. (2+3P)
Theory and application of electronic devices to chemical analysis.

CHEM 526. Advanced Analytical Chemistry
3 cr.
Equilibria, and the theories of gravimetric, volumetric, and instrumental analysis.

CHEM 527. Separations
3 cr.
Covers the fundamentals of separation methods and relationships to modern analytical techniques such as gas chromatography and liquid chromatography.
CHEM 528. Electroanalytical Techniques 3 cr.
Theory and application of modern electrochemical methods of analysis including voltammetry, amperometry, modern cyclic and pulse methods, and stripping analysis.

CHEM 529. Spectrochemical Analysis 3 cr.
Fundamentals, instrumentation, and applications of spectrochemical analysis.

CHEM 530. Seminar in Physical Chemistry 1 cr.
Current topics. May be repeated.

CHEM 536. Chemical Thermodynamics 3 cr.
First, second, and third laws of thermodynamics, and the concepts, interrelations, and applications of thermodynamic state functions.

CHEM 537. Quantum Chemistry 3 cr.
Fundamentals of quantum mechanics. Prerequisite: consent of instructor.

CHEM 538. Chemical Kinetics 3 cr.
Empirical analysis of rate measurements, collision theory, transition state theory, and chain reactions.

CHEM 539. Spectroscopy 3 cr.
Molecular spectroscopy for physical chemistry. Quantum mechanics applied to spectroscopy of polyatomic molecules: UV-Vis, IR, magnetic resonance. CHEM 537 desired but not required. Prerequisite: consent of instructor. Prerequisite: consent of instructor.

CHEM 550. Discussions in Inorganic Chemistry 1 cr.
Current research problems in inorganic chemistry. May be repeated. Graded S/U.

CHEM 560. Discussions in Organic Chemistry 1 cr.
Current research problems in organic chemistry. May be repeated. Graded S/U.

CHEM 570. Discussions in Analytical Chemistry 1 cr.
Current research problems in analytical chemistry. May be repeated. Graded S/U.

CHEM 580. Discussions in Physical Chemistry 1 cr.
Current research problems in physical chemistry. May be repeated. Graded S/U.

CHEM 598. Special Research Programs 1-3 cr.
Individual investigations, either analytical or experimental. Graded S/U.

CHEM 599. Master’s Thesis 0-88 cr.

CHEM 600. Research 1-88 cr.
Course used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

CHEM 609. Topics in Inorganic Chemistry 1-3 cr.
Selected topics of current interest designated by subtitle.

CHEM 619. Topics in Organic Chemistry 1-3 cr.
Selected topics of current interest designated by subtitle.

CHEM 629. Advanced Topics in Analytical Chemistry 3 cr.
Discussion of advanced topics in the field of analytical chemistry. May be repeated with different subtitles. Consent of instructor required.

CHEM 639. Topics in Physical Chemistry 1-3 cr.
Selected topics of current interest designated by subtitle.

CHEM 650. Advanced Seminar 1 cr.
Intended for students who have earned a master’s degree or the equivalent. A discussion of current topics of interest in chemistry. May be repeated.

CHEM 700. Doctoral Dissertation 0-88 cr.
Dissertation preparation

BIOCHEMISTRY

BCHE 451. Special Topics 1-3 cr.
Same as CHEM 451. Prerequisite: consent of instructor. May be repeated for a maximum of 12 credits.

BCHE 455. Independent Studies 1-3 cr.
Independent studies directed by consulting faculty. Prerequisite: consent of instructor.

BCHE 494. Techniques in Genetic Engineering 4 cr. (2+4P)
Basic laboratory techniques required for research involving recombinant DNA technology; structured experimental procedures, including nucleic acid isolation and purification, as well as the identification and manipulation of genes and genetic material of both bacterial and plant origin. Prerequisites: BCHE 395, 396, and consent of instructor.

BCHE 540. Seminar in Biochemistry 1 cr.
Formal seminar presentation in current topics in biochemical research. May be repeated for a maximum of 3 credits.

BCHE 542. Biochemistry I 3 cr.
Relationship between macromolecular structure and function. Basic enzymology. Energy metabolism. Prerequisite(s): CHEM 314 and CHEM 431 or CHEM 433 or BCHE 395 or equivalent.

BCHE 545. Molecular and Biochemical Genetics 3 cr.
An accelerated treatment of the molecular basis of gene expression. Discussion of chemical, enzymological, and genetic techniques of molecular biology. Prerequisite: BCHE 542 or equivalent. Same as BIOL 545.

BCHE 546. Biochemistry II 3 cr.
Intermediary metabolism: catabolic and anabolic pathways of carbohydrates, lipids, amino acids, and nucleic acids, including their regulation. Prerequisite: BCHE 542 or BCHE 395 with consent of instructor.

BCHE 590. Discussions in Biochemistry 1 cr.
Current research problems in biochemistry. May be repeated for a maximum of 6 credits. S/U Grading (S/U, Audit).

BCHE 598. Special Research Programs 1-3 cr.
May be repeated for a maximum of 6 credits. Same as CHEM 598. Graded S/U.

BCHE 599. Master’s Thesis 0-88 cr.
May be repeated for a maximum of 6 credits. Same as CHEM 599.

BCHE 600. Research 1-88 cr.
May be repeated for a maximum of 20 credits. PR/U grading. Same as CHEM 600.

BCHE 645. Nucleic Acid Metabolism 3 cr.
Study of the enzymology of proteins that act on nucleic acids as well as the effect of DNA and RNA structure on metabolic processes. Taught with BCHE 451. Prerequisite(s): “C” or better in BCHE 395 or BCHE 542.

BCHE 647. Physical Biochemistry 3 cr.
Fundamental applications of physical chemistry to the investigation of biological metabolites and biological macromolecules, including proteins, oligo-nucleotides, and molecular arrays with an emphasis on understanding biological functions based on chemical structures. Taught with BCHE 451. Prerequisite(s): “C” or better in CHEM 431 or CHEM 433 or BCHE 542.

BCHE 648. Proteins and Enzymes 3 cr.
Theories and mechanisms of enzyme catalysis, chemical modification of proteins, general acid-base catalysis and nucleophilic catalysis as they pertain to enzymes, advanced enzyme kinetics, and formulation of enzymatic rate equations. Prerequisite: BCHE 546.

BCHE 649. Topics in Biochemistry 1-3 cr.
Selected topics of current interest designated by title and credit. May be repeated for a maximum of 3 credits.

BCHE 650. Advanced Seminar 1 cr.
Discussion of biochemical research in progress that relates to a doctoral candidate’s thesis research. Intended for students who have earned a master’s degree or the equivalent and has made significant research progress for preparation of the doctoral dissertation. May be repeated for a maximum of 3 credits.

BCHE 700. Doctoral Dissertation 0-20 cr.
May be repeated for a maximum of 20 credits. Graded PR/U. Same as CHEM 700.

TOXICOLOGY

Industry, as well as federal, state, and municipal government agencies, has a growing need for scientists and engineers with an understanding of toxicological problems. The Toxicology Program has been designed to provide instruction in general, environmental, and occupational toxicology for students majoring in areas of science, agriculture, or engineering. Master’s or doctoral students may minor in toxicology by completing the introductory course and at least two of the advanced courses.

TOX 461. Toxicology I 3 cr.
Introduction to principles of toxicology. Prerequisite(s): BIOL 111G or BIOL 211G, and CHEM 345. Restricted to: Main campus only. Crosslisted with: ANSC 461

TOX 523. Environmental Toxicology 3 cr.
Introduction to the science of environmental toxicology. This course examines common pollutants and their impact on human and environmental health. It also evaluates the role of environmental protection agencies in monitoring and regulating these substances. Prerequisite(s): CHEM 211 or CHEM 313-314. Restricted to: Main campus only.
COMMUNICATION STUDIES

Department website: http://web.nmsu.edu/~nmsucomm/

Anne Hubbell, Department Head; Ph.D. (Michigan State)—organizational communication, health communication; G. Armfield, Ph.D. (University of Missouri-Columbia)—organizational communication, communication theory; I. Dyko, Ph.D. (Ohio State University)—communication theory, political communication, communication technology, research methods; J. Flora, Ph.D. (Kansas)—communication; K. L. Hacker, Ph.D. (Oregon)—computer mediated communication, political communication, E. Morgan, Ph.D. (University of Massachusetts-Amherst)—communication and culture, environmental communication

** DEGREE: Master of Arts

** MAJOR: Communication Studies

** MINOR: Communication and National Security

The Master of Arts in Communication Studies provides students with a social scientific approach to the study of human interaction, using quantitative and qualitative methods. Our curriculum is designed to explore how oral communication takes place interpersonally, within organizations, within our political system, and between and within cultures. Students take courses in interpersonal communication, organizational communication, political communication and/or cultural communication. All graduate students take courses in communication theory and research methods. In addition, students can take courses in topic areas such as conflict management, small group communication, persuasion, and nonverbal communication.

The program offers a wide variety of courses allowing students an opportunity to select topics pursuant to their special interests. In addition to courses, students have the opportunity to obtain practical experience by participating in professional activities offered by the department; for example, graduate teaching assistantships, research, and colloquia.

** DEGREE: Master of Arts

** MAJOR: Communication Studies

The department offers both thesis and non-thesis options in its Masters of Arts program. Both options require a minimum of 36 credits, which includes not only Communication courses but courses from outside the department. The thesis option requires at least 30 credits of coursework, 3-6 credits of thesis (COMM 599), and an oral defense of the thesis and coursework. The non-thesis option requires 36 credits of coursework, plus a comprehensive written examination, followed by an oral defense. Both options require a minimum of 30 credit hours of Communication courses.

** DEGREE REQUIREMENTS

Both of the following courses are required:

- COMM 505, Research Methods* .......................................................... 3
- COMM 583, Seminar in Theories of Communication** ..................... 3

Total ........................................................................................................ 6

Students must take three of the following four courses:

- COMM 540, Seminar in Political Communication* ......................... 3
- COMM 570, Seminar in Organizational Communication* ............... 3
- COMM 576, Seminar in Communication and Culture * .................. 3
- COMM 584, Seminar in Interpersonal Communication** ............... 3

Total ........................................................................................................ 9

** Electives in Related Fields*** (graduate levels; numbered 450+) ........... 3-6

** Thesis Option: COMM 599, Thesis .................................................. 3-6

** Non-thesis Option: Additional Graduate COMM Electives ............. 3-6

Total in COMM ....................................................................................... 30

Grand Total ......................................................................................... 36(min)

*COMM 925, 570, & 576 are offered only once every year, usually in the Spring.
** COMM 563, 540, & 584 are offered only once every year, usually in the Fall.
*** Anthropology, Education, English, Government, Psychology, Journalism, Management, Marketing, Sociology, &/or Women’s Studies.

ENTRANCE REQUIREMENTS FOR GRADUATE STUDY IN COMMUNICATION STUDIES

The Graduate Record Exam (GRE) General Test is not required for admission; however, high GRE scores will strengthen a candidate’s application and are highly regarded in the awarding of Graduate Assistantships. Students wishing to enroll in the Master program in Communication Studies must meet the following criteria:

1. Hold a BS degree, from an accredited institution of higher learning; Social Science disciplines are preferred
2. Hold a minimum grade point average of 3.25

To apply for an assistantship, please submit the following application materials

- COMM Information Form (on the department website)
- Three letters of recommendation
- Current Vita/Resume
- 750 word statement of intent
- A sample of scholarly writing

MINOR: Communication Studies

Students who wish to take a minor in Communication Studies will need to accumulate a minimum of 9 graduate credits in Communication Studies courses. Students are encouraged to contact the Communication Studies Department Chair for directions in the selection of courses.

MINOR: Communication and National Security

This minor is aimed at graduate students who seek employment in national security, intelligence, international business, military affairs in other nations, and other positions which require knowledge of how communication affects the national image of the United States and how Americans communicate with members of other cultures about political matters. Graduate students will be required to write a special analysis for each course that is not required of the undergraduate students. Each graduate student will also be required to present a one-hour lecture on an area of research specialization. TOTAL REQUIRED UNITS: 12.

Students will take three of four courses below plus one outside course approved by the department. The list below is our expected course rotation.

COMM 555, Fundamentals of Communication and National Security
COMM 556, Communication and the Intelligence Cycle
COMM 557, Strategic Communication and Public Diplomacy
COMM 558, Intercultural Communication and National Security

The courses from other departments can include special topics courses or related courses relevant to this minor, as well as regular courses such as the ones listed below.

- GEOG, 501, Research Design and History of Geographic Thought (should focus research project on national security)
- GOVT 562, Advanced Issues in Security and Intelligence Studies
- GOVT 568, Advanced Intelligence Studies
- HIST 523, History of U.S. Intelligence
- HIST 561, Islam and the West: Cultural Contacts, Conflicts and Exchanges (pre-requisites or co-requisites include HIST 212G or HIST 222G)
- SOC 478, Sociology of Development and the World System
- SOC 489, Globalization

ENGLISH AS A SECOND LANGUAGE


Instruction in speaking, reading, and writing basic conversational English. Class meets 30 hours weekly. Enrollment limited to beginning level graduate students in the International Intensive English Program. Consent of instructor required.

SPCD 453. Intensive English as a Second Language III 3-18 cr. Writing and speaking scientific English. Class meets 10 hours weekly, with additional laboratory hours at the instructor’s discretion. Enrollment limited to advanced-level graduate students in the International Intensive English Program. Consent of instructor required. Prerequisite(s): SPCD 402 or consent of instructor.

SPCD 458. Advanced Speaking and Listening for International Graduate Students 3 cr. Advanced speaking and listening skills for active participation at the graduate level. Emphasis on pronunciation and individual goal setting. Includes a theoretical component involving library research or preparation and presentation of a teaching unit. Prerequisites: placement and 530 TOEFL or consent of instructor. Graded S/U, RR.

SPCD 470. Scholarly Writing for International Graduate Students 3 cr. Instruction and practice in writing major academic genres, including experimental, descriptive, and problem-solution research reports, proposals, and library referenced papers. Prerequisites: placement based on English language screening test or successful completion of SPCD 110; a minimum TOEFL score of 500 or consent of instructor; and successful completion of SPCD 108/490 where indicated by placement. Main campus only. Graded S/U.

SPCD 490. Seminar Skills for Foreign Students 3 cr. Advanced skills required for active participation in academic discussions and oral presentations. Includes extensive video-taping which is replayed for evaluation. Prerequisite: placement based on English language screening test, and a minimum TOEFL score of 500 or consent of instructor. Main campus only.

COMMUNICATION STUDIES

COMM 450. Technologies of Human Communication 3 cr. Development and evolution of human communication technologies from prehistory through the future of computer-mediated communication networks. Examines behavioral, cognitive, social, cultural, and political issues of new communication technologies and their use and management. Prerequisite: junior or senior standing.

COMM 455. Fundamentals of Communication and National Security 3 cr. This course addresses communication perspectives informing national security, strategic intelligence, and the intelligence process. Students will examine U.S. national security history, policy, the development of the Intelligence Community, and intelligence as processes of communication. This course serves as an introduction to national security studies.

COMM 456. Communication and the Intelligence Cycle 3 cr. The course addresses communication requirements and the technical, cognitive, and cultural complexity of the collaborative research environment. Students participate in novel, team-based problem scenarios that provide the foundation for acquiring advanced cognitive analytic methods and strategies. Students will engage in interdisciplinary information science processes and will develop and present analytic products responding to national security requirements.

COMM 457. Strategic Communication and Public Diplomacy 3 cr. This course covers history, theory, and research related to the use of communication to change attitudes in favor of U.S. national security interests. Students will examine the use of strategic communication and influence in diplomacy, intelligence, and military communities in terms of specific strategies, effects, and issues. Students will learn to distinguish public diplomacy, information operations, public affairs, and other forms of political communication that are used by the U.S. government to persuade target populations about American interests and goals. Topics include soft power, intelligence-based negotiation processes, and research methods used to identify influence techniques or groups that threaten U.S. national security.

COMM 458. Intercultural Communication and National Security 3 cr. This course provides a concentration on cultural factors in international affairs and conflicts, how culture affects perceptions of national interests, and the relationship of U.S. national security to understand the general and political cultures of other nations. Students will integrate cultural and intercultural communication theory and behavior, with an emphasis on the development of specific communication skills to facilitate developing cultural knowledge in government and political contexts. Students will learn how to study the cultural factors that affect international conflicts and how strategic communication should address such cultural factors.

COMM 460. Deception and Communication 3 cr. Deceptive communication including nonverbal indicators of lies, types of lies, and influence of relationships on lying behavior and interpretation.

COMM 462. Family Communication 3 cr. A communication perspective on traditional and nontraditional family configurations, roles, interaction patterns, and conflict. Includes an examination of media depictions of families and family interaction, as well as current social and political issues related to the family. Same as W S 462 and FCS 462.

COMM 463. Communication and Gender 3 cr. Study of communication, gender, and culture, including theoretical approaches to gender development, the implications of gender identity, gendered patterns of verbal and nonverbal communication, and the rhetorical dimensions of gender. Discussion of gendered communication in the workplace, as well as the influence of media on gender. Same as W S 463.

COMM 465. Nonverbal Communication 3 cr. Study of and experimentation with nonverbal aspects of human communication as vital components of the total communication process.

COMM 470. Leadership Communication 3 cr. Examination of traditional theories and concepts of leader-follower dynamics; presentation of cognitive, systemic, and symbolic interpretative views of leadership with an emphasis on persuasion and motivation in leader-follower interactions.

COMM 475. International Communication 3 cr. Exploration of the forms and channels of communication substantially influenced by international cultural and political factors. Covers: global communication technology; news, information and entertainment flows; international diplomacy and negotiation, communication in war and peace.

COMM 477. Environmental Communication 3 cr. Examines the link between communication and environment within the context of communication scholarship. Topics include sense of place, cultural approaches to interacting with environment as well as exploring current themes surrounding environment.

COMM 480. Health Communication 3 cr. Examination of central issues in communication theory and practice as applied to health care. Includes communication in health care organizations, media dissemination of health information, role of communication in disease prevention and health promotion, and symbolic meaning of illness within cultures.

COMM 483. Communication in Friendships and Romantic Relationships 3 cr. Examines communication in adult friendships and romantic relationships that do not have legal commitments. Includes trends in friendships, benefits and problems within cross and same-sex friendships and romances, gender differences in communication within adult friendships and romances and the communication of friendship and romance on the Internet. Prerequisite: COMM majors or consent of instructor.

COMM 484. Verbal Communication 3 cr. Examination of rules governing conversational structures such as speech acts, action sequences, topics and topic shifts. Also covers humor in conversation and conversational control.

COMM 485. International Teaching Assistant Development 3 cr. International teaching assistants will receive instruction in communicative skills to enable them to meet their responsibilities at NMSU. Course includes lectures, seminars, video-taped presentations, and tutorial sessions emphasizing pedagogic and presentation skills and styles. Prerequisite: consent of instructor.

COMM 490. Independent Study 1-3 cr. Individualized, self-paced projects for advanced students. Prerequisites: COMM 265G and junior standing with consent of participating instructor. May be repeated for a maximum of 6 credits.

COMM 491. Selected Topics 1-6 cr. Individual and/or group study of selected topics. To be identified by sub-title. Prerequisite: prior arrangement with faculty supervisor(s). May be repeated for a maximum of 12 credits.

COMM 495. Communication Internship 3 cr. Internship opportunity to apply what has been learned to a real-world situation. Prerequisite: junior standing and 3.0 GPA in major. May be repeated for a maximum of 6 credits. Restricted to majors.

COMM 505. Research Methods 3 cr.
COMM 506. Qualitative Research Methods in Communication 3 cr.
Survey of qualitative research methods in the study of human communication, including historical and critical approaches, interviewing, participant-observation, and communication ethnography. Students apply methods to their own research.

COMM 535. Seminar in Psychology of Human Communication 3 cr.
Advanced study of psychological processes involved in interpersonal communication. Covers person perception and message production.

COMM 540. Seminar in Political Communication 3 cr.
Political communication theory, research, and issues. Empirical studies of campaigns, movements, news media, voter decision-making, political participation, socialization, and knowledge. Political theory, field research, communication science findings and research methods.

COMM 545. Seminar in Ethicis, Racism, and Communication 3 cr.
Course focuses on theories and research concerning the social, cognitive, and communication aspects of ethnic and racial prejudice. Specific psychological and communication processes of person and group categorization are explored along with findings about the effects of ethnic prejudice on everyday communication (and vice versa).

COMM 550. Seminar in Communication Technologies 3 cr.
Seminar on design, usage, and social impact of electronic mail, communication through computer networks, and new technologies of organizational communication such as group decision support systems (GDSS). Each student will study an actual application of a major communication technology in an organization.

COMM 551. Seminar in Persuasion 3 cr.
Work with an actual persuasion campaign, such as public information, political, or commercial marketing campaigns. Includes case studies of large-scale persuasion efforts, current theoretical models of persuasion processes, and methods for studying, evaluating, and refining messages for optimal effects. Prerequisite: COMM 351 or consent of instructor.

This seminar course addresses communication perspectives informing national security, strategic intelligence, and the intelligence process. Students will examine U.S. national security history, policy, the development of the Intelligence Community, and intelligence as processes of communication. This course serves as an introduction to national security studies. Graduate students are required to fulfill advanced research and presentation requirements.

COMM 556. Seminar Communication and the Intelligence Cycle 3 cr.
This seminar course addresses communication requirements and the technical, cognitive, and cultural complexity of the collaborative research environment. Students participate in novel, team-based problem scenarios that provide the foundation for acquiring advanced cognitive analytic methods and strategies. Students will engage in interdisciplinary information science processes and will develop and present analytic products responding to national security requirements. Graduate students will be required to fulfill advanced research and presentation requirements.

The seminar course covers history, theory, and research related to the use of communication to change attitudes in favor of U.S. security interests. Students will examine the use of strategic communication and influence in diplomacy, intelligence, and military communities in terms of specific strategies, effects, and issues. Students will learn to distinguish public diplomacy, information operations, public affairs, and other forms of political communication that are by the U.S. government to persuade target populations about American interests and goals. Topics include soft power, intelligence-based negotiation processes, and research methods used to identify influence techniques of groups that threaten U.S. national security. Graduate students will be required to fulfill advanced research and presentation requirements.

COMM 558. Seminar Intercultural Communication and National Security 3 cr.
The seminar course provides a concentration on cultural factors in international affairs and conflicts, how culture affects perceptions of national interests, and the relationship of U.S. national security to understand the general and political cultures of other nations. Students will integrate cultural and intercultural communication theory and behavior, with an emphasis on the development of specific communication skills to facilitate developing cultural knowledge in government and political contexts. Students will learn how to study the cultural factors that affect international conflicts and how strategic communication should address such cultural factors. Graduate students will be required to fulfill advanced research and presentation requirements.
academic careers. The department offers specific expertise in several research areas, such as bioinformatics, artificial intelligence and knowledge representation, software engineering and programming languages, computer and wireless networks, data mining and machine learning, high performance computing, theory of computing, computer architectures, and assistive technologies. A number of laboratories have been established to coordinate research activities, including the Knowledge representation, Logic and Advanced Programming (KLAP) laboratory, the Programming Languages, Environments, and Automated Software Engineering (PLEASE) laboratory, the Game Design laboratory, the Database Management and Data Mining laboratory, and the Network and Systems Optimization laboratory. The Department members are also directing the CREST Center for Research Excellence in Bioinformatics and Computational Biology, offering educational and research opportunities in bioinformatics.

ENTRANCE REQUIREMENTS FOR GRADUATE STUDY IN COMPUTER SCIENCE

The Graduate Record Exam (GRE) General Test is not required for admission; however, high GRE scores will strengthen a candidate's application and are highly regarded in the awarding of Graduate Assistantships. To be admitted without undergraduate deficiencies, an entering student must have completed undergraduate preparation substantially equivalent to that required for the Bachelor of Science degree in computer science at New Mexico State University. Deficiencies should be satisfied as early in the student graduate program as possible, through the regular undergraduate courses, the CS 460-469 transition courses, or through tests administered by faculty members in the relevant areas. Students should consult with their Graduate Advisor to address issues related to deficiencies. Deficiencies are also assigned to applicants whose transcripts denote low grades in selected areas. Admission is often denied to candidates with little background in Computer Science. Instructions for prospective applicants can be found at http://www.cs.nmsu.edu.

ENTRANCE REQUIREMENTS FOR GRADUATE STUDY IN BIOINFORMATICS

The Graduate Record Exam (GRE) General Test is not required for admission; however, high GRE scores will strengthen a candidate's application and are highly regarded in the awarding of Graduate Assistantships. Students wishing to enroll in the Master program in Bioinformatics must meet the following criteria:

1. Hold a B.S. degree, from an accredited institution of higher learning, in either a computational field (e.g., Computer Science) or in life sciences (preferably Biology, Biochemistry, or Environmental Sciences)
2. Hold a minimum grade point average of 3.2

Applicants will be expected to provide a Career statement, motivating the interest in bioinformatics and a minimum of three letters of reference.

DEGREE: Doctor of Philosophy

MAJOR: Computer Science

Doctoral students may specialize in any of the areas in which computer science faculty have active research interests. Through interdisciplinary arrangements with other doctoral departments at New Mexico State University, doctoral students may also specialize in such areas as computational biology, computer networks and architectures, and cognitive science.

Doctoral students are expected to join the program with a preparation equivalent to that required for the Master's degree in computer science at New Mexico State University. The requirements for the degree are as specified in the NMSU graduate catalog, with the following additional considerations:

- The qualifying examination is implemented as a written examination, which examines the depth of knowledge in five areas of computer science. The five areas are Formal Languages and Computability, Analysis of Algorithms, Programming Languages, one between Operating Systems and Computer Architecture, and a fifth area agreed between the student and the department's Graduate Committee. Doctoral students are required to take the qualifying examination on or before the date indicated in their departmental admission referral. Each student has three consecutive attempts to complete the five required areas.
- The comprehensive examination evaluates depth of knowledge in the specific research area selected by the candidate. The comprehensive exam includes both a written part, in the form of an extensive survey paper and an annotated bibliography, and an oral examination.
- The student is required to submit and defend a prospectus, at the same time or after completing the comprehensive examination. The prospectus describes and motivates the specific research problem to be addressed in the doctoral dissertation.

Students should contact the department for information on additional graduation requirements, or visit the on-line Graduate Handbook (http://www.cs.nmsu.edu).

DEGREE: Master of Science

MAJOR: Computer Science

Each master's student normally must write a thesis (CS 599) or, with the advisor's permission, undertake a research project (CS 598). In either case, the number of required graduate credits is 33, including 8 for the thesis or project. In all cases, the students are required to sustain a final exam, covering the thesis/research project and the graduate course-work. The two parts of the exam bring equal weight.

In no case may a C.S course numbered below 500 be counted towards the number of credits. In particular, graduate students are expected to register for C.S classes numbered 500 or above. The student's program must include:

- CS 510
- CS 570
- One of: CS 573, CS 574, CS 594
- One of: CS 571, CS 575, CS 580, CS 581, CS 582
- One additional course selected between: CS 550, CS 571, CS 572, CS 573, CS 574, CS 575, CS 580, CS 581, CS 582, CS 584
- One additional computer science course numbered above 550 and different from CS 598, CS 599, CS 600, and CS 700.

Courses not in Computer Science can be included in the student’s program of study only if prior written approval has been obtained from the student's advisor and the departmental Graduate Committee. Further details can be found in the on-line Graduate Handbook (http://www.cs.nmsu.edu/).

With the advisor’s consent, the student may instead complete a coursework-only Master degree; this requires 36 credits of regular course work, satisfying the same requirements listed above, except that the 6 credits of thesis or project are replaced by 9 credits of courses numbered 550 or above and different from CS 598, CS 599, and CS 590. Students pursuing a coursework-only degree are expected to complete a written exam covering a selected subset of the students’ plan of study. Further details can be found in the on-line Graduate Handbook (http://www.cs.nmsu.edu/).

DEGREE: Master of Science

MAJOR: Bioinformatics

The degree requirements include 30 graduate credit hours. The requirements are structured as follows:

1. Introductory Courses (9 credit hours): these courses provide foundational preparation in biological sciences and computational sciences. They will be organized along two tracks:
   - Computational Track: these courses are intended for students with a Bachelor's degree in life sciences; the required courses are CS 462, CS 468, and CS 469.
   - Life Sciences Track: these courses are intended for students with a Bachelor's degree in computer sciences; the required courses are BIOL 520, MOLB 542 and MOLB 545.

   These courses can be replaced by more advanced courses with written permission of the graduate advisor.

2. Core Courses (9 credit hours): The goal of these courses is to expose the students to the central issues and techniques in the field of bioinformatics. The core courses are:
   - CS 516
   - MOLB 470 or GENE 452 (Bioinformatics and Genome Analysis) or GENE 452 (Applied Bioinformatics) or BIOL 550 (Bioinformatics Applications and Databases) or CS 598
   - CS 502 or CS 579 (Data Mining)

3. Elective Courses (6 credit hours): The goal of these courses is to allow students to specialize in a specific branch of bioinformatics. The courses can be selected among the following: CS 502, CS 521, CS 570, CS 572, CS 575, CS 579, CS 581, CS 598, BIOL 470, AGRO/HORT 506, BIOL 474, BIOL 475, BIOL 490, BIOL 557, BIOL 567, BIOL 569, BIOL 598, BIOL 500.

4. Master's Project/Thesis (6 credit hours): Each master's student must write a thesis (CS 559) or, with the advisor's permission, undertake a research project (CS 598). In either case, the number of required graduate credits is 6 for the thesis or project. In all cases, the students are required to sustain a final exam, covering the thesis/research project.
MINOR: Computer Science

Students who wish to take a minor in Computer Science will need to accumulate a minimum of 9 graduate credits in Computer Science courses. Students are encouraged to contact the Computer Science Graduate Committee Chair for directions in the selection of courses.

ASSISTANTSHIPS

Graduate assistantships—in the form of Teaching and Research assistantships—are expected to be available during the academic year. Inquiries should be addressed to the departmental Graduate Committee. Research assistantships are available at the discretion of individual research project leaders in the Department or elsewhere on campus. Submitting detailed vitae, letters of reference, and GRE test scores is encouraged when applying for any assistantship.

5-YEAR DUAL DEGREE BS+ MS PROGRAM

The dual degree program combines some of the requirements of the Bachelor of Science in Computer Science and the Masters of Science in Computer Science. Full details of the program can be found at http://www.cs.nmsu.edu. Admission occurs in two steps. First, students will apply to the Computer Science department to receive approval for the BS+MS program. The students submit the pre-application when he/she is within 48 credits of earning a BS in Computer Science; an application form is provided in the department web site. Qualification for the BS+MS program will be based on the cumulative (non-grade replaced) grade point average in Computer Science and Math courses taken to that point, including C S 371 and C S 473 (at least 3.3) and recommendations by faculty members listed on the departmental application. Additional factors might be taken into account when available (e.g., TOEFL/IELTS scores, GRE scores). Students having a grade point average below 3.5 may be admitted on a case-by-case basis, depending on faculty recommendations and evaluations of the individual academic and professional history. Once the Computer Science department has notified the applicant of acceptance in the combined BS+MS program, the applicant must then formally apply to the graduate school (prospective.nmsu.edu/graduate) for formal admission to the graduate program; this application to the graduate school is made during the semester of graduation from the BS in Computer Science.

The curriculum for the first three years of the BS+MS program coincides with the requirements of the BS program. In particular, the general requirements include a grade of a least a C in each course to satisfy the departmental and non-departmental requirements. No course may be counted as satisfying both a departmental and non-departmental requirement. No course taken to satisfy wither a departmental or non-departmental requirement may be taken S/U. The following are the departmental requirements for the degree (the non-departmental requirements are identical to those of the BS in Computer Science).

Departmental Requirements for Years 1 through 4:

C S 171, Computer Science I
C S 271, Object Oriented Programming
C S 272, Introduction to Data Structures
C S 273, Machine Programming and Organization
C S/MATH 278, Discrete Mathematics for Computer Science
C S 370, Compilers and Automata Theory
C S 371, Software Development
C S 372, Data Structures and Algorithms
C S 419, Computing Ethics and Social Implications of Computing
C S 448, Senior Thesis
C S 471, Programming Language Structure I
C S 473, Architectural Concepts I
C S 474, Operating Systems I

One of the following: C S 470, Functional Programming; C S 472, Logic and Constraint Logic Programming; C S 475, Artificial Intelligence I; C S 476, Artificial Intelligence II; C S 478, Computer Graphics; C S 479, Computer Security; C S 480, Linux System Administration; C S 481, Visual Programming; C S 482, Database Management Systems I; C S 483, Introduction to Robotics; C S 484, Computer Networks I; C S 485, User Interface Design; C S 486, Bioinformatics; C S 491, Parallel Programming; C S 492, Computer Systems Modeling and Simulation

One of the following: C S 501, Functional Programming; C S 502, Database Management Systems; C S 503, Introduction to Robotics; C S 504, Computer Networks; C S 505, Artificial Intelligence I; C S 506, Computer Graphics; C S 507, Visual Performing; C S 511, Logic and Constraint Logic Programming; C S 512, Computer Systems Modeling and Simulation; C S 515, User Interface Design; C S 516, Bioinformatics; C S 521, Parallel Programming

One of the following: C S 573, Architectural Concepts II; C S 574, Operating Systems II; or C S 584, Computer Networks II

Departmental Requirements for Year 5:

C S 510, Automata, Languages and Computability
C S 570, Analysis of Algorithms

One of the following: C S 571, Programming Language Structures II, or C S 575, Artificial Intelligence II, or C S 580, Compilers Construction, or C S 581, Advanced Software Engineering, or C S 582, Database Management Systems II

One of the following: C S 590, Complexity Theory, or C S 571, Programming Language Structures II, or C S 572, Advanced Algorithms, or C S 573, Architectural Concepts II, or C S 574, Operating Systems II or C S 575, Artificial Intelligence II, or C S 580, Compilers Construction, or C S 581, Advanced Software Engineering, or C S 582, Database Management Systems II, or C S 584, Computer Networks II

One Additional Course Numbered 559 or above
One Additional Course Numbered 500 or above

C S 599 Master Thesis .................................................................6 credits

COMPUTER SCIENCE

C S 450, C Programming .................................................................3 cr. (2+3P)
Programming in the C language. More advanced than C S 167. Recommended for nonmajors only. Prerequisite(s): Graduate standing. Restricted to: Main campus only.

C S 451, C++ Programming ..........................................................3 cr.
Programming in the C language. More advanced than C S 177. Recommended for nonmajors only. Prerequisite(s): Graduate standing.

C S 452, Java Programming ..........................................................3 cr. (2+2P)
Programming in the Java language. More advanced than C S 167. For nonmajors only. Prerequisite(s): Graduate standing. Restricted to: Main campus only.

C S 457, Topics in Software Programming and Applications ..........................................................3 cr. (2+2P)
Current topics in computer programming and software applications. Topic announced in the Schedule of Classes. More advanced than CS 157. Recommended for non-majors only. May be repeated if subtitle is different. Prerequisite(s): Graduate standing.

C S 460, Computer Science I Transition ..................................................3 cr.
Computational problem solving; problem analysis; implementation of algorithms. Recursive structures and algorithms. For CS graduate students only; cannot be used in a student’s program of study. Taught with C S 172. Consent of instructor required.

C S 462, Object Oriented Programming Transition ..................................................3 cr.
Introduction to problem analysis and problem solving in the object-oriented paradigm. Practical introduction to implementing solutions in the C++ language. Hands-on experience with useful development tools. For C S graduate students only; cannot be used in a student’s program of study. Consent of instructor required. Prerequisite(s): At least a C in C S 172 or C S 460 or consent of instructor.

C S 463, Introduction to Data Structures Transition ..................................................3 cr.
Design, implementation, use of fundamental abstract data types and their algorithms: lists, stacks, queues, dequeues, trees; imperative and declarative programming. Internal sorting; time and space efficiency of algorithms. For C S graduate students only; cannot be used in a student’s program of study. Consent of instructor required. Prerequisite(s): At least a C in C S 172 or C S 460 or consent of instructor.

C S 464, Machine Programming and Organization Transition ..................................................3 cr.
Computer structure, instruction execution, addressing techniques; programming in machine and assembly languages. For C S graduate students only; cannot be used in a student’s program of study. Consent of instructor required. Prerequisite(s): At least a C in C S 172 or C S 460 or consent of instructor.
Logical connectives, sets, functions, relations, graphs, trees, proofs, induction, and application to computer science. For C S graduate students only; cannot be used in a student’s program of study. Consent of instructor required. Prerequisite(s): At least a C in C S 172 or C S 460 or consent of instructor.

C S 466. Compilers and Automata Transition 3 cr.
Methods, principles, and tools for programming language processor design; basics of formal language theory (finite automata, regular expressions, context-free grammars); development of compiler components. For C S graduate students only; cannot be used in a student’s program of study. Consent of instructor required. Prerequisite(s): At least a C in C S 271 or C S 462, in C S 272 or C S 463, in C S 273 or C S 464, in C S 278 or C S 465, or consent of instructor.

C S 468. Software Development Transition 3 cr.
Software specification, design, testing, maintenance, documentation; informal proof methods; team implementation of a large project. For C S graduate students only; cannot be used in a student’s program of study. Consent of instructor required. Prerequisite(s): At least a C in C S 271 or C S 462, in C S 272 or C S 463, or consent of instructor.

C S 469. Data Structure and Algorithms Transition 3 cr.
Introduction to efficient data structure and algorithm design. Order notation and asymptotic run-time of algorithms. Recurrence relations and solutions. Abstract data type dynamic set and red-black trees. Classic algorithm design paradigms: divide-and-conquer, dynamic programming, greedy algorithms. For C S graduate students only; cannot be used in a student’s program of study. Consent of instructor required. Prerequisite(s): At least a C in C S 272 or C S 463, in C S 278 or C S 465, or consent of instructor.

C S 470. Functional Programming 3 cr.
Applicative programming techniques: higher order functions, infinite data structures, lambda calculus, universal functions. Survey of functional languages including Miranda and ML. Not for C S graduate students. Prerequisite(s): At least a C in C S 272 and C S 278.

C S 471. Programming Language Structure I 3 cr.
Syntax, semantics, implementation, and application of programming languages; abstract data types; concurrency. Not for C S graduate students. Prerequisite(s): C or better in C S 270 and C S 370.

C S 472. Logic and Constraint Logic Programming 3 cr.
Declarative programming techniques; foundations of logic programming; programming in Prolog; constraint logic programming; applications of logic and constraint programming. Not for C S graduate students. Prerequisite(s): At least a C in C S 272 and C S 278.

C S 473. Architectural Concepts I 3 cr.
Comparison of architectures to illustrate concepts of computer organization; relationships between architectural and software features. Not for C S graduate students. Prerequisite(s): at least a C in C S 273 and C S 370.

C S 474. Operating Systems I 3 cr.
Operating system principles and structures, and interactions with architectures. Not for C S graduate students. Prerequisite(s): at least a C in C S 273, C S 371, and C S 372.

C S 475. Artificial Intelligence I 3 cr.
Fundamental principles and techniques in artificial intelligence systems. Knowledge representation formalisms; heuristic problem solving techniques; automated logical deduction; robot planning methods; algorithmic techniques for natural language understanding, vision, and learning. Not for C S graduate students. Prerequisite(s): At least a C in C S 372.

Languages, programming, devices, and data structures for representation and interactive display of complex objects. Not for C S graduate students. Prerequisite(s): At least C in C S 370 or C S 371.

C S 478. Computer Security 3 cr.
Introduction to the art and science of computer security. Fundamentals of computer security including early cryptography, authentication and access control, security threats, attacks, detection and prevention in application software, operating systems, networks and databases. Prerequisite(s): At least a C in C S 273 or consent of instructor.

C S 479. Special Topics 1-3 cr.
Topic announced in the Schedule of Classes. May be repeated if subject is different. Not for C S graduate students.

C S 480. Linux System Administration 3 cr.
Basic system administration for Linux environments. Topics include user management, file systems, security, backups, system monitoring, kernel configuration and other relevant aspects of system administration. Not for Computer Science graduate students.

C S 481. Visual Programming 3 cr.
Design and implementation of languages using visual but nontextual means to specify programs. Not for C S graduate students. Prerequisite(s): C or better in C S 371.

C S 482. Database Management Systems I 3 cr.
Database design and implementation; models of database management systems; privacy, security, protection, recovery. Not for C S graduate students. Prerequisite(s): at least a C in C S 272 and either C S 278 or MATH 279 or MATH 320.

C S 483. Introduction to Robotics 3 cr.
Basic AI-based robotic architecture and concepts, with an emphasis on building and programming mobile robots. Not for C S graduate students. Consent of instructor required. Prerequisite(s): At least a C in C S 272 and C S 273.

C S 484. Computer Networks 3 cr.
Fundamental concepts of computer communication networks; layered network architecture, network components, protocol stack and service. Example of application, transport, network and data link layers, protocols primarily drawn from the Internet (TCP, UDP, and IP) protocol multimedia networks; network management and security. Not for C S graduate students. Prerequisite(s): At least a C in C S 272 and C S 273, senior or graduate standing or consent of instructor. STAT 371 or STAT 470 recommended.

C S 485. User Interface Design 3 cr.
Interface design, conceptual models formed by users, computer aided instruction, natural and query languages, graphical representations. Not for C S graduate students. Prerequisite: at least C in C S 371.

C S 486. Bioinformatics 3 cr.
Introduction to bioinformatics and computational biology. Computational approaches to sequences analysis, protein structure prediction and analysis, and selected topics from current advances in bioinformatics. Not for C S graduate students. Prerequisite(s): At least a C in C S 272 or BIOL 221 or BIOL 311.

C S 491. Parallel Programming 3 cr.
Programming of shared memory and distributed memory machines; tools and languages for parallel programming; techniques for parallel programming; parallel programming environments. Not for C S graduate students. Prerequisite: C or better in C S 370 or consent of instructor.

C S 492. Computer Systems Modeling and Simulation 3 cr.
Fundamental concepts of modeling computer systems: continuous and discrete time models, states and transition, probabilistic models. Structure of simulation programs, time driven and event driven simulation on captured and synthetic traces, generation of random variables, queueing models, Markov chains, random walks, Poisson, Markov, renewal branching and Brownian motion processes, model validation and data analysis. For C S undergraduate students and non-C S graduate students only. Prerequisite(s): C or better in C S 372.

C S 501. Functional Programming 3 cr.
Applicative programming techniques: higher order functions, infinite data structures, lambda calculus, and universal functions. Survey of functional languages including Miranda and ML. Requires more advanced graduate work than C S 470.

C S 502. Database Management Systems I 3 cr.
Database design and implementation; models of database management systems; privacy, security, protection, recovery; requires more advanced graduate work than C S 482. Prerequisite: At least a C in C S 272 and either C S 278, MATH 279, or MATH 320.

C S 503. Introduction to Robotics 3 cr.
Basic AI-based robotic architecture and concepts, with an emphasis on building and programming mobile robots; requires more advanced graduate work in C S 484. Consent of instructor required. Prerequisite(s): At least a C in C S 272 and C S 273, consent of instructor. STAT 371 or STAT 470 recommended.

C S 504. Computer Networks I 3 cr.
Fundamental concepts of computer communication networks; layered network architecture, network components, protocol stack and service. Example of application, transport, network and data link layers, protocols primarily drawn from the Internet (TCP, UDP, and IP) protocol suite, local and wide area networks, wireless and mobile networks, multimedia networks; network management and security; requires more advanced graduate work than C S 484. Prerequisite(s): At least a C in C S 272 and C S 273, or consent of instructor. STAT 371 or STAT 470 recommended.
C S 505. Artificial Intelligence I 3 cr.
Fundamental principles and techniques in artificial intelligence systems. Knowledge representation formalisms; heuristic problem solving techniques; automated logical deduction; robot planning methods; algorithmic techniques for natural language understanding, vision and learning; requires more advanced graduate work than C S 475. Prerequisite(s): At least a C in C S 372.

Languages, programming, devices, and data structures for representation and interactive display of complex objects. Prerequisite(s): At least a C in C S 370 or C S 371 or consent of instructor. Requires more advanced graduate work than C S 476.

C S 510. Automata, Languages, Computability 3 cr.
Regular and context-free languages, pushdown and finite-state automata, turing machines, models of computation, halting problems. Prerequisite: at least a C in C S 370 and C S 372.

C S 511. Logic and Constraint Logic Programming 3 cr.
Declarative programming techniques; foundations of logic programming; programming in Prolog; constraint logic programming; application of logic and constraint programming; requires more advanced graduate work than C S 472. Prerequisite(s): At least a C in C S 272 and C S 278, or consent of instructor.

C S 512. Computer Systems Modeling and Simulation 3 cr.
Basic concepts of modeling computer systems: continuous and discrete time models, states and transition, probabilistic models. Structures of simulation programs, time driven and event driven simulation, simulation on captured and synthesized traces, generation of random variables, queuing models, Markov chains, random walks, Poisson, Markov, renewal branching and Brownian motion processes, model validation and data analysis; requires more advanced graduate work than C S 492. Prerequisite(s): At least a C in C S 372.

C S 515. User Interface Design 3 cr.
Interface design, conceptual models formed by users, computer-aided instruction, natural and query languages, graphical representations; requires more advanced graduate work than C S 485. Prerequisite(s): At least a C in C S 371 or consent of instructor.

C S 516. Bioinformatics 3 cr.
Introduction to bioinformatics and computational biology. Computational approaches to sequences analysis, protein structure prediction and analysis, and selected topics from current advances in bioinformatics; requires more advanced graduate work than C S 488. Prerequisite(s): At least a C in C S 372 or BIOL 221 or BIOL 311.

C S 521. Parallel Programming 3 cr.
Programming of shared memory and distributed memory machines; tools and languages for parallel programming; parallelizing compilers; parallel programming environments; requires more advanced graduate work than C S 491.

C S 550. Complexity Theory 3 cr.
Polynomial bounded, NP-complete, exponentially hard, and undecidable problems; reducibility. Prerequisite: C S 510.

C S 552. Introduction to Computational Science and Engineering 3 cr.
Modeling of scientific and engineering problems; computational methods for solving such problems including data structure design and relevant discrete and numerical algorithms. Prerequisite: consent of instructor.

C S 560. Graph Theory 3 cr.
Graph theoretic models in all areas of computer science including computer architectures, computer geometry, fault tolerance, databases. Includes connectivity, colorability, factorization, topological embeddings in surfaces, reconstruction, graphs and matrices associated with graphs. Prerequisite: consent of instructor.

C S 570. Analysis of Algorithms 3 cr.
Techniques for design and analysis of algorithms; time and space complexity; proving correctness of programs. Particular algorithms such as sorting, searching, dynamic programming, NP complete problems. Prerequisite: at least C in C S 372.

C S 571. Programming Language Structure II 3 cr.
Formal semantics of programming languages. Prerequisites: C S 372, C S 471.

C S 572. Advanced Algorithms 3 cr.
Design, analysis, and use of important algorithms and data structures. Prerequisite: C S 570 or consent of instructor.

C S 573. Architectural Concepts II 3 cr.
Advanced topics related to computer architecture, guided by the current literature. Crosslisted with: E E 564. Prerequisite(s): C S 473, C S 474.

C S 574. Operating Systems II 3 cr.
Advanced topics related to operating system principles, guided by the current literature. Prerequisites: C S 473, C S 474.

C S 575. Artificial Intelligence II 3 cr.
Covers advanced theory and application of artificial intelligence. Concentration on several specific research areas, such as knowledge representation, problem solving, common-sense reasoning, natural language understanding, automated tutoring systems, learning systems. Prerequisites: C S 475 or CS 505 or consent of instructor.

C S 579. Special Topics 1-6 cr.
Topic announced in the Schedule of Classes.

C S 580. Compiler Construction 3 cr.
Current methods in the design and implementation of compilers; construction of components of an actual compiler as a term project. Prerequisite(s): C S 471, C S 510.

C S 581. Advanced Software Engineering 3 cr.
Advanced tools and methods for developing large software systems. Topics include object-oriented modeling and design, component architectures, templates and generic programming, software configuration and revision control, static and dynamic analysis tools, model checking, advanced testing, and verification. Prerequisite: C S 371.

C S 582. Database Management Systems II 3 cr.
Advanced data models and abstractions, dependencies, implementations, languages, database machines, and other advanced topics. Prerequisite: C S 482 or 502 or consent of instructor.

C S 584. Computer Networks II 3 cr.
Advanced topics in computer networks. Covers advanced topics in networking, with emphasis on wireless, and IP networks. Prerequisite(s): C S 484 or C S 504. STAT 371 or STAT 470 or by consent of instructor.

The course will introduce important algorithms and computational models used in systems biology to study molecular mechanisms for cellular dynamics, processes, and systems. Cellular processes, such as metabolism and signal transduction, are studied as systems and networks quantitatively from high throughput molecular measurements. The topics include molecular biological systems, network alignment, model simulation, network inference, model optimization, and hybrid models. Students will be able to construct models and analyze their properties in the context of molecular biological systems. Prerequisite(s): C S 372 or equivalent course or consent of instructor.

C S 598. Master’s Project 1-6 cr.
Faculty-supervised investigation, to culminate in a written report. Prerequisite: written agreement with faculty supervisor. May be repeated; maximum of 6 credits may be applied toward M.S. degree. Restricted to majors.

C S 599. Master’s Thesis 1-6 cr.
Faculty-supervised investigation, to culminate in a written report. Prerequisite: written agreement with faculty supervisor. May be repeated; maximum of 6 credits may be applied toward M.S. degree. Restricted to majors.

C S 600. Pre-dissertation Research Pre-dissertation research.

C S 629. Selected Topics in Computer Science 1-3 cr.
Topics of current interest designated by subtitle. May be repeated.


C R I M I N A L  J U S T I C E

Department website: http://www.nmsu.edu/~crimjust/
(575) 564-3316
jmasufi@nmsu.edu

C.E. Posadas, Department Head, Ph.D. (Arizona State)– immigration and justice, research methods; C. Bejarano, Ph.D. (Arizona State)– border violence and justice and border identities, justice, race, class, and gender in the CJ system, J. E. Crowley, Ph.D. (Michigan)– community corrections, victims and gender in criminal justice; R. J. Duran, Ph.D. (Colorado-Boulder)– Mexican-American gangs, race, crime and justice, D. Greene, Ph.D. (John Jay)– corrections,
restorative justice, sentencing and punishment policy. D. Keys, Ph.D. (Missouri
Columbia)—penology, narcotic policy, D. Lara*, Ph.D. (University of California
Berkeley)—cultural studies, race & ethnicity, border justice; R. Maratea, Ph.D.
(Delaware)—Media and Crime, Theory, Inequality and Crime; J. Maupin, Ph.D.
(Arizona State)—policy analysis and program evaluation, criminal justice systems

*MCJ Program Director

DEGREE: Master of Criminal Justice

The Department of Criminal Justice offers graduate study leading to the
Master of Criminal Justice (M.C.J.) degree. Admission to the M.C.J. is competi-
tive and prospective graduate students are expected to have at least a 3.0 under-
graduate grade-point-average, coursework in research methods and statistics, and
possess a bachelor’s degree. Those not meeting these requirements may be
admitted conditionally and required to make up deficiencies at the outset of their
program of study. Applicants must submit three letters of recommendation and a
three–five page essay introducing themselves and addressing the following topic:
“the most important change needed in the criminal justice system is….”

This essay serves as a sample of written work to be evaluated by the M.C.J.
Graduate Committee. The GRE is NOT required for admission into the M.C.J.
program. The M.C.J. Graduate Committee reserves the right to require a student
to complete additional English writing coursework. For more information, please visit our website: http://www.nmsu.edu/~crimjust/criminal-justice-graduat.html

After completion of all core course requirements, candidates declare their intent
to pursue a degree option and complete all chosen degree option require-
ments. There are two M.C.J. degree options: the thesis and focused coursework.

The degree options are provided so that students may better match their educa-
tion with career goals. The thesis option is often used by students interested in
pursuing careers in basic and applied criminal justice research or a doctoral
degree. The focused coursework option is often used by students pursuing
administrative positions within criminal justice agencies. At this time, the Thesis
Option is only available for Campus-Based Students. Online students may only
pursue the Focused Coursework Option.

All candidates, regardless of chosen degree option, must complete a final
evaluation requirements vary by degree option. Please contact
the director of the M.C.J. program or consult the Department of Criminal Justice
web site http://crimjust.nmsu.edu/degrees.htm for details.

Thesis Option (33 cr.)

Thesis students must submit a thesis proposal to their faculty commit-
tee for approval and subsequently complete the approved thesis project. An
approved thesis proposal is one wherein the thesis committee determines the
student demonstrates a comprehensive understanding of the nexus of theory,
method, and policy as it applies to the proposed thesis project. At the discretion of
the thesis committee the proposal may be considered inadequate and the student is required to revise and resubmit the thesis proposal until the committee
determines the proposal is satisfactory. The final examination minimally includes
a defense of the completed thesis, but may also include a general examination
based upon the candidate’s program of study. The minimum coursework
requirements are displayed below.

Required Courses (21 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C J 501</td>
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<td>Issues in Ethics, Law, and Criminal Justice</td>
<td>3</td>
</tr>
<tr>
<td>C J 599</td>
<td>Master’s Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

General Electives (12 cr.)

Students may not count Internship (C J 593) or Independent Research (C J
592) credit toward their elective requirement. No more than three total credits of
Directed Readings (C J 591) coursework may be used as electives; a minimum of
3 of the 9 credit general elective requirement must come from the Department of
Criminal Justice. A minor is optional (contact the director of the M.C.J. program

or consult the Department of Criminal Justice web site, http://crimjust.nmsu.edu/
degrees.htm, for details) and may result in more than 33 total credits for the degree.

Focused Coursework Option (36 cr.)

Focused coursework students must pass a written comprehensive exami-
nation following completion of the required courses. Students not passing the
examination will be required to wait until the following semester to retake the
examination. The minimum course requirements are displayed below.

Required Courses (15 cr.)

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C J Electives (12 cr.)

Electives are to be chosen in consultation with a student’s advisor. No
more than three total credits of Internship or Directed Readings courses may be
used as Criminal Justice electives. Independent Research may not be used as
Criminal Justice Electives for this option.

General Electives/Minor (9 cr.)

Electives are to be chosen in consultation with a student’s advisor. No more
than three credits of Internship or Directed Readings may be used to fulfill the
general elective requirement. Independent Research may not be used as Crimi-
ナルJustice Electives for this option. A minor is optional (contact the director of
the M.C.J. program or consult the Department of Criminal Justice web site, http://
crimjust.nmsu.edu/degrees.htm, for details) and may result in more than 36 total
credits for the degree.

Online M.C.J. Coursework

Distance-based graduate students taking courses online may also com-
plete the M.C.J. degree. Online criminal justice courses are available only to
those admitted to the M.C.J. program as online students, or with permission of
the Director of the M.C.J. program. Students desiring to be admitted to the M.C.J.
program as online students must declare that intent in writing to the M.C.J. direc-
tor. Online students may not enroll in campus-based criminal justice courses.

Online students may only pursue the Focused Coursework Option. For more
information regarding the online M.C.J. degree option, consult the Department
of Criminal Justice web page, http://crimjust.nmsu.edu, or contact the Director
of the M.C.J. program.

Assistantships

Graduate assistantships - in the form of Teaching assistantships - are
expected to be available during the academic year. Inquiries should be
addressed to the Director of the M.C.J. program.

CRIMINAL JUSTICE

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CRIMINAL JUSTICE includes policy analysis and program evaluation, criminal justice systems

or consult the Department of Criminal Justice web site, http://crimjust.nmsu.edu/
degrees.htm, for details) and may result in more than 33 total credits for the degree.

Focused Coursework Option (36 cr.)

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</table>
C J 545. Feminist Research Methods
3 cr.
Feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work. Same as W S 455.

C J 480. Criminal Justice Planning and Crime Analysis
3 cr.
Basic working tools in gathering data for the purpose of developing criminal justice plans and programs. Planning criteria, program implementation strategies, and evaluation requirements. Prerequisite: restricted to majors or consent of instructor.

C J 481. Hate Crimes and Domestic Terrorism
3 cr.
Overview of religious and political extremism in the U.S., with a particular focus on the roots and practices of extremist groups and their doctrines. Prerequisite: C J 380 or consent of instructor.

C J 482. Transnational Terrorism
3 cr.
Overview of international terrorism and its sociological, political, historical, and religious origins, with a particular focus on current terrorism.

C J 501. Research Methods in Criminal Justice
3 cr.
Research design, methods of data collection and analysis, and preparation of research reports. Prerequisite: C J major or consent of instructor. Restricted to majors.

C J 502. Criminal Justice Statistics
3 cr.
Intermediate level statistical techniques applied to criminal justice data. Prerequisite: C J major or consent of instructor. Restricted to majors.

C J 510. Advanced Criminal Justice Administrative Systems
3 cr.
Structure and operations of criminal justice agencies and institutions; relationships of structure and operations to practical police, courts, and corrections problems.

C J 511. Nature of Crime
3 cr.
Defining and measuring crime, crime causation, and criminal behavior systems. Prerequisite: C J major or consent of instructor. Restricted to majors.

C J 512. Seminar in Theories and Theory Construction
3 cr.
Major perspectives, alternative approaches to an integration of the various perspectives, and the development of causal models. Topics announced in the Schedule of Classes. May be repeated under different subtitles for unlimited credit.

C J 514. Advanced Race, Crime, and Justice
3 cr.
Advanced analysis of the historical and contemporary relationship between race and crime in the United States with emphasis upon human equality and fairness. Overview of racial and ethnic social categorizations and how they impact law and order.

C J 515. A Course on Punishment
3 cr.
Exploration and analysis of the idea and practice of punishment through a variety of philosophical perspectives, seeking to understand its moral and practical viability as employed in contemporary society, including its application within the criminal justice system.

C J 518. Documentary Production Stories of Justice I
3 cr.

C J 519. Documentary Production Stories of Justice II
3 cr.
Follow up to C J 518. Students shoot, edit, and publish work from proposal of C J 518. Prerequisite: C J 518. Restricted to C J, ANVE, and DFM majors. Taught with C J 419.

C J 520. Advanced Girls, Women & Crime
3 cr.
Advanced critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Restricted to C J, W S majors. Crosslisted with W S 520.

C J 521. Law and Social Control
3 cr.
The development and implementation of criminal law. Consideration of functionalist, conflict, and interpretive theories and research. Prerequisite: C J major or consent of instructor. Restricted to majors.

C J 522. Legal Issues in Criminal Justice
3 cr.
Major legal concerns in the formulation and implementation of criminal law.

C J 523. Seminar in Criminal Law
3 cr.
Major theoretical orientations, specific areas of research, and contemporary policy issues. Content will vary and will be listed in the Schedule of Classes. May be repeated under different subtitles for unlimited credit.

C J 524. Forensic Law
3 cr.
Rules and policy implications related to the use of scientific information in legal process. Prerequisite: C J major or consent of instructor. Restricted to majors.

C J 525. Issues in Ethics, Law, and Criminal Justice
3 cr.
Examination of the key ethical and decision-making dilemmas facing professionals working in the fields of law and criminal justice. Restricted to majors.

C J 526. Advanced Race & Environmental Justice
3 cr.
Advanced analysis of concepts of justice and social justice responses across the 20th and 21st centuries to environmental degradation affecting communities of differing racial and ethnic backgrounds.

C J 527. Advanced Race & Crime in Film
3 cr.
Advanced critical analysis of film where messages relating race and crime are present, with emphasis on how this imagery informs problem definition, policies, and practice within the criminal justice system.

C J 528. Advanced Issues in Criminal Justice (f, s, sum)
3 cr.
Seminar on problems and conflicts encountered in major criminal justice issues. Topics announced in the Schedule of Classes. May be repeated under different subtitles for unlimited credit.

C J 530. Seminar in Criminal Justice Administration
3 cr.
Organizational and administrative issues currently confronting criminal justice agencies. Different subtitles (police, courts, and corrections) to be announced in the Schedule of Classes. May be repeated under different subtitles for unlimited credit.

C J 535. Advanced Political Penology
3 cr.
Advanced comparative analysis of incarceration and sanctions as punishment for crimes of conscience, religious intolerance, and disobedience.

C J 540. World Criminal Justice Systems
3 cr.

C J 541. Seminar in Criminal Justice Policy Analysis and Planning
3 cr.
Seminar on policy development, planning and implementation processes in criminal justice. Links formal policy goals as they relate to theory and outcomes. Topics announced in the Schedule of Classes. Prerequisite: C J major or consent of instructor. Restricted to majors.

C J 545. Advanced Victimology
3 cr.
Study of risk factors in crime victimization, the impact of crimes upon victims, and the role of the victim in the criminal justice system. Consideration of the impact of criminal justice policy on victim outcomes. Same as W S 545.

C J 547. Advanced Sex Crimes
3 cr.

C J 554. Advanced Human Trafficking
3 cr.

C J 555. Advanced Feminist Research Methods
3 cr.
Advanced feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work. Same as W S 555.

C J 560. Juvenile Justice Systems
3 cr.
Policy development and operations in police, court, and correctional agencies in response to juveniles. Analysis of programs designed to identify, prevent and treat juvenile offenders. C J 570. Probation and Parole
3 cr.
Advanced analysis of goals, theories and practices of all forms of correction in the community, including probation, parole, plus other intermediate sanctions. Restricted to majors.

C J 570. Probation and Parole
3 cr.
Advanced analysis of goals, theories, and practices of all forms of correction in the community, including probation, parole, plus other intermediate sanctions. Restricted to majors.

C J 581. Community Policing
3 cr.
Overview and analysis of community policing issues from various perspectives. Analysis of strategies that facilitate police and community collaboration. Restricted to majors.

C J 582. Advanced International Terrorism
3 cr.
Advanced analysis of Islamic terrorism worldwide, tracing its development as a form asymmetric warfare from the seventh century through the present, and U.S. and International governmental responses.
ENGLISH

Department Website: [http://www.nmsu.edu/~english](http://www.nmsu.edu/~english)

- M. Torres, Ph.D. (New Mexico)– cultural studies, film, J. Almeyd, Ph.D. (Bowling Green)– digital communication, new media, literacies, R. Bradford, M.F.A. (New Mexico State)– creative writing, fiction, creative nonfiction; C. Burnham, Ph.D. (Rhode Island)– rhetoric and composition, American literature, R. Cull, Ph.D. (Illinois)– modern and contemporary American literature; J. Garay, Ph.D. (Arizona State)– Chicano/a and Latinx/a literature; R. Greenfield, Ph.D. (Denver)– digital communication, new media, literacies; R. Bradburd, M.F.A. (New Mexico)– cultural studies and film; L. Hoang, M.F.A. (Notre Dame)– creative writing, fiction, H. Linkin, Ph.D. (Michigan)– British Romantic literature, gender and language theory; T. Miller-Tomlinson, Ph.D. (Yale)– Shakespeare, early modern literature and culture; B. Rourke, Ph.D. (Stanford)– modern British literature, critical theory; E. Schirmer, Ph.D. (California-Berkeley)– medieval literature, J. Sheppard, Ph.D. (Michigan Tech)– new media, technical and professional communication, pedagogy; D. Smith, M.F.A. (Iowa)– creative writing, poetry, T. Stottle, Ph.D. (British Columbia)– 19th-century British literature and culture, B. Thatscher, Ph.D. (Purdue)– professional communication, intercultural rhetoric; K. Valentine, Ph.D. (Michigan Tech)– rhetoric and composition, literacy studies, writing center theory and practice; C. Voisine, Ph.D. (Utah)– creative writing, poetry, creative nonfiction; P. Wojahn, Ph.D. (Carnegie Mellon)– professional communication, computers and writing

DEGREE: Master of Arts

MAJOR: English

EMPHASES: Creative Writing

- English Studies for Teachers
- Literature
- Rhetoric and Professional Communication

DEGREE: Master of Fine Arts in Creative Writing

DEGREE: Doctor of Philosophy

MAJOR: Rhetoric and Professional Communication

DEGREE: Master of Arts

MAJOR: English

New Mexico State University offers M.A. programs in four areas of emphasis; each one requires 36 hours of graduate-level work.

EMPHASIS: Creative Writing

Students electing this emphasis choose a major genre: poetry or fiction. Students complete 36 hours of graduate-level course work including creative writing and literature; submit a creative writing portfolio (typically of 5-8 separate writing samples totaling 25-50 pages); and pass an oral examination.

Required Coursework (36 credits):

- Workshop courses in the major genre (poetry, fiction) 12
- Workshop course in a second genre 3
- Form and technique courses in the major genre 3
- Graduate literature courses in the Department of English 9
- ENGL 595, Advanced Writing Workshop: RPC Capstone 3
- Elective courses 6

Note: Graduate assistants must take 3 hours of ENGL 571, Composition Theory and Pedagogy, during their first semester of teaching.

EMPHASIS: English Studies for Teachers

Students take 36 hours of graduate coursework, including core courses in creative writing, film, literature, and rhetoric and professional communication, as well as additional courses in an area of specialization approved by an advisor.

Students in the program develop individualized plans of study in consultation with an advisor. They conclude their program by developing a master’s portfolio or other approved capstone project and passing an oral examination. This portfolio may provide material for public schools’ Professional Development Dossier. With advisor approval, students may take up to two related courses (six credit hours) in other departments, such as Communication Studies, Education, Journalism, and Theatre, and may also develop an alternative capstone experience and enroll for appropriate credits (such as independent study).

Required Coursework (36 credits):

- Core class in Composition, Rhetoric, and Professional Communication 3
- Core class in Creative Writing 3
- Core class in Literature 3
- Core class in Film 3
- Courses in core area of specialization 18-21
- Required Coursework of 6 credits in special area requirement:
  - ENGL 571, Workshop: Adv. Technical and Professional Writing or
  - ENGL 595, Advanced Writing Workshop: RPC Capstone 3

EMPHASIS: Literature

Students electing this emphasis can choose to work in various areas of literature, criticism, and film. Students are required to complete 36 hours of coursework while satisfying area requirements (in early and modern literatures, in British and American Literatures, and in critical theory) with advisor-approved courses; demonstrate competency in a foreign language; deliver a public presentation on their research; write a master essay or thesis; and complete their program by passing an oral examination. See advisor for list of courses satisfying theory and distribution requirements.

Required Coursework (36 credits):

- Graduate course in critical theory 3
- Literature courses, including ‘early’ and ‘late’ periods, English and American 18
- Elective courses in English Department 9-12
- Master’s Thesis or Master Essay:
  - ENGL 598: Master Essay OR 3
  - ENGL 599: Master’s Thesis 3

Note: Graduate assistants must take 3 hours of ENGL 571, Composition Theory and Pedagogy, during their first semester of teaching.

EMPHASIS: Rhetoric and Professional Communication

Students electing this emphasis take core courses across a wide range of topics within rhetoric and professional communication and choose from one of four areas of specialization: Composition, Critical/Cultural Studies, Rhetoric, and Professional and Technical Communication. Students conclude their program by writing a thesis, composing a portfolio of work completed in the program, or writing a master essay, and by passing an oral examination. Students develop individualized plans of study in consultation with an advisor.

Required Coursework (36 credits):

- Core classes in area of specialization 6
- Core classes in additional area(s) 6
- Additional courses in area of specialization 12
- Methods course:
  - ENGL 548, Graduate Study in Empirical Research or;
ENGL 601, Qualitative Research or;
ENGL 602, Quantitative Research or;
ENGL 603, Rhetorical Criticism ................................................................. 3

Elective courses:
Advisor-approved electives in English and/or related fields, or
ENGL 597, Internship or;
ENGL 599, Master’s Thesis (in lieu of portfolio or master essay) .............. 6

Capstone course:
ENGL 585, Advanced Writing Workshop: RPC Capstone ....................... 3
ENGL 598, Master Essay ............................................................................. 3
ENGL 599, Master’s Thesis ................................................................. 6

Note: Graduate assistants must take 3 hours of ENGL 571, Composition Theory and Pedagogy, during their first semester of teaching.

Core Courses:
Students take two core courses from their area of specialization. In addition, students take two core courses from any of the other three core areas.

Core Composition Courses:
ENGL 564, Composition History and Theory
ENGL 570, Graduate Study in Approaches to Composition
ENGL 571, Composition Pedagogy and Practicum

Note: Students may take either ENGL 570 or ENGL 571 as a core course. Taking a second course will count under the area of specialization.

Core Critical/ Cultural Studies Courses:
ENGL 517, Graduate Study in Critical Theory
ENGL 568, Rhetorical/ Cultural Studies

Core Professional and Technical Communication Courses:
ENGL 512, Graduate Study in Writing in the Workplace
ENGL 572, Technical & Professional Communication: Theory and Pedagogy

Core Rhetoric Courses:
ENGL 518, History of Rhetoric
ENGL 519, Modern Rhetorical Theory

Specialized Courses
Students take four additional courses in their area of specialization determined in consultation with an advisor. Students are encouraged to take ENGL 510, Proseminar in Rhetoric and Professional Communication early in their time as a graduate student. This course is appropriate for all areas of specialization. Appropriate courses for each specialization are suggested below, though the lists are not inclusive of all options.

Composition Courses:
ENGL 549, Graduate Study in Writing
ENGL 550, Graduate Study in Literacy
ENGL 561, Issues in Writing Program Administration
ENGL 572, Assessment
ENGL 579, Computers and Writing

Critical/Cultural Studies Courses:
ENGL 511, Theories of Discourse
ENGL 549, Graduate Study in Writing
ENGL 550, Graduate Study in Literacy
ENGL 555, Graduate Study in Rhetoric of Scientific Literature
ENGL 590, Master’s Seminar in Rhetoric

Professional and Technical Communication Courses:
ENGL 451, Grammar
ENGL 478, Document Design
ENGL 543, Multimedia Theory and Production
ENGL 549, Graduate Study in Writing
ENGL 562, Client Practicum
ENGL 565, Intercultural Communication
ENGL 577, Workshop: Advanced Technical and Professional Writing
ENGL 578, Topics in Technical Communication
ENGL 579, Computers and Writing

Rhetoric Courses:
ENGL 511, Theories of Discourse
ENGL 530, Theories of Argument
ENGL 549, Graduate Study in Writing
ENGL 555, Graduate Study in Rhetoric of Scientific Literature
ENGL 590, Master’s Seminar in Rhetoric

DEGREE: Master of Fine Arts in Creative Writing

Students pursuing the M.F.A. in Creative Writing devote themselves to concentrated study and development of a chosen genre: poetry or fiction. Students complete 54 hours of graduate-level coursework, present a book-length thesis of original work with an introduction or afterward, perform a public reading from the thesis, and pass an oral examination in the final semester. A maximum of 12 credits in Form and Technique count for the degree.

Required Coursework (54 credits)
MFA workshop in the major genre (poetry, fiction) .................. 12
Form and Technique courses in major genre ......................... 6
Workshop in a second genre ....................................................... 3
Master Workshop (poetry, fiction) .............................................. 6-12
Graduate literature courses (may incl. 2 Form & Technique) ...... 12
ENGL 599, Master’s Thesis ....................................................... 6
Elective courses ................................................................. 3-12

Note: Graduate assistants must take 3 hours of ENGL 571, Composition Theory and Pedagogy, during their first semester of teaching.

DEGREE: Doctor of Philosophy
MAJOR: Rhetoric and Professional Communication

Students in the doctoral program will develop individualized plans of study in consultation with advisors. Students are required to take 78 hours of graduate-level coursework including the doctoral proseminar in the first semester; courses in research methods; core courses in composition, critical/cultural studies, professional communication, and rhetoric; additional coursework in an area of specialization determined in consultation with an advisor; an internship; and a dissertation. The Ph.D. also requires a qualifying portfolio, a comprehensive examination and an oral examination. The dissertation must be completed and approved within 5 years after the comprehensive exam. Consult the department for additional instructions regarding the internship, qualifying comprehensive examinations, portfolio, and dissertation.

Program Requirements (78 credits) including:
ENGL 610, Doctoral Proseminar ......................................................... 3
Methods Courses ................................................................. 6
ENGL 548, Graduate Study in Empirical Research or;
ENGL 601, Qualitative Research or;
ENGL 602, Quantitative Research or;
ENGL 603, Rhetorical Criticism
Core courses ................................................................................. 12
Courses in area of specialization ................................................. 15-18
ENGL 597, Internship ................................................................. 6
ENGL 700, Doctoral Dissertation .................................................... 18

Note: Graduate assistants must take 3 hours of ENGL 571, Composition Theory and Pedagogy, during their first semester of teaching.

Core Courses

Core Composition Courses
ENGL 664, Composition History and Theory
ENGL 571, Composition Pedagogy and Practicum

Core Critical/ Cultural Studies Courses
ENGL 517, Graduate Study in Critical Theory
ENGL 668, Rhetorical/ Cultural Studies

Core Professional and Technical Communication Courses
ENGL 512, Graduate Study in Writing in the Workplace
ENGL 572, Technical & Professional Communication: Theory and Pedagogy
**Core Rhetoric Courses**

- ENGL 518, History of Rhetoric
- ENGL 519, Modern Rhetorical Theory

**Specialized Courses**

Students must successfully complete 15-18 credit hours in specialized area. Students define their specialized area, a coherent set of related courses drawn from both inside and outside the Department of English, in consultation with their doctoral committee. Possible specializations include Border Rhetorics and Cultures; Writing Program Administration; Writing Center Administration; Assessment; Pedagogy; Literacy Studies; Identity and Political and Social Rhetoric; New Media Rhetoric and Design; Intercultural Rhetoric; Writing Across the Curriculum; Workplace Communication; and the Rhetoric of Science.

**Transfer Courses (up to 18 credits):**

Students may apply 18 hours of master’s level work to the 54-hour coursework requirement with departmental approval. In consultation with an advisor and the Doctoral Committee, students petition for transfer credits when they submit their qualifying portfolio and file the program of study with the Graduate School.

**FINANCIAL SUPPORT**

Students are eligible for teaching assistantships and a variety of positions that involve writing around campus and the community. Because many students work full time, many courses are offered in the late afternoon and evening to accommodate various schedules.

**APPLICATION INFORMATION**

Please refer to the online application process described on the NMSU Admissions website for specific instructions for each program.

**ENGLISH**

  - Studies of formal grammar of the English language in preparation for the teaching of the English language and/or advanced linguistic analysis.

- ENGL 452. History of the English Language 3 cr.
  - This course examines the history of the English language from its Indo-European origins through its development into an international language. The aim is to describe the English language formally and to track linguistic change over time. Samples of written English will illustrate various stages in the development of English. Also considered are contemporary social and political issues related to language, including the problem of “standard English” and the uses of language in advertising, the media, and politics.

- ENGL 453. World Literatures 3 cr.
  - Study of one or more literary traditions exclusive of those originating in Europe and the United States. Readings will include texts in translation. Repeatable once under a different subtitle.

- ENGL 454. Postcolonial Literature 3 cr.
  - Study of the transformations of literature and theory produced in the context of decolonization and its aftermath, from the twentieth century to the present. Some texts will be read in translation. Repeatable once under a different subtitle.

  - Concentrates on comparative study of literary and cultural production by two or more U.S. ethnic populations. Incorporates both literary and sociocultural readings of texts. Repeatable under different subtitles.

- ENGL 457. American Indian Literatures 3 cr.
  - Intensive study of selected topics and genres from American Indian literatures, such as American Indian oral tradition, the Native American Trickster figure, the development of American Indian fiction, and contemporary American Indian literature. Repeatable once under a different subtitle.

- ENGL 458. Latino/a Literature and Culture 3 cr.
  - Focuses on established and emergent Latino/a literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.

- ENGL 459. Black Literature and Culture in the United States 3 cr.
  - Focuses on established and emergent Black U.S. literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.

- ENGL 460. Proposal Writing 3 cr.
  - Developing proposals and grants in a workshop setting.

- ENGL 461. Interdisciplinary, Client-Based Project Practicum 3 cr.
  - Hands-on experience in designing projects within interdisciplinary teams for organizational clients. Taught with ENGL 562.

- ENGL 462. Advanced Study in English Literature 3 cr.
  - Covers selected works for a particular period of English literary history. Repeatable under different subtitles.

- ENGL 463. Intercultural Professional Communication 3 cr.
  - Examines rhetorical traditions in intercultural profession, technical, academic, and government contexts.

- ENGL 464. Advanced Study in American Literature 3 cr.
  - Covers selected works for a particular period of American literary history. Repeatable under different subtitles.

- ENGL 465. Approaches to Composition 3 cr.
  - Theory and practice of teaching writing. Discussion and application of classroom practices, definition of standards, and evaluation of student writing.

- ENGL 466. Document Design 3 cr.
  - Advanced study in writing, with an emphasis on the computer as a tool for designing visually informative text. Includes theory and research in document design and the use of page composition and graphics software.

- ENGL 467. Computers and Writing 3 cr.
  - Examines how computers change the nature of writing and the teaching of writing.

- ENGL 468. Screenwriting II 3 cr.
  - Students will write two short scripts, 10-15 pages each. Focus will be on learning how to take notes and rewrite. Script analysis will be in a workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. Prerequisite(s): ENGL 309 or CMI 309 or THTR 306 or consent of instructor. Crosslisted with: CMI 480

- ENGL 481. Women’s Literature 3 cr.
  - Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: W S 484

- ENGL 482. Gender and Popular Culture 3 cr.
  - Intensive study of the representations of gender in popular culture. Examines the historical, aesthetic, and cultural contexts of these representations and the various critical and theoretical lenses we use to understand them. Repeatable under different subtitles. Crosslisted with: W S 482

- ENGL 483. Gender and Language 3 cr.
  - Overview of current and historical approaches to the critical study of gender and language: how gender theoretically manifests in linguistic, social, cultural, academic, and professional texts and contexts.

- ENGL 484. Gender and Literature 3 cr.
  - Intensive study, critical and theoretical, of intersections between literature and gender. Examines representations or constructions of gender in literary discourse, as well as the gendering of literary activity in different cultural contexts. Repeatable under different subtitles.

- ENGL 486. Hollywood Film 3 cr. (3+3P)
  - Intensive study of Hollywood film in its artistic, cultural, or historical contexts. Repeatable under different subtitles.

- ENGL 487. Modernist and Experimental Film 3 cr.
  - Explores the variety of film aesthetics that depart to some degree from the conventions of classical cinema. Focuses on how film form relates to modernist, postmodernist, experimental, and avant-garde tendencies in the arts. Special attention will be paid to the implications of radical formal experimentation for cultural politics, in particular in the context of modern and contemporary history. Repeatable once under a different subtitle.

- ENGL 488. Art and Literature 3 cr.
  - Intensive study of art in its various forms, including visual, literary, and cultural contexts, such as Film Adaptation, Religion in Literature and Film, or The American West in Fiction and Film. Repeatable under different subtitles.

- ENGL 489. Cultural Studies: Literature and Theory 3 cr.
  - Examines the theory and practice of cultural studies in relation to the variety of discourse describable as literary, including autobiography, avant-garde writing, nonfiction prose, the essay, online writing, folklore, and popular genre fiction (such as mystery, romance, thriller, or horror). Repeatable once under a different subtitle.

- ENGL 491. Advanced Screenwriting 3 cr.
  - Students will prepare a 30-60 page screenplay. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. This course is aimed at preparing writers for the professional market. Consent of instructor required. Cosslisted with: CMI 490
ENGL 492. Old English 3 cr.
An introduction to the language, literature, and culture of Anglo-Saxon England, including Beowulf.

ENGL 493. Middle English Textual Cultures 3 cr.
Intensive study of cultures of reading, writing, and literary production in late-medieval England, situating Middle English literature in its manuscript contexts. No prior experience with Middle English required.

ENGL 494. Shakespeare for Educators 3 cr.
In-depth study of selected plays by Shakespeare designed for present and future teachers of literature. Dual emphasizes on increasing knowledge of Shakespeare’s plays in context and on developing effective strategies for teaching them.

ENGL 497. Internship 3-6 cr.
Supervised technical and professional communication internship in business, industry, government, or the university. Repeatable for a total of 6 credits. Consent of instructor required.

ENGL 500. Supervised Study 1-3 cr.
To prepare the student for the master’s degree examinations by special studies in fields not covered in routine course work. Prerequisite: consent of instructor.

ENGL 505. Graduate Study in Chaucer 3 cr.
Principal works, with emphasis on the Canterbury Tales. Requirements include independent directed research. Prerequisite: ENGL 261 or consent of instructor.

ENGL 506. Early Modern Poetry and Prose 3 cr.
Survey of the major authors, genres, and themes of non-dramatic English literature from 1550 to 1700. Emphasis on how writers of the period invented new literary forms and adapted existing ones to convey their experience of a changing world.

ENGL 508. Graduate Study in Shakespeare I 3 cr.
Principal plays of Shakespeare’s first two periods. Requirements include independent directed research.

ENGL 509. Graduate Study in Shakespeare II 3 cr.
Principal plays of Shakespeare’s last two periods. Requirements include independent directed research.

ENGL 510. Proseminar in Rhetoric and Professional Communication 3 cr.
Introduction to research in rhetoric and professional communication. Taught with ENGL 610.

ENGL 511. Discourse and Theories 3 cr.
Investigates theories describing how humans use language and considers production, reception, and cultural context. Topics vary. Repeatable for a maximum of 6 credits.

ENGL 512. Graduate Study in Writing in the Workplace 3 cr.
Study of workplace writing practices, including a focus on research-based, theoretical, and pedagogical approaches to professional communication.

ENGL 513. Creative Writing Workshop: Fiction 3 cr.
Advanced creative writing prose workshop. Imaginative writing, chiefly the narrative. Graduate level workshop for students who are not in the English Department MFA program. May be repeated for a maximum of 12 credits. Taught with ENGL 413 with additional work required at the graduate level.

ENGL 514. Creative Writing Workshop: Poetry 3 cr.
Creative writing poetry workshop for advanced writers of poetry. Graduate level workshop for students who are not in the English Department MFA program. Repeatable for a maximum of 12 credits. Taught with ENGL 414 with additional work required at the graduate level.

ENGL 515. Creative Writing Workshop: Playwriting 3 cr.
Advanced creative writing workshop in playwriting. Repeatable for up to 12 credits. Taught with ENGL 415.

ENGL 516. Graduate Study in Approaches to Literature 3 cr.
Understanding, appreciation, techniques of instruction in the high school. Requirements include independent directed research. Prerequisite: at least 6 credits in upper-division English courses.

ENGL 517. Graduate Study in Critical Theory 3 cr.
Advanced study of one or more major trends in theoretical inquiry within English studies. Some prior study of theory, such as ENGL 301, 302, or 303, strongly recommended. Repeatable under different subtitles.

ENGL 518. History of Rhetoric 3 cr.
An investigation of the crucial writings that have shaped Western attitudes towards and practice of rhetoric. Course will examine key texts from the Greeks through the Enlightenment, especially as they have influenced contemporary rhetorical theory.

ENGL 519. Graduate Study in Modern Rhetorical Theory 3 cr.
Major figures in rhetorical theory, with particular emphasis on developments in rhetorical theory in the 20th century. Students will be responsible for all requirements of ENGL 419 and will in addition undertake independent directed research.

ENGL 520. Workshop: Advanced Composition 3 cr.
Intensive work in composition in a workshop setting.

ENGL 521. Graduate Study in a Literary Period or Movement 3 cr.
Close study of a topic in a particular literary period or movement. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 522. Graduate Study in a Literary Form or Genre 3 cr.
Close study of a topic in a particular literary form or genre. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 523. Graduate Study of a Major Author 3 cr.
Close study of selected works of a major author. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 524. Graduate Study in a Major Text 3 cr.
Close study of a major text. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 525. Graduate Study in Comparative Literature 3 cr.
Close study of a selection on non-English literary works read in translation. English-language works from a similar literary period or genre may also be read. Requirements include independent directed research. Prerequisite: graduate standing or consent of instructor. Repeatable under different subtitles.

ENGL 526. Special Topics in Critical Theory 3 cr.
Study of a specific historical or theoretical topic, trend, or movement in Critical Theory. Repeatable under different subtitles.

ENGL 527. Graduate Study in Film and Digital Media 3 cr.
Offers close graduate study of a form or genre, a major figure or style, a historical period or movement, or a major theme or text. Topics vary from semester to semester.

ENGL 528. Drama from the Renaissance to the Restoration 3 cr.
Survey of the major authors, genres, and themes of sixteenth- and seventeenth-century drama in England, with particular emphasis on Renaissance revenge tragedy, marriage comedy, and city comedy, and on Restoration comedy of manners.

ENGL 529. British Romanticism 3 cr.
Intensive study of major writers and critical topics from the Romantic period. Repeatable under different subtitles.

ENGL 530. Argument Theory and Practice 3 cr.
Examining theories of argument and how language convinces audiences to think and act in certain ways and not in others. Investigates argument across disciplines and in social/political contexts.

ENGL 531. Technical Editing 3 cr.
Uses workshops, readings, hands-on projects, and discussion to improve skills in gathering, writing, designing, and editing technical information. For students interested in technical communication as well as students interested in developing strengths in communicating in scientific and technical fields.

ENGL 532. Gothic Literature 3 cr.
Intensive study of gothic literature in particular historical, aesthetic, cultural, or intellectual contexts, such as American Gothic, Female Gothic, Dark Romanticism, or Vampire Literature. Repeatable under different subtitles.

ENGL 533. Victorian Literature 3 cr.
Intensive study of major writers and critical topics from the Victorian period. Repeatable under different subtitles.

ENGL 534. Graduate Study: Form and Technique in Fiction 3 cr.
Advanced study of issues in form and technique in fiction, including point of view, scene and dialogue, and story structure. Repeatable for a maximum of 6 credits.

ENGL 535. Graduate Study: Form and Technique in Poetry 3 cr.
Advanced study of issues in form and technique in poetry, including voice, tone, syntax, and structure. Repeatable for a maximum of 6 credits.
ENGL 536. The Borderlands Writing Project 3-6 cr.
Intensive month-long seminar for practicing teachers and educators designed to improve the teaching of writing and the writing process and literacy and reading in schools and other educational contexts. Reading, discussing, and writing about current professional literature; completing teacher inquiry; and planning action research. Participants complete personal and professional writing, as well as additional professional development activities. By invitation only. Affiliated with the National Writing Project. Consent of instructor required. Crosslisted with: RDG 536

ENGL 537. Practitioner Inquiry and Literacy Action Research 1-3 cr.
Inquiry concerning literacy practices within specific contexts and the planning, implementing, and assessing projects designed to increase and improve literacy within that context. Instruction includes reading and web-based discussion, bimonthly seminars, and onsite consultations. Associated with ongoing community outreach by the English Department and the Borderlands Writing Project. Consent of instructor required.

ENGL 538. Literature of the American Renaissance 3 cr.
Intensive study of topics critical to the development of nineteenth-century American literature before and during the Civil War, and the work of authors such as Emerson, Thoreau, Poe, Hawthorne, Melville, Whitman and Dickinson. Repeatable once under a different subtitle.

ENGL 539. American Realism and Naturalism 3 cr.
Key works of literary realism and naturalism, Civil War to World War I. Course readings vary, but will normally include works of Henry James, Edith Wharton, Willa Cather, Theodore Dreiser, as well as others. Repeatable once under a different subtitle.

ENGL 540. Harlem Renaissance and Modernism 3 cr.
Reading and study of key works of the flowering of African American literature known as the Harlem Renaissance of the 1920s and 1930s. Consideration of the literary context of the Harlem Renaissance, which includes both African American and non-African American writers of the early modern and modern periods.

ENGL 541. Modern and Contemporary American Fiction 3 cr.
Studies the development of American fiction from World War I to the present. Repeatable once under a different subtitle.

ENGL 542. Modern and Contemporary American Poetry 3 cr.
Studies the development of American poetry from World War I to the present. Repeatable once under a different subtitle.

ENGL 543. Multimedia Theory and Production 3 cr.
Issues, theories, and production practices underlying design of multimedia, including rhetorical choices, aesthetic approaches, usability concerns, and diverse academic and popular discourses contributing to continued development of digital texts. Taught with ENGL 643.

ENGL 544. Modern British Fiction 3 cr.
Study of the fiction produced in the British Isles in the 20th and 21st centuries. Repeatable once under a different subtitle.

ENGL 545. Postmodern Fiction 3 cr.
Study of the various forms of formally innovative experimental fiction produced since 1945, with a focus on the relationship between literary history and its sociohistorical contexts. Some texts will be read in translation. Repeatable once under a different subtitle.

ENGL 546. Advanced Creative Writing: Nonfiction Prose 3 cr.
This graduate level workshop will examine the many varieties of Creative Nonfiction. Students should be prepared for a rigorous reading load of published nonfiction and student submissions. Because of the workshop format, every student is expected to contribute extensively to every class, both in printed form and oral comments. Taught with ENGL 446 with additional work required at the graduate level. May be repeated up to 12 credits. Prerequisite(s): ENGL 307 or consent of instructor.

ENGL 548. Graduate Study in Empirical Research 3 cr.
Introduction to empirical research methods in composition, professional communication, and rhetoric.

ENGL 549. Graduate Study in Writing 3 cr.
Close study of a topic in composition, rhetoric, and/or technical and professional communication. Topics vary. Repeatable for a maximum of 6 credits.

ENGL 550. Graduate Study in Literacy 3 cr.
Studies in literacy theory and literacy research. Topics may vary. Taught with ENGL 650.

Studies of formal grammar of the English language in preparation for the teaching of the English language and/or advanced linguistic analysis. Taught with ENGL 451.

ENGL 552. Graduate Study in History of the English Language 3 cr.
This course examines the history of the English language from its Indo-European origins through its development into an international language. The aim is to describe the English language formally and to trace linguistic change over time. Samples of written English will illustrate various stages in the development of English. Also considered are contemporary social and political issues related to language, including the problem of 'standard English' and the uses of language in advertising, the media, and politics.

ENGL 553. World Literatures 3 cr.
Study of one or more literary traditions exclusive of those originating in Europe and the United States. Readings will include texts in translation. Repeatable once under a different subtitle.

ENGL 554. Postcolonial Literature 3 cr.
Study of the transformations of literature and theory produced in the context of decolonization and its aftermath, from the twentieth century to the present. Some texts will be read in translation. Repeatable once under a different subtitle.

ENGL 555. Graduate Study in Rhetoric of Scientific Literature 3 cr.
Intensive study of the rhetoric of selected works of scientific literature.

Concentrates on comparative study of literary and cultural production by two or more U.S. ethnic populations. Incorporates both literary and socio-cultural readings of texts. Repeatable under different subtitles.

ENGL 557. American Indian Literatures 3 cr.
Intensive study of selected topics and genres from American Indian Literatures, such as American Indian oral tradition, the Native American Trickster figure, the development of American Indian fiction, and contemporary American Indian literature. Repeatable once under a different subtitle.

ENGL 558. Latino/a Literature and Culture 3 cr.
Focuses on established and emergent Latino/a literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.

ENGL 559. Black Literature and Culture in the United States 3 cr.
Focuses on established and emergent Black U.S. literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.

ENGL 560. Proposal and Grant Writing 3 cr.
Developing proposals and grants in a workshop setting.

ENGL 561. Topics in Writing Program Administration 3 cr.
Explores issues, theories, and research underlying the design of writing programs and the administration of writing centers. Repeatable for a maximum of 6 credits. Taught with ENGL 661.

ENGL 562. Interdisciplinary, Client-Based Project Practicum 3 cr.
Hands-on experience in collaborating within interdisciplinary teams designing projects for organizational clients. Taught with ENGL 462.

ENGL 563. Graduate Study in English Literature 3 cr.
Covers selected works for a particular period of English literary history. Repeatable under different subtitles.

ENGL 564. History and Theory of Composition Studies 3 cr.
Studies in the history and theory of composition as a discipline. Taught with ENGL 664.

ENGL 565. Intercultural Rhetoric and Professional Communication 3 cr.
Examines rhetorical traditions in intercultural professional, technical, academic, and governmental contexts. Taught with ENGL 665.

ENGL 566. Online Pedagogy for Writing and Professional Communication 3 cr.
Course explores key issues related to teaching and learning in online environments, with a focus on the teaching of writing and professional communication. Examines digital classroom practices and the theories that inform them and evaluates applicability and relevance of available technologies.

ENGL 567. Documentary Film Theory and Criticism 3 cr. (3-3P)
Course offers critical survey of documentary film theory and criticism including considerations of the epistemological assumptions, rhetorical choices, aesthetic approaches, political circumstances of historical and contemporary documentary film.

ENGL 568. Rhetoric and Cultural Studies 3 cr.
Explores intersections between rhetoric and cultural studies. Examines theories and practices of texts and discourses in political and cultural contexts. Taught with ENGL 668.

ENGL 569. Graduate in American Literature 3 cr.
A group of works from a particular period of American literary history. Repeatable under different subtitles.
ENGL 570. Graduate Study in Approaches to Composition 3 cr.
Theory and practice of teaching writing, including classroom practices,
definition of standards, and evaluation of student writing. Requirements
include independent directed research.

ENGL 571. Composition Pedagogy and Practice 3 cr.
Examines the pedagogical implications of contemporary composition
theory and research. Focuses on teaching composition at the college
level. Consent of instructor required.

Topics in teaching business, technical and scientific communication in
academic and workplace contexts. Prerequisite: graduate standing.

ENGL 573. Writing Assessment and Evaluation 3 cr.
Theory and practice of writing evaluation and program assessment.
Examines pedagogical, political, legal, and policy issues involved in
assessment. Taught with ENGL 473.

ENGL 574. Workshop: Advanced Writing Prose 3 cr.
Intensive practice in prose writing, primarily fiction, in a workshop envi-
ronment with peer criticism. Repeatable for a total of 15 credits. Consent
of instructor required.

ENGL 575. Workshop: Advanced Writing Poetry 3 cr.
Intensive practice in poetry writing in a workshop environment with peer
criticism. Repeatable for a total of 15 credits. Consent of instructor required.

ENGL 576. Workshop: Advanced Writing Playwriting 3 cr.
Intensive practice in dramatic writing in a workshop environment with peer
criticism. Repeatable for a total of 9 credits. Consent of instructor required.

ENGL 577. Workshop: Advanced Technical and Professional Writing 3 cr.
Intensive practice in technical and professional writing and editing in a
workshop environment. May be repeated for a total of 6 credits. Consent
of instructor required.

ENGL 578. Topics in Rhetoric and Technology 3 cr.
Explores intersections between rhetoric and technology, approaches
may highlight theory, media production, and/or research. Repeatable for a
maximum of 6 credits. Taught with ENGL 678.

ENGL 579. Computers and Writing 3 cr.
Examines how computers change the nature of writing and the teaching
of writing.

ENGL 580. Graduate Problems in Creative Writing 3 cr.
Independent study in creative writing. Consent of instructor required.
Repeatable for a total of 9 credits.

ENGL 581. Women’s Literature 3 cr.
Intensive study of literature by women, in particular historical, aesthetic,
cultural, or intellectual contexts. Repeatable under different subtitles.
Crosslisted with: W S 584

ENGL 582. Gender and Popular Culture 3 cr.
Intensive study of the representations of gender in popular culture.
Examines the historical, aesthetic, and cultural contexts of these representa-
tions and the various critical and theoretical lenses we use to understand
them. Repeatable under different subtitles. Crosslisted with: W S 582

ENGL 583. Gender and Language 3 cr.
Overview of current and historical approaches to the critical study of gen-
eral language, how gender theoretically manifests in linguistic, social,
cultural, and academic contexts.

ENGL 584. Gender and Literature 3 cr.
Intensive study, critical and theoretical, of intersections between litera-
ture and gender. Examines representations or constructions of gender in
literary discourse, as well as the gendering of literary activity in different
cultural contexts. Repeatable under different subtitles.

ENGL 585. Advanced Writing Workshop: RPC Capstone 3 cr.
Students work to develop and revise their chosen Master’s program
Capstone Project (a portfolio, thesis or master essay) in consultation with
instructor and classmates. Students provide and receive feedback on
their work-in-progress. Consent of Instructor required.

ENGL 586. Hollywood Film 3 cr. (3-3P)
Intensive study of Hollywood film in its artistic, cultural, or historical con-
texts. Repeatable under different subtitles.

ENGL 587. Modernist and Experimental Film 3 cr.
Explores the variety of film aesthetics that depart to some degree from
the conventions of classical cinema. Focuses on how film form relates to
modernist, postmodernist, experimental, and avant-garde tendencies in the
arts. Special attention will be paid to the implications of radical formal
experimentation for cultural politics, in particular in the context of modern
and contemporary history. Repeatable once under a different subtitle.

ENGL 588. Film and Literature 3 cr.
Intensive study of literary and film texts in particular historical, generic, or cul-
tural contexts, such as Film Adaptation, Religion in Literature and Film, or The
American West in Fiction and Film. Repeatable under different subtitles.

ENGL 589. Cultural Studies: Literature and Theory 3 cr.
Examines the theory and practice of cultural studies in relation to the
variety of discourse describable as literary, including autobiography,
avant-garde writing, nonfiction prose, the essay, online writing, folklore,
and popular genre fiction [such as mystery, romance, thriller, or horror].
Repeatable once under a different subtitle.

ENGL 590. Master’s Seminar in Rhetoric 3 cr.
Studies in theories of and issues in rhetoric. Topics may vary from year to
year. Repeatable for a total of 9 credits.

ENGL 591. Graduate Screenwriting 3 cr.
Students will prepare a feature-length screenplay. Script analysis will
be in an advanced workshop format. Scripts will be read and discussed,
scenes performed and reactions analyzed to consider effect of dialogue,
character development, etc. Aimed at preparing writers for the profes-
sional market. Consent of instructor required.

ENGL 593. Middle English Textual Cultures 3 cr.
Intensive study of cultures of reading, writing, and literary production in
late-medieval England, situating Middle English literature in its manuscript
contexts. No prior experience with Middle English required.

ENGL 596. Master’s Workshop: Fiction 3-6 cr.
Students will submit a draft of thesis project for workshop critique. Revi-
sion of the thesis draft submitted to the instructor. Prerequisite(s): Enrolled in
MFA penultimate semester. Restricted to MFA CW majors.

ENGL 598. Master’s Thesis 0-88 cr.
Students electing the master essay option complete revision of a schol-
archy essay of 25-30 pages, the approximate length of a journal article, and
reformulation of this essay to the 7-8 pages appropriate for presenta-
tion at a conference. This option also requires research of appropriate
publication venues and a final oral defense of the project. A supervising
faculty member will approve the selected essay, guide revision, and help
students form an examining committee, which consists of at least two
members of the graduate English faculty and one member of the graduate
faculty outside the department. Students are encouraged to under-
take the Master Essay process in the first half of their third semester of
full time graduate work, or soon after completing 18 hours of course work.
This option is the preferred exam option, particularly for those students
who intend to pursue Ph.D. study. Consent of instructor required.

ENGL 600. Doctoral Research 1-88 cr.
Assigns credit for research performed prior to the doctoral comprehen-
sive examination.

ENGL 601. Qualitative Research 3 cr.
Theory and practice of designing research studies and of collecting and
analyzing data. Emphasis on qualitative methods of research in composi-
tion, professional communication, and rhetoric.

ENGL 602. Quantitative Research 3 cr.
Theory and practice of designing quantitative research studies and of col-
lecting and analyzing data. Emphasis on quantitative methods of research
in composition, professional communication, and rhetoric.

ENGL 603. Rhetorical Criticism and Methodology 3 cr.
Theory and practice of designing research studies and of collecting and
analyzing data. Emphasis on methods of rhetorical criticism.

ENGL 610. Proseminar in Rhetoric and Professional Communication 3 cr.
Introduction to research in rhetoric and professional communication.
Required of and limited to students enrolled in the Ph.D. program in Rheto-
ric and Professional Communication.

ENGL 643. Multimedia Theory and Production 3 cr.
Issues, theories, and production practices underlying design of mul-
timedia, including rhetorical choices, aesthetic approaches, usability
concerns, and diverse academic and popular discourses contributing to
continued development of digital texts. Taught with ENGL 543.
ENGL 648. Graduate Study in Writing 3 cr.
Close study of a topic in composition, rhetoric, and/or technical and professional communication. Repeatable for a total of 6 credits.

ENGL 650. Graduate Study in Literacy 3 cr.
Studies in literacy theory and literacy research. Topics may vary. Taught with ENGL 550.

ENGL 661. Topics in Writing Program Administration 3 cr.
Explores issues, theories, and research underlying writing programs and the administration of writing centers. Repeatable for a maximum of 6 credits. Taught with ENGL 561.

ENGL 666. History and Theory of Composition Studies 3 cr.
Studies in the history and theory of composition as a discipline. Taught with ENGL 566.

ENGL 667. Documentary Film Theory and Criticism 3 cr. (3+3P)
Course offers critical survey of documentary film theory and criticism including considerations of the epistemological assumptions, rhetorical choices, aesthetic approaches, and political circumstances of historical and contemporary documentary film. Taught with ENGL 567.

ENGL 668. Rhetoric and Cultural Studies 3 cr.
Explores intersections between rhetoric and cultural studies. Examines theories and practices of texts and discourses in political and cultural contexts. Taught with ENGL 568.

ENGL 669. Topics in Rhetoric and Technology 3 cr.
Explores intersections between rhetoric and technology, approaches may highlight theory, media production, and/or research. Repeatable for a maximum of 6 credits. Taught with ENGL 578.

ENGL 670. Doctoral Seminar in Rhetoric 3 cr.
Studies in theories of and issues in rhetoric. Topics may vary from year to year. Repeatable for a maximum of 9 credits.

ENGL 678. Research Practicum 3 cr.
Designing and conducting individual research projects, for students engaged in dissertation research.

ENGL 700. Doctoral Dissertation 0-88 cr.
Dissertation.

DEGREE: Master of Applied Geography

MINOR: Geographic Information Systems

The Department of Geography offers a minor in Geographic Information Science and Technology (GIS &T), and this minor is available for all undergraduate students. To earn a minor in GIS &T, the following courses are required, combining for a total of 13 credits. Students may not take any of these courses S/U, and students must earn a grade of at least B- in all of these classes.

The following two classes are mandatory requirements for the minor:

- GEOG 521, GIS Applications and Modeling .................................................................3
- GEOG 572, Geodatabase Design ..................................................................................3

TWO of the following four optional classes are also required:

- GEOG 561, GIS Design ........................................................................................................3
- GEOG 582, Advanced Remote Sensing .......................................................................3
- GEOG 452, Landscape Ecology ....................................................................................3

ANALYSIS OF THE STRUCTURE, FUNCTION AND CHANGE OF NATURAL AND ANTHROPOGENIC LANDSCAPES. PATCHES, CORRIDORS, MATRIX AND NETWORK, SPATIAL ORGANIZATION, LANDSCAPE DYNAMICS, AND ROLE OF DISTURBANCE IN OVERALL FUNCTIONING OF LANDSCAPES. ROLE OF LANDSCAPE HETEROGENEITY. PREREQUISITES: EITHER GEOG 351, BIOL 301, OR OTHER BASIC GEOGRAPHY COURSE OR CONSENT OF INSTRUCTOR.
GEOG 455. Southwestern Environments 3 cr.
The U.S. Southwest: physical and human geography, coupled human-environment interactions, causes and consequences of environmental issues, and implications for sustainable development. Taught with GEOG 555. Consent of instructor required. Prerequisite(s): GEOG 281, physical geography class, human geography class, or equivalents.

GEOG 467. Transportation Geography 3 cr.
Nature and distribution of land, air and water transport facilities and their importance in regional development. Prerequisite: GEOG 120G or consent of instructor.

GEOG 472. Soil Morphology and Classification 4 cr. (2+2P)
Same as SOIL 472.

GEOG 473. Advanced Remote Sensing 4 cr. (3+3P)
Introduction to advanced topics in digital image processing, analysis, interpretation, and visualization. Topics include geometric and radiometric correction, image enhancement, image classification, change detection, and accuracy assessment. Lectures focus on the discussion of advanced remote sensing concepts, techniques, and applications; labs are applications-oriented. Prerequisite(s): GEOG 372, Intro to Remote Sensing or consent of instructor.

GEOG 474. Field Explorations in Geography 4 cr. (2+2P)
A field-based class where students complete exercises in physical, human, and environmental geography in the Southwest. May be offered as a two-week intensive class where students are away from Las Cruces and camping; or may be offered with weekend field trips depending on the instructor. A lab fee for transportation and other expenses is required. Taught with GEOG 583. Prerequisite(s): GEOG 281, physical geography class, human geography class, or equivalents, or consent of instructor.

GEOG 481. Fundamentals of Geographic Information Systems 4 cr. (3+3P)
Fundamentals of computer-based systems which organize, analyze, and present spatially referenced data. Taught with GEOG 578. Prerequisite(s): GEOG 281 or GEOG 381.

GEOG 482. Geodatabase Design 3 cr. (2+3P)
A practical introduction to designing geodatabases. The course takes you through the eleven steps of geodatabase design divided into four stages: thematic characterization; developing the database elements, relationships and properties; capture and collection; and finally, implementation and documentation. Taught with GEOG 572. Prerequisite(s): GEOG 481 or consent of instructor.

GEOG 483. Field Explorations in Geography 3 cr. (6P)
A field-based class where students complete exercises in physical, human, and environmental geography in the Southwest. May be offered as a two-week intensive class where students are away from Las Cruces and camping; or may be offered with weekend field trips depending on the instructor.

GEOG 493. Special Problem Research 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. Consent of instructor required.

GEOG 492. GIS Applications and Modeling 3 cr.
Group oriented class in which students conduct an applied research project in GIS science application or modeling area of choice and conduct focused library research. Prerequisite(s): GEOG 481 or consent of instructor.

GEOG 491. GIS Applications and Modeling 3 cr.
Group oriented class in which students conduct an applied research project in GIS science application or modeling area of choice and conduct focused library research. Prerequisite(s): GEOG 481 or consent of instructor.

GEOG 493. Special Problem Research 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. Consent of instructor required.

GEOG 496. Directed Readings 1-3 cr.
Individual study through selected readings. A maximum of 6 credits may be earned. Consent of instructor required.

GEOG 501. Research Design and History of Geographic Thought 3 cr.
Understanding and application of the research process, including conceptualization and definition of a research problem, study designs, data sources, data collection, and report writing in development of geographic thought.

GEOG 521. GIS Applications and Modeling 3 cr.
Group oriented class in which students conduct an applied research project in GIS science application or modeling area of choice and conduct focused library research. Prerequisite(s): GEOG 481, or consent of instructor.

GEOG 552. Landscape Ecology 3 cr.
Analysis of the structure, function and change of natural and anthropogenic landscapes. Patches, corridors, matrix and network, spatial organization, landscape dynamics, and role of disturbance in overall functioning of landscapes. Role of landscape heterogeneity in landscape management. Prerequisite: either GEOG 361, BIOL 301, or other basic ecology course or consent of instructor. Same as BIOL 552.

GEOG 553. Geomorphology 3 cr. (2+3P)
Examination of the principle theories and concepts of landform creation; exploration of the roles of structure, processes, climate, and time in the formation of various types of landforms. Taught with GEOG 553. Prerequisite(s): GEOG/GEOL 303 or GEOG/GEOL 111G.

GEOG 555. Level Southwestern Environments 3 cr.
The U.S. Southwest: physical and human geography, coupled human-environment interactions, causes and consequences of environmental issues, and implications for sustainable development. Taught with GEOG 455. Prerequisite(s): GEOG 281, physical geography class, human geography class, or equivalents, or consent of instructor.

GEOG 557. Fundamentals of Biogeography 3 cr.
Floristic and physiognomic characteristics of the Earth’s major ecosystems and their distributions; ecosystem dynamics, evolution, and physical environment; field and laboratory techniques including remote sensing. Taught with GEOG 351.

GEOG 571. Cartography and Geographic Information Systems 4 cr. (3+3P)
Graduate level design and construction of thematic maps. Introduction to cartographic principles in lecture. Emphasis on map-making using GIS software in the labs. Prerequisite(s): GEOG 281.

GEOG 572. Geodatabase Design 3 cr. (2+2P)
Graduate level introduction to designing geodatabases. The course takes you through the eleven steps of geodatabase design divided into four stages: thematic characterization; developing the database elements, relationships and properties; capture and collection; and finally, implementation and documentation. Taught with GEOG 482. Consent of instructor required. Prerequisite(s): GEOG 481.

GEOG 577. Geographic Information Science and Technology 3 cr.
Graduate level capstone course in geospatial analysis. Demonstration of competence in the use of geospatial tools, techniques, and concepts for the solution of applied geographic problems. Software may change from semester to semester. Taught with GEOG 481.

GEOG 578. Fundamentals of Geographic Information Systems 4 cr. (3+3P)
Graduate level fundamentals of computer-based systems that organize, analyze, and present spatially referenced data. Taught with GEOG 481. Prerequisite(s): GEOG 571 or consent of instructor.

GEOG 581. GIS Design 3 cr.
A critical aspect of GIS is its ability to provide the necessary products within the organization in which it is implemented. This is an in-depth analysis of currently accepted planning methodologies designed to create a successful implementation of GIS inside organizations. Prerequisite(s): GEOG 481 or consent of instructor.

GEOG 582. Advanced Remote Sensing 4 cr. (3+3P)
Graduate level introduction to advanced topics in digital image processing, analysis, interpretation, and visualization. Topics include geometric and radiometric correction, image enhancement, image classification, change detection, and accuracy assessment. Lectures focus on the discussion of advanced remote sensing concepts, techniques, and applications; labs are applications-oriented. Prerequisite(s): GEOG 572/573 or consent of instructor.

GEOG 583. Field Explorations in Geography 3 cr. (6P)
A graduate level field-based class where students complete exercises in physical, cultural, and environmental geography in the Southwest. May be offered as a two-week intensive class where students are away from Las Cruces and camping; or may be offered with weekend field trips depending on the instructor. A lab fee for transportation and other expenses is required. Prerequisite(s): Geography 281, physical geography class, human geography class, or equivalents, or consent of instructor.

GEOG 585. Advanced Spatial Analysis 3 cr. (3+2P)
Introduction to basic spatial and aspatial descriptive statistics, statistical analysis of point and area patterns, critical review of quantitative research in geography, and exploration of advanced spatial analysis routines including cluster analysis, hot/cold spot analysis, and spatially weighted regression. Prerequisite(s): STAT 251 or E ST 311; or consent of instructor.

GEOG 586. Geospatial Techniques for Natural Resource Assessments 3 cr.
Use of integrated geographic information science and technology (GIS&T, includes remote sensing and geographic information systems) approaches for the monitoring and assessment of environmental issues. Lectures focus on the analysis and evaluation of current uses, potentials, and challenges of GIS&T. Labs emphasize the design and implementation of an original research project that uses GIS&T to model a local or regional environmental issue. Prerequisite(s): Geography 481/521 and 372/573 or equivalents.
GEOLOGICAL SCIENCES

Department website: http://www.nmsu.edu/~geology/


DEGREE: Master of Science

MAJOR: Geology

The Department of Geological Sciences offers graduate study leading to the Master of Science degree in geology. Admission to the program is in accord with the general regulations of the Graduate School. Admission to this program without deficiency is based on an undergraduate program essentially equivalent to that pursued by a geology major at this university. The Graduate Record Examination (verbal and quantitative only) is required. A candidate for a master’s degree must complete a minimum of 30 graduate credits, including a minimum of 6 credits for thesis (GEOL 599). No more than 5 thesis credits may be taken in any one semester. Early selection of a research advisor is encouraged. A thesis proposal must be approved by the advisor and the candidate’s committee before registering for thesis credits. At least 15 credits must be earned in courses numbered 500 or above, and at least 15 credits must be earned in geology. Students are expected to register for and participate in the department’s colloquium each semester.

Supportive graduate work is available in geological engineering and geophysics. The department offers excellent laboratory facilities for research in mineralogy, igneous petrology, geochemistry, stratigraphy, paleontology, and sedimentology. Available are a large, fully equipped rock preparation laboratory, mineral separation laboratory, plus computer, geochemical and petrophagic labs. Major equipment includes a Gemens heavy mineral separation table, X-Ray Fluorescence Spectroscopy (XRF), Laser-Induced Breakdown Spectroscopy (LIBS), and Thermal Ionization Mass Spectrometry (TIMS). The department maintains its own fleet of field vehicles. Also available are computing facilities that include an HP color plotter and GIS system. Financial support is available to graduate students in geology through teaching and research assistantships and scholarships. Inquiries regarding financial aid should be directed to the graduate advisor.

GEOLOGICAL SCIENCES

GEOL 452. Geohydrology 3 cr.
Origin, occurrence, and movement of fluids in porous media assessment of aquifer characteristics. Development and conservation of ground water resources, design of well fields. Prerequisite(s): GEOL 111G and C E 231. Crosslisted with: C E 452 and E S 452

GEOL 454. Advanced Stratigraphic Concepts 3 cr.
Geometry and origin of strata, emphasizing techniques for correlation and interpretation. Prerequisite: GEOL 420 or equivalent.

GEOL 455. Applied Geology 1-3 cr.
Geological research and field projects for the advanced student. May be repeated for a total of 6 credits. Prerequisite: consent of instructor.

GEOL 465. Isotope Geochemistry 3 cr.
Geochemistry of stable and radiogenic isotopes and its application to a wide range of problems in the earth and planetary sciences. Prerequisite(s): CHEM 112G, GEOL 360, GEOL 399.

GEOL 470. Structural Geology 3 cr. (2+3P)
Deformation of rocks of the earth. Prerequisite: GEOL 310

GEOL 474. Ground Water Geology 3 cr.
Steady-state and transient ground-water flow in porous media: effects of lithology on hydrologic characteristics of aquifers and confining units; Darcy’s Law applied to steady-state flow; distribution of hydraulic head in confined and unconfined aquifers; recharge and discharge in regional and local ground-water flow systems; ground-water surface-water interaction; steady-state and transient flow to wells; aquifer testing and evaluation of safe yields. Introduction to numerical flow modeling. Prerequisite: GEOL 111G.

GEOL 475. Geology of Mineral Resources 3 cr. (2+3P)
Introduction to ore deposits and industrial rocks and minerals; genesis, mining methods, estimation of reserves, exploration, and economic aspects of selected commodities. Prerequisite: GEOL 299.

GEOL 476. Marine Paleoecology 3 cr. (2+3P)
Paleontological and sedimentologic analysis of the fossil marine record to reconstruct past ecosystems by interpreting the life habits of past organisms, their association in communities and their relationship to the environments in which they lived.

GEOL 477. Special Problems 1-3 cr.
Selected advanced topics of current interest or importance. May be repeated for a total of 6 credits. Prerequisite: consent of instructor.

GEOL 478. Petroleum Geology 3 cr. (2+3P)
Stratigraphy, tectonics, and sedimentation in relation to occurrence of and exploration for hydrocarbons. Prerequisite: GEOL 420.

GEOL 479. Environmental Soil Chemistry 3 cr.
Same as SOIL 479.

GEOL 480. Seminar 1-3 cr.
Supervised study of a subject not covered by regular courses. For organized group meetings treating selected advanced topics. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

GEOL 490. Field Geology 3 cr. (IP)
Mapping, instrumentation, and interpretation of geology in the field. Prerequisite: either GEOL 420 and GEOL 470.

GEOL 491. Tectonic Evolution of North America 3 cr.
Current ideas regarding the plate-tectonic evolution of North America from Archean through Holocene time, emphasizing the use of regional stratigraphy and structural geology to interpret mountain building, magmatism, and basin development. Prerequisites: GEOL 111G, GEOL 399, GEOL 420 and GEOL 470.

GEOL 495. Geology Field Camp 4 cr. (12P)
Three week intensive summer course. Geologic mapping in a site-based setting, emphasizing spatial relations, cross-section construction, and preparation of geologic reports. Prerequisite: GEOL 490

GEOL 499. Senior Thesis 1-3 cr.
Writing a formal paper describing original geologic research conducted under supervision of a faculty advisor. Prerequisite: consent of instructor. Restricted to majors.

GEOL 501. Geology Colloquium 1 cr.
Presentations by visiting speakers and graduate students.

GEOL 508. Geology for Educators 3 cr.
Assists K-12 teachers in developing pedagogy and content knowledge in the subject area of geology.
GEOL 515. Advanced Principles of Geochemical Equilibria 3 cr.
Theory of thermodynamics and the applications of thermodynamics to geological problems. Phase equilibria in water-dominated and magmatic systems.

GEOL 516. Colorado Plateau Seminar 3 cr.
Geologic history of the Colorado Plateau culminating in a 10-day field trip to choose geologic localities in Arizona and Utah. Prerequisites: GEOL 420 or equivalent.

GEOL 520. Selected Topics 1-3 cr.
Selected topics in geology. Prerequisites: graduate standing and consent of instructor. May be repeated for unlimited credit.

GEOL 530. Sandstone Petrology 3 cr. (2+3P)
Provenance and diagenetic history of sand and sandstone as determined by thin-section analysis.

GEOL 531. Depositional Environments 3 cr. (1+6P)
Interpretation of clastic depositional environments with reference to rock units exposed in southern New Mexico.

GEOL 532. Carbonate Petrology and Depositional Systems 3 cr. (2+3P)
Textures, composition, diagenesis, and interpretation of carbonate rocks. Laboratory study of rock suites and thin sections illustrating carbonate facies.

GEOL 533. Petroleum Geophysics 3 cr. (2+3P)
Introduction to fundamentals of exploration seismology, including seismic acquisition, processing, and geologic interpretation of 2-D data sets. Interpretation encompasses major geologic structural styles, including thrust belts, rift basins, and salt provinces.

GEOL 534. Tectonics of Sedimentary Basins 3 cr.
Origin of sedimentary basins with emphasis on subsidence mechanisms, geometry of basin fill and tectonic setting. Lab exercises include field techniques and seismic interpretation. Prerequisites: GEOL 420 or equivalent or consent of instructor.

GEOL 535. Applied Geomorphology 3 cr. (2+3P)
Same as GEOG 553.

GEOL 534. Advanced Stratigraphic Concepts 3 cr.
Geometry and origin of strata, emphasizing techniques for correlation and interpretation.

GEOL 590. Geochemistry of Diagenetic and Hydrochemical Systems 3 cr. (2+3P)
Solution-mineral equilibria and chemical kinetics applied to water-rock interactions, including diagenetic processes in sediments and sedimentary basins.

GEOL 592. Analytical Geochemistry 3 cr.
Techniques used to determine the major element, trace element and isotopic composition of rocks and minerals and the determination of mineral structure.

GEOL 595. Isotope Geochemistry 3 cr.
Trace element partitioning and isotope systematics applied to problems in petrology and ore genesis.

GEOL 597. Global Geochemical Systems 3 cr.
Generation of major element, trace element, and isotopic signatures of igneous rocks in different tectonic settings and propagation or destruction of those signatures by sedimentary and metamorphic processes.

GEOL 576. Marine Paleoeocology 3 cr. (2+3P)
Paleontological and sediment logic analysis of the fossil marine record to reconstruct past ecosystems by interpreting the life habits of past organisms, their association in communities and their relationship to the environments in which they lived.

GEOL 578. Petroleum Geology 3 cr. (2+3P)
Stratigraphy, tectonics, and sedimentation in relation to occurrence of and exploration for hydrocarbons. Prerequisite(s): GEOL 420.

GEOL 580. Tectonic Evolution of the Western U.S. 3 cr.
Geologic history and tectonic evolution of the Western U.S. Cordillera from the Precambrian assembly of the craton to the recent history of rifting in the Rio Grande Valley. Focus on the geology of the Southwest, particularly southern New Mexico, but also topics such as evolution of San Andreas fault system.

GEOL 582. Plate Tectonics 3 cr.
Plate tectonics as a fundamental model for geological activity on a dynamic earth. Focuses on plate tectonic theory development and mechanisms, plus modern analogs of ancient processes.

GEOL 584. Cenozoic Geology 3 cr.
The Cenozoic geologic history of western North America is examined through lectures, discussion of classic and current literature, and local area field trips. Topics include the Laramide orogeny, ignimbrite flare-up, and Basin and Range/Rio Grande rift crustal extension.

GEOL 585. Geochronology 3 cr.
The principles, analytical methods, and interpretation of the most common geochronologic methods.

GEOL 590. Advanced Field Geology 3 cr. (1+6P)
Advanced problems in reconnaissance and detailed mapping and interpretation of rocks in the field. Main campus only.

GEOL 598. Special Research Programs 1-3 cr.
Investigations into contemporary geological problems. Prerequisites: graduate standing and consent of instructor. May be repeated for unlimited credit.

GEOL 599. Master’s Thesis 0-88 cr.
Thesis research.

GOVERNMENT

Department site: http://www.nmsu.edu/~govdept/
Masters in Public Administration site: http://www.nmsu.edu/~mpa/
(575) 646-4835
govdept@nmsu.edu

N. Harvey, Ph.D., department head (Essex) – Mexican politics, comparative politics, Latin America; J. Ackerson, Ph.D. (London School of Economics and Political Science) – International relations, national security, border security; N. Baker, Ph.D. (Tulane) – public law, American politics, presidency; G. Butler, Ph.D. (Catholic) – political theory, American politics, J. Garcia, Ph.D. (New Mexico) – New Mexico politics, border politics, Latin America, comparative politics; Y. Lapid, Ph.D. (Columbia) – international relations theory, comparative foreign policy, international organizations; C. Medina (Univ. Colorado Denver) Ph.D. – public administration, public policy, education policy, qualitative methods; D. Scheller, Ph.D. (Florida State) – public administration, public policy, urban politics; W. Taggart, (emeritus) Ph.D. (Florida State) – public administration, public policy, American politics; R. G. Winn, (emeritus), Ph.D. (Arizona State) – public administration, policy analysis, environmental policy

DEGREE: Master of Arts
MAJOR: Government

DEGREE: Master of Public Administration

MINOR: Government
MINOR: Public Administration
MINOR: Security and Intelligence Studies

The Department of Government offers two degrees: the Master of Arts (M.A.) in government and the Master of Public Administration (M.P.A.) and a graduate minor in Security and Intelligence Studies. The programs are designed to prepare students both for diverse careers in the public sector and for further training at the doctoral level. The M.P.A. program is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA), a distinction held by fewer than one-quarter of M.P.A. programs nationwide. The M.P.A. program offers joint degrees with the Department of Criminal Justice (M.P.A./M.C.J.) and with the Department of History (M.P.A./M.A. in Public History). Students in a joint degree program can earn two master’s degrees with fewer credits than would be required to earn those degrees independently.

ADMISSION
Prospective graduate students in either the M. A. or M. P. A. should demonstrate a 3.0 grade point average for the second half of their undergraduate coursework. For students with a GPA of less than 3.0, GRE scores are required, though this requirement may be waived if the undergraduate degree was awarded more than five years before applying. Applicants to either program are required to submit an application for program admission (available from the department and online), three letters of recommendation, a writing sample, and a personal statement concerning their interest in pursuing a graduate degree. All of these items are to be submitted directly to the department. Additional information concerning program requirements and the admission process can be obtained from either the department’s M.A. chair or M.P.A. director. Under exceptional circumstances the department may exempt students from the minimal requirements. Application for admission to the Graduate School should clearly indicate the program in which the student wishes to enroll.
Students interested in a joint degree option must apply and be accepted in to the two departments separately, and indicate their interest on their applications in one of the joint degree programs.

GENERAL REQUIREMENTS

Students in both the M.A. and M.P.A. programs select either a thesis or nonthesis option. Students planning on continuing their studies in a doctoral program or wishing to establish expertise related to a specific career objective are strongly encouraged to select the thesis option. The nonthesis option is suggested for students desiring immediate employment or seeking to enhance their current employment situations. Course work outside the department must have prior advisor approval to ensure a well-integrated program of study. Complete information on the requirements for either program should be obtained directly from the department. Most M.A. and M.P.A. courses are offered in the evening.

DEGREE: Master of Arts

MAJOR: Government

The M.A. program provides general course work in each of the major fields of political science. Students may choose either the thesis option, under which they complete 30 credits of course work plus 6 thesis credits (GOVT 598), or the nonthesis option, with 30 credits of course work plus 6 hours of special research credit (GOVT 598) or 6 hours of approved internship credit (GOVT 510). Both the thesis and nonthesis options require a final oral examination; the nonthesis option requires a written examination as well. The program provides a broad-based foundation in political science while allowing students to pursue specific areas of interest. All students are required to complete a research methods class, either GOVT 502 or GOVT 503. In addition, students must take 3 of the following 6 courses (8 credits):

- GOVT 530, Seminar in Public Policy
- GOVT 550, Seminar in American Politics
- GOVT 560, Seminar in International Relations Theory
- GOVT 570, Seminar in Comparative Politics
- GOVT 580, Seminar in Political Theory
- GOVT 590, Seminar in Public Law and Legal Systems

The remaining credits required for the degree are selected subject to advisor approval to satisfy particular academic interests or career goals. Flexibility in planning a program of study is permitted to meet the educational needs of a diverse student population. Structured areas of emphasis are available in several topical areas including security studies, Latin American affairs, and international affairs. The study program for each certification area must be approved by the M.A. Program Committee. Information on these areas may be obtained from the Department of Government. No more than 9 credits taken outside the department will be counted toward the degree.

DEGREE: Master of Public Administration

The M.P.A. program is accredited by NASPAA. The M.P.A. is designed to provide students with the managerial and analytical skills, in addition to ethical and professional values, necessary to meet the increased demand for skilled public administrators. Candidates who follow this professional program must complete a minimum of 42 credits, consisting of core courses, electives and either an internship or a thesis. All students are required to complete a core curriculum of 18 credits, including:

- GOVT 502, Research Methods in Government
- GOVT 541, Public Budgeting
- GOVT 542, Public Sector Human Resource Management
- GOVT 544, Public Policy Analysis
- GOVT 547, Government Organizations (Organizational Theory)
- GOVT 549, Ethics in Government

The remaining 24 credits required for the degree are selected with the approval of an advisor to meet the needs and interests of the individual candidate. Because students have divergent career goals, a thesis or internship option is offered. The thesis option requires an additional 18 credits of course work, 6 credits of thesis (GOVT 598), and an oral examination covering the thesis and course work. The internship option requires an additional 21 credits of course work, 3 credits of internship (GOVT 510), and an oral examination covering the internship and course work. As part of the course work, students selecting the internship option must take GOVT 518 (Proseminar/Capstone in Public Administration) during the latter part of their studies, and are required to earn a B- grade or higher in that course.

With approval, students may include up to 12 credits of relevant course work from other departments to be counted toward the total credits required for the M.P.A. These credits may be selected to form a graduate minor in another academic discipline.

Candidates with inadequate preparation for graduate study in public administration may be required to take appropriate undergraduate and graduate courses as part of, or in addition to, a regular program of study. Applicants to the M.P.A. program will be advised of any such requirements at the time of admission.

JOINT M.P.A.-M.C.J. PROGRAM

The M.P.A.-M.C.J. joint-degree option requires completion of a minimum of 57 credits of approved course work from the Departments of Government and Criminal Justice. Students interested in this option should meet with the M.P.A. director or criminal justice graduate advisor for additional information.

JOINT M.P.A.-M.A. PUBLIC HISTORY PROGRAM

The M.P.A.-M.A. Public History degree option requires completion of a minimum of 51 credits of approved course work from the Departments of Government and History, including completing internship credits in both programs. Interested applicants should consult with the M. P. A. director or the director of the Public History Program for additional information.

MINOR: Security and Intelligence Studies

Course Requirements: Nine semester hours of graduate course credit from the following courses:

- GOVT 461, International Political Economy
- GOVT 468, Rebels, Guerrillas, and Terrorists in Modern Latin America
- GOVT 549, Ethics in Government
- GOVT 590, Seminar in International Relations Theory
- GOVT 592, Advanced Issues in Security and Intelligence Studies
- GOVT 594, Advanced National Security Policy
- GOVT 596, Advanced Issues in American Foreign Policy
- GOVT 597, Terrorism and Political Violence
- GOVT 598, Advanced Intelligence Studies
- GOVT 599, Advanced Issues in Globalization
- GOVT 574, Contemporary Comparative Studies
- GOVT 596, International Law

Additional Courses: Other graduate courses may become available during the year which may be substituted for the above listed courses. Consideration may be made on a case-by-case basis.

GOVERNMENT

- GOVT 465, Peru: From Incas to Inca Kola 3 cr.
  Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Same as ANTH 459 and HIST 459.
- GOVT 468, Rebels, Guerrillas, and Terrorists in Modern Latin America 3 cr.
  Explores history of rebels in Latin America. Examines guerilla struggles attaining national dimension. Focus on modern events, including Peru’s Shining Path, Columbia’s FARCS, and Mexico’s Zapatistas. Same as HIST 331.
- GOVT 469, Globalization 3 cr.
  Analysis of the globalization process. Covers theories of globalization, the global economy, political globalization, global culture, transnational social movements, transnational migration and world labor market, global cities, and local-global linkages. Same as SOC 489.
- GOVT 472, Germany 3 cr.
  Political, social, and cultural developments from the eighteenth century to the present, with emphasis on the Nazi era. Same as HIST 383.
- GOVT 474, European Politics 3 cr.
  Politics in European countries, European integration, post-communist states, regionalism and border politics.
- GOVT 476, Modern Eastern Europe 3 cr.
  Addresses the diversity of Eastern European political and cultural experiences from the end of the 19th century to the present day. Same as HIST 380.
- GOVT 493, Mass Communications Law 3 cr.
  Same as JOUR 493 and COMM 493.
- GOVT 501, Scholarly and Professional Writing 1 cr.
  Research, writing, and editing skills for advanced academic and professional communication in disciplinary contexts.
Contemporary methods of political analysis, including mathematical and statistical techniques and computer applications. MA students must complete this class with a B- or better. MA students must complete either GOVT 502 or GOVT 503 with a B- or better.

GOVT 503. Qualitative Research Methods 3 cr.
An overview of qualitative research methods such as fieldwork, ethnography, content analysis, case studies, focus groups and grounded theory. Introduces students to epistemology (the study of knowledge) and to basic components of research design. Explores activist scholarship, ethical dilemmas in research, and software tools for computer assisted analysis. Especially useful for students preparing theses, dissertation, or other research projects. MA students must complete either GOVT 503 or GOVT 502 with a B- or better.

GOVT 505. Directed Readings 1-3 cr.
Selected topics in government. May be repeated for a total of 6 credits. Graded S/U. Prerequisite: consent of instructor.

GOVT 510. Internship 1-6 cr.
Assignment with a public agency and research report. Only 3 credits apply toward degree requirements. Graded S/U. Prerequisite: approval of graduate advisor.

GOVT 517. Selected Topics in Government 3 cr.
Selected issues which may cross sub-fields of the discipline. May be repeated for a total of 6 credits.

GOVT 519. Proseminar in Public Administration 3 cr.
Review of classic and contemporary theory and practice in public administration. Application of written and oral skills to the presentation and defense of essays on various aspects of public administration. To be completed with a B- or better. Prerequisite(s): GOVT 502 or consent of instructor.

GOVT 522. Public Sector Economics I 3 cr.
Same as AEEC 522.

GOVT 523. Public Sector Economics II 3 cr.
Same as AEEC 523.

GOVT 524. American Indian Politics 3 cr.
Introduction to American Indian tribal governments, politics, policy, and administration; historical and contemporary leadership of Indian Nations; and the history and current status of American Indian-U.S. relations. Students learn about Native peoples' cultural responses, forms of resistance, and adaptations to colonization.

GOVT 526. Women, Politics and Administration 3 cr.
Examination of women's participation in U.S. electoral politics as voters, candidates, and officeholders; their political activism in issue-based movements and strategies for affecting public policy; leadership as administrators and managers in public service agencies. Course also covers the influence of feminism in changing women's roles socially, legally, and politically.

GOVT 527. Issues in Public Management 3 cr.
Selected issues in public management. May be repeated under different subtitles for a total of 6 credits.

GOVT 528. Public-Private Partnerships 3 cr.
This course explores how taxpayer-funded services are administered and delivered through public-private partnerships involving privatization and government contracting with the nonprofit sector and for-profit companies. The class will explore funding, legal, accountability, and stakeholder issues in partnerships in health and human services, criminal justice, and homeland security.

GOVT 530. Seminar in Public Policy 3 cr.
Survey of the political, administrative, and technical aspects of policy making in government. MA students taking GOVT 530 as part of their core requirements must complete the class with a B- or better.

GOVT 531. Public Program Evaluation 3 cr.
Politics, processes, and techniques for evaluating both program operations and the outcome of program endeavors.

GOVT 535. Education Policy and Politics 3 cr.
Overview of current pressing policy issues and political debates on education in the U.S., including school choice, vouchers, accountability, and affirmative action. Multiple topics and perspectives covered, with political economy the main approach.

GOVT 537. Issues in Public Policy 3 cr.
Selected issues in public policy. May be repeated under a different subtitle for a total of 6 credits.
GOVT 570. Seminar in Comparative Politics 3 cr.
Examination of methods used for comparing various types of political entities. Investigation of criteria needed to examine a concept across cultures or national boundaries. MA students taking GOVT 570 as part of their core requirements must complete the class with a B- or better.

GOVT 571. Seminar in Latin American Politics 3 cr.
Overview of the political structures of the Latin American region. Addresses a number of contemporary issues facing Latin American states, including interest groups, the church, labor, political parties, U.S.-Latin American relations, political development.

GOVT 573. Resistance Movements in World Politics 3 cr.
Advanced research on violent and non-violent resistance movements around the world. Focus on origins, demands, ideologies, strategies and impacts in the post-Cold War context of economic globalization, US military power and new geopolitical dynamics.

GOVT 574. Contemporary Comparative Studies 3 cr.
Major topical, theoretical, and regional issues in international politics. May be repeated once.

GOVT 575. Issues in Comparative Politics 3 cr.
Selected issues in comparative politics. May be repeated under different subtitle for a total of 6 credits.

GOVT 578. Seminar in the U.S.-Mexican Border 3 cr.
An analysis of the political environment along the United States-Mexico border and a survey of the literature available for a number of contemporary issues.

GOVT 579. Seminar in Mexican Politics 3 cr.
Advanced research on politics and government of Mexico.

GOVT 580. Seminar in Political Theory 3 cr.
Examination of major issues in political theory, including democracy, sovereignty, classical and modern traditions of thought. May be repeated with different subject matter. MA students taking GOVT 580 as part of their core requirements must complete the class with a B- or better.

GOVT 582. Study of Political Theory 3 cr.
Focus on U.S. Constitutional Law and other national legal systems. MA students taking GOVT 582 as part of their core requirements must complete the class with a B- or better.

GOVT 587. Seminar in Religion and Politics 3 cr.
Historical, theoretical and comparative analyses of the interaction between politics and religion.

GOVT 590. Seminar Public Law and Legal Systems 3 cr.
Focus on U.S. Constitutional Law and other national legal systems. MA students taking GOVT 590 as part of their core requirements must complete the class with a B- or better.

GOVT 591. Law for Administrators 3 cr.
Case-law definitions of the legal roles and powers of public administrators.

GOVT 593. Issues in Public Law 3 cr.
Selected issues in public law. May be repeated under a different subtitle for a total of 6 credits.

GOVT 596. International Law 3 cr.
Nature, growth and scope of law of nations; rights and obligations of states in peace and war; current issues.

GOVT 598. Special Research Programs 1-3 cr.
Individual investigations either theoretical, analytical or experimental. Three credits may be taken per semester for a total of 6 credits for thesis students, and 9 credits for non-thesis students. Consent of instructor required.

GOVT 599. Master’s Thesis 0-88 cr.
Thesis.

HISTORY

Department website: http://www.nmsu.edu/~histdept/
Program in Public History site: http://web.nmsu.edu/~pubhist/
(575) 646-4601
jahuner@nmsu.edu


DEGREE: Master of Arts
MAJOR: History
CONCENTRATION: Public History

MINOR: History

The Department of History offers graduate work leading to the Master of Arts degree. In addition to fulfilling the basic requirements for admission to the Graduate School, applicants must present undergraduate passage of at least 12 credits in history with grades of B or higher, including 6 upper division history credits. Those lacking this preparation must normally make up deficiencies before beginning graduate course work. Candidates who choose a course of study requiring a foreign language will be responsible for their own language preparation.

Students applying for admission to the graduate program in history are required to submit an application form and a transcript to the Graduate School and a strong writing sample, three letters of recommendation ideally from History faculty members at NMSU or other institutions, and a two- to three-page statement of purpose to the Department of History, approximately four months in advance of the desired enrollment date. Applicants for graduate assistantships and fellowships must submit a letter of application, a transcript, and three letters of recommendation to the department by February 15 for the fall semester, and by October 15 for the spring semester. Students who are not applying for graduate assistantships and fellowships may apply at any time for acceptance into the graduate program.

Thirty-six credits (27 of which must be at the 500 level) are required for the thesis program, including at least 3 public history credits above the 500 level; four history graduate seminar credits that include the Craft of History seminar, two readings seminars from among History 590, 591, 592, and 593, and a research seminar; and a thesis (6 credits). With permission of the graduate advisor, a maximum of 6 credits may be taken in related fields outside the Department of History. A student choosing the thesis program must receive permission for his/her thesis by passing a thesis proposal defense after earning 12 graduate credits in History. The department will provide guidelines for the thesis defense. A student choosing the thesis program must pass a final oral examination over graduate course work and the thesis. All graduate students will be required to present a research paper in a public forum approved by the department’s Graduate Director.

Thirty-six credits (27 of which must be at the 500 level) are required for the Public History specialization. These include four history seminars: the public history seminar, Craft of History, one research seminar, and one readings seminar from among History 590, 591, 592, and 593. Students complete a public history internship (3 credits) and preparation of an article of scholarly quality (3 credits).

Students in the Public History specialization must collectively pass 18 credits of nonpublic history courses, including the nonpublic history seminars noted above. They must collectively pass 18 credits in public history, which must include the public history seminar, the internship, and the article. The scholarly article is developed through work in the internship and will be of peer-reviewed journal quality. The public history credits may include a maximum of 9 graduate level (450- and above) credits outside the Department of History with permission of the Director of the Public History Program. A student choosing the Public History specialization must pass an article proposal defense about the proposed scholarly article during the first semester after completion of the internship. The department will provide guidelines for the article defense. A student choosing the Public History specialization must give a public presentation of a portfolio that includes his/her work and the scholarly article, and must pass an oral examination over graduate course work, the internship, and the article. Students who receive a Master’s degree in this track will have a specialization in Public History added to their transcripts.

Students choosing to pursue both the thesis track and Public History specialization must complete the course hours required for the public history specialization, perform an internship, and defend the proposed thesis before undertaking it using guidelines provided by the department, present the public history portfolio at a public presentation, complete the thesis, and defend their course work, thesis and public history portfolio at a final oral examination. In order to satisfactorily complete both programs, such students would complete 39 credits, including three hours of internship credit and six hours of thesis work.
The Department of History and the Department of Government offer a joint degree in which students who are accepted into both of these programs may simultaneously earn both a Master of Arts in History degree with the Public History specialization, and a Master of Public Administration degree. The joint degree requires 57 total credits, while students who pursue both degrees as separate degrees would need to pass at least 72 credits. Students earning the joint degrees must pass a joint oral examination after passing required courses and completing internship credits in both programs. Students interested in the joint degree program should consult with the Director of the Public History Program and the Director of the Master of Public Administration Program.

Students may earn a graduate minor in History by passing the following courses: Craft of History, one readings seminar from among History 590, 591, 592, and 593, and two additional 3-credit 500-and-above courses, for a total of 12 graduate credits.

Graduate students in History must maintain a 3.0 grade point average in their History courses. A graduate student earning a C or lower grade in one History course will receive a letter of warning. A graduate student earning two or more C or lower grades in History courses or whose History grade point average falls below 3.0 will be removed from the History graduate program. Students must earn at least one B or higher grade in a seminar during their first year in the graduate program, and must take at least one seminar during each year in which they are enrolled in the program. If a graduate student receives one U (Unsatisfactory) grade on his/her thesis or internship, the student will receive a written warning, and if a student received two or more U grades on his/her thesis or internship, the student will be removed from the program.

HISTORY

HIST 453. Cuba: Colony to Castro 3 cr.
Economic, social, and political development of Cuba and other colonies and nations in the Caribbean with emphasis on recent events.

HIST 455. Brazil 3 cr.
Economic, social, and political development of Brazil since independence. The influence of Brazil in the international arena.

HIST 459. Peru: From Incas to Inca Kola 3 cr.
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Same as ANTH 459 and GOVT 465.

HIST 471. China through the Ming Dynasty 3 cr.
History of China from origins to Ming dynasty, (1368-1644). Cultural and political development with emphasis on social and economic contexts and long term trends.

HIST 472. China in the Modern World 3 cr.
History of China from seventeenth through twentieth centuries. Rise and fall of the Manchu Qing dynasty, internal dynamics of social and political change in nineteenth and twentieth centuries, impact of Western Imperialism, and development of the Peoples Republic since 1949.

HIST 473. History of Japan 3 cr.
History of Japan through twentieth century. Political and cultural developments and their social and economic contexts. Chinese influence on early Japan, rise of Samurai and Shogunate, impact of Western Imperialism, and emergence of modern Japan.

HIST 474. Gender in East Asian History 3 cr.
Examines the position of women and the social roles of both sexes in traditional China and Japan, and traces the changing role of women in those societies in the course of modernization in the last century and a half. Scholarly literature and works of Chinese and Japanese literature in translation and cinema used. Same as W S 474.

HIST 475. History of the Global Political Economy 3 cr.
Traces development of global systems of economic interaction and the rise of European military and political dominance in the 18th and 19th centuries. Emphasis on East and South Asian roles in early modern history, and on challenges to European dominance in the 20th and 21st centuries.

HIST 479. Oral History 3 cr.
Oral history through readings, discussions, and interviews. Seminar project required that includes an interview and transcript.

HIST 481. Time Traveling Through New Mexico’s Past 3 cr.
Teaches historians and educators how to make history come alive. Semester project includes role playing characters and activities from a past era with local schools and museums.

HIST 483. Historic Preservation 3 cr.
Study of community development, the historic preservation movement, and the built environment. Field project.

HIST 484. Historical Editing, Theory and Practice 3 cr.
Readings in historical editing. Projects in editing at the university archives. Includes editing papers and helping to produce a scholarly journal.

HIST 486. Interpreting Historic Places for the Public 3 cr.
Explores historic site interpretation, the scholarship and philosophy of historic interpretation, and the nature of heritage interpretation for historic places.

HIST 489. Projects in History 3 cr.
Individual projects in history. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

HIST 500. Special Topics 1-9 cr.
Specific subjects to be announced in the Schedule of Classes. Graduate research paper required. May be repeated for a maximum of 12 credits.

HIST 502. Revolutionary America, 1763-1800 3 cr.
Development and consequences of the American Revolution, Articles of Confederation, Constitution, and Federalist period. Graduate research paper required.

HIST 503. The Jacksonian Era, 1800-1840 3 cr.
Jeffersonian period, War of 1812. Social, political, and economic history of the Jacksonian era. Graduate research paper required.

HIST 504. Civil War Era, 1840-1877 3 cr.
Mexican-American War, development of secession, American Civil War, Reconstruction. Graduate research paper required.

HIST 505. Progressive United States, 1877-1920 3 cr.
Gilded Age through end of World War I. Emphasis on Populist movement, progressive reform, the impacts of industrialization, imperialist expansion, and World War I.

Roaring Twenties through Eisenhower presidency. Emphasis on the Great Depression, Roosevelt’s New Deal, World War II, origins of the Cold War, and impact of the postwar baby boom. Research paper required.

HIST 508. Environmental History 3 cr.
Seminar discusses how the natural environment and people have shaped each other, and how people have perceived and imagined the natural world. May focus upon one specific topic or area. Course includes a field trip outside regular class times.

HIST 509. Native American History 3 cr.
Seminar explores the history of Native Americans, including tribal conflicts, interactions with Europeans, and Euro-Americans, land loss, degradation of natural resources, federal Indian policy, pan-Indian movements, cultural resistance and revitalization, and modern tribal economies.

HIST 510. New Mexico History for Educators 3 cr.
Course provides advanced content and innovative techniques for teachers of New Mexico history. Covers pre-contact Native American history through Spanish Colonial and Mexican periods through the twentieth century.

HIST 511. Making the American West 3 cr.
Development of the American West from 1803 to 1900, with emphasis on conquest, federal and corporate roles in western development, environmental change, and the mythic West. Includes extra class meetings to view feature-length films. Graduate research paper required.

HIST 516. History of Latinos in the United States 3 cr.
Development of Latino communities since 1500 in what is today the United States. Emphasis on 1846 to present, and on Mexican Americans, Puerto Ricans, and Cuban Americans. Major themes: race, colonialism, immigration, nationalism, class, culture, gender, and politics. Graduate research paper required.

HIST 518. From the Wild West to the Atomic West 3 cr.
Explores the transformation of the West, with particular attention to the roles of race, class, gender, and culture. Includes extra class meetings to view feature-length films. Graduate research paper required.

HIST 520. History of Women and Gender 3 cr.
Seminar discusses the position of women and the roles of both sexes in specific historical and geographic settings. Course emphasizes the ways in which women and gender were both central to and fundamentally affected by all political and social transformations in history.

HIST 521. U. S. Foreign Relations to 1919 3 cr.
Foreign relations from colonial origins through World War I. Emphasis on diplomacy of the Founding Fathers, the continental expansion, and the United States rise to world power.
HIST 522. U.S. Foreign Relations since 1919  3 cr.
Foreign relations from the conclusion of World War I to the present. Emphasis on isolationism, World War II, Soviet-American relations, Vietnam, and new challenges in a multipolar world.

HIST 524. Art, Thought and Literature  3 cr.
Seminar discusses a variety of artistic and literary expressions in their historical contexts and focuses on the ways in which cultural forms both reflect and construct the broader historical trends that surround them.

HIST 525. History of Magic and Witchcraft in Medieval and Renaissance Europe  3 cr.
Examines history of popular and scientific beliefs about magic and witchcraft in medieval and early modern Europe. Includes origins of occult Western sciences; Arabic sources of medieval magic; the occult sciences in scholasticism; witchcraft and scholasticism; witchcraft and medieval theology; witch hunts of the 16th and 17th centuries; and the decline of belief in magic and witchcraft. Emphasis on boundaries that defined and separated magic, science, and religion in Western thought from late antiquity through the Scientific Revolution. Prerequisite: HIST 101G.

HIST 526. Social and Cultural History  3 cr.
Seminar discussions focus on methodological approaches to social and cultural history in specific historical and geographical contexts. Includes such themes as historical demography, family structure, class formation, and popular culture.

HIST 527. Labor History  3 cr.
Seminar discussions explore labor and working-class history, including such topics as pre-industrial labor, slavery, debt peonage, indentured servitude, and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues.

HIST 528. History of Terrorism in Modern Europe and the Middle East  3 cr.
Advanced analyses of causes, methods, and consequences of terrorism in Europe and the Middle East from the Reign of Terror in the French Revolution to Al-Qaeda, Hamas, and Hezbollah in the contemporary Middle East and beyond.

Explores how the natural environment influenced human actions, decisions, and cultural and social development from the colonial period to the present; how people reshaped and reordered the natural environment; and how people perceived or imagined the natural world. Graduate research paper required.

HIST 530. Antiquity and Modernity  3 cr.
Seminar explores link between earlier and more recent historical periods. Examples may include the Renaissance rediscovery of ancient Rome or the early Chinese reassessment of its classical Confucian heritage. Readings include ancient sources and the modern reception of such works, and the scholarly assessment of these processes. Individual research projects required in areas of student interests.

HIST 531. The Scientific Revolution  3 cr.
Seminar discussions explore scientific thought and practice and technological change in specific historical contexts. Focus will be on the impact of science and technology on society, the development of scientific institutions, and the political and cultural context of science and technology.

HIST 535. War and Revolution  3 cr.
Seminar covers historical dynamics of violent social, political and economic transitions. May focus upon a particular war or upheaval, such as World War II or the French Revolution, or may examine more generic characteristics of conflict and radical change across many historical examples. Extensive readings in scholarly literature. Research projects relating to specific course contents.

HIST 536. Nations and Nationalism  3 cr.
Seminar examines major theories of nationalism from the nineteenth to the twenty-first centuries. Course includes nationalist case studies, from liberal nationalist state-building to ethnic cleansing in the Balkans.

HIST 537. Empire and Colonialism  3 cr.
Seminar covers the rise and fall of imperial and colonial systems. May examine the history of the British Empire, the rise of Russian and Chinese imperial orders in Central Asia, Spanish colonies in the New World, or other specific case studies, or may consider comparative patterns and narratives of imperial, colonial and post-colonial experiences. Readings include primary and secondary sources. Individual research projects required.

HIST 538. Special Topics in European History  3 cr.
Advanced special topics in European history to be announced in the schedule of classes. May be repeated for a maximum of 12 credits.

HIST 539. Twentieth Century Science  3 cr.
The development of science after 1900. Emphasis will be placed on the “second scientific revolution” in physics and on the emergence of genetics and molecular biology.

HIST 540. Special Topics in Middle Eastern History  3 cr.
Advanced special topics in Middle Eastern history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 541. Intellectual History of Modern Europe  3 cr.
Culture and ideas in Europe from 1600 to the present, from the Scientific Revolution to Postmodernism, including ideas and their expression in science, art, literature, and politics. Graduate research paper required.

HIST 542. Art and Life in Renaissance Italy  3 cr.
Examines how Italian Renaissance textual and visual culture offered Europe new ways of seeing and portraying itself, 1350-1550. Topics include: Florence, Venice, Rome, Leonardo, Michelangelo, Titian, humanism, the Medici, and republican and courtly culture. Same as ART 542.

HIST 543. Special Topics in Asian History  3 cr.
Advanced special topics in Asian history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 544. Special Topics in Latin American History  3 cr.
Advanced special topics in Latin American history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 545. Special Topics in United States History  3 cr.
Advanced special topics in United States history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 546. World War I  3 cr.
Cultural, social, and intellectual background and impact of World War I. Military and diplomatic events of the war. Consequences of the war. Graduate research paper required.

HIST 547. World War II  3 cr.
Social, cultural and political aspects of World War II, in addition to traditional military events. Emphasis on U.S. involvement. Graduate research paper required.

HIST 548. Nuclear Nation  3 cr.
Explores post-World War II history and the impact that atomic energy has had on the United States and the world.

HIST 549. Graduate Readings  1-3 cr.
Individual study of selected readings and problems. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

Covers U.S.-Latin American relations during the nineteenth and twentieth centuries. Assesses interactions between the United States and other nations in the Americas, surveys U.S. interventions in the region, and appraises social challenges facing the Americas as a whole.

HIST 551. Colonial Mexico  3 cr.
Political, economic, and social development from the Aztecs to 1821. Graduate research paper required.

HIST 552. Modern Mexico  3 cr.
From independence to the present, with emphasis on the Revolution. Graduate research paper required.

HIST 553. Cuba: Colony to Castro  3 cr.
Economic, social, and political development of Cuba and other colonies and nations in the Caribbean, with emphasis on recent events. Graduate research paper required.

HIST 555. Brazil  3 cr.
Economic, social, and political development of Brazil since independence. The influence of Brazil in the international arena. Graduate research paper required.

HIST 557. The Mexican Revolution  3 cr.
Origins, causes, and scope of the Mexican Revolution, including leading personalities, with emphasis on the U.S.-Mexican border. Graduate research paper required.

HIST 559. Peru: From Incas to Inca Kola  3 cr.
Crosslisted with: ANTH 559 and GOVT 559

HIST 560. History of Egypt  3 cr.
Advanced study of history of Egypt from ancient through modern times. Includes the study of Egypt’s interactions with the Middle East and the West, as well as its legacy for both civilizations.
HIST 561. Islam and the West: Cultural Contacts, Conflicts and Exchanges 3 cr.
Examines interactions, encounters and cross-fertilization between the Islamic world and the West from the seventh to the twenty-first centuries. Course includes origins of Islam, relationships between Islam, Judaism, and Christianity, and concludes with the post 9/11 present. Prerequisites: C or higher grade in HIST 221G or HIST 222 or HIST 461; or enrollment in one of these courses at the same time as enrollment in HIST 561.

HIST 563. Nineteenth Century Europe 3 cr.
Rise of Europe to a position of economic and political dominance in the world from the French Revolution to World War 1.

HIST 564. Twentieth Century Europe 3 cr.
Course will address the foremost events, personalities, developments and ideas which marked the European continent during the twentieth century.

HIST 565. Cold War Europe 3 cr.
Course deals with the Cold War’s multipolar international climate as well as the individual paths charted by each European nation in response. Events, leaders, thinkers, ideas and developments will all be featured. Crosslisted with GOVT 565.

HIST 566. British Imperialism 3 cr.
Survey of the activities of the British empire from the 16th century through the 20th century, with emphasis on Ireland, North America and India. Assesses the impact of imperial activities on British domestic politics, culture and social history, and the process and impact of decolonization.

HIST 567. Race and Ethnicity 3 cr.
Seminar explores the historical social construction of race and ethnicity, and their relationship to other systems of social difference such as class and gender. Course will examine popular and academic theories of race and ethnicity as well as historical concrete effects of racial and ethnic differences in society.

HIST 568. Urban History 3 cr.
Seminar discusses cities as complex catalysts for cultural, political, and scientific development, both within cities themselves and more broadly for their nations and regions. Course deals with such topics as the relationship between social organization and physical space; city development, morphology and dynamics; and the cultural and intellectual history of cities.

HIST 569. History of Religion and Spirituality 3 cr.
Seminar examines religion and spirituality in a variety of historical settings. Includes formal religious institutions, popular religion, and heterodoxy. Introduces students to competing theories of religion.

HIST 570. The Cold War in Latin America 3 cr.
Seminar discusses Latin American political history during the Cold War. Course focuses on how Latin Americans (individuals, parties, militaries, states) acted in an increasingly politicized arena defined by growing United States concerns over Cuban and Soviet influence in the area.

HIST 571. China through the Ming Dynasty 3 cr.
History of China from origins to Ming Dynasty, 1368-1644. Cultural and political development with emphasis on social and economic contexts and long term trends. Research paper required.

HIST 572. China in the Modern World 3 cr.
Covers the history of China from 17th through 20th centuries. Rise and fall of the Manchu Qing dynasty, internal dynamics of social and political change in the 19th and 20th centuries, impact of Western imperialism, and development of the Peoples Republic since 1949. Research paper required.

HIST 573. History of Japan 3 cr.
Covers the history of Japan through the 20th century. Political and cultural developments and their social and economic contexts. Chinese influence on early Japan, rise of Samurai and Shogunate, impact of Western imperialism and the emergence of modern Japan. Research paper required.

HIST 574. Gender in East Asian History 3 cr. (3+2P)
Examines the position of women and the social roles of both sexes in traditional China and Japan, and traces the changes taking place in those societies in the course of modernization in the last century and a half. Scholarly literature and works of Chinese and Japanese literature (in translation) and cinema used. Same as W S 574.

HIST 575. History of the Global Political Economy 3 cr.
Traces development of global systems of economic interaction and the rise of European dominance in the 18th and 19th centuries. Emphasis on East and South Asian roles in early modern history, and on challenges to European dominance in the 20th and 21st centuries.

HIST 576. The Holocaust 3 cr.
Advanced study of the attack on European Jews by Adolf Hitler and the National Socialist Party in Germany and occupied Europe from his accession as chancellor in 1933 until the end of the Third Reich in 1945.

HIST 577. Early Russia 3 cr.
Domestic affairs and international relations from the rise of the Kievan state to the mid-nineteenth century.

HIST 578. Modern Russia 3 cr.
Domestic policies and international relations from the mid-nineteenth century to the present with emphasis on the Soviet experience.

HIST 579. Oral History 3 cr.
Oral history through readings, discussion, and interviews. Course project required that includes an interview and transcription.

HIST 580. Graduate Research Projects 1-6 cr.
Intensive investigation of a selected area of history, including the completion of a research paper or a public history project. Consent of instructor required.

HIST 581. Time Traveling Through New Mexico’s Past 3 cr.
Instructs historians and educators on how to make history come alive. Semester project includes role playing characters and activities from a past era with local schools and museums.

HIST 582. History and Memory 3 cr.
Seminar examines the interplay of memory and history. Explores how various nations and people construct the narratives of their past.

HIST 583. Advanced Historic Preservation 3 cr.
Covers the community development, the historic preservation movement, and the built environment. Field project and additional graduate work.

HIST 584. Advanced Historical Editing: Theory and Practice 3 cr.
Readings and projects in historical editing at the NMSU Archives. Includes editing papers and helping to produce a scholarly journal.

HIST 585. Public History Internship 3 cr.
Individual project in an area of public history, including a final written report. Research project required. Prerequisite: consent of instructor. May be repeated for a maximum of 9 credits.

HIST 586. Interpreting Historic Places for the Public 3 cr.
Advanced study of historic site interpretation, the scholarship and philosophy of historic interpretation, and the nature of heritage interpretation for historic places.

HIST 587. United States Labor History to 1877 3 cr.
Seminar discussions explore United States labor and working-class history to 1877, including such topics as pre-industrial and industrial labor, slavery, debt peonage, indentured servitude and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 588. United States Labor History since 1877 3 cr.
Seminar discussions explore United States labor and working-class history since 1877, including such topics as pre-industrial and industrial labor, slavery, debt peonage, indentured servitude and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 590. Reading Seminar: Borders, Boundaries and Frontiers 3 cr.
Explores questions and issues concerning different kinds of borders, boundaries and frontiers. Introduces relevant theoretical literature and considers specific places and times through case studies, including U.S.- Mexico border. Restricted to students in HIST program.

HIST 591. Reading Seminar: Modernity and its Discontents 3 cr.
Examines the problem of modernization and the meaning of becoming and being modern, including positive and negative effects on individuals, cultures, environments and societies.

HIST 592. Reading Seminar: Nature and Society 3 cr.
Considers how humans and nature have reshaped each other, how people have perceived nature, how different cultures have understood their relationships to nature, and how social groups and nations have struggled over natural resources. Takes a comparative, transnational approach.

HIST 593. Reading Seminar: History, Myth and Memory 3 cr.
Course analyzes the complex and often contested process of writing national histories, creating national heroes, and forging collective memories. Students assess written texts, memorials, parades and celebrations.

HIST 594. Public History Seminar 3 cr.
Introduction to the discipline of public history, including its methodology and literature. Fieldwork is required.

HIST 595. Research Seminar, Oral History 3 cr.
Research seminar in oral history. Covers techniques, interpretation and use of oral interviewing techniques of historical writing and documentation.
HIST 597. Public History Article 1-9 cr.  
Researching and writing an article suitable for publication about a 
student’s public history internship or other topic of interest within the field of 
public history.

HIST 598. Craft of History: Historical Theories, Methods, and Criticism (f) 3 cr.  
Introduction to historical theories, methodologies, criticism, and skills 
essential to graduate study in history. Required for all history graduate 
students; restricted to history majors.

HIST 599. Master’s Thesis 0-88 cr.  
Thesis.

DEGREE: Doctor of Philosophy

MAJOR: Mathematics

Faculty: Annie Selden, Ph.D. (Clarkson)– mathematics education; John Selden, 
senior faculty (Charles University)– topology; T. Wang, Ph.D. (Windsor)– mathematical statistics. Associated 
Faculty: S. Salamanca-Riba, Ph.D. (M.I.T.)– Lie groups and representation theory; R. 
Bezhanishvili, Ph.D. (Tokyo Institute of Technology)– logic; M. S. Cohen, Ph.D. (Chicago)– mathematical biology, mathematical physics; R. 
DeBiasio, Ph.D. (MIT)– Probability; L. Fouil, Ph.D. (Purdue)– commutative algebra; T. Giorgi, Ph.D. (Purdue)– applied mathematics; J. Harding, Ph.D. (McMaster)– logic and foundations; D. Kurtz, Ph.D. (Rutgers)– harmonic analysis; G. 
Lodder, Ph.D. (Stanford)– algebraic topology; P. Morandi, Ph.D. (California–San 
Diego)– algebra; B. Olberding, Ph.D. (Wesleyan)– commutative algebra, valuation 
theory and module theory; D. Ramras, Ph.D. (Stanford)– algebraic topology, 
S. Salamanka-Riba, Ph.D. (M.I.T.)– Lie groups and representation theory; R. 
Smith, Ph.D. (Purdue)– probability, harmonic analysis; R. Stafford, Ph.D. (California–Berkeley)– algebraic topology, T. Stanford, Ph.D. (Columbia)– low dimensional topology, T. Wang, Ph.D. (Windsor)– mathematical statistics. Associated 
Faculty. Annie Selden, Ph.D. (Clarke)– mathematics education, John Selden, 
Ph.D. (Georgia)– mathematics education.

DEGREE: Master of Science

MAJOR: Mathematics

Minimum Requirements for the Master's Degree

1. Three credits of an upper-division required course.
2. The student must complete, transfer, or challenge MATH 525, MATH 527, 
MATH 528, and MATH 581.
3. In addition, 6 of the 24 Math credits must be from the following list of 
courses: Algebra (MATH 525, 527), Complex Analysis (MATH 591, 592), Differential 
equations (MATH 531, 532), Logic and Foundations (MATH 585, 586), Probability and Statistics (STAT 562, 571), Real Analysis (MATH 593, 594) and Topology (MATH 541, 542).
4. At most 6 credits of individual study courses such as MATH 540 may be 
used to fulfill the course requirement.
5. MATH 511 through 516, and MATH 563 through 569 may not be used to 
fulfill any of these requirements.
6. The student’s program of study must be approved by the departmental 
Graduate Studies Committee.
7. The student must successfully complete a final master’s examination.

The Master’s Final Examination

The Master’s final examination is an oral examination administered by the 
student’s committee and covers the student’s coursework. The student’s 
committee consists of at least three departmental members and a Graduate faculty 
member from another department who serves as the Dean’s representative. 
If the student has a minor area of study, then a member must come from the 
minor department. The examination is restricted to course work presented in the 
student’s program of studies. When a master’s thesis has been written, the 
master’s final exam will be in part an oral defense of the thesis and in part a general 
examination of the candidate’s course work. The oral exam must be completed 
at least 10 days prior to the end of the semester in which the candidate wishes 
to receive the degree.

DEGREE: Doctor of Philosophy

MAJOR: Mathematics

Candidates for the Ph.D. degree in the Department of Mathematical Sciences must pass a qualifying examination, three comprehensive written 
examinations, a basic mathematical reading knowledge test in a language other 
than English, a comprehensive oral examination, a series of courses, and a final
oral doctoral thesis examination. These are briefly described below. For more information, see the Graduate School requirements in this catalog, and the Mathematics Graduate Student handbook at www.math.nmsu.edu.

Qualifying examination: Every student admitted to the Ph.D. program must complete the Ph.D. oral qualifying examination. Its purpose is to determine the areas in which the student shows strength or weakness, as well as the ability to assimilate subject matter presented at the graduate level. Students who complete their mathematics master’s degree at NMSU may request, at the time of applying for their master’s oral final examination, that the Master’s examination also fulfill the Ph.D. qualifying examination requirement. In all other cases, towards the end of the student’s first semester in the Ph.D. program, the student and his or her advisor will convene an oral examination with three examiners, the examiners being the advisor and some of the student’s current or past instructors. As a result of the qualifying examination, the department will take one of the following actions: (1) admit the student to further work toward the Ph.D.; (2) require that the student’s program be limited to a Master’s degree; (3) recommend a reevaluation of the student’s progress after the lapse of one semester; or (4) recommend a discontinuation of the student’s graduate program in mathematics.

Written comprehensive examinations: Candidates for the Ph.D. degree must pass written comprehensive examinations in three of the seven areas of algebra, complex analysis, differential equations, logic and foundations, real analysis, statistics, and topology. To ensure adequate breadth, a combination of three comprehensive examinations must include real analysis, and at least one of algebra and topology.

The seven examinations are based on the following comprehensive examination sequence courses: Algebra (MATH 525, MATH 581, MATH 582), Complex Analysis (MATH 517, MATH 591, MATH 592), Differential Equations (MATH 518, MATH 531, MATH 532), Logic and Foundations (MATH 504, MATH 557, MATH 593), Real Analysis (MATH 527, MATH 529, MATH 592, MATH 594), Probability and Statistics (STAT 592, STAT 571), and Topology (MATH 541, MATH 542).

Full-time students should complete the comprehensive written exams in the first two years. Those who have not made substantial progress towards completion of their written exams at the start of the fifth semester may be removed from the program. Students who have not completed the written exams by the start of the sixth semester will normally have no departmental funding revoked.

Exams are offered every August and January. A student must register to take exams in the semester prior to taking the exams. A student has three consecutive examination periods to complete the written comprehensive exam requirements (Example: if s/he starts in August, s/he has the August, January and August examination periods to complete the exams). This does not extend the time limit mentioned above. Students will normally not be given more than two attempts at any one exam.

Course requirements: Before graduation, a student must pass a total of four comprehensive exam sequences, but needs to take the comprehensive examinations in only three of them. In addition, a student must pass four more (one-semester) MATH/STAT courses from the seven comprehensive exam sequences listed above.

A student may pass any of the four comprehensive examination sequences before enrolling as a Ph.D. student, but the four additional courses have to be passed after enrolling as a Ph.D. student.

The following courses will not count towards the course requirements: Any course below MATH 501, 511 through 516, and MATH 562 through 569, MATH/STAT 540, MATH/STAT 598, MATH 620, MATH 690.

Students and advisors are encouraged to consider further courses beyond this minimum.

Foreign language examination: The department requires that each Ph.D. student pass a basic mathematical reading knowledge exam in a language, other than English, relevant to the student’s research interests. This exam is coordinated by the student’s advisor and consists of the open-dictionary written translation into English of a mathematical text of interest to the student. The language requirement must be fulfilled prior to the oral part of the Ph.D. comprehensive examination.

Oral Comprehensive Exam: The student must take this exam at the end of the semester after completing the written comprehensive exams. The student should present a proposed direction for thesis work.

Final Oral Exam: This should be an exam over the student’s thesis and administered by the same committee of the oral comprehensive exam.

### Mathematics

**MATH 451. Introduction to Differential Geometry** 3 cr.
Applies calculus to curves and surfaces in three dimensional Euclidean space. Prerequisites: MATH 280 and MATH 391, or consent of instructor.

**MATH 452. Foundations of Geometry** 3 cr.
Topics in projective, axiomatic Euclidean or non-Euclidean geometries. Prerequisite(s): C or better in MATH 331 or MATH 332. Restricted to: Main campus only.

**MATH 453. Introduction to Topology** 3 cr.
Introduction to topological spaces and metric spaces, with connections to analysis, geometry, and the classification of surfaces. Prerequisite: MATH 332 or consent of instructor.

**MATH 454. Mathematical Logic** 3 cr.
Propositional calculus and the first order predicate calculus, including Gödel’s completeness theorem for the latter, and additional topics at the option of the instructor. Prerequisite(s): C or better in MATH 331 or MATH 332, or consent of instructor.

**MATH 455. Elementary Number Theory** 3 cr.
Covers primes, congruences and related topics. Prerequisite: grade of C or better in MATH 331 or consent of instructor.

**MATH 457. Applications of Modern Algebra** 3 cr.
Topics may include coding theory, cryptography, graph theory, or symmetry groups. May be repeated up to 9 credits. Prerequisite(s): C or better in MATH 331 or consent of instructor.

**MATH 459. Survey of Geometry** 3 cr.
Basic concepts of Euclidean geometry, ruler and compass constructions. May include topics in non-Euclidean geometry. For non-math majors. Prerequisite(s): C or better in MATH 331 or MATH 332. Restricted to: Main campus only.

**MATH 466. Lattice Theory** 3 cr.
Introduction to partially ordered sets, distributive, modular, and Boolean lattices. Prerequisites: MATH 330 or MATH 331 or MATH 332 or consent of instructor.

**MATH 471. Complex Variables** 3 cr.
A first course in complex function theory, with emphasis on applications. Prerequisite: MATH 391 or both MATH 392 and MATH 291G.

**MATH 472. Fourier Series and Boundary Value Problems** 3 cr.
Fourier series and methods of solution of the boundary value problems of applied mathematics. Prerequisite: MATH 392.

**MATH 473. Calculus of Variations and Optimal Control** 3 cr.
Euler’s equations, conditions for extrema, direct methods, dynamic programming, and the Pontryagin maximal principle. Prerequisite: MATH 392.

**MATH 475. Business Applications** 3 cr.
Taught with MATH 375 with additional work. Does not fulfill requirements for degrees in mathematics. Prerequisite(s): C or better in MATH 142G, or in MATH 191G, or in MATH 235.

**MATH 480. Matrix Theory and Applied Linear Algebra** 3 cr.
An application driven course, whose topics include rectangular systems, matrix algebra, vector spaces and linear transformations, inner products, and eigenvalues and eigenvectors. Applications may include LU factorization, least squares, data compression, QR factorization, singular value decomposition, and search engines. Prerequisite(s): C or better in any 300-level course with a MATH or STAT prefix.

**MATH 481. Advanced Linear Algebra** 3 cr.
Rigorous treatment of vector spaces and linear transformations including canonical forms, spectral theory, inner product spaces and related topics. Prerequisite: grade of C or better in MATH 331.

**MATH 491. Introduction to Real Analysis I** 3 cr.
Rigorous discussion of the topics introduced in calculus. Sequences, series, limits, continuity, differentiation. Prerequisite: grade of C or better in MATH 332 or consent of instructor.

**MATH 492. Introduction to Real Analysis II** 3 cr.
Continuation of MATH 491. Integration, metric spaces and selected topics. Prerequisite: MATH 491 or consent of instructor.

**MATH 498. Directed Reading** 1-6 cr.
May be repeated for a maximum of 6 credits. Graded S/U.

**MATH 501. Introduction to Differential Geometry** 3 cr.
Same as MATH 451 with additional work for graduate students.

**MATH 502. Foundations of Geometry** 3 cr.
Same as MATH 452 with additional assignments for graduate students.

**MATH 503. Introduction to Topology** 3 cr.
Same as MATH 453 with additional work for graduate students.
MATH 667. From Measurement to Geometry 3 cr.
The progression from Measurement to Geometry in the K-12 curriculum as a concrete-to abstract progression. Important concepts such as angle, length, and area progress from concrete, measurable situations to more abstract problems which require reasoning and proof. Does not fulfill requirements for degrees in mathematics. Consent of instructor required. Prerequisite(s): Admission into the MC2-LIFT program.

MATH 688. Using Number Throughout the Curriculum 3 cr.
Understand number concepts more deeply by seeing many examples of those concepts applied in other content strands. Develop mathematical knowledge and understanding to build a repertoire of ways for students to practice and review basic number skills and concepts as part of later, more advanced courses. Does not fulfill requirements for degrees in mathematics. Consent of instructor required. Prerequisite(s): Admission into the MC2-LIFT program.

MATH 699. Geometry with Connections 3 cr.
Connections between Geometry and other K-12 curriculum strands, especially Algebra and Probability / Data Analysis. Address key attributes of geometric concepts by considering their connections within and across grade levels. Does not fulfill requirements for degrees in mathematics. Consent of instructor required. Prerequisite(s): Admission into the MC2-LIFT program.

MATH 577. Numerical Analysis I 3 cr.
Topics may include interpolation, differential equations, nonlinear equations, optimization. Prerequisites: MATH 480 and 527, or consent of instructor.

MATH 681. Algebra I 3 cr.
Examines groups, commutative rings, solvability of polynomials, Galois theory, ruler and compass constructions. Prerequisite/corequisite: MATH 525.

MATH 682. Algebra II 3 cr.
Group actions, fundamental theorem of finite Abelian groups, Sylow theorems, solvable groups, noncommutative rings, Noetherian rings, unique factorization domains, modules, tensor products. Prerequisite: MATH 581.

MATH 568. Introduction to Commutative Algebra and Algebraic Geometry 3 cr.
Introduction to the basic notions and techniques of modern algebraic geometry, including the necessary commutative algebra foundation. Topics likely to include algebraic and projective varieties, Nullstellensatz, morphisms, rational ?and regular functions, local properties. Other topics may include Noether normalization, dimension theory, Torsion, schemes, Grobner bases. May be repeated to up to 9 credits. Prerequisite(s): MATH 581 or consent of instructor.

MATH 584. Representation Theory 3 cr.
Topics from representation theory of finite or infinite groups. Prerequisite: consent of instructor. May be repeated for a maximum of 3 credits.

MATH 585. Universal Algebra 3 cr.
Universal algebra and category theory. Theorems of Birkhoff and Tarski relating equational classes, free algebras and their construction through homomorphisms, subalgebras and products. Topics from model theory, sheaf theory and representation by subdirect products. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

MATH 586. Nonlinear Dynamics I 3 cr.
Same as PHYS 586.

MATH 591. Complex Analysis I 3 cr.
Rigorous treatment of complex differentiation and integration, properties of analytic functions, series and Cauchy’s integral representations. Prerequisites: MATH 517 and MATH 528, or consent of instructor.

MATH 592. Complex Analysis II 3 cr.
Harmonic functions, product representations, conformal mappings, Riemann’s mapping theorem, Riemann surfaces, and selected other topics. Prerequisite: MATH 581 or consent of instructor.

MATH 593. Measure and Integration 3 cr.
Measure spaces, measurable functions, extension and decomposition theorems for measures, integration on measure spaces, absolute continuity, iterated integrals. Prerequisite: MATH 528 or consent of instructor.

MATH 594. Real Analysis 3 cr.
Differentiation, Lp spaces, Banach spaces, measure and topology, other selected topics. Prerequisite: MATH 593.

MATH 599. Master’s Thesis 0-98 cr.
Admittance. Prerequisite(s): Admission.

MATH 600. Doctoral Research 1-98 cr.

MATH 601. Special Topics 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated for unlimited credit with approval of the department.

MATH 643. Topology III 3 cr.
Topics may include higher homotopy groups, fibrations, cohomology operations and obstruction theory, spectral sequences, or others chosen by instructor. Prerequisites: MATH 542 or consent of instructor. May be repeated for a maximum of 9 credits.

MATH 649. Applications of Tensor Analysis Same as PHYS 649.

MATH 655. Topics in Differential Geometry 3 cr.
Representation theory of Lie groups, Riemannian geometry, or another topic chosen by instructor. Content varies. Prerequisite: MATH 555 or consent of instructor. May be repeated for a maximum of 9 credits.

MATH 663. Homological Algebra 3 cr.
Basic topics in homological algebra and category theory. Prerequisite: MATH 542 or MATH 582 or consent of instructor. May be repeated for a maximum of 9 credits.

MATH 666. Nonlinear Dynamics II 3 cr.
Same as PHYS 666.

MATH 695. Introduction to Functional Analysis I 3 cr.
Banach spaces. The three basic principles: uniform boundedness principle, closed graph/open mapping theorems, Hahn-Banach theorem. Prerequisites: MATH 541 and MATH 594, or consent of instructor.

MATH 592. Complex Analysis I 3 cr.
Continuation of MATH 695. Topics selected from topological vector spaces, Hilbert space, spectral theory, Banach algebras, and distribution theory. Prerequisite: MATH 695 or consent of instructor.

MATH 698. Selected Topics 1-98 cr.
Selected topics.

MATH 700. Doctoral Dissertation 1-98 cr.

STATISTICS

Basic probability distributions including binomial, normal; random variables, expectation; laws of large numbers; central limit theorem. Prerequisites: MATH 2910 and at least one 300-level Math course.

Point and interval estimation; sufficiency; hypothesis testing; regression; analysis of variance; chi-square tests. Prerequisite: STAT 470.

Same as STAT 470 with additional work for graduate students.

Same as STAT 480 with additional work for graduate students.

STAT 535. Elementary Stochastic Processes 3 cr.
Markov chains, Poisson processes, Brownian motion, branching processes, and queuing processes, with applications to the physical, biological, and social sciences. Prerequisite: STAT 515 or consent of instructor.

STAT 540. Directed Reading 1-6 cr.
Prerequisite: consent of instructor and graduate committee. May be repeated for a maximum of 6 credits. Graded S/U.

STAT 562. Foundations of Probability 3 cr.
Probability spaces, expectation and conditional expectation, limit theorems and laws of large numbers. Prerequisite: MATH 593.

STAT 571. Continuous Multivariate Analysis 3 cr.
Theory and applications of the multivariate normal distribution. Prerequisites: MATH 480 and STAT 525, or consent of instructor.

STAT 572. Linear Models 3 cr.
Theory of regression, analysis of variance, analysis of covariance in various linear models. Prerequisite: STAT 571.

Testing hypotheses, probability and sufficiency, uniformly most powerful tests, unbiasedness, invariance, and minimax principle. Prerequisite: STAT 526 or consent of instructor.

STAT 582. Advanced Theory of Statistics II 3 cr.
Estimation of parameters; unbiased estimators; equivariance; Bayes properties; large sample theory and optimality. Prerequisite: STAT 581 or consent of instructor.

STAT 596. Special Research Problems 1-3 cr.
Individual investigations or consulting programs. Maximum of 3 credits.
THE MOLECULAR BIOLOGY PROGRAM

Students of the molecular life sciences seek to reduce complex biological processes to a set of understandable molecular or chemical structure and function relationships. Integration of this knowledge into the context of complex living tissues interacting with the environment is the ultimate goal. This requires that the expertise from many diverse traditional disciplines be directed along converging experimental lines. The Ph.D. program in molecular biology is designed to facilitate an interdisciplinary approach to graduate research, utilizing both traditional techniques and the latest advances in biotechnology, including the extraordinary power of recombinant DNA methodology. Participants in this program will take core courses in biochemistry, molecular biology and cell biology. Subsequent course work will be tailored for the individual student, depending upon his or her research emphasis. Participation in regular seminar programs will be expected to provide students with the widest possible scientific background. Financial aid, in the form of a limited number of MB teaching and research assistantships, is available on a competitive basis. Research Assistantships may also be available from individual faculty within the Molecular Biology (MB) program. Only the most competitive students are admitted with assistantship support.

The MB program offers curricula leading to the M.S. and Ph.D. degrees in the areas of biochemistry, molecular genetics, molecular biology, cell biology, bioinformatics, and microbiology. Admission to the MB Program without deficiency is based on an undergraduate program essentially equivalent to that pursued by an undergraduate major in chemistry, biology, agronomy, horticulture, biochemistry, or microbiology at this university. An entering student is required to complete the Graduate Record Examination (General Aptitude). Undergraduate deficiency courses must be passed with a minimum grade of B.

Applicants are strongly encouraged to contact at least three individual program faculty before applying to identify a prospective advisor and laboratory in which to pursue graduate research. Previous course records and GPA standings (typically minimum of 3.3/4.0), GRE scores (typically minimum of 300 combined verbal and quantitative), TOEFL scores of foreign applicants (typically minimum of 550 on the paper-based or 213 on the computer-based), a letter of interest from the applicant that identified faculty laboratories of interest, and three letters of reference regarding research performance or potential are weighted heavily during the selection process.

Students with a B.S. degree in one of the disciplines listed above can expect to earn the M.S. degree in about 30 credits, including at least 6 credits of thesis research. The Ph.D. degree can be earned in about 30 to 40 credits of formal course work, plus additional thesis research credits, for a minimum total of 75 credits beyond the B.S. Because research is central in both the M.S. and Ph.D. curricula, early selection of a research advisor is required. Ph.D. degree candidates will successfully complete a written and oral qualifying examination based on their proposed research and the subject matter in the core courses at the end of the second year of study. A final, formal presentation and oral defense of the original research documented in the M.S. or Ph.D. thesis completes the degree requirements.

The Molecular Biology program also offers formal minors in molecular biology or bioinformatics. The molecular biology minor consists of 10 credit hours including MOLB 545, either MOLB 530 or MOLB 542, any of the tier II courses, and one MOLB 580 seminar. The bioinformatics minor is jointy offered with the Department of Computer Science and Molecular Biology curricula. Please inquire with the Molecular Biology Program office for the most recent requirements for the bioinformatics minor.

Phase I Core Courses:
MOLB/BIOL 520, Molecular Cell Biology
MOLB/BCHE 542, Biochemistry I
MOLB/BCHE 545, Molecular and Biochemical Genetics

Molecular Biology Tier II Courses (at least 9 credits):
AGRO/HORT 506, Plant Genetics
AGRO 516, Molecular Analysis of Complex Traits
AGRO / HORT 531, Plant Physiology: Growth and Development
AGRO/HORT 685, Plant Genetic Engineering
ANSC 602, Advanced Reproductive Physiology
ANSC 602L, Molecular Techniques in Reproductive Physiology
MOLB 546. Biochemistry II        3 cr.
MOLB 590. Discussions in Molecular Biology        1 cr.
MOLB 545. Molecular and Biochemical Genetics        3 cr.
MOLB 542. Biochemistry I        3 cr.
MOLB 452. Independent Studies in Bioinformatics        1-3 cr.
MOLB 520. Molecular Cell Biology        3 cr.
MOLB 546. Biochemistry II        3 cr.
MOLB 547. Physical Biochemistry
BCH 548. Proteins and Enzymes
BIOL 451. Physiology of Microorganisms
BIOL 470. Developmental Biology
BIOL 474. Immunology
BIOL 475. Virology
BIOL 477. Applied and Environmental Microbiology
BIOL 478. Molecular Biology of Microorganisms
BIOL 482. Microbial Systemsatics
BIOL 490. Neurobiology
BIOL 523. Mechanisms of Microbial Pathogenicity
BIOL 541. Professional Development Seminar
BIOL 541. Advanced Genetic Aspects of Population Biology
BIOL 550. Molecular Biology Aspects of Population Biology
BIOL 550. Genomics Techniques in Life Science - Dr. Xu
BIOL 550. Bioinformatics Applications & Databases - Dr. Xu
BIOL 577. Advanced Topics Environmental Microbiology
BIOL 590. Advanced Neurobiology
BIOL 698. Special Topics
CHEM 516. Physical Organic Chemistry
CHEM 517. Synthetic Organic Chemistry
EPVS 486. Plant Virology
MOLB/AGRO/HORT 506, Plant Genetics
MOLB 530. Plant Physiology: Metabolism
MOLB 546/ BCH 546, Biochemistry II
MOLB 550. Topics in Molecular Biology
MOLB 571. Molecular and Cellular Mycology
MOLB 650. Advanced Topics in Molecular Biology
TOX 461, Toxicology I
WLSC 488, Conservation Genetics

Other Course Requirements
A ST 505, Statistical Inference I or equivalent course
MOLB 590, Discussions in Molecular Biology
MOLB 597, Laboratory Rotations/Research Discussions
MOLB 599, (6 Thesis Research Credits)
PHIL 540, Ethics or equivalent course
MS candidates must enroll for 6 credits MOLB 599, Master’s Thesis. May register for additional credits to maintain full-time status

MOLECULAR BIOLOGY AND RESEARCH COURSES
MOLB 450. Special Topics in Molecular and Cellular Biology        1-3 cr.
Selected topics of current interest in the fields of molecular and cellular biology. Specific topics announced in the Schedule of Classes. May be repeated for a maximum of 6 credits.
MOLB 452. Independent Studies in Bioinformatics        1-3 cr.
Individual investigation, theoretical or experimental, in bioinformatics or computational applications under the supervision of a molecular biology or computation science faculty member. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.
MOLB 520. Molecular Cell Biology        3 cr.
Same as BIOL 520.
MOLB 542. Biochemistry I        3 cr.
Same as BCH 542. B or better required.
MOLB 545. Molecular and Biochemical Genetics        3 cr.
Same as BCH 545 and BIOL 545.
MOLB 546. Biochemistry II        3 cr.
Same as BCH 546.
MOLB 550. Topics in Molecular Biology        1-3 cr.
Selected topics of current interest in field of molecular biology for masters level students.
MOLB 590. Discussions in Molecular Biology        1 cr.
Oral presentations of ongoing research and/or research proposal for the masters thesis. Must be repeated twice for masters and three times for doctoral students. Graded by 2 options: S/U or Letter Grade
MOLB 597. Laboratory Rotations/Research Discussions        1-3 cr.
All entering students are required to take at least one credit, during their first semester, in which they will circulate through at least three different labs working on assigned problems and discussing research programs. May be repeated for a maximum of 4 credits. Graded S/U.
MOLB 598. Special Research Programs        1-3 cr.
Individual investigation, experimental or theoretical, under the supervision of a molecular biology faculty member. Course may be repeated up to a total of 6 credits with committee approval.
MOLB 599. Master’s Thesis        0-8 cr.
Experimental and scholarly research leading to the preparation of a master’s thesis.
MOLB 600. Molecular Biology Research        1-8 cr.
Laboratory research efforts prior to successful completion of doctoral comprehensive exam.
MOLB 650. Advanced Topics in Molecular Biology        1-3 cr.
Discussions and lectures on topics of current interest in molecular biology for doctoral students.
MOLB 698. Advanced Research Projects        1-9 cr.
Individualized special research assignments for doctoral-level students. Up to 9 credits, with approval of committee. Graded S/U.
MOLB 700. Doctoral Dissertation Research        0-8 cr.
Research for doctoral students after completing comprehensive exams.

MUSIC

Department website: http://music.nmsu.edu
(575) 646-2421
music@nmsu.edu

L. Chaffin, department head, Ph.D. (Texas Tech)– theory, composition; L. Borchert, D.M.A. (Florida State)—clarinet, theory, history, F. Bugbee, D.M.A. (Eastman School of Music)—percussion, music history; C. Hughes, D.M.A. (Univ. of Colorado)—Director of Bands, music education; A. Kaplan, Ph.D. (NYU Manhattan School of Music)—low brass; J. Martinez-Rios, M.M. (Western Michigan)—viola, theory; J. Shearer, D.M.A. (Eastman School of Music)—performance, literature, and history; L. Spitzer, D.M.A. (USC)—piano, theory, history; R. Taylor, D.M.A./Arizona—saxophone, theory

DEGREE: Master of Music
The Master of Music degree is offered in the following fields: Conducting, Music Education and Performance. Applicants are expected to have an undergraduate degree in music or music education equivalent to that represented by the B.M. or B.M.E. degree from New Mexico State University. The music department does not require the Graduate Record Exam, but does expect each applicant to possess graduate-level language and writing skills. An audition, either in person or by recording, is required for entrance into the Performance or Conducting programs. Auditions will be based upon, but not limited to, prescribed repertory. (Contact the Music Department for details).

Course Requirements
Master of Music in Conducting (33 credits):
MUS 471, Graduate Theory Review* .................................................................3
MUS 477, Graduate History Review** ..............................................................3
MUS 527, History and Analysis of the Symphony ............................................3
Music Theory .................................................................................................3
Music History and Literature ..........................................................................3
Conducting ......................................................................................................9
MUS 450, Research Methods ..........................................................................3
MUS 580, Ensemble Performance .................................................................2
MUS 540, Recital and Analytical Paper ............................................................4

Master of Music in Performance (33 credits):
MUS 471, Graduate Theory Review* .............................................................3
MUS 477, Graduate History Review** ...........................................................3
Music Theory ..................................................................................................3
Music History and Literature .........................................................................3
Applied ...........................................................................................................8
Pedagogy and Literature ................................................................. 4
MUS 450, Research Methods ....................................................... 3
MUS 580, Ensemble Performance .................................................. 2
MUS 540, Recital and Analytical Paper ......................................... 4

Master of Music in Music Education (31 credits):
MUS 471, Graduate Theory Review* ........................................... 3
MUS 477, Graduate History Review** ......................................... 3
Music Theory .............................................................................. 3
Music History and Literature ....................................................... 3
Music Education ........................................................................ 9
Approved Elective ...................................................................... 3
MUS 450, Research Methods ....................................................... 3
MUS 598 or 599, Thesis or Project .............................................. 4

Students must make the grade of B or better in a course for it to count toward degree completion.

*Students must make a B or better in MUS 471 before taking additional music theory courses.

**Students must make a B or better in MUS 477 before taking additional music history courses.

Recital Requirements for Performance and Conducting
A graduate recital plus an analytical paper are required of all candidates in Performance and Conducting. Students must be enrolled in their applied area during the semester the recital is given. A minimum of 60 minutes of music is required for all Performance recitals. A minimum of three major works for the appropriate ensemble is required for all Conducting recitals. The recital may only be given after at least 6 hours of graduate applied or conducting courses have been successfully completed.

Program of Study and Committee Selection
After admission, each student must successfully complete MUS 471 before subsequent enrollment in other music theory courses. He or she must also successfully complete MUS 477 before subsequent enrollment in other music history courses.

During the first semester of study, a tentative Program of Study is planned, documented and filed by the student in consultation with the advisor in his or her major field. The Program of Study is subject to approval by the Music Department Head and the Graduate Music Committee. The student will also select, in consultation with his or her advisor, an advisory committee consisting of the advisor, and two additional faculty members.

Candidacy
In order to qualify for candidacy the student (except those in the online Music Education program) must meet the Graduate School requirement of 12 credits of graduate work in residence and must show evidence of a satisfactory quality of work in the required courses, demonstrate the desired progress in his or her performance area and, where required, submit a recital program, thesis topic, or project proposal for approval.

Thesis
A thesis is optional in Music Education and is encouraged for students considering completion of a terminal degree. Music Education candidates not writing a thesis must develop and complete an approved project before the oral examination.

Final Examination
All Master of Music candidates must take a final comprehensive oral examination. The final oral examination may not be scheduled until the graduate recital (with analytical paper) is completed or a final draft of the Music Education project or thesis has been approved by the candidate’s advisor.

Fees
Fees, in addition to tuition, will be assessed for all applied hours and recitals. Consult the Music Department for details.

MUSIC
MUS 450, Research Methods ....................................................... 3 cr.
Introduction to methodology of music research. Emphasis on important scholarly resources and academic writing. Prerequisite: consent of instructor. Restricted to majors. Main campus only. No S/U option.

MUS 451. Orchestra II ................................................................. 1 cr.
Las Cruces Symphony at NMSU, a full symphony orchestra concentrating on masterworks of the literature. Students must assume a leadership role. Consent of Instructor required.

MUS 455. Music Business Internship ......................................... 3 cr.
Capstone course for the Music Business degree. Working with the music business coordinator, students must have been accepted as an intern in a music business setting before enrolling. Credit given for the internship based on criteria developed for each placement. Prerequisites: MUS 330 and piano proficiency. Restricted to majors. Traditional Grading with RR.

MUS 456. Composition III ......................................................... 2 cr.
Emphasis on extended compositional techniques, serialization, and modern counterpoint. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.

MUS 466. Composition IV .......................................................... 2 cr.
New music notation and techniques. Open forms, aleatory concepts. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.

MUS 470. Special Topics III ......................................................... 1-3 cr.
Designed for highly motivated students. Independent study and individual guidance. May be taken for unlimited credit.

MUS 471. Graduate Theory Review ........................................... 3 cr.
Comprehensive and accelerated study of modes, diatonic harmony, and classical form in the common practice period. Restricted to: Music majors. Traditional Grading with RR.

MUS 475. Intermediate Conducting .......................................... 3 cr.
Essential conducting technique in preparation for advanced study. Prerequisite: consent of instructor.

MUS 476. Music Cultures of the World: History and Criticism ....... 3 cr.
Listening, criticism, and analysis of musical cultures around the world. Emphasis on non-Western musical traditions and folk music of the world. Open to all majors.

MUS 477. Graduate Music History Review ................................ 3 cr.
Comprehensive and accelerated study of music history from antiquity to the present Restricted to: Music majors. Traditional Grading with RR.

MUS 486. Applied Music Pedagogy and Literature II ................. 2 cr.
Methods, materials, problems, literature, and techniques in teaching individual lessons. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.

MUS 498. Independent Study ..................................................... 1-3 cr.
For students with a strong musical background wishing to explore content beyond the traditional curriculum. Prerequisite: consent of instructor. Restricted to majors. May be repeated for a maximum of 6 credits.

MUS 511. Survey of Traditional Harmony .................................. 3 cr.
Tonal harmony in common practice and theory of the late 17th, 18th, and early 19th centuries. Prerequisite(s): A grade of B or better in MUS 471. Restricted to: Music majors. Traditional Grading with RR.

MUS 513. Twentieth Century Art Music ..................................... 3 cr.
Analytical techniques, structural design and compositional materials from Debussy to the Minimalist school in historical context. Prerequisite(s): A grade of B or better in MUS 471. Restricted to: Music majors.

MUS 514. Advanced Composition ............................................ 3 cr.
Original composition in 20th century idioms. Prerequisite: MUS 466.

MUS 518. Seminar in Music Theory .......................................... 3 cr.
Varying topics in Music Theory, providing a more specific and in-depth study of the particular topic. May be repeated up to 6 credits. Prerequisite(s): A grade of B or better in MUS 471. Restricted to: Music majors.

MUS 519. Seminar in Music History .......................................... 3 cr.
Varying topics in Music History, providing a more specific and in-depth study of the particular topic. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.

MUS 520. Music of the Middle Ages and Renaissance: History and Literature ......................................................... 3 cr.
An overview of the music of the Middle Ages and Renaissance with an emphasis on history and literature.

An overview of the music of the Baroque Era with an emphasis on history and literature.

An overview of the music of the Classical era with an emphasis on history and literature.

MUS 527. History and Analysis of the Symphony 3 cr.

MUS 528. The Symphony in Historical Context 3 cr.

MUS 529. Opera and Music Drama 3 cr. (3+1P)

MUS 531. Music in Elementary Schools 3 cr.

MUS 535. Current Issues in Music Education 3 cr.

MUS 537. Advanced Wind Conducting I 3 cr.

MUS 538. Advanced Wind Conducting II 3 cr.

MUS 540. Graduate Recital/Analytical Paper 4 cr.

MUS 546 or 480, Statistical Mechanics or Thermodynamics 3 cr.

MUS 576. Advanced Wind Conducting I 3 cr.

MUS 577. Advanced Wind Conducting II 3 cr.

MUS 578. Applied Music Pedagogy and Literature III 2 cr.

MUS 582. Applied Music 2-4 cr.

MUS 583. Applied Music 2-4 cr.

MUS 584 or 480, Statistical Mechanics or Thermodynamics 3 cr.

MUS 585. Applied Music Pedagogy and Literature III 2 cr.

MUS 586. Supervised Studio Teaching 2 cr.

MUS 588. Special Research Programs 1-4 cr.

MUS 599. Master’s Thesis 0-88 cr.

DEGREE: Master of Science
MAJOR: Physics

CONCENTRATION: Space Physics

DEGREE: Doctor of Philosophy
MAJOR: Physics

MINOR: Physics

The Department of Physics offers programs in many areas of emphasis leading to the M.S. and Ph.D. degrees. Admission to these programs is competitive and selection of applicants is based on undergraduate and/or previous graduate grade-point averages, performance on the Graduate Record Examination, other evidence of prior academic and research accomplishments submitted by the applicant, and references, as well as matching of the applicant’s research interests to the Department’s research activities, as described by the student’s statement of purpose, in the case of applicants for the doctoral program.

The M.S. in Physics with a concentration in Space Physics program provides students with a strong foundation in physics with an intensive focus on space physics. Graduate study in space physics at the master’s level prepares graduates for continued and specialized study toward the doctorate program in space-related fields as well as for challenges they will confront in space industrial and government settings.

All degree-seeking graduate students must satisfy the relevant Graduate School requirements, pass a qualifying examination based on undergraduate physics courses at the 400 level, successfully complete a 3-credit, 500-level laboratory, and demonstrate or develop knowledge of computer programming. Additional course requirements are described below; courses taken S/U may not be used to satisfy any of the degree requirements, including the lab requirement for Master’s and Ph.D. students.

For the master’s degree, students must also successfully complete or transfer at least 30 course credits and pass a final oral examination or the doctoral comprehensive examination. Of these 30 credits, at least 21 must be in physics/geophysics, at most 3 may be for individual study or other informal courses, at most 6 may be for a thesis, and at most 9 may be numbered between 450 and 499. A master’s thesis is optional.

For the master’s degree with a concentration in Space Physics, students must successfully complete the following physics core and specialized courses:

PHYS 480 or 593, Experimental Nuclear Physics or Advanced Experimental Nuclear Physics 3 cr.

PHYS 511 or 495, Mathematical Method of Physics I 3 cr.

PHYS 497 or 507, Plasma Physics 3 cr.

PHYS 551, Classical Mechanics 3 cr.

PHYS 554 or 454, Quantum Mechanics I or Intermediate Modern Physics I 3 cr.

PHYS 561 or 461, Electromagnetic Theory I or Intermediate Electricity and Magnetism I 3 cr.

PHYS 584 or 480, Statistical Mechanics or Thermodynamics 3 cr.

In addition, all physics M.S. students with a concentration in Space Physics must take a minimum of three elective courses in their specialization from the following list:

ASTR 535, Observational Techniques I 3 cr.

ASTR 575, Computational Astrophysics 3 cr.

ASTR 620, Planetary Science I 3 cr.

ASTR 698, Special Topics: Solar Physics and Space Weather 3 cr.

EE 480, Space System Mission Design and Analysis 3 cr.

GPHY 540, Physics of the Earth and Planetary Interiors 3 cr.

Physics Department website: http://physics.nmsu.edu/

S. Zollner, department head, Ph.D. (Stuttgart)—experimental condensed matter and applied physics; V. Papavassiliou, graduate program director, Ph.D. (Yale)—nuclear and particle physics; R. L. Armstrong, Ph.D. (Johns Hopkins)—optics and laser physics; C. W. Bruce, Ph.D. (New Mexico State)—applied optics; M. Burkard, Ph.D. (Erlangen)—theoretical nuclear and particle physics; M. DeHantson, Ph.D. (New Mexico State)—applied optics; M. Engelhardt, Ph.D. (Erlangen)—computational nuclear and particle physics; W. R. Gibbs, Ph.D. (Rice)—theoretical nuclear physics; G. H. Goedecke, Ph.D. (Rensselaer)—theoretical physics, optics; T. M. Hearn, Ph.D. (Cal Tech)—seismic tomography, seismology; Stephen Kanin, Ph.D. (University of Washington)—Physics Education, K. Kiefer, Ph.D. (Michigan)—computational condensed matter physics, mineral physics; G. S. Kyle, Ph.D. (Minnesota)—nuclear and particle physics; H. Nakotte, Ph.D. (Amsterdam)—materials science, neutron scattering; J. N. Ph.D. (Cornell)—geophysics, seismology; S. F. Pate, Ph.D. (Pennsylvania)—nuclear and particle physics; J. Urquidi, Ph.D. (Texas Tech)—materials science, neutron and X-ray scattering; I. Vasiliev, Ph.D. (Minnesota)—computational materials science; Xiaorong Wang, Ph.D. (Hua-zhong Normal)—nuclear and particle physics.
Introduction to quantum mechanics, focusing on the role of angular momentum and symmetries, with application to many atomic and subatomic systems. Specific topics include intrinsic spin, matrix representation of wave functions and observables, time evolution, and motion in one dimension. Prerequisite(s): PHYS 315. Pre/Corequisite(s): MATH 392 and PHYS 296.

PHYS 452. Intermediate Modern Physics II 3 cr.
Continuation of subject matter of PHYS 454. Specific topics include rotation and translation in three dimensions, solution of central potential problems, perturbation theory, physics of identical particles, scattering theory, and the interaction between photons and atoms. Prerequisite(s): PHYS 454.

PHYS 461. Intermediate Electricity and Magnetism I 3 cr.
Covers electro- and magneto-statics, dielectric and magnetic materials, electromagnetic wave propagation, reflection, refraction, waveguides, radiating systems, interference and diffraction, Newtonian and relativistic electrodynamics and plasma physics. Prerequisite(s): PHYS 214 or PHYS 216G or equivalent and MATH 291G. Pre/Corequisite(s): MATH 392 and PHYS 296.

PHYS 462. Intermediate Electricity and Magnetism II 3 cr.
Continuation of topics in PHYS 461. Prerequisites: PHYS 461. Main campus only.

PHYS 471. Modern Experimental Optics 2-3 cr.
Advanced laboratory experiments in optics related to the material presented in PHYS 473. Crosslisted with: E E 471. Prerequisite(s)/Corequisite(s): PHYS 473.

PHYS 472. Non-Linear Optical and Laser Physics 3 cr.
An introduction to the physics of non-linear optical processes primarily involving the interaction of intense laser radiation with matter. Topics include elements of laser physics, harmonic generation, stimulated Rayleigh, Raman, and Brillouin scattering, self-focusing and optical phase conjugation.

PHYS 473. Introduction to Optics 3 cr.
The nature of light, Geometrical optics, basic optical instruments, wave optics, aberrations, polarization, and diffraction. Elements of optical metrology, lasers and fiber optics. Prerequisite(s): PHYS 216G or PHYS 217. Crosslisted with: E E 473

PHYS 475. Advanced Physics Laboratory 0-3 cr.
Advanced undergraduate laboratory involving experiments in atomic, molecular, nuclear, and condensed-matter physics. Prerequisite: PHYS 315 and 315L.

PHYS 476. Computational Physics 3 cr.
An introduction to finite difference methods, Fourier expansions, Fourier integrals, solution of differential equations, Monte Carlo calculations, and application to advanced physics problems. Prerequisite(s): PHYS 150 or equivalent and MATH 392.

PHYS 477. Fiber Optic Communication Systems 4 cr. (3+3P)
See E E 477 Prerequisite(s): C or better in E E 315 or PHYS 461. Crosslisted with: E E 477

PHYS 478. Optical Sources, Detectors, and Radiometry 4 cr. (3+3P)
See E E 478 Prerequisite(s): PHYS 217. Crosslisted with: E E 478

PHYS 479. Lasers and Applications 4 cr. (3+3P)
See E E 479 Prerequisite(s): C or better in E E 315 or in PHYS 461. Crosslisted with: E E 479

PHYS 480. Thermodynamics 3 cr.
Thermodynamics and statistical mechanics. Basic concepts of temperature, heat, entropy, equilibrium, reversible and irreversible processes. Applications to solids, liquids, and gases. Prerequisites: PHYS 217, PHYS 315 and MATH 291G.

PHYS 485. Independent Study 1-3 cr.
Individual analytical or laboratory studies directed by a faculty member. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

PHYS 488. Condensed Matter Physics 3 cr.
Crystal structure, X-ray diffraction, energy band theory, phonons, cohesive energy, conductivities, specific heats, p-n junctions, defects, surfaces, and magnetic, optical, and low-temperature properties. Prerequisite: PHYS 315.

PHYS 497. Research and Development 1 cr.
Basic research and development in the department. Prerequisite: permission of the instructor.

PHYS 498. Introduction to Modern Materials 3 cr.
Structure and mechanical, thermal, electric, and magnetic properties of materials. Modern experimental techniques for the study of material properties. Prerequisite: PHYS 315.
PHYS 491. High Energy Physics I        3 cr.
Nuclear interactions at high energies. Grand unification. Super symmetry.
Prerequisite(s): PHYS 455.

PHYS 483. Experimental Nuclear Physics        3 cr. (1+6P)
Selected experimental investigations in nuclear physics such as measurement of radioactivity, absorption of radiation, nuclear spectrometry.
Prerequisite(s): PHYS 315 and PHYS 315L.

PHYS 495. Mathematical Methods of Physics I        3 cr.
Applications of mathematics to experimental and theoretical physics. Topics selected from: complex variables; special functions; numerical analysis; Fourier series and transforms, Laplace transforms.
Prerequisite(s): MATH 392 and PHYS 295.

PHYS 487. Space Plasma Physics        3 cr.
Properties of plasmas, especially those in the heliosphere such as the solar wind, planetary magnetospheres and ionospheres, cosmic rays, and the Sun. Topics include both independent-particle and fluid descriptions of plasmas such as magnetohydrodynamics, the solar cycle and solar flares, planetary magnetic substorms and aurorae, Van Allen radiation belts, shocks in the solar wind, and wave propagation in plasmas.
Prerequisite(s): PHYS 461 or E E 351) and MATH 392.

PHYS 500. Special Topics Seminar        1-2 cr.
Treatment of topics not covered by regular courses. Graded S/U. May be repeated.

PHYS 508. Physics for Educators        3 cr.
Assists K-12 teachers in developing pedagogy in physics. Addresses New Mexico benchmarks and standards.

PHYS 511. Mathematical Methods of Physics I        3 cr.
Same as PHYS 495. Additional work required at a more advanced level.

PHYS 520. Selected Topics        1-3 cr.
Formal treatment of graduate-level topics not covered in regular courses.
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration. May be repeated for a maximum of 9 credits.

PHYS 521. Individual Study        1-3 cr.
Individual analytical or laboratory studies directed by a faculty member.
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration. May be repeated for a maximum of 6 credits.

PHYS 527. Fiber Optic Communication Systems        4 cr. (3+3P)
Same as E E 527 Crosslisted with: E E 527

PHYS 528. Optical Sources, Detectors, and Radiometry        4 cr. (3+3P)
Same as E E 528 Crosslisted with: E E 528

PHYS 529. Lasers and Applications        4 cr. (3+3P)
Same as E E 529 Crosslisted with: E E 529

PHYS 551. Classical Mechanics        3 cr.
Lagrangian and Hamiltonian formulation of dynamics. Advanced treatments of most topics listed under PHYS 451, plus canonical transformations and Hamilton-Jacobi theory. PHYS 451 strongly recommended.

PHYS 554. Quantum Mechanics I        3 cr.

PHYS 555. Quantum Mechanics II        3 cr.
Continuation of topics in PHYS 554. Prerequisites: PHYS 554 or consent of instructor.

PHYS 561. Electromagnetic Theory I        3 cr.
Detailed advanced treatments of most topics listed under PHYS 461, PHYS 462, plus multiple radiation, collisions of charged particles and bremsstrahlung, scattering, and radiation reaction. PHYS 461 and PHYS 462 strongly recommended.

PHYS 562. Electromagnetic Theory II        3 cr.
Continuation of topics in PHYS 561. Prerequisites: PHYS 561 or consent of instructor.

PHYS 571. Advanced Experimental Optics        2 cr.
Taught with PHYS 471 with additional work required at the graduate level. Consent of Instructor required. Prerequisite(s)/Corequisite(s): PHYS 573.

PHYS 572. Advanced Nonlinear Optical and Laser Physics        3 cr.
Same as PHYS 472 with differentiated assignments for graduate students.

PHYS 575. Advanced Physics Laboratory        0-3 cr.
Selected experiments in atomic, molecular, nuclear and condensed-matter physics.

PHYS 576. Advanced Computational Physics I        3 cr.
Advanced treatment of topics listed under PHYS 476, plus additional required work. Applications of numerical methods to complex physical systems. Recommended knowledge of Fortran or C, and MATH 377 or MATH 392. Same as PHYS 476, but additional work required.

PHYS 577. Fourier Methods in Electro-Optics        3 cr.
Same as E E 577 Crosslisted with: E E 577

PHYS 578. Optical System Design        3 cr.
See E E 578 Crosslisted with: E E 578

PHYS 580. Laser Detection Techniques        3 cr.
Fundamentals of laser detection. Laser radar sensing (LIDAR), laser induced fluorescence, raman scattering, opto-galvanic spectroscopy, opto-acoustic spectroscopy, and other common laser detection techniques. Recommended preparation is PHYS 478 and PHYS 479 or equivalent.

PHYS 584. Statistical Mechanics        3 cr.

PHYS 588. Advanced Condensed Matter Physics        3 cr.
Same as PHYS 488, but additional work required. Prerequisite: PHYS 554 or consent of instructor.

PHYS 589. Modern Materials        3 cr.
Same as PHYS 489 with differentiated assignments for graduate students. Prerequisite: PHYS 554 or consent of instructor.

PHYS 591. Advanced High-Energy Physics I        3 cr.
Taught with PHYS 491 with additional work required at the graduate level. Prerequisite(s): PHYS 555 or consent of instructor.

PHYS 592. Advanced High-Energy Physics II        3 cr.
Continuation of topics in PHYS 591 Prerequisite(s): PHYS 591.

PHYS 593. Advanced Experimental Nuclear Physics        3 cr. (1+6P)
Advanced experimental investigation of topics such as measurement of radioactivity, absorption of radiation, and nuclear spectrometry.

PHYS 597. Advanced Space Plasma Physics        3 cr.
Same as PHYS 497 but with added requirements.

PHYS 599. Master’s Thesis        0-88 cr.
Thesis.

PHYS 600. Research        1-88 cr.
Doctoral research. May be repeated.

PHYS 620. Advanced Topics in Physics        1-3 cr.
Advanced formal treatment of topics not covered in regular courses. Prerequisite: consent of instructor. May be repeated for a maximum of 9 credits.

PHYS 649. Application of Tensor Analysis        3 cr.
Introduction to tensor analysis, Gaussian differential geometry, and Riemannian geometry. Working knowledge of vector methods is assumed and numerous physical applications in electrodynamics and special relativity are included. Course is intended to cover the tensor-theoretic preliminaries for PHYS 650. Prerequisite(s): PHYS 511 or PHYS 561 or consent of instructor. Crosslisted with: MATH 649

PHYS 650. General Relativity I        3 cr.
Basic foundations and principles of general relativity, derivation of the Einstein field equations and their consequences, the linearized theory, the Bel-Petrov classification of the curvature tensor, derivation of the Schwarzschild solution and the four basic tests of general relativity.
Prerequisite(s): PHYS 511 or PHYS 561 or consent of instructor.

PHYS 659. Independent Study        1-3 cr.
Individual analytical or laboratory studies directed by a faculty member. Prerequisite: graduate standing or consent of instructor. May be repeated for a maximum of 6 credits.

PHYS 688. Advanced Condensed Matter Physics II        3 cr.
Continuation of the advanced condensed matter physics presented in PHYS 588. Topics include electronic structure methods, optical, magnetic, and transport properties of solids, semiconductors, crystalline defects, nanostructures, and noncrystalline solids. Prerequisite(s): PHYS 588.

PHYS 688. Advanced Modern Materials        3 cr.
Advanced topics in the physics of modern materials, such as crystalline, amorphous, polymeric, nanocrystalline, layered, and composite materials and their surfaces and interfaces. Prerequisites: PHYS 555, PHYS 588, or consent of instructor.
PHYS 561. Quantum Field Theory I 3 cr.
- Path integrals, gauge invariance, relativistic quantum mechanics, canonical quantization, relativistic quantum field theory, introduction to QED.
- Prerequisites: PHYS 555 and PHYS 562, or consent of instructor.

PHYS 562. Quantum Field Theory II 3 cr.
- QED, running coupling constant, QCD, electroweak theory, asymptotic freedom, deep inelastic scattering, basic QCD phenomenology, path integrals in quantum field theory, lattice QCD.
- Prerequisite: PHYS 561 or consent of instructor.

PHYS 700. Doctoral Dissertation 0-88 cr.
- Dissertation.

GEOPHYSICS

GPHY 450. Selected Topics 1-3 cr.
- Readings, discussions, lectures or laboratory studies of selected areas of geophysics. Prerequisite: consent of instructor. May be repeated for a maximum of 12 credits.

GPHY 500. Special Topics Seminar 1-2 cr.
- Supervised study of selected topics not covered by regular courses.

GPHY 510. Geophysical Field Methods 1-3 cr. (3P)
- Field collection, reduction, and interpretation of geophysical data; equipment operation.

GPHY 520. Selected Topics 1-3 cr.
- Formal treatment of graduate topics not covered in regular courses. Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration. May be repeated for unlimited credit.

GPHY 530. Seismology 3 cr.
- Seismic wave propagation in a layered earth, ray theory, exploration techniques, earth structure, and seismicity. Prerequisites: PHYS 511, MATH 472, or equivalent.

- Prerequisites: consent of instructor.

GPHY 560. Applied Inverse Theory 3 cr.
- Inversion of data with an emphasis on geophysical problems. Curve fitting, tomography, earthquake location, overdetermined and underdetermined problems, linear and nonlinear problems. Computing experience desirable.
- Prerequisite(s): Either MATH 280, equivalent, or consent of instructor.

GPHY 588. Special Research Problems 1-3 cr.
- Individual investigations, either analytical or experimental. May be repeated for unlimited credit.

GPHY 598. Master's Thesis 0-88 cr.
- Thesis.

GPHY 620. Advanced Topics in Geophysics 3 cr.
- Advanced formal treatment of a topic or topics not covered in regular courses. Prerequisite: consent of instructor. May be repeated for unlimited credit.

GPHY 621. Special Topics Seminar 1-3 cr.
- Seminar treatments of advanced special topics in geophysics. Prerequisite: consent of instructor. May be repeated for unlimited credit.

GPHY 630. Theoretical Seismology I 3 cr.
- Advanced treatment of wave propagation, ray theory, inversion methods, extension to heterogeneous media, and free oscillations. Prerequisite(s): GPHY 530.

GPHY 700. Doctoral Dissertation 0-88 cr.
- Dissertation.

PSYCHOLOGY

DEGREE: Master of Arts
MAJOR: Psychology

DEGREE: Doctor of Philosophy
MAJOR: Psychology

MINOR: Psychology

ADMISSION

The Department of Psychology offers graduate work leading to the Master of Arts and Doctor of Philosophy degrees. To maximize consideration for admission, candidates should submit applications by January 1. Note that the Psychology Department does not offer training in counseling or clinical psychology.

Students will be admitted to graduate study on the basis of their potential for achievement in research, scholarship, and teaching. The most promising applicants will be accepted. Because the number of students that the department can successfully accommodate is limited, it will not always be possible to admit all qualified applicants. The admissions committee will consider any material that a candidate for admission wishes to present. Application forms and instructions are available here: http://prospective.nmsu.edu/graduate/apply/index.html. The minimum application consists of the following:

1. A completed Graduate School admission application.
2. Two letters of recommendation. Those letters of recommendation should be from individuals who are qualified to evaluate your potential for graduate work.
3. Three letters of recommendation from professors, employers, or others qualified to evaluate your potential for graduate work.
4. A curriculum vitae or resume.
5. A personal statement explaining how graduate work at NMSU fits your educational and career goals, and, an indication of the faculty members whose work is of particular interest to you.

Students with bachelor degrees should apply for admittance to the master’s program even if their eventual goal is a Ph.D. Students with a master’s degree in psychology-related disciplines or from other institutions may apply directly to the Ph.D. program. Admission to the doctoral program is frequently made conditional upon one or more of the following: completion of a research thesis, completion of either course work or qualifying exams in three of the core course areas; and completion of either course work or qualifying exams in masters-level quantitative methods.

A number of potential minors are available to interested students, including a minor in statistics. Additional information about a minor may be found in the listing of the home department in this catalog.

DEGREE: Master of Arts
MAJOR: Psychology

The department offers an M.A. degree in general experimental psychology. The program provides students with sufficient electives to emphasize a particular sub-area of experimental psychology. The program is designed to
provide graduates with the tools and knowledge necessary for further training at the doctoral level or for employment in industry or government. Students are required to: (1) complete a first-year research project; (2) complete three of the nine core courses (perception, learning, biopsychology, cognitive neuroscience, cognitive, developmental, engineering or human performance, history & systems, or social); (3) take three required courses in quantitative skills; and (4) complete a research thesis. Students should also register for one credit of Research Seminar (PSY 590) each semester.

**DEGREE: Doctor of Philosophy**

**MAJOR: Psychology**

The Ph.D. in psychology is offered in the major areas of cognitive, engineering, and social psychology. Ph.D. candidates are required to: (1) complete four of the nine core courses (perception, learning, biopsychology, cognitive neuroscience, cognitive, developmental, engineering or human performance, history and systems, or social), at least one which must be the basic course from one of our three programs, viz. cognitive, engineering, or social psychology; (2) complete three required courses in quantitative skills, plus a minimum of 6 additional credits in methods/statistics; (3) pass comprehensive written and oral exams in their area (cognitive, engineering, or social); (4) pass a final oral examination that consists primarily of an evaluation of the dissertation and the candidate’s defense of it, but may extend over the entire field of the candidate’s study, and (5) complete a work-related training requirement (i.e. complete an internship of at least 3 months duration OR teach at least one 3-credit undergraduate course independently; pre-teaching requirements listed on psych.nmsu.edu. Students should also register for one credit of Research Seminar (PSY 590) each semester.

**MINOR: PSYCHOLOGY**

Students may earn a minor in psychology at the M.A. or Ph.D. level by completing three of the nine core courses (perception, learning, biopsychology, cognitive neuroscience, cognitive, development, engineering or human performance, history & systems, or social), at least one which must be the basic course from one of our three programs, viz. cognitive, engineering, or social psychology.

**PSYCHOLOGY**

**PSY 450. Senior Thesis** 3 cr.
A laboratory or field research project conducted under faculty supervision. Requires written research proposal, conduct of research, data analysis, and final written report. Prerequisites: PSY 319, 6 additional psychology credits, consent of supervising faculty member, and junior or above standing. May be repeated for a maximum of 6 credits.

**PSY 470. Special Topics** 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

**PSY 501. Introduction to Psycholinguistics** 3 cr.
Introduction to graduate studies in psycholinguistics. Psychological aspects of language; linguistic theories of grammar, psychological factors influencing language performance, primary language acquisition and the relationship of language to thought processes. Same as LING 501.

**PSY 507. Quantitative Methods in Psychology I** 3 cr.
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Prerequisite: An elementary statistics course or consent of instructor.

**PSY 508. Quantitative Methods in Psychology II** 3 cr.
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Prerequisite: PSY 507 or equivalent.

**PSY 509. Quantitative Methods in Psychology III** 3 cr.
Statistical concepts emphasizing distributions and methods most appropriate to the data, models in psychology. Prerequisite: PSY 507 or equivalent.

**PSY 510. Computer Methodology** 3 cr.
Use of computers in psychological research with emphasis on developing experimental control programs.

**PSY 520. Learning** 3 cr.
Classical areas of learning, including instrumental and classical conditioning paradigms, habituation, reinforcement variables, stimulus generalization and transfer, and memory.

**PSY 522. Sensation and Perception** 3 cr.
Stimulus and decision variables in judging auditory and visual events. Topics include: detection of signals; signal intensity versus perceived strength; size, shape, and movement perception; reading and listening.

**PSY 523. Methods in Cognitive Psychology** 3 cr.
Experimental and correlational methodologies appropriate for investigating cognitive psychological theories and problems. Prerequisite(s): PSY 524 or consent of instructor.

**PSY 524. Cognitive Psychology** 3 cr.
Examines theoretical and empirical work on human cognition. Topics include: information processing theories, pattern recognition, memory, attention, language, problem solving, decision making, and reasoning.

**PSY 525. Behavioral Neuroscience** 3 cr.
The biological basis of behavior with an emphasis on human cognitive functioning.

**PSY 527. Social Psychology** 3 cr.
Current and traditional theories, research findings, and research methodologies of social psychology.

**PSY 529. Methods in Social Psychology** 3 cr.
Experimental, quasi-experimental, and correlational methodologies appropriate for investigating social psychological theories and problems. Prerequisite(s): Graduate student in psychology or consent of instructor.

**PSY 530. Human-Computer Interaction** 3 cr.
Issues associated with human-computer interface design. Concepts, methods, and data from HCI, cognitive psychology, human factors, artificial intelligence, and psycholinguistics that apply.

**PSY 531. Human Memory** 3 cr.
Current and traditional theories and research findings related to human memory.

**PSY 535. Developmental Psychology** 3 cr.
Examines theoretical and empirical work in lifespan developmental psychology, with an emphasis on perceptual and cognitive development, language development, and social cognitive development.

**PSY 540. History and Systems of Psychology** 3 cr.
History of scientific method emphasizing outstanding methodological problems of contemporary science, especially psychology. Covers recent history of psychology and development of schools of psychology.

**PSY 543. Cognitive Neuroscience** 3 cr.
Introduction to the study of the neural mechanisms underlying cognitive processes. Topics include relations between neural processes and attention, perception, memory, thinking and language; measuring change in electrical activity, blood flow, and metabolism in the brain during cognition; the problem of consciousness; and evolutionary perspectives.

**PSY 547. Engineering Psychology** 3 cr.
Covers concepts, methods, and findings of human performance. Treats the human as a subsystem that receives, stores and processes information, makes decisions, and acts within a human-machine environment system.

**PSY 548. Methods in Engineering Psychology** 3 cr.
Engineering psychology methods such as task analysis, cognitive task analysis, user testing, prototyping, protocol analysis, cost-benefit analysis, safety and reliability analysis, and multivariate techniques. Prerequisite: PSY 547 or consent of instructor.

**PSY 570. Special Topics** 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated with consent of instructor. May be repeated for unlimited credit.

**PSY 590. Research Seminar in Psychology** 1 cr.
Presentations on research by students, faculty, and guest speakers. May be repeated with consent of instructor.

**PSY 598. Special Research Programs** 1-3 cr.
Individual investigations either analytical or experimental. May be repeated for credit.

**PSY 599. Master’s Thesis** 0-88 cr.
Thesis.

**PSY 600. Doctoral Research** 1-88 cr.
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

**PSY 625. Seminar in Cognitive Science** 3 cr.
May be repeated with consent of instructor. May be repeated for unlimited credit.

**PSY 698. Special Research Programs** 1-3 cr.
Individual investigations either analytical or experimental. May be repeated for credit.

**PSY 700. Doctoral Dissertation** 0-88 cr.
SOCIOLGY

Department website: http://sociology.nmsu.edu
(575) 646-3448
Program Coordinator Director: Dr. Kassia Wosick
kassiav@nmsu.edu

D. LoConto, Ph.D. (Oklahoma State University)– classical American social
thought, disability studies, race ethnic studies; P. Hoffman, Ph.D. (University of
Nebraska)– sociology of the family, environment and child well-being; K. Hovey,
Ph.D. (University of New Mexico)– rural and urban communities, social control,
criminological theory; C. A. Nevitt, Ph.D. (University of Texas at Austin)– race/
ethnic minority relations; C. Pelak, Ph.D. (Ohio State University)– social inequalities,
race and ethnicity, sociology of sport; J. Steinkopf-Rice, Ph.D. (Washington
State University)– gender, globalization, communities; J.C. Rice, Ph.D. (Washington
State University)– environment, society and technology, political sociology;
S. Way, Ph.D. (University of Arizona)– sociology of education, gender, juvenile
delinquency; K. Wosick, Ph.D. (University of California, Irvine)– sexuality, gender,
family social psychology, qualitative research methods.

DEGREE: Master of Arts
MAJOR: Sociology

THE SOUTHWEST AND BORDER REGION

Our unique location attracts faculty who are interested in peoples of the
southwest, particularly Hispanics/Latinos and American Indians. In addition, our
proximity to the U.S.-Mexico border provides an ideal laboratory for the exami-
nation of such issues as globalization, transnational migration and the conse-
quences of border development.

SOCIAL INEQUALITY

Our faculty members examine the intersection of race, class and gender
oppression in their teaching and research, with special attention to educational,
rural/urban, ecological and global disparities. One goal of this examination is to
address social problems such as poverty and racial/ethnic inequality.

The program is designed to prepare students for doctoral study in sociology
and for employment in research and applied areas of the field. In addition to the
on-campus program, we offer an online MA for students who are geographically
distant from the NMSU main campus or who have full time jobs. Through small
seminars, on campus graduate students engage in discussions of subjects that
often result in thesis and internship topics. Regardless of course format, faculty
members and students work toward the mutual goal of developing each student’s full potential.

Students seeking a master’s degree in sociology should have taken one
undergraduate course each in methods and statistics or their equivalent. Stu-
dents who have not taken these courses should complete them before beginning
their graduate study in sociology in consultation with an academic advisor.

PROGRAM OPTIONS AND REQUIREMENTS

Graduate students in sociology have two program options, thesis or
non-thesis. Faculty consider the student’s special interests and career plans
in advising regarding their choice of program options. The thesis option is typi-
cally selected by students who intend to pursue a Ph.D. degree, while the non-
thesis option is commonly pursued by those desiring immediate employment in
research and applied areas in government, education, social welfare and health.

The non-thesis coursework only option is currently the only option available for
on-line MA students. All students must pass a final master’s examination.

Thesis Program Requirements

In addition to the successful completion of an acceptable master’s thesis,
students who choose this option will take a minimum of 36 credit hours of gradu-
ate work distributed as follows:

• SOC 501, SOC 551, SOC 552, SOC 553 (12 credits total), to be taken within
the first 18 hours of graduate credit. A grade of B or better is required to
receive credit for each of these core courses.
• SOC 599 (6 credits) Thesis
• 18 credits of additional graduate course work to be taken in consultation
with the sociology graduate student’s advisor. Twelve of these 18 credits
must be in 500 level Sociology courses.
• Final master’s oral examination covering all general coursework and the thesis.

Non-Thesis Program Requirements: Coursework Only

Students who choose this option will take a minimum of 36 credit hours of
graduate work distributed as follows:

• SOC 501, SOC 551, SOC 552, SOC 553 (12 credits total), to be taken within
the first 18 hours of graduate credit. A grade of B or better is required to
receive credit for each of these core courses.
• 24 credits of additional graduate course work to be taken in consultation
with the sociology graduate student’s advisor. Eighteen of these 24 credits
must be in 500 level Sociology courses.
• Final master’s written examination covering all general coursework.

In some cases, with the permission of the director of graduate studies,
on-campus students may complete a special research project that will
include a final master’s oral examination covering all general coursework
and the research project.

Admission Requirements

To apply for admission to the Sociology MA Program, and the Graduate
School, submit the following through http://gradschool.nmsu.edu/

• Application form and fees
• Official undergraduate and graduate transcripts from all colleges and
universities attended
• Department Application Form
• A personal statement from the candidate addressing graduate school
objectives and interests
• Letters of recommendation from three persons familiar with candidate’s
academic record

An undergraduate grade-point average of 3.0 or higher is strongly recom-
ended. On-campus applicants wishing to apply for a graduate assistantship
should apply by March 15 for fall only.

SOCIOLGY

SOC 449 H. Directed Readings Honors 1-3 cr.
Same as SOC 449. Additional work to be arranged. Prerequisite: consent
of instructor. May be repeated for a maximum of 6 credits.

SOC 450. Qualitative Research Methods 3 cr.
This course will provide an in-depth examination of qualitative research
methods, including participant observation techniques, interviewing, and
content analysis. Prerequisites: SOC 352, COMM 305, GOVT 300, CJ 300,
PSY 310, PSY 365 or consent of instructor.

SOC 451. Advanced Quantitative Techniques 3 cr.
Advanced methods of sociological analysis are examined in detail.
Prerequisite(s): SOC 353 or equivalent or permission of instructor.
Restricted to Sociology BA or MA or permission of instructor majors.

SOC 452. Advanced Social Theory 3 cr.
Analysis of classical and contemporary theoretical perspectives within
the discipline. Prerequisite(s): SOC 351. Restricted to BA Sociology MA
Sociology majors.

SOC 453. Advanced Research Methods 3 cr.
Exploration of research methods, issues, and practical applications.
Builds upon foundation provided by SOC 352 or other junior-level social
research courses. Prerequisite(s): One of the following: SOC 352,
COMM 305, GOVT 300, CJ 300, PSY 310, PSY 355 or consent of instructor.
Restricted to BA - Sociology MA - Sociology majors.

SOC 455. Advanced Social Research: Evaluation 3 cr.
Logic, design and ethics of evaluations including theory driven and multi
level models. Emphasis on individual, group and community level needs
assessment, process and activities assessment and outcomes assess-
ment including social impact assessment. Data collection techniques will
include survey questionnaire construction, interviewing, focus groups and
case studies. Measures of efficiency and effectiveness will be examined.
Prerequisite: Research Methods Course.

SOC 456. Survey Research Methods 3 cr.
This course will provide an in-depth examination of survey research tech-
niques, including telephone surveys, mail survey, internet surveys, and
multi-modal techniques. The various aspects of questionnaire construc-
tion and administration of surveys will be covered. Prerequisite: COMM
305, GOVT 300, CJ 300, PSY 355 or consent of instructor.

SOC 457. Gender, Science, and Technology 3 cr.
How gender, science and technology are interrelated social construc-
tions. Science and technology are examined as social institutions. Expla-
nations for different rates of participation based on race, class and gender
are explored. Same as: WS 467.
The study of families around the world. The comparison will include how capitalism and power differentials have affected the course of family history, gender relations, and family life today.

SOC 476. Social Institutions in Appalachia 3 cr.
Comprehensive examination of current gender identity and gender stratification issues. Same as W S 459.

SOC 467. Sociology of Religion 3 cr.
Examination of religion in its social context to understand the intricate relations of religion, culture and U.S. society. Recommended preparatory courses: SOC 101G, SOC 275, SOC 376, ANTH 125G.

SOC 461. Population Trends and Analysis 3 cr.
Overview of past, present, and future population phenomena and introduction to techniques of demographic analysis.

SOC 469V. Environmental Sociology 3 cr.
Advanced examination of societal responses to environmental problems including social adjustments to natural and technological hazards, socio-cultural aspects of technological risk and impact assessment, and emergence of environmental social movements.

SOC 466. Society and Technology 3 cr.
Examines the social dynamics shaping technological form and utilization as well as the impacts of technology and socio-technical systems upon society. Topics include: the historical role of technology in socio-cultural evolution, technology and contemporary social change, technological risks and risk management, technology and politics, and the contradictory effects of technology in contributing to and alleviating environmental degradation.

SOC 467. Internship 1-6 cr.
SOC 468. Global Sexualities 3 cr.
Generates a global context to focus on sexual identity and orientation, sexual identity politics, romantic relationships, patterns of sexual behavior, sexual regulation and the impact of different cultures on individual sexualities. Taught with SOC 568. Crosslisted with: W S 468.

SOC 470. Sociology of Latinos/as in the United States 3 cr.
In-depth examination and comparative analysis of political and economic issues affecting Latino/a culture and behavior. Includes the Chicano/a and larger Latin/o movements, the border, immigration, language policies, education, religion, labor, and Latina women's issues. Recommended preparatory courses: SOC 101G, SOC 270, SOC 371, or HIST 367.

SOC 471. Advanced Race and Ethnic Relations 3 cr.
In-depth analysis of the dynamics of prejudice, discrimination, and patterns of intergroup interaction in the U.S.

SOC 472. Sociology of Medical Ethics 3 cr.
Focus on ethics as applied in health care from a sociological perspective. Includes cultural issues and the decision making process, with individual and social implications. Same as SOC 572.

SOC 474. Sociology of Organizations 3 cr.
Sociological models of formal organizations relevant to business, education, government, healthcare, military, and religion. Focus on internal organizational structure and dynamics plus the reciprocal relationship between organizations and their operating environment.

SOC 475. Advanced Social Stratification 3 cr.
Theories of stratification and current methods of stratification research. Focus on differences by ethnicity, race, class, and gender.

SOC 476. Social Institutions in Appalachia 3 cr.
Survey of social issues of Appalachia including the emergence and perpetuation of stereotypical images, the impact of the coal industry on the social environment, and consideration of religious, political, and social policy aspects.

SOC 477. Sociology of Education 3 cr.
Socio-political and economic factors that shape the structure and operation of educational institutions in modern complex societies. Socio-historical development of the school as a microcosm of society, with examples from American and other school systems.

A sociological approach to development and global system. Theories of development and underdevelopment; world poverty/inequality; Latin America, Africa, and Asia in comparative perspectives; transnational borders/U.S.-Mexico border; current topics. Same as GOVT 477.

SOC 479. Sociology Perspectives on the U.S.-Mexico Border 3 cr.
Theoretical perspectives and current research on the U.S.-Mexico border region, including topics such as migration, identity, health, gender, and environment.

SOC 480. Diversity in Alternative Families 3 cr.
Cross-cultural examination of diversity among and within families: analysis of family diversity includes consideration of the theoretical frameworks, ideological commitments, personal experiences, and methodological approaches to examine family life.

SOC 481. Social Deviance 3 cr.
Theoretical approaches to the study of social deviance with emphasis on critical theories. Exploration of forms of deviance in society. Examination of social construction of deviance within mass media and systems of social control.

SOC 482. Advanced Individual and Society 3 cr.
Examines reciprocal relationship between individual and society. Topics include socialization, social influence and persuasion, group structure and performance, altruism, aggression, interpersonal attraction, group cohesion and conformity, and inter-group conflict.

SOC 483. Symbolic Interaction 3 cr.
Examination of the interaction of self and the social order including society as process, the negotiation of social order, identity as a social product, role taking and the situated self, the social construction of reality with an emphasis on phenomenology and ethnomethodology.

SOC 484. Globalization 3 cr.
Analysis of the globalization process. Covers theories of globalization, the global economy, political globalization, global culture, transnational social movements, transnational migration and world labor market, global cities, and local-global linkages. Same as GOVT 469.

SOC 491. Criminological Theory 3 cr.
Schools of thought, contrasting approaches, and contemporary efforts in theory construction relevant to adult and juvenile offenders.

SOC 496. Internship 1-6 cr.
Supervised participation in an appropriate community setting. Taught with SOC 566. May be repeated up to 9 credits. Consent of Instructor required. S/U Grading (S/U, Audit).

SOC 501. Perspectives on Sociology 3 cr.
Overview of the field, subfields, and faculty available for students at NMSU. Emphasis on theories and research currently being developed in the Sociology program. Graded: S/U.

SOC 530. Advanced Social Movement Theory 3 cr.
Overview of key theories in past and present social movement research. Topics include a focus on rational or spontaneous choice theories, resource mobilization, and new social movement theories. Theoretical perspectives focus on analysis of case studies including women's movement, civil rights, and environmental movements.

SOC 548. Graduate Special Topics 3 cr.
Specific subjects to be announced in the Schedule of Classes.

SOC 549. Special Research Problems 1-3 cr.
Individual analytic or experimental investigations. May be repeated for a maximum of 6 credits. Prerequisite: consent of instructor.

SOC 550. Qualitative Research Methods 3 cr.
This course will provide an in-depth examination of qualitative research methods, including participant observation techniques, interviewing, and content analysis.

SOC 551. Issues in Advanced Quantitative Analysis 3 cr.
Advanced methods of sociological analysis are examined in detail. Prerequisite(s): SOC 363 or equivalent or permission of instructor. Restricted to Sociology MA majors.

SOC 552. Seminar in Sociological Theory 3 cr.
Analysis of contemporary theoretical perspectives within the discipline. Restricted to MA Sociology majors.

SOC 553. Seminar in Sociological Research 3 cr.
Exploration of research methods, issues, and practical application. Prerequisite(s): SOC 352 or equivalent. Restricted to MA Sociology majors.

SOC 554. Multiple Methods Research 3 cr.
Builds upon basic skills of social research to design and implement a multiple methods study. Data collection, organization, and analysis involve both quantitative and qualitative approaches Prerequisite(s): SOC 551, SOC 553. Restricted to: Main campus only.

SOC 555. Applied Evaluation 3 cr.
Logic, design and ethics of evaluations including theory driven and multi-level models. Emphasis on individual, group and community level needs assessment, process and activities assessment and outcomes assessment including social impact assessment. Data collection techniques will include survey questionnaire construction, interviewing, focus groups and case studies. Measures of efficiency and effectiveness will be examined. Prerequisite: Research Methods Course.
**SPANISH**

Department website: [http://www.nmsu.edu/~langling/](http://www.nmsu.edu/~langling/)

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jelingwe@nmsu.edu

J. Longwell, Graduate Director, M.A. (New Mexico State University); J. Barquet, Ph.D. (Tulane); J. M. Garcia, Ph.D. (Kansas); S. Herrera, Ph.D. (New Mexico); P. MacGregor-Mendoza, Ph.D. (Illinois-Champaign-Urbana); B. Moreno, Ph.D. (Arizona); B. Pollack, Ph.D. (California-Santa Barbara); D. Villa, Ph.D. (New Mexico); M. Wairminn, Ph.D. (New Mexico)

**DEGREE:** Master of Arts

**MAJOR:** Spanish

**MINOR:** Spanish

The Department of Languages and Linguistics offers a Master of Arts in Spanish, which may be completed through our program on the main campus or completely online. Students are asked to specialize in either linguistics or literature.

**Admission Requirements**

Admission requirements include a BA in Spanish. An undergraduate Grade Point Average (GPA) of 3.0 or above, which includes at least 12 semester hours of upper-division undergraduate courses in Spanish with a GPA of at least 3.0. Students must also satisfy general requirements of the Graduate School and submit the proper electronic online application and transcripts at the Graduate School website. Students must also complete a secondary admission packet (also submitted online through the Graduate School electronic application portal), which should include:

- A current resume (C.V.) in Spanish
- Three (3) letters of recommendation from qualified professionals (written within the last six months), preferably from past professors, that address the applicant’s academic record.
- A writing sample in Spanish (critical or creative writing texts). If you do not have a six-page paper, you may submit multiple shorter works totaling six pages.
- A Language Evaluation Form (available for download at the departmental website) completed and signed by a qualified language evaluator. If you have an official ACTFL OPI rating certificate, this may be submitted in lieu of the Language Evaluation Form.
- An introductory letter in Spanish to include:

  • An introductory letter in Spanish to include:
  
  - A writing sample in Spanish (critical or creative writing texts). If you do not have a six-page paper, you may submit multiple shorter works totaling six pages.
  - A Language Evaluation Form (available for download at the departmental website) completed and signed by a qualified language evaluator. If you have an official ACTFL OPI rating certificate, this may be submitted in lieu of the Language Evaluation Form.
  - An introductory letter in Spanish to include:

  • A current resume (C.V.) in Spanish
  
  - A writing sample in Spanish (critical or creative writing texts). If you do not have a six-page paper, you may submit multiple shorter works totaling six pages.
  - A Language Evaluation Form (available for download at the departmental website) completed and signed by a qualified language evaluator. If you have an official ACTFL OPI rating certificate, this may be submitted in lieu of the Language Evaluation Form.
  - An introductory letter in Spanish to include:
1. A brief biography of one or two paragraphs along with your goals and objectives for obtaining a Master’s degree in Spanish.
2. A statement of interest in either the residential (on-campus) program or the online program.
3. A statement of your prospective area of interest (Linguistics or Literature).
4. Your declaration of interest in being considered for a Graduate Teaching Assistantship (this option is only available for the residential (on-campus) program).

Only completed applications will be reviewed. Again, all materials should be submitted via the Graduate School electronic application portal. No materials should be sent directly to the department. Applying to the program does not guarantee admission to the program. It is the applicant’s responsibility to ensure that all materials have been submitted correctly.

Application deadlines: September 15 for admission for the following Spring semester (which begins in January), and February 15 for admission for the following Fall semester (which begins in August). Students will be advised upon their formal acceptance into the program.

The Degree Plan

The degree plan requires a minimum of 36 credits in Spanish, of which at least 30 must be earned at the 500 level, and the remainder above the 450 level. The courses should be concentrated in the student’s chosen area of study (linguistics or literature) as each student will be tested on a reading list that corresponds to each area study. A thesis is optional. Students authorized to complete a thesis may count a maximum of 6 credits of thesis work toward the degree. At the present time, the thesis option is not available for online-only students. There are no required core courses at this time and a student should work closely with his/her advisor and the Graduate Director to establish an appropriate individual degree plan. All students in either the on-campus or online program may complete a minor at the master’s level by taking 9 credits (3 courses) at the 500 level or above, in another area (department) of study, or within the department itself. For instance, a student studying linguistics may wish to obtain a minor in literature or a student studying literature may wish to obtain a minor in linguistics. In either case, the minor credits count as part of the 36 total credits required for the degree. In all cases, the student should work closely with the Graduate Director to ensure his/her particular plan of study is acceptable to the program.

Additional Language Requirement

For both the on-campus and online degrees, the department requires that students fulfill a second language requirement (in addition to English and Spanish) by following an approved course of study. Typically, this is completed by taking a four-semester course of study, but may vary according to the languages available.

Options for completing this requirement include taking classes at a local Community College or University, or online. Some students have met this requirement by studying abroad through NMSU. Students should consult the Graduate Director to establish a plan and discuss how this requirement will be met. NOTE: evidence of fulfilling the second language requirement must be provided to the Graduate Director before taking final examinations.

English Language Requirement

International students are required to demonstrate proficiency in English and meet all international admissions requirements prior to beginning their program of study. Please see the section of the Graduate Catalog on international admissions requirements and scores required for either the TOEFL or IELTS exam. NOTE: evidence of fulfilling the English Language Requirement must be provided to the Graduate Director before taking final examinations.

Final Examinations

Students must successfully complete a final department examination (generally during the final semester of coursework) that is partially written and partially oral. Please consult the Graduate Director for specific information on dates and format for these exams. Final examinations are only available during the Fall and Spring semesters.

Areas of Interest/Reading List

As stated previously, each student needs to select an area of interest—Linguistics or Literature. At the end of the student’s degree, the final examinations (written and oral) will be based on the readings from the readings list in the student’s selected area of study. For example, a student that has opted to specialize in literature is responsible for reading all the materials on the Literature Reading List. Likewise, a student that has opted to specialize in linguistics is responsible for reading all the materials on the Linguistics Reading List. The student is responsible for the reading list that was in place the year s/he started the program.

Each student is responsible for covering the reading materials listed. Please contact the Graduate Director for a detailed reading. Note that the list is dated, so make sure to refer to the correct list that covers the year/semester the student started the program. The student is responsible for covering ALL the readings even if the student did not cover them as part of work done in class.

Graduate Assistantships

For the on-campus program only, the department awards graduate assistantships to qualified students. For this financial assistance, the student works up to 20 hours a week in departmental programs, chiefly in the teaching of elementary and intermediate Spanish courses in either the Heritage Language sequence or Spanish as a second Language sequence. Students interested in being considered for an assistantship should clearly state this interest in their introduction letter during the application process. The department offers a limited number of assistantships, and students should remember that not everyone that applies for this award receives one. Maintaining the award depends on the student’s successful performance both academically and in the classes he/she teaches and is evaluated on a semester-by-semester basis. Students that receive an assistantship are required to take SPAN 594 (see course description) as part of their degree plan in order to help them prepare for teaching classes at NMSU.

SPANISH

SPAN 450. Mexican Cultures

Selected topic to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 6 credits under a different subtitle. Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 451. Hispanic Cultures

Issues in Hispanic cultures of the U.S., Spanish-America, and Spain. Also focuses on U.S.-Mexico border culture. Selected topics to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 9 credits under a different subtitle. Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 452. Independent Studies in Hispanic Linguistics

Individualized self-paced projects for advanced students. Prerequisites: consent of instructor. May be repeated for a maximum of 6 credits.

SPAN 457. Strategies for Teaching Spanish for Native Speakers

Strategies and techniques appropriate for teaching Spanish for Native Speakers. Emphasis on curriculum development and use of U.S. Hispanic literature in the classroom. Focus on processes of acquisition and evaluation of all four skills. Prerequisite: SPAN 314.

SPAN 460. Spanish Language Acquisition

Research and theories of acquisition of Spanish as a first or second language. Prerequisite: LING 200 or SPAN 340, or consent of instructor.

SPAN 461. Introduction to Spanish Phonetics

An introduction to Spanish phonetics including basic dialectal variation and comparison with English. Prerequisite: SPAN 340.

SPAN 462. Spanish Phonology

An in-depth examination of the sound system of Spanish including formal characterization, dialectal variation and laboratory data. Prerequisite: SPAN 461 or SPAN 492.

SPAN 469. Gender and Sexuality in Hispanic Film

The study of gender and sexual orientation issues in relation to identity as portrayed in Hispanic cinema. Crosslisted with: W S 469.

SPAN 470. Methods for Teaching Hispanic Children’s and Adolescents’ Literature

Current methods for teaching children’s and adolescents’ literature for levels K-12. Researches appropriate literature for each level, and techniques and strategies to design teaching units and activities. Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 490. Special Topics

Selected topic to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 9 credits under a different subtitle. Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 491. History of the Spanish Language

The development of Spanish from its origins. Prerequisite: SPAN 314 or SPAN 340.
SPAN 492. Structure of Spanish  
Topics in Spanish linguistics including phonology, morphology, syntax, and semantics. Prerequisite: SPAN 314 or SPAN 340.  

SPAN 493. Studies in U.S. and Borderland Spanish  
Linguistic issues of U.S. and borderland Spanish. Prerequisite: SPAN 340.  

SPAN 500. Methods of Research and Literary Criticism  
Advanced methods of research and literary criticism.  

SPAN 501. Graduate Elementary Spanish I  
Spanish for beginners at the Graduate level. Available via Study Abroad only. Credit can be applied only towards fulfilling second language requirement. Credit is not accepted towards any graduate level major or minor.  

SPAN 502. Graduate Elementary Spanish II  
Spanish for beginners at the Graduate level. Available via Study Abroad only. Credit can be applied only towards fulfilling second language requirement. Credit is not accepted towards any graduate level major or minor. Prerequisite: Language placement exam or C or better in SPAN 501, or consent of instructor.  

SPAN 503. Graduate Intermediate Spanish I  
Spanish for intermediate students at the Graduate level. Available via Study Abroad only. Credit can be applied only towards fulfilling second language requirement. Credit is not accepted towards any graduate level major or minor. Prerequisite: Language placement exam or C or better in SPAN 502, or consent of instructor.  

SPAN 504. Graduate Intermediate Spanish I  
Spanish for intermediate students at the Graduate level. Available via Study Abroad only. Credit can be applied only towards fulfilling second language requirement. Credit is not accepted towards any graduate level major or minor. Prerequisite: Language placement exam or C or better in SPAN 503, or consent of instructor.  

SPAN 507. Technology Enhanced Language Learning  
Strategies for enhancing language learning with emerging technologies. Course is taught in Spanish.  

SPAN 508. Teaching Literature with Technology  
Strategies and techniques for enhancing the teaching of all literature genres using emerging technologies. Course is taught in Spanish. Co/Prerequisite(s): SPAN 507, and/or consent of instructor.  

SPAN 509. Teaching Culture with Technology  
Strategies and techniques for enhancing the teaching of culture using emerging technologies. Course is taught in Spanish. Co/Prerequisite(s): SPAN 507, and/or consent of instructor.  

SPAN 510. Implementing the 5 C’s Using Technology  
Strategies and techniques for bringing the national standards (the 5Cs: Communication, Cultures, Connections, Comparisons, Communities) into the classroom using emerging technologies. Course is taught in Spanish. Co/Prerequisite(s): SPAN 507, and/or consent of instructor.  

SPAN 512. Contemporary Spanish-American Poetry  
Readings and interpretation of Spanish-American poetry from the 20th century to the present.  

SPAN 520. Hispanic Micro Fiction  
Advanced study of micro fiction works by Hispanic Authors and creative writing workshop related to micro fiction.  

SPAN 521. Advanced Cuban Literature  
Advanced study of major works or specific topics or periods of Cuban Literature. Selected topics to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 6 credits under a different subtitle.  

SPAN 528. Advanced Hispanic Literature of the U.S.  
Advanced study of major works by Cuban-American, Dominican-American, and U.S.-Puerto Rican authors. Restricted to: Main campus only.  

SPAN 540. Introduccion a la Linguistica  
Introduces students to the foundational topics of linguistic study with particular reference given to the Spanish language: properties of language and communication, morphology, syntax, phonetics, phonology, language variation and change. Prerequisite(s): Eligibility to take graduate level courses.  

SPAN 546. Advanced Dialectos del Espanol  
Advanced research of Spanish dialects, including their formal characteristics, historical formation and regional variation.  

SPAN 546. Advanced Poesia Modernista  
Advanced study of major poetry works by Latin American modernista authors. Restricted to: Main campus only.  

SPAN 547. Advanced Hispanic Film  
Advanced study of major films from Spain and Spanish-America. Restricted to: Main campus only.  

SPAN 548. Advanced U.S.-Hispanic Film  
Advanced study of major films about and/or by Hispanics of the U.S. Restricted to: Main campus only.  

SPAN 552. Advanced Literature of the Mexican Revolution  
Study of Mexican authors dealing with the Mexican Revolution. Restricted to: Main campus only.  

SPAN 555. Advanced Spanish-American Literature Through the 18th Century  
Advanced study of Spanish-American Literature through the 18th century. Restricted to: Main campus only.  

SPAN 556. Advanced 19-Century Spanish-American Literature  
Study of major works by Spanish-American authors of the 19th century.  

SPAN 558. Bilinguismo  
Examines the topics of bilingualism from a psycholinguistic perspective including the development of the bilingual brain, lexical acquisition, retrieval and storage, and experimental techniques in measuring language competence. Prerequisite(s): SPAN 540 or consent of instructor.  

SPAN 560. Advanced Spanish Language Acquisition  
Advanced research and theories of acquisition of Spanish as a first or second language. Prerequisite: SPAN 500 or consent of instructor.  

SPAN 561. Advanced Spanish Phonetics  
Advanced study of Spanish phonetics, including basic dialectal variation and comparisons with English.  

SPAN 562. Advanced Spanish Phonology  
An advanced formal examination of the sound system of Spanish including formal characterizations, dialectal variation and laboratory data.  

SPAN 563. Advanced Study in Mexican Literature  
Mexican literature from the Pre-Columbian period to the present.  

SPAN 564. Advanced Caribbean Literature in Spanish  
Major works of Cuban, Dominican, and Puerto Rican literature.  

SPAN 566. Contemporary Spanish-American Novel  
The Spanish-American novel from the 20th century to the present.  

SPAN 567. Advanced Study in Chicano Literature  
Study of all genres of Chicano literature.  

SPAN 570. Advanced Study in Technical Translation  
Translation of a variety of non-literary texts from English to Spanish and from Spanish to English. Course is taught in Spanish.  

SPAN 572. Advanced Study in Literary Translation  
Literary translation of texts by genre from Spanish to English and from English to Spanish.  

SPAN 573. Advanced Study in Creative Writing  
Advanced creative writing in Spanish.  

SPAN 579. Research Methodology in Spanish Linguistics  
Study and practical application of techniques in linguistic research.  

SPAN 581. Advanced Prosa Modernista  
Advanced study of major prose works by Latin American modernista authors. Restricted to: Main campus only.  

SPAN 583. Advanced Study in Spanish-American Women Writers  
All genres of Spanish-American literature written by women. Research paper required.  

SPAN 584. Spanish Morphosyntax  
Examination of the morphological and syntactic structure of the Spanish language as well as their interaction. Practical applications are also explored.  

SPAN 585. Language Assessment  
Introduces students to theoretical principles of and analytical techniques for language assessment. Students will learn to critically analyze existing language assessment measures and will develop, pilot test and analyze measures of their own. Prerequisite(s): SPAN 540 or SPAN 560 or SPAN 580 or consent of instructor.  

SPAN 586. Contemporary Spanish-American Essay  
Main currents in the Spanish-American thought from the 20th century to the present.  

SPAN 587. Contemporary Spanish-American Short Story  
The Spanish-American short story from the 20th century to the present.  

SPAN 588. Contemporary Spanish-American Drama  
The Spanish-American drama from the 20th century to the present.  

SPAN 589. Spanish Sociolinguistics  
Relationship between language and society in the Spanish-speaking world.
SPAN 590. Advanced Special Topics 3 cr.
Specific subject to be announced in the Schedule of Classes. May be repeated for a total of 9 credits under a different subtitle.

SPAN 591. Advanced Study in History of the Spanish Language 3 cr.
The development of Spanish from its origins.

SPAN 592. Advanced Structure of Spanish 3 cr.
Advanced study of Spanish linguistics topics such as phonology, morphology, syntax and semantics.

SPAN 593. Advanced Studies in Southwest Spanish 3 cr.
Includes historical background, bilingualism and bilingual education, language maintenance, language planning and Chicano sociolinguistics.

SPAN 594. Theory and Methodology of Spanish Pedagogy 3 cr.
Advanced studies in current theories and methodologies of Spanish language pedagogy. Taught as a practicum.

SPAN 595. Advanced Topics in Applied Spanish Linguistics 3 cr.
Selected topics to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 9 credits under a different subtitle.

SPAN 596. Advanced Gender and Sexuality in Hispanic Film 3 cr.
Advanced study of gender and sexual orientation issues in relation to identity as portrayed in Hispanic cinema. Crosslisted with: WS 569

SPAN 597. Spanish for Native Speakers: Advanced Teaching Strategies 3 cr.
Advanced strategies and techniques appropriate for teaching Spanish for native speakers. Curriculum development and use of U.S. Hispanic literature in the classroom. Focus on processes of acquisition and evaluation of all four skills. Research project required. Prerequisite: graduate standing.

SPAN 598. Independent Reading, Research, and/or Creative Writing 1-3 cr.
Individual study of selected readings and problems; or individual research, either analytical or experimental; or creative writing. May be repeated for unlimited credits.

SPAN 599. Master’s Thesis 0-88 cr.
Thesis.
MINORS: Information Systems

MASTER OF ACCOUNTANCY

The last decade has witnessed a tremendous expansion in the knowledge base required for accounting professionals. The business environment has become increasingly complex, as evidenced by the growth in the body of national and international accounting and auditing standards, taxation, SEC, and other regulatory requirements. The accountant must also be well versed in communications and analytical skills, computer-based information systems, professional ethics, and global issues.

Neither the traditional four-year accounting program nor the M.B.A. provides the educational breadth and depth necessary to fully prepare students for the demands now imposed by many accounting careers. The major objective of the Master of Accountancy (M.Acc.) program is to provide for these increased educational needs and to prepare students more adequately for careers as professional accountants in financial institutions, government, non-for-profit organizations, and public practice. The program is designed to provide a technical and theoretical foundation in accountancy at the advanced level and yet allow the student to take courses to accommodate individual needs.

The M.Acc. program is recommended for those students wishing to fulfill the 150-hour education requirement which most states, including New Mexico, have legislated as a requirement for taking the Uniform CPA Examination.

Graduate assistantships are available for a limited number of qualified students. Interested persons are urged to apply well within the deadlines set by the Graduate School. Inquiries should be addressed to the Master of Accountancy Director.

Admission requirements of the Graduate School must be met before the applicant may be admitted to the Master of Accountancy program. Consideration for admissions to the Master of Accountancy program is dependent on an applicant’s undergraduate record and score on the Graduate Management Admissions Test (GMAT). Specifically, an applicant’s undergraduate GPA is multiplied by a factor of 200 and the result is added to his/her GMAT score. The required total is 1100. Applicants scoring between 1000 and 1100 will be admitted to the program only with approval of the M.Acc. Admissions Committee. The minimum acceptable GMAT score is 400. An acceptable score on the GMAT must be submitted at least one month prior to the student’s first enrollment unless the student meets one of the GMAT waivers listed below.

In addition to the aforementioned entrance requirements, an applicant’s GPA in 7 upper division accounting prerequisites must be at least 3.0. For those students not receiving their undergraduate accounting degree at NMSU, it is expected that substantially all of the accounting prerequisite classes be from an AACSB accredited business school or the application will need to be approved by the M.Acc Admissions Committee. In this case the Admissions Committee may require that some of these prerequisite courses be retaken at an AACSB institution such as NMSU.

All grades, including those from the first attempt at repeated classes, will be used to compute upper division accounting prerequisite grade point averages to determine admission to the graduate program. At the suggestion of any faculty member, the M.Acc Admissions Committee will review the application of a student whose potential might not be accurately reflected by this calculation.

GMAT waivers:

The GMAT requirement is waived for those who:

a. Are graduates of an undergraduate program in accounting from a US AACSB accredited business school with at least a 3.25 GPA overall and a 3.25 GPA in their eight upper division accounting courses; or
b. Hold a recognized professional accounting credential (such as CPA, CMA, CIA, CFE); or
c. Hold a post baccalaureate degree (such as MBA, MS, MA, JD) from an approved, AACSB-accredited U.S. university with a minimum of 3.0 in graduate course work.

Candidates for the Master of Accountancy degree who have an undergraduate degree in accounting must successfully complete a minimum of 30 graduate credits. Qualifying NMSU undergraduate accounting students can apply to have two graduate courses count for their undergraduate program as well as their graduate program. Candidates with an undergraduate degree in a field other than accounting must complete additional prerequisite work dependent upon previous courses taken. In any case, all candidates must present or fulfill the following requirements:

Foundation Courses

These courses are required of every student unless they can be waived. As a general policy, the courses upon which waivers are claimed must have been taken within seven years of enrollment in the program with a grade of B or better. A final decision regarding a waiver is based on an evaluation of each student’s total educational and professional background. The following is a list of these courses (for a description of these courses, see the New Mexico State University Undergraduate Catalog)

- ACCT 221, Financial Accounting
- ACCT 222, Management Accounting
- BCIS 338, Business Information Systems I
- BLAW 316, Legal Environment of Business
- ECON 251G, Principles of Macroeconomics
- ECON 252G, Principles of Microeconomics
- FIN 341, Financial Analysis and Markets
- MKTG 309, Human Behavior in Organizations
- MKTG 303, Principles of Marketing
- BCIS 485, Enterprise Resource Planning; MGT 344, Production and Operations Management; or MGT 470, Project Management in Organizations
Accounting and Related Prerequisites (21 credits)
In addition to the foundation requirements, each student must present or complete the equivalent of an undergraduate major in accounting. This requires, at a minimum, 21 credits of accounting above the elementary level.

No coursework applied toward the M.Acc. degree, including the foundation requirements and the undergraduate accounting prerequisites, may be taken on an S/U basis.

Core and Elective Courses (30 Credits)

Core Courses: Each student must complete 18 credits in accounting courses numbered above 503. These courses must include a research class (either ACCT 555 or 564) and ethics (ACCT 559) unless a student has already taken an equivalent course. In addition, three of the credits may be in upper division undergraduate elective accounting courses numbered 450 or higher. Other specific courses to be completed by each candidate will be determined in the advisement process.

Elective Courses: All students must complete a total of 12 additional credits in elective courses. Electives will be determined individually for each student and will include no more than 3 credits in accounting. At least 3 of the elective credits must be in courses reserved exclusively for graduate students and numbered 510 or higher. Neither ACCT 503 nor any course fulfilling the foundation requirement may be included.

The Graduate School requires that students maintain a grade-point average of at least 3.0 in all courses taken as a graduate student, as well as a 3.0 grade-point average in all graduate courses taken as a graduate student at NMSU. The Department of Accounting and Information Systems requires, in addition, that every candidate for the M.Acc. degree maintain at least a 3.0 grade-point average in all accounting courses used to satisfy the core and elective course requirement. M.Acc. students may not retake 500-level accounting courses for which they have previously received a grade without approval of the M.Acc. Admissions Committee.

Comprehensive Examination
Satisfactory performance on a comprehensive examination is required for the degree.

Thesis: No thesis is required; however, under special approval, a candidate may elect to write a thesis under ACCT 599. Up to 6 credits may be earned for the thesis.

Admission to Master of Accountancy
Class registration in any Accounting course numbered above ACCT 503 requires
1. prior full admission to the M.Acc. program, or
2. prior consent of the Director of the M.Acc. program.

MINOR: INFORMATION SYSTEMS
This minor is for master’s-level students who are not in the Masters of Business Administration (MBA) program. Students in the MBA program may choose a specialization in Information Systems (see the Business Administration section below).

To obtain a graduate minor in Information Systems (IS) students must satisfy the requirements as stated in the Graduate Catalog for a minor at the master’s level. For it to appear on the transcript, the student must list the minor on the “Program of Study and Committee for Master’s Student” (Application for Admission to Candidacy) and have it signed by the head of the department offering the minor. The minor requires a minimum of 9 credits of graduate work. Two courses are required: BCIS 540 and BCIS 599. The third course is chosen from: BCIS 550, BCIS 560, BCIS 565, BCIS 575, BCIS 584, or BCIS 590.

ACCOUNTING
ACCT 451. Auditing Theory and Practices
Auditing standards, audit evidence, auditors reports and opinions, and professional responsibilities. Prerequisite(s): ACCT 351 and C or better in ACCT 302.

ACCT 455. Federal Taxation II
Federal income tax laws applicable to partnerships, corporations, fiduciaries, tax research, tax planning. Prerequisite(s): C or better in ACCT 403 or consent of instructor.

ACCT 456. Accounting for Nonprofit Organizations
Control and reporting problems unique to governmental units and other nonprofit organizations. Fund accounting principles, procedures, and reports. Prerequisite(s): C or better in ACCT 302.

ACCT 457. Mergers, Acquisitions, and Partnerships
Consolidated financial statements, accounting for partnership formation and liquidation. Prerequisite(s): C or better in ACCT 302.

ACCT 459. Ethics and Professionalism in Accounting
Introduction to ethical reasoning, integrity, objectivity, independence, and professional accounting issues. Students will apply the concepts and theories to accounting-specific cases. Prerequisite: grade of C or better in ACCT 451 or concurrent enrollment or consent of instructor. Same as ACCT 559.

ACCT 460. Fraud Examination and Prevention
Covers business fraud as it is occurring in American society. Emphasis is on occupational fraud and financial statement fraud. Examines various types of fraud, its symptoms and effective investigation techniques. Effective fraud prevention measures are discussed throughout the course. Emphasizes case studies and the application of principles to actual fraud cases. Prerequisites: a C or better in ACCT 451 or concurrent enrollment.

ACCT 490. Selected Topics
Current topics in accounting. Prerequisites vary according to the seminar offered. May be repeated for a maximum of 12 credits under different titles.

ACCT 496. Independent Study
Individual studies directed by consenting faculty with the prior approval of the department head. Prerequisites: junior or senior standing and consent of instructor. A maximum of 3 credits may be earned.

ACCT 503. Accounting for Managers
Concepts and principles of financial and managerial accounting. Presents techniques used to prepare financial statements, techniques for management decision-making, planning, and control. Not open to MAcc students. Prerequisite(s): B or better in ACCT 251 and ACCT 252.

ACCT 525. Advanced Cost-Managerial Accounting
Advanced cost-managerial concepts with a quantitative emphasis. Integrates cost-managerial concepts, quantitative tools, organization theory, behavioral concepts and computer methodology. Prerequisite: ACCT 253.

ACCT 544. Financial Statement Analysis and Valuation
Valuation of firms using financial information, financial statement analysis, and the valuation of individual assets and liabilities. Prerequisite(s): ACCT 302; Graduate students only.

ACCT 550. Special Topics
Seminars in current topics in various areas of accounting including financial, managerial, auditing, taxation, systems, and fund accounting. Prerequisites vary according to topic being offered.

ACCT 551. Advanced Auditing Theory and Practice
Understanding and evaluating internal control in an EDP environment. Statistical sampling applications and current issues in auditing. Prerequisite(s): ACCT 451 and ACCT 452.

ACCT 554. Advanced Accounting Theory
Contemporary theoretical basis of accounting. An in-depth study of generally accepted accounting principles and current issues in accounting. Prerequisite: ACCT 302 or consent of instructor.

ACCT 555. Federal Tax Research
Tax research methodology including case materials, critical judicial decisions, journal articles, and research services. Emphasis on tax planning. Prerequisite: ACCT 403 or consent of instructor.

ACCT 559. Ethics and Professionalism in Accounting
Introduction to ethical reasoning, integrity, objectivity, independence, and professional accounting issues. Students will apply the concepts and theories to accounting-specific cases. Prerequisite(s): C or better in ACCT 451 or concurrent enrollment. Same as ACCT 459.

ACCT 560. Taxation of Corporations and Shareholders Advanced
Effects of taxation on the organization, operation, and reorganization of corporations and on their shareholders. Prerequisite(s): ACCT 455 or consent of instructor.

ACCT 564. Financial Accounting Research
Interpretation and application of accounting principles to financial reporting issues of business and nonprofit organizations. Consent of instructor required. Prerequisite(s): Undergraduate degree in accounting or equivalent. Restricted to Master of Accountancy majors.

ACCT 565. Estate Planning and Taxation
Effects of income, gift, and estate taxation on accumulation and preservation of an estate. Prerequisite: ACCT 455 or consent of instructor.
Methods - (A ST 503, A ST 504, A ST 506)

Credit Requirements (minimum)
Complete a minimum of 35 semester credits. Students may choose a research

ADMISSION AND COURSE REQUIREMENTS
with a strong minor in mathematics who wish to apply statistics in one or more

degrees in areas other than mathematics who wish to strengthen their quantita
tion through study of a wide range of topics similar to those a student might encounter in their first year of employment. Counts for elective credit only. Prerequisite: consent of instructor.

ACCT 598. Independent Study
1-3 cr.
Individual studies directed by consenting faculty with prior approval of the department head. A maximum of 3 credits may be earned. Prerequisite: consent of instructor.

ACCT 599. Master’s Thesis
0-99 cr.
Thesis.

APPLIED STATISTICS

Department website: http://business.nmsu.edu/academics/economics-ib/economics-programs/master-of-science-estat/
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rstein@nmsu.edu

R. Adkisson, department head, Ph.D. (Nebraska) – international economics, public finance, institutional economics; D. Clason, Ph.D. (Kansas State) – linear models, regression analysis; D. Daniel, Ph.D. (Southern Methodist) – nonparametrics, general consulting; C. Gard, Ph.D. (University of Washington) – biostatistics; W. Gould, Ph.D. (North Carolina State) – biological sampling, wildlife and fisheries estimation, R. Steiner, Ph.D. (Oklahoma State) – likelihood methods, discrete distributions, simulation; D.M. VanLeeuwen, Ph.D. (Oregon State) – statistics

DEGREE: Master of Science
MAJOR: Applied Statistics

Offered by the Department of Economics, Applied Statistics and International Business, the Master of Science (M.S.) degree in applied statistics is designed to produce graduates proficient in current practices in statistics and able to enter directly into positions in industry, government, or private business. A person completing this degree will have the requisite skills to help researchers outside of statistics execute data analyses, design experiments, and/or plan and analyze biological surveys or surveys obtained by mail, phone, or personal interview. In addition, a person completing this degree will be familiar with the major statistical packages for computers. Students in the program will receive instruction in both theory and application of statistics, oriented strongly towards linear models and sampling, as well as extensive training and experience in statistical consulting.

The M.S. degree serves two basic groups of students: (1) students with degrees in areas other than mathematics who wish to strengthen their quantitative skills and (2) students with a degree in mathematics or statistics or those with a strong minor in mathematics who wish to apply statistics in one or more subject matter areas.

ADMISSION AND COURSE REQUIREMENTS

Candidates for the M.S. in applied statistics are required to successfully complete a minimum of 35 semester credits. Students may choose a research option (thesis or project) or a course.

Credit Requirements (minimum)

Theory - (A ST 505, A ST 566, A ST 567, A ST 568) .............................................. 14
Consulting - (A ST 551, A ST 552, A ST 553) ..................................................... 3
Methods - (A ST 503, A ST 504, A ST 566). ..................................................... 6
Research - (Research option, A ST 598 or 599) .............................................. 4-6
Electives - (Research Option) .............................................................................. 6-8
Electives - (Course-Only Option) ................................................................. 12

Requirements for regular admission to the MS in Applied Statistics include the following:

• A minimum 3.0 grade-point average overall or in the last two years of study. Complete graduate and undergraduate transcripts must be supplied.

• Three semesters of engineering calculus, equivalent to MATH 191G, MATH 192G, and MATH 291 at NMSU, completed with B or better grades.

• A one-semester course in introductory statistics. Students entering with only one undergraduate course in statistics will generally take A ST 505. NOTE: A ST 505 does not carry credit toward the M.S. in applied statistics.

• Three letters of reference from former professors or others able to evaluate the student’s academic potential.

• A one- to two-page typed written letter of application, discussing academic objectives, and professional plans, plus giving specific reasons for selecting statistics as a field for advanced studies.

In addition to the formal requirements above, some expertise in computer use or programming experience is strongly recommended. Applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL). Fluency in written and spoken English is essential to successful completion of the program. Further information regarding the TOEFL can be obtained from Test of English as a Foreign Language, CN 6151, Princeton, NJ 08541-6151, USA.

MINOR: APPLIED STATISTICS

Master’s-level students wishing to minor in applied statistics at the master’s level must have at least 10 credits of 500-level applied statistics courses. The recommended courses for a general master’s-level minor are A ST 503, A ST 504, A ST 505 and A ST 506. Depending on a particular student’s background, it may be desirable to substitute other A ST courses for the minor. In accordance with Graduate School requirements, doctoral students must have at least 12 credits of 500-level applied statistics courses for a minor at the doctoral level.

Students wishing to obtain the minor in applied statistics should contact an applied statistic faculty member to recommend appropriate applied statistics course work to be included in the plan of study and to serve as the graduate committee representative from the minor area.

APPLIED STATISTICS

A ST 450. Special Topics
1-4 cr.
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

A ST 456. Statistical Methods and Data Analysis
3 cr. (2-2P)
Methods for sampling and estimation; analysis of variance and elementary experimental designs; linear regression and correlation; multiple regression, variable selection methods and residual analysis; introduction to statistical packages. Prerequisite: A ST 251G, A ST 311, or equivalent.

A ST 498. Independent Study
1-3 cr.
Individual studies directed by consenting faculty with prior approval of the department head. Maximum of 3 credits per semester and a grand total of 3 credits.

A ST 503. SAS Basics
2 cr. (1-2P)
An introduction to the statistical software package, SAS, and its utilization in an interactive computing environment, primarily PC/SAS. Provides a fundamental understanding of the structure of SAS, its data management capabilities, and how to invoke a variety of descriptive and simple statistical SAS procedures. Corequisite(s): A ST 505, or consent of instructor.

A ST 504. Statistical Software Applications
1 cr.
Optional computing course to accompany A ST 506. Computer analysis of topics covered in A ST 505 and A ST 506. Prerequisite: A ST 503 or consent of instructor. Corequisite: A ST 506 or A ST 502 or consent of instructor.

A ST 505. Statistical Inference I
4 cr. (3-2P)
A qualitative introduction to the concepts and methods of statistical inference. Sampling, frequency distributions (z, t, x2, F), estimation, and testing. One-way analysis of variance. Simple linear regression. Prerequisite: consent of the instructor.

A ST 506. Statistical Inference II
3 cr. (2-2P)
Introduction to multiple regression; the analysis of variance for balanced studies; multiple comparisons, contrasts, factorial experimental designs through split plots. Prerequisite: A ST 505 and the ability to use a standard computer package such as SAS (may be satisfied by A ST 503) or consent of instructor.

A ST 507. Advanced Regression
2 cr.
Examination of multiple regression; residual analysis, collinearity, variable selection, weighted least squares, polynomial models, and nonlinear regression: linearizable and intrinsically nonlinear models. Prerequisites: A ST 503 and A ST 505 or consent of instructor.
A ST 508. Analysis of Advanced Designs and Related Topics        3 cr.
Complete and incomplete block designs; fixed, mixed, and random models; unbalanced data; analysis of covariance; nested and hierarchical designs; fractional factorials. Prerequisites: A ST 504, and one of A ST 502 or A ST 506; or consent of instructor.

A ST 515. Statistical Analysis with R        3 cr.
Introduction to R data types, basic calculations and programming, data input and manipulation, one and two sample tests, ANOVA, regression, diagnostics, graphics, probability distributions, and basic simulations in the R software environment. Prerequisite(s): A ST 505 or equivalent with consent of instructor.

A ST 521. Sampling Methodology        3 cr. (3+2P)
Methodology of sampling finite populations using design-based (simple random, stratified, systematic, cluster, and multistage), model-based (regression and ratio estimators), and adaptive sampling. Properties of estimators under all designs are discussed. Prerequisite: either A ST 456, A ST 501, A ST 505, A ST 585, or consent of instructor.

A ST 522. Survey Sampling        2 cr. (3+2P)
Techniques of survey sampling (mail questionnaire and telephone surveys) applicable to social sciences. Techniques of questionnaire preparation and methods of evaluating results are presented. Prerequisite: A ST 521, or consent of instructor.

A ST 523. Biological Sampling (s)        3 cr.
Methods of sampling biological populations: area frame, quadrant, line intercept, line transect, and mark-recapture. Prerequisite: A ST 501 or A ST 505 or consent of instructor.

A ST 524. Selected Topics in Sampling        2 cr.
Treatment of nonresponse in sample surveys; response error modeling and estimation. Other topics to be selected from among the following: approximate methods for variance estimation, panel rotation sampling, longitudinal survey design and estimation, telephone random-digit-dialing, model-based estimation, and multiplicity sampling. Prerequisite: A ST 521 or consent of instructor.

A ST 545. Time Series Analysis and Applications        3 cr.
A systematic exposition of the methods for analyzing, modeling, and forecasting time series. Emphasizes underlying ideas and methods rather than detailed mathematical derivations, using SAS, BMDP, IMSL, and Fortran. Prerequisites: A ST 503 and A ST 501 or A ST 505, or consent of instructor.

A ST 550. Special Topics        1-4 cr.
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. (Open to credit and audit.

A ST 551. Introduction to Statistical Consulting        1 cr.
Consideration of published material in the consulting process. Prerequisite: consent of instructor. Restricted to majors. Graded S/U.

A ST 552. Advanced Statistical Consulting        1 cr.
Continuation of A ST 551 with emphasis on dealing with clients in order to identify statistically relevant features of a research study. Prerequisite: A ST 551. Restricted to majors. Graded S/U.

A ST 553. Practicum in Statistical Consulting        1 cr.
Supervised experience under the guidance of senior faculty. Prerequisite: A ST 552. May be repeated for a maximum of 2 credits. Restricted to majors. Graded S/U.

A ST 555. Applied Multivariate Analysis        3 cr.
Multivariate analysis of linear statistical models, including MANOVA and repeated measures. Analysis of correlation and covariance structures, including principal components, factor analysis, and canonical correlation. Classification and discrimination techniques. Prerequisites: A ST 506 and A ST 504 or consent of instructor.

A ST 565. Statistical Analysis I        4 cr. (3+2P)
An analytic introduction to the theory and methods of statistical inference. Sampling, frequency distributions (t, x2, F), estimation, testing, and simulation. Prerequisite: MATH 2916G or consent of instructor.

A ST 566. Applied Multivariate Analysis II        4 cr. (3+2P)
Continuation of A ST 565. Prerequisite: A ST 565 or consent of instructor.

A ST 567. Applied Linear Models I        3 cr.
The mean model, including constraints, approach to linear models; non-identity variance-covariance matrices. Some emphasis on computational aspects and relation to statistical packages. Prerequisite: A ST 566 or consent of instructor.

A ST 568. Applied Linear Models II        3 cr.
The relation of full to less-than-full rank linear models; complex data structures, including messy data, empty cells, and components of variance: extensions to categorical data analysis and nonparametric methods. Continues some emphasis on computational aspects. Prerequisite: A ST 567.

A ST 569. Independent Study        1-3 cr.
Individual studies directed by consenting faculty with prior approval by department head. Prerequisite: consent of instructor. May be repeated for a maximum of 3 credits.

A ST 571. Special Research Problems        1-6 cr.
Individual analytical or experimental projects. Restricted to majors. Graded S/U.

A ST 599. Master's Thesis        1-6 cr.
Thesis.
one month prior to initial enrollment in the program. Although the program is designed to encourage participation by students with a variety of educational backgrounds, the curriculum is fast paced. As a consequence, a minimum level of background knowledge is expected of all entering students, and those who are lacking the necessary background in any of the knowledge areas indicated below will be required to make up their deficiencies early in the program. Effective with Spring 2013 admission, students may not complete more than 9 credits of required MBA courses prior to completion of the background knowledge courses.

**Background Knowledge**

Knowledge of the following areas will be assessed during the course of the program, and background knowledge must be demonstrated prior to or during the same terms as B A 590.

1. **Basic Accounting:**
   - Knowledge of each of the topics listed above may be demonstrated by successful completion of the following courses:
   - ACCT 221 and 222
   - ECON 251G
   - FIN 341
   - MKTG 252
   - MKTG 503
   - MATH 142G

   At NMSU, the relevant courses are:
   - ACCT 221 and 222
   - ECON 251G
   - FIN 341
   - MKTG 252
   - MKTG 503
   - MATH 142G

2. **Managerial Economics:**
   - Knowledge of each of the topics listed above may be demonstrated by successful completion of the following courses:
   - MGT 590
   - ECON 503
   - Managerial Economics,
   - MGT 590
   - MKTG 503
   - MATH 142G

   Students who lack the necessary background in any of the knowledge areas indicated below will be required to make up their deficiencies early in the program. Effective with Spring 2013 admission, students may not complete more than 9 credits of required MBA courses prior to completion of the background knowledge courses.

**Required Course Work (36 credits)**

The MBA program consists of twelve courses beyond the background knowledge requirements. Eleven are required courses: ACCT 503, BCIS 502, BLAW 502, ECON 503, FIN 503, MGT 502, MGT 503, MGT 512, MGT 590, MKTG 503, and B A 590. Students requesting transfer credit for any courses must submit appropriate, written justification, including course descriptions, syllabi, etc. The following course sequencing requirements must be satisfied:

1. B A 590 must be completed during the final term of the student’s program, and is only open to students who have been accepted into the M.B.A. degree program. Effective with students entering in summer 2011, ACCT 503, BLAW 502, FIN 503, and MKTG 503 must be completed prior to enrollment in B A 590.
2. MGT 590 must be completed at the end of the student’s program of study, and is only open to students who have been accepted into the M.B.A. degree program. All MBA coursework other than B A 590 must be completed prior to or during the same terms as MGT 503.
3. A maximum of 9 credit hours of these courses may be completed prior to the student’s acceptance into the M.B.A. degree program.

**Elective Course Work**

One elective is required in addition to the core MBA courses. This elective must be selected from the approved course list on the MBA web page.

**Specialization in Agribusiness**

Students who want to specialize in Agribusiness must take the following set of five AEEC courses in substitution of five courses included in the above “Required Course Work” list. The five AEEC courses included in the specialization in Agribusiness are:

- AEEC 511, Advanced Futures and Options Markets
- AEEC 520, International Agricultural Trade Theory and Policy
- AEEC 526, Global Food Supply Management
- AEEC 551, Advanced Agribusiness Marketing
- AEEC 556, Advanced Agribusiness Management

The five “Required Course Work” courses for which the above courses are substituted are:

- BCIS 502, Managerial Economics
- MGT 502, Operations Management
- MGT 512, Quantitative Analysis for Business Decisions
- MKTG 503, Marketing Management
- Elective course (from the approved list)

Elective course work must be selected from the approved course list on the MBA web page.

**Specialization in Information Systems**

Students who want to specialize in Information Systems must take additional coursework beyond that required to complete the M.B.A. degree program.

Four courses constitute the specialization in Information Systems. Choose four from this list:

- BCIS 540 – Information Systems Analysis and Design
- BCIS 560 – Enterprise Resource Planning & Business Processes
- BCIS 565 – Enterprise Systems Development
- BCIS 575 – Management of Information Security
- BCIS 580 – Systems Design, Development, and Implementation
ACCT 458 - Object-Oriented Systems Development Techniques
BCS 585 - Design of On-Line Business Systems
BCS 590 - E-Commerce Security
BCS 596 - Database Management Systems

Students may choose certain combinations of the above BCIS courses to form recommended tracks and are encouraged to seek advising from the MBA Office or the Information Systems faculty in making course selections.

Specialization in Finance
MBA students who want to specialize in Finance must complete 3 of the following 4 courses plus 1 elective course in Finance numbered 500 or higher. (Finance 503 is a required MBA course and a prerequisite for each of the courses listed below). Students who took FIN 435 as undergraduates must substitute another 500 level finance course for FIN 535 and thus are required to take only 2 of the remaining 3 listed courses (FIN 545, FIN 555, and FIN 566).

FIN 526 – Investment Concepts
FIN 540 – Money and Capital Markets
FIN 545 – Derivative Markets and Securities
FIN 566 – Advanced Financial Management

Final Examination
Oral defense of the paper written in fulfillment of the requirements of B A 590 will constitute the final examination as required by the Graduate School and will be scheduled and completed in accordance with timetables prescribed by, and other requirements of, the Graduate School.

Thesis
A thesis is not required. With special approval, however, a degree candidate may elect to write a thesis with at least 6 credit hours earned under B A 599 in lieu of B A 590.

Registration in Master of Business Administration Classes
Registration in any of the courses identified under 'Required Course Work' above requires:
1. admission to the Graduate School,
2. acceptance into the “Senior Petitioner” program, or
3. consent of the Academic Associate Dean.

JOINT DEGREE—ENGINEERING/MBA PROGRAM
Academically outstanding, highly motivated undergraduate engineering students who would like to apply their quantitative skills and technical expertise to the business environment should inquire about the joint degree program through the College of Engineering or the M.B.A. Program Office. Students who are accepted into this program can, with full time enrollment and careful scheduling of their coursework, complete the M.B.A. degree requirements in as little as two semesters beyond completion of the B.S. degree. Information regarding the joint degree program may be obtained from the College of Engineering or the M.B.A. Program Office.

DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION
The College offers a program leading to a Ph.D. degree. Currently concentrations are offered in management and marketing. Each candidate must:
• demonstrate competency in statistics and research methods;
• complete studies in a major field of concentration chosen from the departments of management or marketing in the College of Business;
• complete studies in a minor field of concentration or interest area that supports the student’s research, teaching, and/or career goals; and
• Pass qualifying and comprehensive exams.
• complete and successfully defend a doctoral dissertation.

M.B.A. AND PH.D. COURSES

ACCOUNTING
Descriptions for the following courses may be found under the section “Accounting” at the beginning of this chapter.
ACCT 451 - Auditing Theory and Practices ..................................................3 cr.
ACCT 455 - Federal Taxation II .................................................................3 cr.
ACCT 496 - Accounting for Nonprofit Organizations ..............................3 cr.
ACCT 497 - Mergers, Acquisitions, and Partnerships ............................3 cr.
ACCT 498 - Accounting for Decision Making and Control ....................3 cr.
ACCT 499 - Advanced Accounting Theory ............................................3 cr.
ACCT 490 - Selected Topics ....................................................................3 cr.
ACCT 498 - Independent Study ...............................................................1-3 cr.
ACCT 503 - Accounting for Managers ...................................................3 cr.
ACCT 525 - Advanced Cost-Managerial Accounting ..............................3 cr.
ACCT 545 - Financial Statement Analysis and Valuation ......................3 cr.
ACCT 560 - Special Topics ......................................................................3 cr.
ACCT 565 - Advanced Auditing Theory and Practice ..........................3 cr.
ACCT 564 - Advanced Accounting Theory ............................................3 cr.
ACCT 555 - Quantitative Analysis ............................................................3 cr.
ACCT 559 - Ethics and Professionalism in Accounting ..........................3 cr.
ACCT 560 - Taxation of Corporations and Shareholders Advanced .......3 cr.
ACCT 564 - Applied Accounting Concepts ............................................3 cr.
ACCT 565 - Estate Planning and Taxation ..............................................3 cr.
ACCT 570 - Taxation of Partnerships .....................................................3 cr.
ACCT 580 - Professional Accountancy ....................................................3 cr.
ACCT 598 - Independent Study ...............................................................1-3 cr.
ACCT 599 - Master’s Thesis .................................................................0-98 cr.

AGRICULTURAL ECONOMICS AND ECONOMICS
Descriptions for the following courses may be found under the section “Agricultural Economics and Economics” in the College of Agricultural, Consumer and Environmental Sciences.
AEEC 501 - Microeconomic Theory .........................................................3 cr.
AEEC 502 - Macroeconomic Theory .......................................................3 cr.
AEEC 511 - Advanced Futures and Options Markets ............................3 cr.
AEEC 520 - International Agricultural Trade Theory and Policy ...........3 cr.
AEEC 522 - Public Sector Economics ......................................................3 cr.
AEEC 523 - Public Sector Economics II ..................................................3 cr.
AEEC 528 - Economic Development .....................................................3 cr.
AEEC 540 - Econometrics I ......................................................................3 cr.
AEEC 545 - Advanced Agricultural Policy .............................................3 cr.
AEEC 550 - Advanced Microcomputer Applications in Agriculture .........3 cr. (2-2P)
AEEC 551 - Advanced Agribusiness Marketing ......................................3 cr.
AEEC 556 - Advanced Agribusiness Management ..................................3 cr.
AEEC 580 - Natural Resources and Environmental Policy ....................3 cr.
AEEC 585 - Production Economics ........................................................3 cr.
AEEC 589 - Global Agribusiness Environment .....................................3 cr.
AEEC 590 - Special Topics ....................................................................3 cr.
AEEC 591 - Agribusiness Management Seminar ....................................1 cr.
AEEC 593 - Internship ............................................................................1-6 cr.
AEEC 594 - Internship ............................................................................1-6 cr.
AEEC 595 - Internship (f,s,su) .................................................................1-6 cr.
AEEC 596 - Individual Study .................................................................1-3 cr.
AEEC 597 - Non-Thesis Research Project ...............................................1-3 cr.
AEEC 598 - Creative Component Project ..............................................1-3 cr.
AEEC 599 - Master’s Thesis .................................................................0-98 cr.

BUSINESS ADMINISTRATION
B A 485 - The Business of Science and Technology ............................3 cr.
This course examines business practices for science and technology organizations. The main focus of this course is to show the commercialization process, using business processes to transform an invention into a marketable product. For example, biomedical science discoveries reach patients through collaborative interactions among universities, private industry, and the government over a period of time. Strategic planning, marketing, finance accounting and management practices facilitate the transformation process. Topics include patents, funding, business plan preparation, risk management, and ethical conduct. This course will also address historical, current and global perspectives of science-driven and technology-driven businesses. Not open to MBA students.
B A 490 - Selected Topics .......................................................................3 cr.
Prerequisites vary according to the seminar being offered.
BCIS 475. Database Management Systems        3 cr.
BCIS 458. Knowledge Management and Decision Support        3 cr.
BCIS 450. Systems Design, Development and Implementation        3 cr.
BUSINESS COMPUTER INFORMATION SYSTEMS
BCIS 575. Management of Information Security        3 cr.
BCIS 565. Enterprise Information Portals        3 cr.
BCIS 550. Special Topics        1-3 cr.
BCIS 540. Information Systems Analysis and Design        3 cr.
BCIS 495. Enterprise Information Portals        3 cr.
BCIS 494. Independent Study        1-3 cr.
BCIS 584. Object-Oriented Systems Development Techniques 3 cr.
Business information systems development in the object-oriented environment. Taught with BCIS 470 with differentiated assignments for graduate students. Prerequisite(s): C or better in BCIS 322 or consent of instructor.

Analysis, design, and development of on-line, real-time computerized business information systems. Taught with BCIS 465 with differentiated assignments for graduate students. Prerequisite(s): C or better in BCIS 322 or consent of instructor.

BCIS 587. Business Systems Simulation 3 cr.
Simulation of business systems. Model design, implementation, testing, and analysis. Taught with BCIS 465 with differentiated assignments for graduate students. Prerequisite(s): C or better in BCIS 322 or consent of instructor; and A ST 261 or STAT 251.

BCIS 590. E-commerce Security 3 cr.
Introduction to securing network-based applications from both internal and external threats. Fundamentals of network security including TCP/IP, firewalls, intrusion detection and vulnerability discussed. Not open to students who have taken BCIS 480. Prerequisite(s): C or better in BCIS 460 or consent of instructor. No S/U or audit option.

BCIS 595. Database Management Systems 3 cr.
Design, development, and use of database management systems in the business environment. Prerequisite: BCIS 350 or consent of instructor. Same as BCIS 475 with differentiated assignments for graduate students.

BCIS 598. Independent Study 1-3 cr.
Individual studies directed by consenting faculty with prior approval of department head. A maximum of 3 credits may be earned. Prerequisite: consent of instructor.

BUSINESS LAW

BLAW 490. Selected Topics 1-3 cr.
Prerequisite varies according to the seminar being offered.

BLAW 498. Independent Study 1-3 cr.
Individual studies directed by consenting faculty with the prior approval of the department head. Prerequisite: junior or above standing and consent of instructor and department head.

BLAW 502. Legal Environment of Business 3 cr.
Legal procedures and the judicial system as applied to business situations and a general coverage of the body of substantive law most commonly associated with business. Prerequisite: graduate students only.

BLAW 518. Uniform Commercial Code and Advanced Business Law Topics 3 cr.
Property, advanced contact law, debtor-creditor relations, bankruptcy and Uniform Commercial Code topics including sales, negotiable instruments, secured transactions and documents of title. Students who have taken either BLAW 318 or BLAW 418 may not receive credit for BLAW 518. Prerequisite(s): BLAW 318 or BLAW 502.

BLAW 527. Negotiation and Business Dispute Resolution 3 cr.
Focus on learning tactics related to conflict resolution skills and negotiation theory. Also the use of quantitative methods and their realistic application in resolving disputes. Students will participate in numerous role playing activities and simulated mediation games. Same as MGT 527.

BLAW 530. American Indian Law and Policy 3 cr.
This course is divided into two major parts: an historical survey of federal Indian law and policy, and selected topics focusing on contemporary federal Indian law and policy issues and problems. This course assumes that the students have not had any law courses and approaches the topic of the history of federal Indian law and policy from various multidisciplinary and interdisciplinary perspectives.

BLAW 550. Selected Topics 3 cr.
Seminars in selected topics related to business law or the legal environment of business. Prerequisite(s). Varies according to seminar being offered.

BLAW 598. Special Research Programs 1-3 cr.
Individual investigations either analytical or experimental with the prior consent of the instructor and department head. Prerequisite: consent of instructor and department head.

ECONOMICS

Descriptions for the following courses may be found under the section 'Economics and International Business' later in this chapter.

FIN 545. International Economics 3 cr.
FIN 453. Introduction to Health Services Policy 3 cr.
FIN 455. Public Utilities Regulation 3 cr.
FIN 457. Mathematical Economics 3 cr.
FIN 460. Intelligence Research and Analysis 3 cr.
FIN 465. Economics of Human Resources 3 cr.
FIN 469. Senior Economics Seminar 3 cr.
FIN 490. Selected Topics 1-3 cr.
FIN 498. Independent Study 1-3 cr.
FIN 503. Managerial Economics 3 cr.
FIN 545. Econometrics II 3 cr.
FIN 550. Special Topics 1-3 cr.
FIN 571. Regulatory Policy and Industry Analysis: Electricity I 3 cr.
FIN 572. Regulatory Policy and Industrial Analysis: Water and Natural Gas 3 cr.
FIN 573. Regulatory Policy and Industry Analysis: Electricity II 3 cr.
FIN 574. Advanced Seminar Regulatory Policy and Industry Analysis 3 cr.
FIN 581. International Economics 3 cr.
FIN 582. Economics of Health Care 3 cr.
FIN 596. Independent Study 3 cr.

FINANCE

FIN 456. Real Estate Investments and Financing 3 cr.
Basic considerations for real estate investment and financing in local, state, and national markets. Prerequisite: FIN 325 or BLAW 325 or consent of instructor.

FIN 466. Financial Policy Decisions 3 cr.
Application and integration of financial theory, concepts, and practice using the case method. Prerequisite: FIN 406 or consent of instructor.

FIN 470. Real Estate Appraisal 3 cr.
This course addresses issues influencing the value of real estate with some emphasis upon rural properties. Topics include courthouse records, property taxes, appraisal methodology, expert courtroom testimony, condemnation, and legal issues. Students will take field trips and write appraisals. Course material is relevant to student in Finance, Accounting, and Pre-Law, as well as Agriculture. Accredited for hours to apply to both pre-licensing and continuing education requirements of the New Mexico Real Estate Commission for both Appraisers and Real Estate Brokers. Prerequisite(s): Junior or above standing. Crosslisted with: AGS E 470.

FIN 475. International Managerial Finance 3 cr.
International aspects of financial transactions, decision-making, banking and financial markets. Prerequisite: FIN 341. Same as IB 475.

FIN 480. Management of Financial Institutions 3 cr.
Asset and liability management of financial institutions; emphasis on commercial bank management. Prerequisite: FIN 385 or consent of instructor.

FIN 490. Selected Topics 1-3 cr.
Current topics in finance. Prerequisites: vary according to the seminar being offered.

FIN 491. Finance Internship and Cooperative Education II 1-3 cr.
Advanced application of finance techniques to the work environment. Prerequisite: consent of instructor. Restricted to finance majors.

FIN 498. Independent Study 1-3 cr.
Individual studies directed by consenting faculty with the prior approval of the department head. Prerequisites: junior or above standing and consent of instructor. A maximum of 3 credits may be earned.

FIN 503. Financial Management 3 cr.
Theory and application of financial analyses to asset management, profit evaluation, capital structure, and dividend policy. Interrelationships among financial and other organizational decisions. Prerequisite(s): FIN 341 with a grade of B or better.

FIN 511. Financial Futures Markets 3 cr.
Same as AEEC 511.

FIN 521. Personal Financial Planning for Professionals 3 cr.
Introduction to personal financial planning, including goal setting and fact finding, cash management, credit, housing, retirement planning, taxation and estate planning. This course is intended for those planning careers in personal financial advising in one of the various financial services environments. Prerequisite(s): FIN 503 or FIN 341 or consent of instructor.
FIN 525. Financial Statement Analysis and Valuation 3 cr.
Financial statement analysis from the perspective of equity investors, creditors, and company managers. Using a fundamental analysis approach, the primary objectives are development of fundamental information analysis skills used in firm and stock valuation, as well as enhancement of skills in credit analysis and strategic firm management. Prerequisite: FIN 503 and ACCT 503. Graduate students only.

FIN 535. Investment Concepts 3 cr.
Investments in common stocks and other securities. Risk and return, securities markets, portfolio theory and management. Prerequisite(s): FIN 355 or FIN 503.

FIN 536. Applied Security Analysis and Portfolio Management 1-3 cr.
Application of analytical tools to security selection and portfolio management. Prerequisite(s): FIN 436 or FIN 535.

FIN 545. Money and Capital Markets 3 cr.
Examination of financial markets and institutions. Emphasis on interest rate determinants, bond markets, and fixed income portfolio management. Prerequisite: FIN 503.

FIN 555. Derivative Markets and Securities 3 cr.
Institutional aspects of derivative markets and the arbitrage based pricing of derivative instruments such as stock options, interest rate options, future contracts and swaps. The applied component of the course demonstrates use of these instruments as hedge and/or investment vehicles. Prerequisite(s): FIN 503.

FIN 566. Advanced Financial Management 3 cr.
Application and integration of financial theory, concepts, and practice using the case method. Prerequisite: FIN 503.

FIN 575. International Managerial Finance 3 cr.
International aspects of financial transactions, decision-making, banking and financial markets. Prerequisite(s): FIN 503 or FIN 541.

FIN 581. Management of Financial Institutions 3 cr.
Asset and liability management of financial institutions; emphasis on commercial bank management. Prerequisite(s): FIN 385 or FIN 503.

FIN 590. Selected Topics 1-3 cr.
Current topics in finance. Taught with FIN 490 with differentiated assignments for graduate students. Consent of instructor required.

FIN 598. Special Research Programs 1-3 cr.
Directed individual reading or research. Prerequisite: consent of instructor.

INTERNATIONAL BUSINESS

Descriptions for the following courses may be found under the section ‘Economics and International Business’ later in this chapter.

IB 450V. International Economics 3 cr.
IB 458. Comparative International Management 3 cr.
IB 475. International Finance 3 cr.
IB 489. Senior Seminar in International Business 3 cr.

MANAGEMENT

Staffing processes for organizations and the evaluation of employee performance. Use of selection methods and measurement of work behavior.

MGT 453. Leadership and Motivation 3 cr.
Theories of leadership and motivation. Motivational programs for complex organizations. Relationships between organizational power, authority, and management styles. Crosslisted with: IE 453

MGT 454. Work Teams in Organizations 3 cr.
Theories of small groups and their application to the work situation. Why and how groups form, grow, communicate, and maintain themselves. Prerequisites: senior or above standing.

MGT 455. Public Utilities Regulation 3 cr.
Same as ECON 455.

MGT 458. Comparative International Management 3 cr.
Cultural influences on management are examined in a global business environment with a particular emphasis on human behavior in multinational organizations and the management of human resources. Same as IB 458.

MGT 460. Compensation Management 3 cr.
An overview of wage and salary administration, including job evaluation, wage and salary surveys, program administration, legal aspects of pay systems, and benefits administration. Prerequisite(s): MGT 332 or consent of instructor.

MGT 461. Seminar in Entrepreneurship 3 cr.
For students interested in owning and operating their own business; students desiring hands-on, real-time experience in helping start up a business. Prerequisites: seniors in business administration or engineering, MBA students and others at the discretion of the instructor. Same as MKTG 461.

MGT 462. Introduction to Health Services Policy 3 cr.
Same as ECON 453.

MGT 465. Contemporary Issues in Human Resources Management 3 cr.
Integrative course in human resources management, emphasizing the application of advanced concepts to complex personnel cases. Prerequisite: MGT 332.

Surveys the emerging Internet technology involving business to business, business to consumer, and consumer to consumer forms of trade. Covers quantitative decision and negotiation analysis techniques as well as auction and market trade mechanisms.

MGT 470. Project Management in Organizations 3 cr.
Roles, responsibilities, and techniques of project managers in managing projects effectively. Preparation for professional certification.

MGT 480. Operations Strategy 3 cr.
The formulation and implementation of integrated operations plans as strategic as well as tactical means to organizational competitiveness. Integration of the operations management course sequence with the companion functional areas of business is achieved via the case method and a systems design project.

MGT 490. Selected Topics 1-18 cr.
Seminars in selected current topics in the various areas of management and administration. Prerequisites vary according to the seminar being offered.

MGT 491. Management Internship and Cooperative Education II 1-3 cr.
Covers the application of management skills to the work environment. The amount of academic credit (1-3 cr.) will be determined by the academic experience and not be the work experience. Prerequisite: MGT 395 and consent of instructor. May be repeated for a maximum of 3 credits. Restricted to majors and minors.

MGT 498. Independent Study 1-3 cr.
Individual studies directed by consenting faculty with the prior approval of the department head. Prerequisites: junior or above standing and consent of instructor. A maximum of 3 credits may be earned.

MGT 502. Operations Management 3 cr.
Systems and specialized models applied to the management of production facilities and service operations, including physical and human resources. Prerequisite(s): Graduate students only.

MGT 503. Organizational Behavior and Management Processes 3 cr.
Covers the theory and practice related to the successful management of human resources in organizations operating within a dynamic global environment. Course goals include developing alternative frameworks for analyzing issues related to human behavior, management science, and organizational structure and theory. Prerequisite: graduate students only.

MGT 512. Quantitative Analysis for Business Decisions 3 cr.
Identification, collection, and analysis of an organization’s data both internal and external, and use of the resultant information in managerial decision making. Prerequisite: graduate students only.

MGT 524. Human Resource Management 3 cr.
Employment planning, recruiting, selection, orientation, performance evaluation, training, compensation, employee benefits, health and safety, equal employment opportunity, labor relations, and discipline.

MGT 527. Negotiation and Business Dispute Resolution 3 cr.
Same as BLAW 527.

MGT 545. Seminar in Human Resources Management 3 cr.
Systems, theories, and methods of managing human resources for optimum productivity.

MGT 546. Small Business Consulting 3 cr.
Study, analysis, and presentation of recommendations for solving significant problems confronting small businesses. Same as MGT 448 with differentiated assignments for graduate students.

MGT 582. Leadership and Motivation 3 cr.
Theories of leadership and motivation. Motivational programs for complex organizations. Relationships between organizational power, authority, and management styles. Same as MGT 453 with differentiated assignments for graduate students.
MGT 585. Public Utilities Regulation 3 cr.
Same as MGT 455 with differentiated assignments for graduate students.
Same as ECON 585.

MGT 588. Comparative International Management 3 cr.
Covers human resource management in other countries, with emphasis on Mexico, Western Europe, and Japan. Examination of cultural influences on management systems. Prerequisite: consent of instructor. Same as MGT 458 with differentiated assignments for graduate students.

MGT 589. Global Agribusiness Environment 3 cr.
Covers the integration of free trade, social equity, environmental and transnational corporation’s aspects of agribusiness from a food and global market perspective and within the framework of open systems theory, the socio-ecological perspective (CSTE). Prerequisite: Graduate students only.

MGT 590. Strategic Management 3 cr.
Covers the integration of functional, human, technological, and environmental aspects of business within the framework of management policy and strategy formulation. Formulate, implement, evaluate and control the various functions of the organization from a systems perspective. Understand the external environment and its impact on the organization. Prerequisite: M.B.A. student in his or her final semester. Restricted to majors.

MGT 591. Seminar in Entrepreneurship 3 cr.
For students interested in owning and operating their own business; students desiring hands-on, real-time experience in helping start up a business. Prerequisite: M.B.A. student or consent of instructor. Same as MGT 461 with differentiated assignments for graduate students. Crosslisted with: MKTG 591.

MGT 592. Compensation Management 3 cr.
An overview of wage and salary administration, including job evaluation, wage and salary surveys, program administration, legal aspects of pay systems, and benefits administration. Prerequisite: consent of instructor. Same as MGT 460 with differentiated assignments for graduate students.

MGT 598. Special Research Programs 1-3 cr.
Individual investigations either analytical or experimental. Prerequisite: consent of instructor. A maximum of 6 credits may be earned.

MGT 600. Doctoral Research 1-88 cr.
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination. Restricted to management majors.

MGT 601. Research in Management 1 cr.
Ph.D. course provides opportunities for significant interaction between Management faculty and Management Ph.D. students. The course also provides opportunities for the development of professional scholarly standards, ethics, and critique, as well as insight into current research areas and topics supported by the Management Department and other relevant disciplinary areas. May be repeated for a maximum of 6 credits. Restricted to Ph.D. students. Graded SU.

MGT 640. Instructional Development for Teaching Business 3 cr.
Pedagogical issues and techniques in collegiate business education. Includes course and curriculum development, outcomes assessment, class management, and teaching techniques. Practical issues faced in college instruction. Restricted to doctoral students.

MGT 645. Seminar in Human Resources Management 3 cr.
Seminar will address current issues in human resources management. Focus on research related to the selection, development, and effective use of human resources. Restricted to doctoral students.

MGT 650. Seminar in Organizational Behavior 3 cr.
Seminar will include specific organizational behavior topics; motivation, leadership, group and inter-group relations, and attitude theory. Focus on current research and theory. Restricted to doctoral students.

MGT 655. Seminar in Organizational Systems and Theory 3 cr.
Analysis of organizations from a macro perspective. Topics include organizational theory, organizational design, organizational environment, and sociotechnical systems. Restricted to doctoral students.

MGT 660. Research Design and Methodology 3 cr.
Topics will include philosophy of science, theory building, and research methods applicable to the study of organizational behavior. Restricted to doctoral students.

MGT 661. Qualitative Research Methods 3 cr.
In-depth coverage of selected topics in research methodology, including theory and logic of scientific investigation, grounded theory, action research, and ethnography. Restricted to doctoral students.

MKTG 591. Seminar in Entrepreneurship 3 cr.
For students interested in owning and operating their own business; students desiring hands-on, real-time experience in helping start up a business. Same as MKTG 461 with differentiated assignments for graduate students. Crosslisted with: MGT 591.

MKTG 598. Special Research Programs 1-3 cr.
Individual investigations either analytical or experimental. Prerequisite: consent of instructor. A maximum of 3 credits may be earned.

MGT 670. Seminar in Operations Management 3 cr.
Seminar examines the major problem areas, research findings, and research methodologies of operations management. Focus on the critical evaluation of current theory and methodology. Restricted to doctoral students.

MGT 675. Seminar in Strategic Management 3 cr.
Survey of current and classical readings in strategy. Introduces the doctoral level student to strategic issues, strategic topics for research, and publication venues. Restricted to doctoral students.

MKTG 685. Story Consulting to Organizations 3 cr.
Apply various qualitative story and narrative research methods (plot analysis, script analysis, life history, and restoring) to action research consulting project. Students will conduct story assessment and (propose or enact) intervention with a local consenting organization. Restricted to doctoral students.

MKTG 690. Special Topics 3 cr.
Seminars in selected current topics in the various areas of management. May be repeated for unlimited credit. Restricted to doctoral students. Prerequisite(s): Vary according to seminar being offered.

MKTG 698. Special Topics 1-3 cr.
Prerequisite: consent of instructor.

MKTG 706. Doctoral Dissertation 0-88 cr.
Prerequisite: advancement to candidacy.

MARKETING
Same as AG E 451.

MKTG 455. Services Marketing Management 3 cr.
How service organizations can grow and prosper through application of marketing. Analyzes nature of services, service environment, customer and marketing mix, and implementation of service strategies.

MKTG 461. Seminar in Entrepreneurship 3 cr.
Same as MKTG 461.

MKTG 480. Level 3, PGA’s PGM Education Program (Part 2) 1.5 cr.
Completion of Level 3 of the PGA’s Educational Program. This class will focus on applying work experience while out on a PGA-required internship (co-op) to complete the PGA’s Level education kit. Restricted to PGA Golf Mgt. students. Consent of PGA Director required. Consent of instructor required. Restricted to MKTG, PGM majors.

MKTG 481. PGA Final Experience 3 cr.
The following is a requirement for successful completion of this senior level PGA Golf Mgt. Capstone course: 16 months of co-op, completion of Level 1, Level 2, and Level 3 of the PGA’s PGM Educational Program, and successful completion of the PGA’s Playing Ability Test. Restricted to PGA Golf Mgt. students. Consent of PGA Director required. Consent of instructor required. Restricted to MKTG, PGM majors.

MKTG 489. Strategy and Policy 3 cr.
Techniques and analysis of marketing strategy and policy planning and formulation. Prerequisites: senior standing or consent of instructor.

MKTG 490. Selected Topics 1-18 cr.
Covers materials and subjects not offered in regular Marketing courses. Students can take 18 credit hours of MKTG 490 if each class is a different subtitle. A maximum of 18 credit hours can be earned through MKTG 490.

MKTG 498. Independent Study 1-3 cr.
Individual studies directed by consenting faculty with the prior approval of the department head. Prerequisites: junior or above standing and consent of instructor. A maximum of 3 credits may be earned.

MKTG 503. Marketing Management 3 cr.
Analysis of marketing problems and the integration of organizational resources as well as behavioral and quantitative techniques into the development and implementation of solutions. Prerequisite(s): MKTG 303 or equivalent with a grade of B or better. Graduate students only.

MKTG 591. Seminar in Entrepreneurship 3 cr.
For students interested in owning and operating their own business; students desiring hands-on, real-time experience in helping start up a business. Same as MKTG 461 with differentiated assignments for graduate students. Crosslisted with: MGT 591.

MKTG 598. Special Research Programs 1-3 cr.
Individual investigations either analytical or experimental. Prerequisite: consent of instructor. A maximum of 3 credits may be earned.
MKTG 601. Marketing Management 3 cr.
Covers the conceptual foundations of contemporary marketing management, research, concepts, and literature. Fundamental to the understanding of contemporary marketing and the breadth of the field of marketing study.

MKTG 610. Marketing and the Scientific Method 3 cr.
Issues related to the evolution of research philosophies and methodologies. Critical to the development of appreciation for the value of research and experimentation.

MKTG 620. Research-Theory Interface 3 cr.
Theoretical and methodological issues involved in translating a theory into a research study. Prepares Ph.D. students to undertake dissertation research. Consent of instructor required.

MKTG 625. Consumer Behavior 3 cr.
Extensive reading of seminal and contemporary articles on consumer behavior and developing original research to explore cross-disciplinary issues relevant to the study of marketing.

Explores theories of measurement that underlie all quantitative analysis, including the use of structural equation models. Contrasts classical test theory with item response theory and generalizability theory. Covers PRELIS and LISREL, and critiquing structural equation models by other researchers. Prerequisite: MKTG 630 or equivalent.

MKTG 670. Marketing Theory 3 cr.
The evolution, development, construction, and evaluation of the major theoretical perspectives of marketing. Fundamental to the understanding of contemporary marketing and preparation for investigations into the nature and role of theory in marketing.

MKTG 690. Special Topics in Marketing 3 cr.
A seminar on special topics in marketing. The topic of the course will vary according to the needs of the students in the program and the instructor. Ph.D. students may repeat this course up to three times for a maximum total of 9 credits.

MKTG 698. Selected Topics 1-9 cr.
Materials and subjects not offered in regular marketing courses. May be repeated for a maximum of 18 credits under different subtitles.

MKTG 700. Doctoral Dissertation 0-88 cr.
Prerequisite: advancement to candidacy.

ECONOMICS AND ECONOMIC DEVELOPMENT

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Department of Economics, Applied Statistics and International Business:
R. Adkisson, department head, Ph.D. (Nebraska)–international economics, public finance, institutional economics; Larry Blank, Ph.D. (University of Tennessee, Knoxville)–microeconomic theory, managerial economics and regulatory economics; K. Brook, Ph.D. (Texas-Austin)–macroeconomic theory, monetary policy; D. L. Clasen, Ph.D. (Kansas State)–linear models, government statistics; D. L. Daniel, Ph.D. (Southern Methodist)–nonparametrics; C. M. Downes, Ph.D. (University of New Mexico)–environmental/economic resources, development, international business; M. Els (Emeritus), Ph.D. (California-Riverside)–comparative economic systems, medical economics; C. Enomoto, Ph.D. (Texas A&M)–econometrics, economic theory; C. A. Erickson, Ph.D. (Arizona)–monetary theory, macroeconomics; C. Gard, Ph.D. (University of Washington)–biostatistics; O. D. Geagax, Ph.D. (Wyoming)–public utility economics, industrial organization; W. R. Gould, Ph.D. (North Carolina State)–biological sampling, wildlife and fisheries estimation; S. M. Knapp, Ph.D. (Purdue)–wildlife biometrics; Y. L. Lee, Ph.D. (Southern Illinois-Carbondale)–international finance, international trade, international system, economic development, B. N. Matta, (Emeritus) Ph.D. (Texas at Austin)–Economics, Randy McFerrin, Ph.D. (Texas A & M University)–micro theory, principles and American economic history; J. T. McGuirk (emeritus), Ph.D. (Wisconsin-Madison)–production economics, resource economics and policy; M. Pan, Ph.D. (Nebraska)–economics development, international economics, applied econometrics, general regional economics; J. T. Peach, Ph.D. (Texas-Austin)–quantitative economics, border studies, economic development; A. V. Popp, (Emeritus), Ph.D. (Northern Illinois)–public finance, C. Ricketts, Ph.D. (Mississippi State)–labor, health, development; D. B. Smith, (Emeritus), Ph.D. (Nebraska)–public utility economics, industrial organization; R. L. Steiner, Ph.D. (Oklahoma State)–likelihood methods, discrete distributions; D. VanLeeuwen, Ph.D. (Oregon State)–statistics; B. Wildner, Ph.D. (Colorado State)–urban, regional, public finance, development; E. S. Williman, (Emeritus) Ph.D. (Indiana)–monetary policy, macroeconomic theory.

Department of Agricultural Economics and Agricultural Business:

Terry L. Crawford, interim department head, Ph.D. (Cornell University)–marketing, policy and pricing, quantitative methods, trade, R. N. Agharya, Ph.D. (Auburn University)–food safety, logistics management, technology adoption, and marketing; S. Archambault, Ph.D. (University of New Mexico)–Economics, L.B. Catlett, Ph.D. (Iowa State)–marketing, futures, economics, C. Clary, Ph.D. (North Carolina State)–marketing, commodity advertising, J. A. Daimer, Ph.D. (Colorado State)–natural resources, regional economics; C. Falk, Ph.D. (Oklahoma State)–marketing, agribusiness; J. M. Fowler, Ph.D. (Iowa State)–forestry and range economics; W. D. Gorman (Emeritus, Adjunct), Ph.D. (Oregon State)–agricultural business management, international marketing, J. Hawkes, Ph.D. (New Mexico State)–range management, B. H. Hurd, Ph.D. (California-Davis)–water and natural resource economics; J. D. Libbin, Ph.D. (Iowa State)–farm management, production economics, J. Lillywhite, Ph.D. (Purdue)–agribusiness marketing; M. Patrick, Ph.D. (Michigan State)–Economic Development; R. Skaggs, Ph.D. (Utah State)–agriculture and natural resource policy; L. A. Torell, Ph.D. (Utah State)–range, ranch economics, production economics; F. A. Ward, Ph.D. (Colorado State)–resource economics, welfare economics.

DEGREE: Master of Arts
MAJOR: Economics

SPECIALIZATION: Public Utility Policy and Regulation

DEGREE: Doctor of Economic Development

GRADUATE STUDY IN ECONOMICS

The Department of Economics, Applied Statistics and International Business cooperates with the Department of Agricultural Economics and Agricultural Business in offering graduate programs in economics, agricultural economics, and economic development. The programs are jointly administered by faculty from the two departments. The objective of the master’s programs is to prepare students for professional positions in business, government, or research institutions and/or for further graduate studies leading to the Ph.D. degree. The Department of Economics, Applied Statistics and International Business offers a Master of Arts in economics and, as subcategories of the degree, options in regulatory economics, policy analysis and econometrics. For more information on the Master of Science degree in agricultural economics, refer to the Agricultural Economics section in this catalog. The objective of the Doctor of Economic Development is to provide advanced training in applied economic development.

DEGREE: Master of Arts
MAJOR: Economics

Candidates for the Master of Arts in economics must successfully complete a minimum of 30 graduate credits, options may require more than 30 graduate credits. Twenty-nine of the credits must have one of the four following prefixes: AEEC, ECON, ECDV, or AG E. Twenty-four of the credits must be associated with courses numbered 500 or above. ECON 503 cannot be counted toward the major in Economics. All students must meet the requirements specified in the general regulations and requirements for admission to the Graduate School and to candidacy. Students preparing to enter the program are encouraged to complete the following: (a) one course in intermediate microeconomic theory and one course in macroeconomic theory with minimum grades of B; (b) one course in college-level calculus; and (c) one course in statistics, including simple regression. Those students not having completed these courses may be admitted with the requirement that the deficiencies be completed at the beginning of the graduate program. Those students interested in the option in regulatory economics are advised to complete two courses in college-level statistics.

All students in the program must successfully complete a minimum of 30 credits including the following core courses: AEEC 501, AEEC 502, and AEEC 540.

For the option in Public Utility Policy and Regulation, students must also complete ECON 571, ECON 572, ECON 573, and ECON 574.
For the option in policy analysis, students must also complete the following courses: AECC 522, AECC 523, AECC 524, GOVT 530, either a three-credit internship or AECC 589 (3 credits), and 6 additional credits agreed upon with the advisor.

For the option in Econometrics, students must also complete the following courses: ECON 545 and 6 graduate credits of A ST (Applied Statistics) at the 500 level (excluding A ST 505).

Teaching and research assistantships are available to qualified applicants. It is not necessary to have a degree in economics to enter the graduate program or to receive financial assistance. An application and three letters of reference are required to be considered for any available assistantships. These forms can be obtained from the department.

MINOR: ECONOMICS

Graduate students wishing to earn a minor in economics must complete 12 semester credit hours, including at least two courses from AECC 501, AECC 502, and AECC 540. The remaining credit hours must come from ECON or AECC courses numbered 500 or higher, excluding ECON 503, which cannot be counted toward the minor. Students pursuing the economics minor must fulfill the course prerequisites before enrolling in the graduate courses.

CERTIFICATE: GRADUATE CERTIFICATE IN PUBLIC UTILITY REGULATION AND ECONOMICS (PURE)

The certificate in Public Utility Regulation and Economics (PURE) is a professional educational program designed for post-baccalaureate students pursuing a career in the utility sector, with an electric utility company, natural gas utility, water distribution utility, or with a government agency regulating these types of companies. PURE students must meet the general regulations and minimum requirements for admission to the graduate school and complete 12 credit hours including ECON 571, ECON 572, ECON 573, and ECON 574. See departmental webpage for details.

DEGREE: Doctor of Economic Development

The Doctor of Economic Development (DED) is a professional doctorate designed to provide advanced training for economic development professionals. It is not designed to prepare graduates for academic careers.

Candidates for the DED enter the program with the equivalent of a master’s degree. DED students must successfully complete 60 graduate credits beyond the hours required for entry. All students must meet the requirements specified in the general regulations and requirements for admission to the Graduate School and to candidacy. DED minimum admission requirements include: (a) related master’s degree or equivalent coursework; (b) one course in intermediate microeconomic theory and one course in intermediate macroeconomic theory with minimum grades of B; (c) one course in college-level calculus with a minimum grade of B; and (d) one course in statistics, including simple regression with a minimum grade of B. Additionally, students who have not completed graduate level courses in microeconomic theory, macroeconomic theory, and econometrics AECC 501, AECC 502, AECC 540 with grades of B or better will be required to successfully complete these courses early in the DED program.

All students in the DED program must successfully complete the following core courses: ECON 556, ECON 661, ECON 662, ECON 664, ECON 666, ECON 671, and ECON 692 (twice). In addition, students will complete ECON 661, ECON 662, and ECON 682 plus a specialty area (six semester hours) and 12-15 semester hours of internship and final project, and sufficient elective credits to fulfill the 60 hour requirement. Comprehensive and oral exams will be given and will determine eligibility to continue in the program and/or to graduate.

Detailed and updated information is available on the departmental website.

GRADUATE STUDY IN BUSINESS ADMINISTRATION

The Department of Economics, Applied Statistics and International Business also cooperates with the other departments of the College of Business in offering programs leading to a Master of Business Administration degree and a Ph.D. in business administration. Within the Ph.D. program, the department offers a minor area of study. More information about these programs is available in this catalog under College of Business.

ECONOMICS

ECON 450. International Economics
3 cr.
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariffs matters, international organizations. Prerequisites: ECON 251G and ECON 252G. Crosslisted with: IB 450

ECON 452. Introduction to Health Services Policy
3 cr.
The economics of health care policy in the United States with concern for U.S. Mexico border health issues and international comparisons. Same as MGT 462.

ECON 455. Public Utilities Regulation
3 cr.
Procedures of utility regulation; regulatory theory applied to specific industries; commission regulation compared to public ownership and deregulation. Prerequisites: ECON 252G, FIN 306, or consent of instructor. Same as MGT 455.

ECON 457. Mathematical Economics
3 cr.
Application of mathematical tools, especially the calculus, to economic theory. Prerequisite: one upper-division economics course.

ECON 460. Intelligence Research and Analysis
3 cr.
This course explores the organization, functions, and processes of the U.S. Intelligence Community (IC), with a focus on practical intelligence research and analytical methods. Students will learn in-depth research techniques that will be valuable to any course of study. Critical thinking skills will be enhanced through the practice of analytical methods that can be applied toward national security and/or commercial interests. Unclassified and declassified data, including human intelligence, imagery, and other sources of evidence will be used in class projects and assignments. Intelligence successes and failures will be examined, as well as the politicization of intelligence and the relationship of intelligence activities to policy and policymakers. Prerequisite: Junior status or above.

ECON 465. Economics of Human Resources
3 cr.
Measurement, allocation, and utilization of human resources; labor supply, value of education and training, labor market dynamics, unemployment, government manpower programming.

ECON 489. Senior Economics Seminar
3 cr.
Seminar primarily for economics majors in their final semester. Provides an opportunity to apply economic theory to a broad variety of topics. Prerequisite: ECON 371 or ECON 372.

ECON 490. Selected Topics
1-3 cr.
Current topics in economics. Subject matter to be designated for each semester.

ECON 498. Independent Study
1-3 cr.
Individual studies directed by consenting faculty with the prior approval of the department head. May be repeated for a maximum of 3 credits. Prerequisite: junior or above standing and consent of instructor.

ECON 502. Managerial Economics
3 cr.
Theory and application of microeconomics to the management of organizations. Prerequisite(s): A ST 251 or 311 or equivalent with B or better.

ECON 545. Econometrics II
3 cr.
Application of statistical techniques to estimation of economic relationships; demand functions, production and cost functions, and macroeconomic equations. Prerequisites: ECON 251, 252, STAT 251G or A ST 311, and AECC 540.

ECON 550. Special Topics
1-3 cr.
Seminars in selected current topics in the various areas of economics. Prerequisites vary according to the topic being offered.

ECON 571. Regulatory Policy and Industry Analysis: Electricity I
3 cr.
Regulatory policy and economic analysis related to the Electric Industry. Topics include: characteristics of a utility and analytical justification for regulation; characteristics and functions of a regulatory commission; history and structure of the industry; technology and network design; revenue requirements; cost allocation; and basic rate design. Prerequisite(s): ECON 252G, FIN 306, or consent of instructor.

ECON 572. Regulatory Policy and Industry Analysis: Water and Natural Gas
3 cr.
Regulatory policy and economic analysis related to the Natural Gas and Water industries. Topics include: history and structure of the industry; technology and network design; revenue requirements; cost allocation; and retail rate design.
ECDV 670. Research in Economic Development 3 cr.

ECDV 671. Sustainable Economic Development 3 cr.
Focuses on the interconnections between economic development and the environment. Provides a broad set of tools and ideas related to the impacts of human activities on the environment. Prerequisites: AEEC 501, AEEC 502 and AEEC 540.

ECDV 672. Research Methods 3 cr.
An overview of alternative research methods and tools. Students explore quantitative and qualitative research methods as alternatives and complements to statistical methods. Research design, ethics, and presentation are emphasized. Prerequisites: AEEC 501, AEEC 502 and AEEC 540.

ECDV 681. Urban Economic Development 3 cr.
Examines causes and consequences of economic change in urban and metropolitan areas. Covers both theory and tools for analysis. Prerequisites: ECDV 651, ECDV 661 and ECDV 662.

ECDV 682. Rural Development 3 cr.
Examines causes and consequences of economic change in rural areas, communities and small, open economies. Covers both theory and tools for analysis. Prerequisites: ECDV 651, ECDV 661 and ECDV 662.

ECDV 683. Seminar in National Economic Development 3 cr.
Explores specific examples and cases of rural and urban economic development. Involves applied analysis of specific rural and/or urban economic issues/projects. Prerequisites: ECDV 681 and ECDV 682.

ECDV 685. Seminar in International Economic Development 3 cr.
Explores specific examples and cases of economic development in an international context. Focuses on the application of theories and methods in prerequisite courses to the problems of nations lagging in economic development. Prerequisites: AEEC 528, AEEC 529 or ECON 581.

ECDV 692. Seminar in Economic Development 3 cr.
Seminars in selected topics in economic development. Subtitle reflects content. May be repeated up to 9 credits. Prerequisite: Completion of at least nine semester hours of ECDV courses.

ECDV 698. Internship 1-9 cr.
Internship in Economic Development. May be repeated up to 9 credits. Prerequisite: Completion of core requirements of Doctor of Economic Development.

ECDV 699. Doctoral Project 1-9 cr.
Doctoral Project. May be repeated up to 9 credits. Completion of all DED coursework and successful completion of comprehensive exams.

INTERNATIONAL BUSINESS

IB 450. International Economics 3 cr.
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Prerequisite(s): ECON 251G and ECON 252G. Crosslisted with: ECON 450G

IB 456. Comparative International Management 3 cr.
Cultural influences on management are examined in a global business environment with a particular emphasis on human behavior in multinational organizations and the management of human resources. Same as Mgt. 458.

IB 475. International Finance 3 cr.
Same as FIN 475.

IB 489. Senior Seminar in International Business 3 cr.
Capstone class for IB majors. Integration of previous classwork via the examination of case studies and completion of a major project. Prerequisite: IB core.

AGRICULTURAL ECONOMICS AND ECONOMICS

Descriptions for the following courses may be found under the section "Agricultural Economics And Economics" at the beginning of this chapter.

AEEC 501. Microeconomic Theory 3 cr.
AEEC 502. Macroeconomic Theory 3 cr.
AEEC 511. Advanced Futures and Options Markets 3 cr.
AEEC 520. International Agricultural Trade Theory and Policy 3 cr.
AEEC 522. Public Sector Economics I 3 cr.
AEEC 523. Public Sector Economics II 3 cr.
AEEC 526. Global Food Supply Chain Management 3 cr.
AEEC 528. Economic Development 3 cr.
AEEC 540. Econometrics I 3 cr.
AEEC 545. Advanced Agricultural Policy 3 cr.
AEEC 559. Advanced Microcomputer Applications in Agriculture (2-2P)
AEEC 551. Advanced Agribusiness Marketing 3 cr.
AEEC 556. Advanced Agribusiness Management 3 cr.
AEEC 580. Natural Resources and Environmental Policy 3 cr.
AEEC 585. Production Economics 3 cr.
AEEC 590. Special Topics 3 cr.
AEEC 591. Agribusiness Management Seminar 3 cr.
AEEC 593. Internship 1-6 cr.
AEEC 594. Internship 1-6 cr.
AEEC 595. Internship (f,s,su) 1-6 cr.
AEEC 596. Individual Study 1-3 cr.
AEEC 597. Non-Thesis Research Project 1-3 cr.
AEEC 598. Creative Component Project 1-3 cr.
AEEC 599. Master’s Thesis 0-88 cr.

AGRICULTURAL ECONOMICS

Descriptions for the following courses may be found under the section "Agricultural Economics and Economics" at the beginning of this chapter.

AG E 450. Advanced Microcomputer Applications in Agriculture 3 cr. (2+2P)
AG E 452. Food and Agricultural Products Marketing Research Techniques and Writing and Oral Presentation Skill 3 cr.
AG E 454. Community Economic Development 3 cr.
AG E 456. Agribusiness Management 3 cr.
AG E 458. Economics of Making and Marketing Wine 3 cr.
AG E 470. Rural Appraisal (2+2P)
AG E 491. Linear Programming Methods 1 cr.
AG E 499. Senior Thesis 3 cr.
COLLEGE of EDUCATION

Dean • Michael Morehead
Associate Dean • James O’Donnell
Associate Dean for Research • Karin Wilburg
Assistant Dean for Budget and Planning • Gladys De Necochea
Director of Education Research and Budget • Juanita Hannan

COUNSELING AND EDUCATIONAL PSYCHOLOGY

Department website: http://education.nmsu.edu/cep/ (575) 646-2153

J. P. Schwartz, Ph.D., department head, (New Mexico State University)– counseling psychology, gender roles, prevention, intimate violence; E. Adams, Ph.D., (Ohio State University)– multiculturalism & diversity, mindfulness, supervision; E. Arroyo, Ph.D. (University of Iowa)– school psychology, pediatric neuropsychology, mentoring, multicultural competence; H. Cheng, Ph.D. (University of Missouri-Columbia)– attachment theory, help-seeking and mental health disparities, racial and ethnic minority psychology; H. Chun, Ph.D. (Missouri-Columbia)– school psychology, prevention of adolescent mental health and behavior problems, risk and protective factors; J. Torres Fernandez, Ph.D. (University of Iowa)– school psychology, prevention, classroom guidance; G. Dickson, Ph.D. (University of Iowa)– counselor education, multicultural training; L. L. Grayshield, Ph.D. (Nevada-Reno)– indigenous culture based methods in counseling & educational psychology; A. L. Lopez, Ph.D. (The University of Texas at San Antonio)– multicultural counseling, social justice, immigration, bilingual counseling/supervision, eating disorders and body image; C. Porras, Ph.D. (University of Iowa State University) – Research: Attachment styles, emotional intelligence, diversity implications in therapy, underrepresented populations in higher education; E. Vazquez, Ph.D. (University of Iowa)– school psychology, assessment, psychoeducational interventions, acculturation, ethnic and linguistic diversity; L. Vazquez, Ph.D. (University of Iowa)– multicultural curriculum development and counseling, bilingual therapy, acculturation, identity development, and phenotype research; M. Valdo, Ph.D. (University of Utah)– counseling psychology, mental health counseling, relationship enhancement, group work, prevention

DEGREE: Master of Arts
MAJOR: Counseling and Guidance
CONCENTRATION: Counseling

DEGREE: Specialist in Education
MAJOR: School Psychology

DEGREE: Doctor of Philosophy
MAJOR: Counseling Psychology

The major thrust of the Counseling and Educational Psychology (CEP) Department is the preparation of personnel for work in counseling, guidance, school psychology, counseling psychology and related areas. Three graduate degrees are available: (1) Master of Arts, (2) Specialist in Education and (3) Doctor of Philosophy.

The CEP Dept. offers a Counseling Program which leads to a Master of Arts in Counseling and Guidance. The program is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). It prepares professional counselors to perform mental health counseling in agencies, hospitals, private practice and schools. Successful completion of the Counseling Program qualifies students to pursue licensure as clinical mental health counselors with the New Mexico Counseling and Therapy Practice Board and licensure as school counselors with the New Mexico Department of Education. The 60-credit counseling curriculum requires two years full time or three years part time study on campus, and covers the following areas: human development; appraisal; diagnosis; treatment planning; individual, family and group counseling; consultation; career/life planning; addictions; research; and professional issues. Specialized training and supervised experience is offered in mental health agencies, hospitals and in schools.

The CEP Department also offers a Specialization in Guidance and Human Relations that leads to a Master of Arts in Counseling and Guidance. It prepares professionals for guidance roles in the military, education, community agencies, corrections and other settings. The thirty credit guidance curriculum can be completed in two years of part time study. It is offered primarily through distance education, but includes some face to face instruction on campus. The Specialization in Guidance and Human Relations does not prepare students for licensure as counselors, and is not accredited by the Counsel for Accreditation of Counseling and Related Educational Programs.

The CEP Dept. offers a School Psychology Program that leads to an Educational Specialists (Ed. S.) degree in School Psychology. The program has national approval through the National Association of School Psychologists. The program provides additional education beyond the M.A. to prepare professionals for licensure as school psychologists in New Mexico and throughout the United States. The School Psychology Program prepares its candidates to work with preschoolers, children, adolescents, and families. The various settings where School Psychologists are employed include public schools and other organizations that require advanced assessment, counseling, consultation and other interventions. The program trains its candidates to serve students with diverse educational, psychological and emotional needs from various backgrounds. Such training also includes working with all school personnel to help make education a positive and rewarding experience for their students. Currently, the program offers additional training for the development of bilingual School Psychologists through a personnel preparation grant.

The CEP Dept. offers a doctoral Counseling Psychology Program that leads to a Ph.D. in Counseling Psychology. The program is accredited by the American Psychological Association (for more information on this accreditation contact the Office of Program Consultation and Accreditation, APA, 750 1st Street, NE, Washington, DC 20002, 202.336.5979). The program is based on the scientist-practitioner model through which both research and service delivery skills are acquired. Graduates of the program are prepared to conduct research, provide service, teach and supervise. The program prepares students for licensure as psychologists. The three goals of the program are to:

1) Produce well-trained generalists in applied psychology capable of competently utilizing a wide variety of assessments, modalities and types of interventions, and in disseminating psychological information.
2) Nurture active learners and critical/scientific thinkers capable of integrative thinking, application of theory, hypothesis generation, and self-reflection.
3) To develop in students a contextual understanding of psychology and the environments in which they work and live so as to produce culturally-responsive, developmentally-aware, and strengths-based psychology professionals.

CEP faculty conducts periodic reviews of students’ progress in the programs, including their academic performance, counseling and psychoeducational skills, professionalism, and ethics. An interview is required as part of the review. Deficits identified through faculty reviews may result in recommendations that students engage in remedial work or that they pursue alternative career goals.
For information on admission procedures and requirements of degree programs in Counseling and Educational Psychology, contact the department office. Test scores on the Graduate Record Examination (aptitude) are required of all applicants. Other requirements include but are not limited to the following: application and fee, official transcripts, three letters of recommendation, letter of intent, statement of purpose and list of completed upper-division and/or graduate course work related to counseling, school psychology, or counseling psychology. Interviews are required as a part of the selection process. For more information about the CEP Department and programs visit our website: http://education.nmsu.edu/cep/.

Counseling and Educational Psychology

C EP 451V. Introduction to Counseling 3 cr.
Principles of counseling for nonmajors.

Understanding addictions process, prevention, and recovery, including biological, interpersonal and sociological influences, and intervention strategies. Taught with C EP 555.


Understanding social identities such as race, ethnicity, sexual orientation, age, social class and spirituality as it relates to psychosocial development, academic achievement and counseling.

C EP 499. Independent Study 1-6 cr.

C EP 495. Psychology, Multiculturalism and Counseling 3 cr.
Appraisal and conceptualization of mental disorders and other problems through diagnostic interviewing using the DSM. Treatment planning for counseling with children, adolescents, and adults. Prerequisite: C EP 512 or concurrent enrollment, or consent of instructor. Restricted to majors. Taught with C EP 496.

C EP 500. Career/Life Planning and Vocational Assessment 3 cr.
Appraisal of personal and career choice, sources of occupational and educational information, and approaches to decision making and values clarification. Laboratory involves supervised interpretation of vocational assessment. Prerequisites: consent of instructor. Restricted to majors. Same as C EP 651.

C EP 502. Introduction to Counseling 3 cr.
Overview of counseling theory, techniques, ethics, and professional issues. Same as C EP 451V.

Overview of counseling. Emphasis on developing listening skills and basic counseling strategies, and provision of psychoeducational services. Prerequisites: C EP 500 or consent of instructor.

C EP 511. Edumetrics 3 cr.
The rationale, assumptions, theories, and techniques underlying descriptive statistics as applied to educational and psychological measurement and research. Intended primarily for post-masters students (e.g., Ed.S., Ed.D.). Prerequisite: consent of instructor.

C EP 512. Human Development 3 cr.
Theory and research regarding cognitive, social, and emotional development across the lifespan with emphasis on enhancing human development. Prerequisite: C EP major or consent of instructor. Same as C EP 612 except for advanced level materials and experiential activities.

Survey and comparison of theory and research regarding human learning as they apply to development, education, and counseling. Prerequisites: C EP 512 or consent of instructor. Crosslisted with: C EP 615

C EP 517. The Psychology of Multiculturalism 3 cr.
Understanding age, gender, ethnicity, socioeconomic status and culture in relation to human development, education, and counseling. Prerequisite: C EP 512 or concurrent enrollment or consent of instructor. Restricted to majors. Same as C EP 617 except for advanced-level materials and experiential activities.

Theory, research and practice from feminist and multicultural perspectives will examine the integration of social identities such as gender, sexual orientation, race, ethnicity, age, social class, spirituality, and ability in relation to counseling psychology. Prerequisite: C EP 512 or concurrent enrollment or consent of instructor. Same as C EP 619.

C EP 522. Organization and Administration of School Counseling Services 3 cr.
Procedures for establishing and maintaining counseling programs in the schools. Professional and ethical issues in school counseling and group laboratory experience to enhance self-awareness and interpersonal skills for effective professional relationships. Prerequisite: consent of instructor. Restricted to majors.

History, roles, organizational structures, settings, ethics, standards, laws, and credentialing related to mental health counseling. Group laboratory experience to enhance self-awareness and interpersonal skills for effective professional relationships. Prerequisite: consent of instructor. Restricted to majors.

Develop research and program evaluation including critical literature review, generating questions, quantitative and qualitative methodology, analysis, and writing proposals.

Selection, administration, and interpretation of tests and other assessment methods. Topics include reliability, validity, norms, cultural factors, and ethics related to appraisal. Prerequisites: C EP 512 and C EP 517, or consent of instructor. Restricted to majors.

Selection, administration, scoring, interpretation, and report writing using individual tests of intelligence. Moderator variables, such as acculturation, ethnic identity development, and world view are also incorporated. Restricted to majors. Taught with C EP 546. Consent of instructor required. Prerequisite(s): C EP 542 and consent of instructor.

Major theories of counseling with an emphasis on development of the ability to offer theory-based counseling and consultation. Prerequisite(s): C EP 512, C EP 517, or concurrent enrollment.

C EP 551. Diagnosis and Treatment Planning 3 cr.
Appraisal and conceptualization of mental disorders and other problems through diagnostic interviewing using the DSM. Treatment planning for counseling with children, adolescents, and adults. Prerequisite: C EP 512 or concurrent enrollment, or consent of instructor. Restricted to majors. Same as C EP 651.

C EP 552. Career/Life Planning and Vocational Assessment 3 cr.
Vocational choice theories, relationship between career choice and life style, sources of occupational and educational information, and approaches to decision making and values clarification. Laboratory involves supervised interpretation of vocational assessment. Prerequisite: consent of instructor. Restricted to majors. Same as C EP 652.

Major theories of counseling with an emphasis on development of the ability to offer theory-based counseling and consultation. Prerequisite(s): C EP 512, C EP 524, or concurrent enrollment.

Understanding addictions process, prevention, and recovery, including biological, interpersonal and sociological influences, and intervention strategies. Taught with C EP 455.

C EP 556. Addictions Counseling 3 cr.
Emphasis on alcohol and other psychoactive substance abuse. Also includes eating disorders, gambling, and other addictive behaviors. Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. Prerequisite: C EP 550. Restricted to majors. Same as C EP 656.

Counseling theory and technique applied to children and adolescents from a developmental perspective in school and mental health settings. Prerequisite: C EP 550 or consent of instructor. Restricted to majors. Same as C EP 658, except for advanced-level materials.


C EP 562. Family Therapy Theory and Technique 3 cr.

C EP 563. Primary Care Psychology 3 cr.
Didactic and experiential learning in primary care psychology issues. Through this course students will learn about the cultural necessity of the integration of mental and physical health issues and multidisciplinary collaboration. Restricted to majors. Consent of instructor required.

Didactic and experiential learning in group theory and practice. Laboratory involves experiences in group participation and leadership. Prerequisite: C EP 550, C EP 562 or consent of instructor. Restricted to majors.

C EP 572. Counseling Practicum 1-8 cr.
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live session and case presentations. Prerequisites: C EP 550 and consent of instructor. Restricted to majors.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>C EP 578</td>
<td>Advanced Counseling Practicum</td>
<td>3-6 cr.</td>
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<tr>
<td>C EP 580</td>
<td>Counseling Internship</td>
<td>3-12 cr.</td>
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<tr>
<td>C EP 584</td>
<td>School Counseling Internship</td>
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<td>C EP 586</td>
<td>Diagnostic Class</td>
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<td>C EP 588</td>
<td>Curriculum-Based Assessment and Intervention</td>
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<tr>
<td>C EP 610</td>
<td>Human Development</td>
<td>3 cr.</td>
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<td>C EP 611</td>
<td>Spanish for Mental Health Professionals</td>
<td>3 cr.</td>
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<tr>
<td>C EP 612</td>
<td>Psychopathology for Health Care Professionals</td>
<td>3 cr.</td>
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<td>C EP 616</td>
<td>Special Research Programs</td>
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<td>C EP 618</td>
<td>Master’s Thesis</td>
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<td>C EP 620</td>
<td>Ethical/Professional Issues in Counseling Psychology</td>
<td>3 cr.</td>
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<td>C EP 622</td>
<td>Practicum in School Psychology: Psychological</td>
<td>1-6 cr.</td>
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<td>C EP 623</td>
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<td>C EP 624</td>
<td>Appraisal Practicum</td>
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<td>C EP 625</td>
<td>Multivariate Research Procedures and Analyses</td>
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<td>C EP 626</td>
<td>Diagnosis and Treatment Planning</td>
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<tr>
<td>C EP 627</td>
<td>Child and Adolescent Counseling Theory and Technique</td>
<td>3 cr.</td>
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<tr>
<td>C EP 628</td>
<td>Family Therapy Theory and Technique</td>
<td>3 cr.</td>
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<tr>
<td>C EP 629</td>
<td>Behavioral Health Practicum</td>
<td>1-6 cr.</td>
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<tr>
<td>C EP 630</td>
<td>Clinical Psychopharmacology</td>
<td>3 cr.</td>
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<tr>
<td>C EP 631</td>
<td>Group Work Theory/Practicum</td>
<td>1-6 cr.</td>
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<tr>
<td>C EP 632</td>
<td>Counseling Psychology Research</td>
<td>3 cr.</td>
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<tr>
<td>C EP 633</td>
<td>Clinical Psychopharmacology</td>
<td>3 cr.</td>
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<tr>
<td>C EP 634</td>
<td>Advanced Measurement and Statistics</td>
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<td>C EP 635</td>
<td>Appraisal of Cognitive Functioning</td>
<td>3 cr.</td>
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<td>C EP 637</td>
<td>Multivariate Research Procedures and Analyses</td>
<td>3 cr.</td>
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<td>C EP 638</td>
<td>Appraisal of Personality</td>
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<td>C EP 639</td>
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<tr>
<td>C EP 640</td>
<td>Career/Life Planning and Vocational Assessment</td>
<td>3 cr.</td>
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<td>C EP 641</td>
<td>Child and Adolescent Counseling Theory and Technique</td>
<td>3 cr.</td>
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<tr>
<td>C EP 642</td>
<td>Family Therapy Theory and Technique</td>
<td>3 cr.</td>
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<tr>
<td>C EP 643</td>
<td>Behavioral Health Practicum</td>
<td>1-6 cr.</td>
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<tr>
<td>C EP 644</td>
<td>Ethical/Professional Issues in Counseling Psychology</td>
<td>3 cr.</td>
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<tr>
<td>C EP 645</td>
<td>Practicum in School Psychology: Psychological</td>
<td>1-6 cr.</td>
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<tr>
<td>C EP 646</td>
<td>Psychological Assessment and Intervention</td>
<td>3 cr.</td>
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<tr>
<td>C EP 647</td>
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C EP 678. Advanced Counseling Psychology Practicum
Supervised counseling psychology experience including appraisal, diagnosis, case conceptualization, treatment planning, therapy-based counseling and evaluation. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of counseling sessions and case presentations. Graded: S/U. Prerequisite(s): C EP 677.

C EP 679. Supervision Theory and Practicum
Didactic and experimental training in theory-based supervision. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of supervision sessions and case presentations. May be repeated for a maximum of 6 credits. Prerequisites: C EP 675 or C EP 678; and consent of instructor. Restricted to majors.

C EP 680. Internship in Counseling Psychology I
Full-time equivalent of one-half calendar year of internship preferably in an APA-approved or APA-equivalent site. Available to Ph.D. students who have successfully completed their comprehensive exams. May be repeated for a maximum of 18 credits.

C EP 681. Internship in Counseling Psychology II
Full-time equivalent of one-half calendar year of internship preferably in an APA-approved or APA-equivalent site. Available to Ph.D. students who have successfully completed their comprehensive exams. Prerequisite: consent of instructor. May be repeated for a maximum of 18 credits.

C EP 684. Internship in School Psychology

C EP 688. Internship in Educational Psychology
Internship in either counselor education or college teaching. Course subtitled. Prerequisite: consent of instructor. May be taken for a maximum of 12 credits. Restricted to majors.

C EP 690. Dissertation Seminar
Same as EMD, EDUC, SPED 693.

C EP 691. Selected Topics
Offered under various subtitles which indicate the subject matter covered. A maximum of 6 credits in any one semester and a total of 18 credits overall. Restricted to CEP majors.

Study and research at the Specialist in Education level. Each problem to be designated by a qualifying subtitle. Restricted to majors.

C EP 700. Doctoral Dissertation
Dissertation. Restricted to majors.

C EP 801. Introduction to Psychopharmacology for Psychologists I
This course is an introduction to psychopharmacology and an overview of the nervous system. The course includes an introduction to the molecular and cellular basis of neurotransmitter function and to the basic principles of drug action. Prerequisite: consent of instructor.

C EP 802. Introduction to Psychopharmacology for Psychologists II
Principles of organic chemistry and human biochemistry necessary for the understanding of psychopharmacology are discussed and related to the major transmitter systems and dynamics of transmission. By the end of the course, psychologists will have an understanding of the nervous system. Prerequisite: Doctorate in psychology or consent of instructor.

This course is an intensive study of the treatment of psychosis from a biopsychosocial model of care. Special consideration is given to: first, second, and third generation antipsychotic drugs and their pharmacology and clinical uses; neurological and metabolic disorders associated with antipsychotic use; and appropriate use of antipsychotics in children and the elderly. Special attention is then given to child and adolescent psychopharmacology, including drugs used in pregnancy and lactation, teratogenicity, embryotoxicity, developmental disorders, conduct disorders, ADHD, and special considerations in use of approved drugs in children. Prerequisites: Doctorate in psychology or consent of instructor.

C EP 804. Clinical Psychopharmacology II
This course is a thorough investigation of the diagnosis and treatment of affective disorders from a biopsychosocial model of care. Particular emphasis is given to psychopharmacological treatment of depressive disorders and bipolar disorders. Prerequisites: Doctorate in psychology or consent of instructor.
C EP 811. Supervised Experience in Psychopharmacology I
3 cr.
In this applied course, students employ their knowledge of psychopharmacology in treatment settings. Students will participate in the treatment of 50 patients for a minimum of 200 hours under the supervision of a physician. Restricted to Post Doctoral Masters Programs. Prerequisite: Doctorate in psychology or consent of instructor.

C EP 812. Supervised Experience in Psychopharmacology II
3 cr.
Continuation and completion of supervised experience in CEP 811. Students will participate in the treatment of 50 patients for a minimum of 200 hours under the supervision of a physician. Restricted to Post Doctoral Masters Program. Prerequisite: Doctorate in psychology or consent of instructor.

CURRICULUM AND INSTRUCTION

Department website: http://education.nmsu.edu/ci/ (575) 646-4820
jmartine@nmsu.edu


The Department of Curriculum and Instruction is devoted to the preparation of master educators for public, private, and governmental institutions. Graduates are prepared to serve as directors of instruction and curriculum, subject matter specialists, supervisors of student teaching and college professors of curriculum and instruction.

Five degree programs are available: Master of Arts (in education), Master of Arts in Teaching, Specialist in Education, Doctor of Education in curriculum and instruction, and Doctor of Philosophy in curriculum and instruction. The Master of Arts requires a concentration in curriculum and instruction. Six areas of concentration are offered: (1) curriculum and instruction, (2) bilingual education, (3) early childhood education, (4) educational learning technologies, (5) language, literacy & culture, reading, and (6) TESOL. Course work may be taken in elementary education, secondary education, TESOL, curriculum development, instructional technologies, instructional technology, advanced methodology, multicultural education, and teaching fields or endorsement areas.

At the master’s degree level, nonthesis option, the department requires a final examination. This written examination is administered once each semester (fall, spring, and summer III). Detailed information about the written exam is available in the Master’s Handbook (http://education.nmsu.edu/ci/documents/candi_ma_handbook.pdf) and on the departmental webpage (http://education.nmsu.edu/ci/) and index.html.

The Ph.D. and Ed. D. have a theoretical-research orientation. Every doctoral student (Ph.D. and Ed. D.) is required to take a 12-credit research block that includes EDUC 613 and EDUC 576. Furthermore, students enrolled in the Ph.D. program must complete 6 credits in either computer tools courses or the foreign language sequence.

A master’s degree, a cumulative GPA of 3.0 or better in graduate work, and three years of teaching experience or the equivalent are required for admission to doctoral programs in curriculum and instruction. Applicants should be aware that admission to the doctoral program is competitive and based on available departmental resources and available faculty resources and interest. Applicants for the Ed.S. degree must meet all departmental qualifications and have at least one year of successful teaching experience.

Doctoral-level qualifying exams are held during the spring semester.

Particulars with regard to procedural requirements relating to the degree are available by visiting the departmental website: http://education.nmsu.edu/ci/index.html.

Students seeking teacher licensure must meet all Teacher Education Program requirements. Those requirements include an undergraduate GPA of 2.5, passing scores on basic and general portions of the NMTA, and satisfying the requirements for the academic teaching field. Each student must possess the academic ability, character, and attitude suitable for teaching. Students who, in the professional judgment of the faculty and staff, do not possess these qualifications may be examined by a Selective Review Committee. The committee may require a variety of actions, ranging from remedial procedures to withdrawal from the Teacher Education Program.
COMPETITIVE ADMISSION PROCESS FOR TEACHER LICENSURE

Applicants who successfully meet the minimum requirements for admission will be reviewed by the Teacher Education Program admission committee. The admission committee will base admission decisions on applicants’ academic qualifications, basic skills test scores, written communication, faculty recommendations for the student and the student’s portfolio. Applicants should be aware that admission to the Teacher Education Program is competitive and is based upon available faculty resources. Posted GPA and basic skills test scores are the minimum necessary to be considered for admission to the Teacher Education Program and do not ensure admittance into programs. Applicants are encouraged to develop a strong student portfolio, achieve the highest GPA possible and present a professional portfolio.

GENERAL ADMISSION TO GRADUATE PROGRAMS

The Department of Curriculum and Instruction requires graduate students who have completed 9 credits under the “undeclared” category in the Graduate School and/or nondegree status in the College of Health and Social Services to be admitted into a graduate degree program either in Curriculum and Instruction or any other graduate department in the College of Education. The department will enroll any student who has not been admitted into a graduate degree program (after completing 9 credits) and additionally, will not allow them to enroll or attend in other Curriculum and Instruction coursework.

BILINGUAL EDUCATION

BIL 489. Topics 3 cr.
Course subtitled in the Schedule of Classes. May be repeated three times for a maximum of 9 credits.

BIL 505. The Bilingual Preschool Child 3 cr.
Principles of multicultural education applied to preschool and primary levels. Focus on issues, methods, and materials.

BIL 520. Issues in Schooling for Bilingual Learners 3 cr.
Identification and consideration of current thought and directions in bilingual education, nationally and internationally.

BIL 522. Literacy-Language Instruction for Bilingual Students 3 cr.
Framework and strategies for developing the written language abilities of bilingual learners, with attention to the interrelationships among reading, writing, and oral language.

BIL 545. Bilingual/Multicultural Schooling and Community Relations 3 cr.
Rationale, information pertinent to the school and the community in a setting involving economic, cultural, and linguistics diversity.

BIL 550. Internship in Bilingual Education IV 1-6 cr.
Advanced experience in educational bilingual settings for prospective bilingual education teachers. Maximum of 6 credits.

BIL 560. Selected Topics in Bilingual Education III 1-6 cr.
Various topics on current research and needs in bilingual education. Maximum of 6 credits. BIL561. The Bilingual Exceptional Student 3 cr. Introduction to bilingual/multicultural special education. Same as SPED 561, SPED 661.

BIL 570. Directed Study in Bilingual Education III 1-6 cr.
Independent research topics in bilingual education based on particular individual interest or needs.

BIL 616. Acquiring Emancipatory Discourses. TESOL/BIL 3 cr.
An elaboration of understandings of bi- and multilingualism and related models of education based on current research and practice.

BIL 617. Multiple Critical Literacies 3 cr.
An exploration of the multiple literacies that operate on the individual, family, community, cultural and societal levels.

BIL 623. Curricular Mediation for Democratic Communities 3 cr.
Problematization of the various relationships, roles, and leadership considerations which emerge within educational institutions, their structures, and their culturally democratic practices in the classroom, community, and society. Restricted to doctoral-level students of any major. Same as EDUC 623, ECED 623.

BIL 633. Praxis and Reflexivity 3 cr.
The cyclical research processes of continuous self and systemic (re)evaluation vis-a-vis classroom, community, and society with an eye toward reflection, growth, change, and larger forms of social agency. Prerequisite: consent of instructor. Restricted to doctoral-level students of any major. Same as EDUC 633, EDUC 633, RDG 633, EDLT 633.

BIL 635. Critical Theory and Pedagogy 3 cr.
Same as EDUC 635.

Same as EDUC 637.

BIL 663. Assessment and Consultation for Exceptional Multicultural Populations 3 cr.
Covers formal and informal methods of assessments as well as consultation models for multicultural populations. Same as BIL 563, SPED 563.

BIL 670. Directed Study in Bilingual Education IV 1-6 cr.
Independent research topics in bilingual education based on particular individual interest or needs.

EARLY CHILDHOOD EDUCATION

Development of curriculum based on children’s play, a means of exploring and learning the patterns of human living, communications, and experiences congruous with their developing interests and capacities.

ECED 452. Teaching Language Minority Children in Early Childhood Settings 3 cr.
Framework and strategies for the educational development of young language-minority children.

ECED 455. Teaching and Learning Social Studies, Fine Arts and Movement 3 cr. (2+2P)
The course focuses on the aims, scope, and integration of methods of teaching social studies, the fine arts and movement across the curriculum. This course emphasizes an integrated approach to teaching the what and why of social studies; assessing student learning; planning units, lessons, and activities; effective instructional strategies; and knowledge of social studies content. Concepts of expressive art include the visual arts, music, movement and drama. Corequisite(s): ECED 440, ECED 329, RDG 350.

ECED 458. Field Experience (Infants Pre-K) 1 cr.
Supervised field experiences in early childhood settings: infants, toddlers, and pre-K programs. Graded S/U.

ECED 459. Field Experience (K-3) 1 cr.

ECED 465. Advanced Caregiving for Infants and Toddlers 3 cr.
The advanced field-based course is intended to assist students to define and implement advanced elements of quality programming for all infants, toddlers in safe, healthy, responsive caring environments. The experiences in the approved setting will support strong nurturing relationships, cultural competence, diverse learning needs and styles of every child, appropriate guidance techniques and partnership with the families, cultures, and community represented. Students are assisted through the course in advancing their ability to observe, discuss, and implement elements of quality programming for infants and toddlers in home, small-group or whole-group care situations. Crosslisted with: SPED 465.

ECED 470. Student Teaching/Seminar 6 cr.
Provides student teaching experience in a variety of settings with young children ages birth 8.

ECED 474. Curriculum in Early Childhood Education 3 cr.
Development and implementation of curriculum and materials for teaching young children.

ECED 489. Topics 3 cr.
Offered under various subtitles which indicate the subject matter to be covered. May be repeated three times for a maximum of 9 credits.

ECED 505. The Bilingual Preschool Child 3 cr.
Same as BIL 505.

ECED 510. Issues in Early Childhood Education 3 cr.
Examines current trends and problems through readings of theoretical, empirical, and applied literature.

ECED 515. Working with Parents of Young Children 3 cr.
Techniques for setting up home and classroom visitations, communicating with parents, and establishing special programs.

ECED 520. Seminar on Cognitive and Social Development 3 cr.
In-depth study of developmental theories: Piaget, Kohlberg, Bruner, and Erikson. Implications for development of preschool programs and teaching techniques.

ECED 540. Science/Math Curriculum 3 cr. (2+2P)
Methods and materials for developmentally appropriate practices in teaching science and math for young children. Same as ECED 440 with differentiated assignments for graduate students.
EDLT 612. Advanced Fieldwork 3 cr.
Methods and materials for developmentally appropriate practices in teaching language arts and social studies for young children. Same as ECED 441 with differentiated assignments for graduate students.

EDLT 570. Play in the Early Childhood Curriculum 3 cr.
Advanced exploration of the development of curriculum based on children's play. A means of exploring and learning the patterns of human living, communications, and experiences congruous with developing interests and capacities. Restricted to majors. Same as ECED 451 with differentiated assignments for graduate students.

EDLT 605. Independent Study Topics in Early Childhood Education 1-3 cr.
A problem and seminar course for those pursuing an advanced graduate degree. Prerequisite: EDUC 555. May be repeated for a maximum of 6 credits. Restricted to doctoral-level students of any major.

EDLT 606. Inquiry in Early Childhood Education 3 cr.
A complete research review and examination of practices in early childhood education. Restricted to doctoral-level students of any major.

EDLT 610. Technology, Society, and Education 3 cr.
The application of principles of curriculum development to the integration of technology on learning and education.

EDLT 573. Technology and Critical Thinking 3 cr.
Explore, and evaluate use of multimedia authoring tools including website, video, audio, image editing, and apps (iOS/Android) for educational applications. Includes additional theoretical research component for doctoral students.

EDLT 628. Designing Educational Resources for the Internet 3 cr.
This course covers how to access, use, design, and evaluate instructional resources on the Internet, for blended and online learning environments. Includes a theoretical and research component for doctoral students.

CURRICULUM AND INSTRUCTION

EDUC 450. Methods of Teaching Early Childhood Education 3 cr.
Characteristics of the young child, play, guidance, communication, methods, materials, models, issues.

EDUC 451. Methods of Teaching Elementary School Science 3 cr. (2+2P)
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontextual curriculum, integration, multicultural education, authentic assessment, and practical applications. Corequisites: EDUC 450, EDUC 452, and RDG 360 (Block A courses). Same as EDUC 559 with differentiated assignments for graduate students.

EDUC 452. Methods of Teaching Elementary School Mathematics 3 cr. (2+2P)
Focus on student-centered response to literature, writing process, whole language learning, based on socio-psycholinguistic theory and research. Corequisites: RDG 361, EDUC 454, and EDUC 455 (Block B courses). Same as EDUC 553 with differentiated assignments for graduate students.

EDUC 454. Methods of Teaching Elementary School Social Studies 3 cr. (2+2P)
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontextual curriculum, integration, multicultural education, authentic assessment, and practical applications. Corequisites: RDG 361, EDUC 454, and EDUC 455 (Block B courses). Same as EDUC 554 with differentiated assignments for graduate students.

EDUC 460. Teaching Language Arts at the Middle and High School Level 3 cr. (2+2P)
Implications of cognition and language development for appropriate second instructional practices. Focus on construction of meaning, student-centered response to literature, writing process, print and oral language development, based on socio-psycholinguistic research and theory. Practicum required. Same as EDUC 561.

EDUC 461. Teaching Social Studies at the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in social studies. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of social studies. Practicum required. Same as EDUC 561.

EDUC 462. Teaching Mathematics at the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in mathematics. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of mathematics. Practicum required. Same as EDUC 562.

EDUC 463. Teaching Science at the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in science. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of science for students in grades 6-12. Practicum required. Same as EDUC 563.
EDUC 484. Teaching Foreign Language at the Middle and High School Level
Integrating content knowledge and pedagogy for the middle and high school teacher in foreign language. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of foreign language for students in grades 6-12. Practicum required. Same as EDUC 504.

EDUC 467. Teaching Business Education at the Middle and High School Level
Integrating content knowledge and pedagogy for the middle and high school teacher in business education. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of business education for students in grades 6-12. Practicum required. Same as EDUC 567.

EDUC 470. Elementary Student Teaching
Synthesis of knowledge and skills appropriate to teaching in elementary schools. Graded S/U.

EDUC 471. Secondary Student Teaching
Synthesis of knowledge and skills appropriate to teaching in secondary schools. Graded S/U.

EDUC 475. Contemporary Issues in Education
Discussion of contemporary issues including: classroom management, motivation, conferences, professional organizations, professional ethics, community influences, cultural pluralism, reform movements, instructional influences, and educational technology. Requires field experience component in a school or community setting. Same as EDUC 575.

EDUC 480. International Student Teaching Seminar
Preparation for students planning to teach in an international setting. Prerequisite: Must be scheduled one semester before graduation.

EDUC 481. Elementary Student Teaching Seminar
Discussion of elementary school issues related to student teaching. Taken concurrently with EDUC 470. Graded S/U.

EDUC 482. Middle and High School Student Teaching Seminar
Discussion of secondary school issues related to student teaching. Taken concurrently with EDUC 471. Graded S/U.

EDUC 483. Second Language Acquisition
Exploring affective, cultural, linguistic, cognitive factors that influence the second-language-acquisition process with application to classroom practice. Same as EDUC 583.

EDUC 487. Methods of TESOL
Effective language teaching approaches that provide for interactive learning situations, meaningful input language models, varied language use materials, adaptive teacher response strategies, and assessments of student processing needs. 3 cr.

EDUC 489. Topics
Offered under various subtitles which indicate the subject matter to be covered. A maximum of 3 credits in any one semester and a grand total of 3 credits. 1-3 cr.

EDUC 495. Directed Study Courses in Education
Each course shall be identified by a qualifying subtitle. Maximum of 3 credits in any one semester and a grand total of 6 credits. 1-3 cr.

EDUC 501. Special Topics
Course subtitles in the Schedule of Classes. A maximum of 3 credits per semester and a total of 6 credits overall. 1-3 cr.

EDUC 502. Special Problems
Course subtitles in the Schedule of Classes. A maximum of 3 credits per semester and a total of 6 credits overall. 1-3 cr.

EDUC 504. Adult and Family Literacy in TESOL
An exploration of the theoretical, programmatic, and curricular framework for English language learners and their families. Focus on the development of culturally responsive and pedagogically sound literacy programs. Same as RDG 504.

EDUC 505. Classroom Management
Strategies for managing classroom settings and determining appropriate modification of instructional approaches to meet changing classroom situations. 3 cr.

EDUC 506. Adult and Family Literacy
Principles, practices, and instructional materials for adult and family literacy. Same as RDG 510.

EDUC 509. Teaching Methods Laboratory
Practical application of previously learned content. Prerequisites: bachelor's degree and admission to the Graduate School and departmental special program. Elementary or secondary. Graded S/U.

EDUC 510. Internship/Student Teaching
Integrated with EDUC 509. Student is assigned to an elementary or secondary classroom for 14-16 weeks. Elementary or secondary. Prerequisite: EDUC 509. Graded S/U.

EDUC 512. Equity Education for Mathematics Teachers
This course is designed to increase teacher awareness and ability to address diverse students learning needs leading to success in mathematics. Prerequisites: Have access to teach in a mathematics classroom with a diverse student population. Same as EDUC 615.

EDUC 515. Multicultural Education
Conceptual manifestations of culture, race, and ethnicity, class, gender, exceptionality, language and bilingualism within the schooling process. Same as EDUC 315 with differentiated assignments for graduate students.

EDUC 516. Curriculum and Pedagogy I
Introduction, reconstruction, and other connections among historical, philosophical, sociocultural, psychological, and theoretical foundations of curriculum and pedagogy and their application to culturally and linguistically diverse teaching and learning settings.

EDUC 518. Technology and Pedagogy
Critical analysis, design, and evaluation of computer-based technologies in teaching and learning for diverse communities.

EDUC 519. Research in Curriculum and Pedagogy
An introduction to qualitative and quantitative designs for research in curriculum and instruction, with emphasis on action research.

EDUC 520. Action Research Projects
Deeper explorations and connections among foundations of curriculum and pedagogy and their application to culturally and linguistically diverse teaching and learning settings through action research projects, approaches to assessment, and agency. Prerequisites: EDUC 515, 518, 516 & 519.

EDUC 530. Exploration in Education
Overview of elementary and secondary schooling. Includes opportunities to gain teaching experience in diverse settings.

EDUC 536. Special Studies: Bilingual Education, Curriculum and Instruction, Early Childhood Education, or Read
Each study will be designated by a qualifying subtitle.

EDUC 537. Independent Readings
Each project will be designated by a qualifying subtitle.

EDUC 550. Methods of Teaching Early Childhood Education
Characteristics of the young child, play, guidance, communication, methods, materials, models, issues. Same as EDUC 450 with differentiated assignments for graduate students.

EDUC 551. Methods of Teaching Elementary School Science
Methods and materials for teaching elementary school science. Includes components of lessons, planning and teaching lessons in schools, and multimedia. Prerequisites: 9 hours of science from biology, chemistry, physics, and earth science with no more than 3 hours from any one department. Corequisites: EEDC 550, EDUC 552, and RDG 560 (block A course). Same as EDUC 451 with differentiated assignments for graduate students.

EDUC 552. Methods of Teaching Elementary School Mathematics
Content, theories of cognition, and instructional approaches for the teaching of mathematics in the elementary grades. Prerequisite: MATH 111. Corequisites: EEDC 550, EDUC 551, and RDG 560 (block A course). Same as EDUC 452 with differentiated assignments for graduate students.

EDUC 553. Methods of Teaching Elementary School Language Arts
Implications of language acquisition and development for instructional practices. Focus on student-centered response to literature, writing process, whole language learning, based on socio-psycholinguistic theory and research. Corequisites: EDUC 554, EDUC 555, and RDG 561 (block B course). Same as EDUC 453 with differentiated assignments for graduate students.

EDUC 554. Methods of Teaching Elementary School Social Studies
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontraditional curriculum, integration, multicultural education, authentic assessment, and practical applications. Corequisites: EDUC 553, EDUC 555, and RDG 561 (block B course). Same as EDUC 454 with differentiated assignments for graduate students.

EDUC 557. Science and Math Methods: Internship
Elementary alternative licensure process course designed to introduce intern licensed teachers to methods of instruction for mathematics and science. University supervision provided simultaneously with EDUC 557. Restricted to CI and HSS non-degree students.
EDUC 558. Social Studies/Language Arts Methods Internship 3 cr.
Elementary alternative licensure process course designed to introduce intern licensed teachers to methods of instruction of social studies and language arts. University supervision provided simultaneously with EDUC 558. Restricted to CI and HSS non-degree students.

EDUC 560. Teaching Language Arts at the Middle and High School Level 3 cr. (2+2P)
Implications of cognition and language development for appropriate instructional practices. Focus on construction of meaning, student-centered response to literature, writing process, print and oral language development, based on socio-psycholinguistic research and theory, Practicum required. Same as EDUC 460 with differentiated assignments for graduate students.

EDUC 561. Teaching Social Studies at the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in social studies. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of social studies for student in grades 6-12. Practicum required. Same as EDUC 461 with differentiated assignments for graduate students.

EDUC 562. Teaching Mathematics at the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in mathematics. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of students in 6-12 setting settings for mathematics. Same as 462 with differentiated assignments for graduate students.

EDUC 563. Teaching Science at the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in science. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of student for grades 6-12. Practicum required. Same as EDUC 463 with differentiated assignments for graduate students.

EDUC 564. Teaching Foreign Language and the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in foreign language. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of foreign language for student in grades 6-12. Practicum required. Same as EDUC 464 with differentiated assignments for graduate students.

EDUC 567. Teaching Business Education at the Middle and High School Level 3 cr. (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in business education. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of business education for student in grades 6-12. Practicum required. Same as EDUC 467 with differentiated assignments for graduate students.

EDUC 570. Classroom Research I 3 cr.
Introduction to action research techniques for classroom teachers. For interns only.

EDUC 575. Contemporary Issues in Education 3 cr. (2+2P)
Discussion of contemporary issues including: classroom management, motivation, conferences, professional organizations, professional ethics, community influences, cultural pluralism, reform movements, instructional influences, and educational technology. The class will require a field experience component in a school or community setting. Taught with EDUC 475 with differentiated assignments for graduate students.

EDUC 576. Qualitative Research 3 cr.
Introduction to qualitative research methodologies from problem formulation to interpretation of results.

EDUC 583. Second Language Acquisition 3 cr.
Exploring affective, cultural, linguistic, cognitive factors that influence the second-language-acquisition process with application to classroom practice. Appropriate for public school and adult educators. Same as EDUC 483.

EDUC 587. Pedagogy of TESOL 3 cr.
Overview of approaches that provide for interactive, culturally responsive pedagogy for students acquiring English. Emphasis on development of ESL literacy. Appropriate for public school and adult educators. Same as RDG 587.

EDUC 590. TESOL Practicum 3 cr.
Classroom applications of ESL literacy development through supervised teaching experiences accompanied by a seminar. Same as RDG 590.

EDUC 595. Directed Study Courses in Education 1-3 cr.
Each course will be identified by a qualifying subtitle. Maximum of 3 credits in any one semester and a total of 6 credits overall.

EDUC 598. Special Research Programs 1-3 cr.
Individual investigations either analytical or experimental. Maximum of 3 credits per semester and a total of 6 credits overall.

EDUC 599. Master’s Thesis 0-88 cr.
Thesis.

EDUC 600. Doctoral Research 1-88 cr.
Research.

EDUC 601. Contemporary Curriculum/Instruction Practices 1-3 cr.
Course substituted in the Schedule of Classes. A maximum of 3 credits per semester and a total of 6 credits overall.

EDUC 602. Internship in Curriculum and Instruction 3-6 cr.
For those pursuing an advanced graduate degree to meet the requirement for field work. Each course to bear an appropriate subtitle.

EDUC 603. Curriculum for a Diverse Society 3 cr.
Builds upon knowledge of the foundations of curriculum and professional experience in an educational setting. Focus on the role of the curriculum leader in understanding curriculum theory, designing curriculum, and implementing curriculum in various settings.

EDUC 604. Pedagogy of Learning in a Diverse Society 3 cr.
Builds upon knowledge of the foundations of instruction and professional experience in teaching and learning. Focus on diverse theories of instruction with relevant practices in pluralistic settings and multicultural interactions of teaching and learning.

EDUC 605. Independent Study Topics 1-3 cr.
A problem and seminar course for those pursuing an advanced graduate degree. Course substituted in the Schedule of Classes. Prerequisite: EDUC 535.

EDUC 606. In-depth Interviewing: A Qualitative Research Method 3 cr.
Use of pilot research project to introduce students to in-depth interviewing techniques.

EDUC 607. Current Research in Educational Practice 3 cr.
A seminar for doctoral and education specialist students emphasizing current research and educational practices. Same as BIL 607, ECED 607, RDG 607, and SPED 607.

EDUC 608. Issues in Multicultural Curriculum and Instruction and Teacher Education 3 cr.
Builds upon multicultural theories and practices of teacher education. Restricted to doctoral-level students of any major.

EDUC 610. Technology, Society, and Education 3 cr.
Investigates models of the change process, examines speculations related to the directions and dynamics of change in an era of electronic technologies, explores shifts in the cultural and personal activities and relations of humans, and speculates on concomitant educational implications. Same as EDLT 610.

EDUC 613. Evaluation of Quantitative Research in Education 3 cr.
A doctoral-level exploration of a broad range of quantitative research designs and methodologies for collection and analysis of data as applied to critical review of the literature. Prerequisite: EDUC 513 or the equivalent.

EDUC 614. Schooling for a Democratic Society 3 cr.
Examines the foundations of the U.S. public school with special attention to the struggle for equity and access in education. Restricted to doctoral-level students of any major.

EDUC 623. Curricular Mediation for Democratic Communities 3 cr.
Problematization of the various relationships, roles, and leadership considerations which emerge within educational institutions, their structures, and their culturally democratic practices in the classroom, community, and society. Restricted to doctoral-level students of any major. Same as BIL 623, ECED 623.

EDUC 632. Multicultural Education Curricular and Pedagogical Trends 3 cr.
Study and critique of historical constructs, philosophical considerations, paradigm orientations, theories, and pedagogical practices foundational to multi-perspective understanding of multicultural education. Restricted to doctoral-level students of any major.

EDUC 633. Praxis and Reflexivity 3 cr.
Same as BIL 633, ECED 633, EDLT 633, RDG 633.

EDUC 634. Research as Praxis 3 cr.
Alternative community-or-school-based research aimed at investigating and transforming educational realities, with the participants for their own benefit. Students will experience the dynamic between research theory and practice in education. Prerequisite(s): EDUC 578 and 613. Crosslisted with: BIL 634, EDLT 634 and RDG 634
EDUC 635. Critical Theory and Pedagogy 3 cr.
Covers the various schools of thought on pedagogy, the historical and philosophical foundations embedded in these schools, and their impact on educational settings. Restricted to doctoral-level students of any major. Same as BIL 635.

EDUC 637. Social Justice Issues in Education 3 cr.
Covers the systems of oppression located within the constructs of power and hegemony and their impact on schooling. Restricted to doctoral-level students of any major. Same as BIL 637.

EDUC 685. Practicum 2-6 cr.
Provision for field inquiries and experiences designed to prepare the doctoral student for assuming responsibilities in the areas of curriculum and instruction. Prerequisite: post-master s standing.

EDUC 694. Dissertation Seminar: Qualitative Research Designs 1-6 cr.
Dissertation seminar course for doctoral students utilizing a qualitative research design. Prerequisite: consent of instructor. Restricted to College of Education students.

EDUC 698. Selected Topics 1-6 cr.
Offered under various subtitles which indicate the subject matter to be covered. A maximum of 6 credits per semester and a total of 6 credits overall.

Offered primarily for those pursuing the research requirements for the Ed.S. degree. Course may be repeated up to a maximum allowed for this degree. Each research project will be designated by a qualifying subtitle.

EDUC 700. Doctoral Dissertation 0-88 cr.
Dissertation.

READING

RDG 510. Adult and Family Literacy 3 cr.
Principles, practices, and instructional materials for adult and family literacy. Same as EDUC 506.

RDG 511. Literacy Assessment and Evaluation 3 cr.
Theoretical and practical aspects of using formal and informal assessment and evaluation procedures in literacy curriculum and instruction. Same as EDUC 511.

RDG 514. Content Area Literacy 3 cr.
Surveys integrated reading/writing/discursive practices in middle/secondary content areas. Same as RDG 314.

RDG 522. Language and Literacy Acquisition 3 cr.
Framework and strategies of language and literacy acquisition with attention to bilingual learners and the interrelationship among reading, writing, and oral language. Same as BIL 522, RDG 422.

RDG 525. Pedagogy and Theory of Literature for Adolescents 3 cr.
This course provides an in-depth exploration of pedagogy and theory related to literature for adolescents Prerequisite(s): Graduate Standing.

RDG 530. Sociopsycholinguistics of Reading 3 cr.
Examines current research on reading process, learning to read, and teaching children to read and evaluates current programs and materials.

RDG 538. Special Studies in Literacy 1-6 cr.
Each study will be designated by a qualifying subtitle. Same as RDG 636.

RDG 537. Independent Study in Literacy 1-6 cr.
Each project will be designated by a qualifying subtitle. Same as RDG 637.

RDG 551. Literacy Development in Early Childhood 3 cr.
Advanced theory, research, and practice relating to early childhood reading. Same as RDG 351.

RDG 555. Introduction to Instructional Leadership for Literacy Educators 3 cr.
Three credit course will introduce students to the roles and responsibilities of literacy specialists in the k-12 school setting. Prerequisite(s): Graduate standing, RDG 511 & RDG 530.

RDG 560. Elementary School Literacy I 3 cr. (2+2P)
Reading development, curriculum, and instruction in the elementary grades. Corequisites: ECED 550, EDUC 551, and EDUC 552 (block A course). Same as RDG 360 with differentiated assignments for graduate students.

RDG 561. Elementary School Literacy II 3 cr. (2+2P)
Reading development in curriculum and instruction with assessment and evaluation in the elementary grades (K-8). Prerequisite: RDG 560. Corequisites: EDUC 553, EDUC 554, and EDUC 555 (block B course). Same as RDG 361 with differentiated assignments for graduate students.

RDG 565. Practicum in Literacy Education 1-6 cr.
Supervised laboratory experience with children reading difficulties. The student implements a program of specific procedures to aid the disabled reader. Prerequisite: RDG 511.

RDG 587. Pedagogy of TESOL 3 cr.
Overview of approaches that provide for interactive, culturally responsive pedagogy for students acquiring English. Emphasis on development of ESL literacy. Appropriate for public school and adult educators. Same as EDUC 587.

RDG 598. Selected Topics in Literacy 1-6 cr.
Offered under different subtitles in the Schedule of Classes. Same as RDG 698 with differentiated subjects for doctoral students.

RDG 600. Doctoral Research in Literacy 1-88 cr.
Research on topic of interest.

RDG 605. Independent Study Topics in Reading 1-6 cr.
A problem and seminar course for those pursuing an advanced degree. Each course will have an appropriate subtitle.

RDG 608. Critical Issues in Literacy Education 3 cr.
Critical issues from historical to current perspectives.

RDG 616. Acquiring Emancipatory Discourses and TESOL/BIL 3 cr.
Offered primarily for those pursuing the research requirements for the Ed.S. degree. Each course should bear a qualifying subtitle. Maximum of 6 credits per semester and a maximum of 6 credits overall.

RDG 617. Multiple Critical Literacies 3 cr.
Same as BIL 617.

RDG 621. Literacy/Biliteracy Assessment and Evaluation Same as BIL 621.

RDG 630. Ethnography of Reading and Writing 3 cr.
Covers the dynamics of data interpretation and critical analysis in the study of literacy.

RDG 633. Praxis and Reflexivity 3 cr.
Same as BIL 633, ECEED 633, EDLT 633, EDUC 633.

RDG 638. Special Studies in Literacy 1-6 cr.
Offered under different subtitles in the Schedule of Classes. Same as RDG 536 with differentiated assignments for doctoral students.

RDG 639. Multiculturalism, Literature, and Inquiry 3 cr.
Advanced exploration and examination of critical multicultural language education vis-a-vis children’s adolescence, young adult, and adult literature, with an eye toward problematizing assumptions about literacy, articulating issues of social justice and enacting transformative pedagogy. Same as BIL 639.

RDG 640. Higher Education Teaching Apprenticeship 1-6 cr.
Instructor apprenticeship in teaching university-level literacy-related classes. Each course should bear a qualifying subtitle. Maximum of 6 credits per semester and a maximum of 6 credits.

RDG 685. Advanced Internship K-12 Literacy 3 cr.
Advanced internship in a professional position/research/application within K-12 schools and classes. Restricted to doctoral-level students of any major. Same as BIL 685.

RDG 698. Selected Topics in Literacy 1-6 cr.
Offered under various subtitles that indicate the subject matter. Same as RDG 598.

RDG 699. Research Project 1-88 cr.
Offered primarily for those pursuing the research requirement for the Ed.S. degree. Each research project will be designated by a qualifying subtitle.

EDUCATIONAL MANAGEMENT AND DEVELOPMENT

Department website: http://education.nmsu.edu/emd/
(575) 445-3825 edmandev@nmsu.edu
M. Prentice, Department Head, Ph.D. (University of Texas at Austin)– community college administration, service learning issues, best practices in teaching higher education; D. Christiansen, Ed.D (Oklahoma State University)– educational administration, higher education, educational change processes, gender and American Indian issues, multicultural leadership; R. Dominguez, Ph.D. (New Mexico State University)– educational administration, higher education, community college administration, leadership development; J.M. Hannan, Ph.D. (New Mexico State University)– distance education administration, best practices in
teaching distance education, student services for distance education students; A. Humada-Ludeke, Ed.D. (Arizona State University) – school administration, organizational change, educational accountability, leadership development, PK-20 collaborations and partnerships; D.M. Ivory, Ed.D. (Texas Tech University) – research design and evaluation, management technology. K. Kew, Ph.D. (Boston College) – educational change and reform, educational leadership, school culture, micro-politics; A.F. Osanloo, Ph.D. (Arizona State University) – educational equality, educational leadership and policy, philosophical foundation of education, issues of race, class, and gender in civic education; C. Rodríguez, Ph.D. (University of Texas at Austin) – education policy and leadership, PK-20 access policy. Latino and borderland studies.

Emeriti
A. L. Amendáriz, Ph.D. (University of New Mexico) – school administration, leadership development, organizational theory; M.L. González, Ph.D. (New Mexico State) – leadership in public school administration, multicultural organizations; C. T. Toenley, Ph.D. (University of Michigan) – knowledge management, higher education

DEGREE: Master of Arts
MAJOR: Educational Administration

DEGREE: Doctor of Education
MAJOR: Educational Administration

DEGREE: Doctor of Philosophy
MAJOR: Educational Administration

MINOR: Educational Administration

The mission of the Department of Educational Management and Development at New Mexico State University is to prepare and graduate capable, skillful and dynamic educational leaders for a diverse society. Through the use of theory and practice we aim to develop change agents and role models for socially-just educational systems. Students studying in these programs are generally interested in the following categories:

- Those seeking preparation for careers as educational leaders and administrators in PK-12 school sectors. Positions most commonly sought are principals, superintendents, supervisors, program directors, central office staff, and state education agency leaders.
- Those seeking preparation for administrative and leadership careers in postsecondary education at the community college and university level, as well as in technical-vocational education. This particular focus can include preparation for the professoriate.
- Those seeking preparation for careers in educational research, agency and program evaluation, and educational management technology. Positions cover placement in a broad range of employment situations within school districts, community colleges, universities, government, and industry.

ADMISSION

The department requires full admission to any EMD program before starting course work. The department will disenroll any student who has not been admitted into a graduate degree program and, additionally, will not allow them to enroll in other EMD course work.

Detailed information on programs may be obtained by writing the department or on the website at http://education.nmsu.edu/emd/. For additional information on degree requirements, consult the Graduate School and College of Education policies listed in the 'General Information' chapter of this catalog. Specific criteria for each program are available from the Department of Educational Management and Development.

ADMISSION TO EMD CLASSES

Admission to EMD course work is generally done by cohort. Registration in any EMD 500-level course requires

1. full admission to the EMD department, or
2. admission to another COE graduate degree department, and
3. consent of the EMD Programs Coordinator and/or EMD Department Head.

MASTER OF ARTS

The Master of Arts (MA) in educational administration focuses on two areas: PK-12 school administration and Postsecondary education. The program of study for PK-12 school administration includes all course work and internships required by the New Mexico State Public Education Department for Administrative Licensure.

Admission

Grade point average requirements for the master’s program are consistent with those of the Graduate School. However, in addition to these requirements, all master’s degree applicants must provide a one-page letter of application indicating career interests and reasons for wanting to pursue a master’s degree in the department; a professional résumé; a two-page professional or academic writing sample; official document showing three years of PK-12 teaching experience (for those pursuing the PK-12 administration focus); copy of current teaching license (for those pursuing the PK-12 administration focus); international applicants may submit a certified letter from their school director in lieu of teaching license; and three letters of recommendation. The letters of support must be mailed directly to the department from the writer. The EMD admissions committee bases admissions decisions on this portfolio and will not consider incomplete applications.

Prerequisites

Students interested in the PK-12 school administration must have a current teaching license and three years of full-time teaching experience in the PK-12 sector.

Application Deadlines for PK-12 School Administration

This program begins in the fall semester only. All materials for this program must be received by the deadline of July 15. Application requirements are available from the Department of Educational Management and Development, or on the website at http://education.nmsu.edu/emd/main.html.

Application Deadline for Postsecondary Education

This program begins in the spring semester only. All materials for this program must be received by the deadline of December 1. Admission requirements are available from the Department of Educational Management and Development, or on the website at http://education.nmsu.edu/emd/main.html.

DOCTORATE DEGREES

The Department of Educational Management and Development offers both the Doctor of Education (Ed.D.) and the Doctor of Philosophy (Ph.D.). The Doctor of Education is geared toward those students wishing to pursue a degree which will help them in their profession. Course work, internships, and research are constructed to develop individuals for administrative positions in PK-12 schools and in postsecondary institutions.

The Doctor of Philosophy is a research-oriented degree. Course work and internships will be directed toward developing research proficiencies in educational leadership. The Ph.D. also requires additional hours of course work in an approved cognate area.

Admission

The department requires applicants to complete a Doctoral Admissions Portfolio. Specific details and criteria are available from the Department of Educational Management and Development or on the website at http://education.nmsu.edu/emd/docpage.html.

GRADUATE ASSISTANTSHIPS

Some graduate assistantships are available in the department. Interested persons should inquire at an early date. Due date for application for the following academic year is March 15. Graduate Assistantship applications are available at http://education.nmsu.edu/emd/student-resources.html.

EDUCATIONAL MANAGEMENT AND DEVELOPMENT

Overview of the use of law and policy in schools and higher education. Restricted to: EDM majors.

EDM 455. Principles of Education Budgeting and Finance 3 cr.
Analysis of budget and finance practices in education. Restricted to: EDM majors.
EMD 502. Special Problems. 1-3 cr.
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 3 credits per semester and a total of 6 credits overall.

EMD 511. Foundation for School Library Specialists 3 cr.
Elements of librarianship. Introduction to the history, purpose, and role of the school library. Overview of current issues and legislation affecting school libraries. Same as EMD 411.

EMD 512. Administration of the School Library 3 cr.
Principles and practices related to the function, structure, and management of school libraries. Same as EMD 412.

EMD 513. Curriculum Role of the School Library Specialist 3 cr.
Introduction to the integration of curriculum in school library programs. Current trends in collaborative planning, and teaching between school librarians and teachers. Same as EMD 413.

Principles of identifying, selecting, acquiring, managing, and evaluating information for school libraries. Same as EMD 414.

EMD 530. Management of Educational Change 3 cr.
Leadership in implementing innovations in education.

EMD 531. Special Education Administration 3 cr.
Competencies for the administration of special education programs with an emphasis upon New Mexico public school standards.

EMD 532. Human Relations in Educational Administration 3 cr.
Administrative skills necessary to promote quality relationships among staff, students, and parents; also skills needed to open communication and work with various individuals and groups in educational settings.

EMD 540. Management of Student Services in Higher Education 3 cr.
History and overview of student services (e.g., admissions, counseling, registration, financial aid, housing, food services, student organizations) and a review of management components used in student services.

EMD 550. Internship: Public Schools Part II 3 cr.
First half of a practical internship in PK-12 schools under supervision of school administrator. Prerequisites: 18 cr. of EMD coursework, 3 years of PK-12 teaching experience and consent of instructor. Restricted to majors.

EMD 555. Internship: Public Schools Part I 3 cr.
Second half of a practical internship in PK-12 administrative setting under supervision of experienced higher education administrator. Consent of instructor required. Prerequisite(s): EMD 550. Restricted to EMD majors.

EMD 560. Internship: Higher Education Part I 3 cr.
First half of practical internship in administrative setting under supervision of experienced higher education administrator. Prerequisites: 15 credits of EMD and consent of instructor. Restricted to majors.

EMD 561. Internship: Higher Education Part II 3 cr.
Second half of a practical internship in an administrative setting under supervision of an experienced higher education administrator. Consent of instructor required. Prerequisite(s): EMD 560.

EMD 563. Higher Education Administration 3 cr.
This course provides an overview of higher education in the United States including history, mission, and governance, in the context of organizational theory.

EMD 564. Internship: Public Schools Part I 3 cr.
First half of a practical internship in PK-12 schools under supervision of school administrator. Prerequisites: 18 cr. of EMD coursework, 3 years of PK-12 teaching experience and consent of instructor. Restricted to majors.

EMD 565. Internship: Public Schools Part II 3 cr.
Second half of a practical internship in PK-12 administrative setting under supervision of experienced higher education administrator. Consent of instructor required. Prerequisite(s): EMD 564. Restricted to EMD majors.

EMD 566. Topics in School Administration 1-3 cr.
Designated by subtitle.

EMD 569. Basing Decision on Data: Higher Education 3 cr.
Analysis of accountability data and other evidence to support educational decision making. Disaggregating and interpreting assessment data to guide improvement of instruction. Moving from evidence to plans for action.

EMD 570. Educational Leadership, Supervision, and Evaluation 3 cr.
Leadership, supervision, and evaluation in PK-12 and post secondary education.

EMD 572. History and Philosophy of Education 3 cr.
An overview of the historical development of the American school system and the relation of various philosophies to American education.

EMD 575. The Principalship 3 cr.
Key issues surrounding the role of school-site leaders.

EMD 576. Educational Financial Management 3 cr.
Educational finance and business applications.

EMD 578. Leadership and Administration of Bilingual Education 3 cr.
Concepts and practical approaches to improving the education of English language learners through higher education. Restricted to majors.

EMD 579. Public School Law 3 cr.
Legal processes of education, major court decisions and the legislative process will be studied.

EMD 580. Administration of Adult and Continuing Education 3 cr.
Administration of programs in public schools, higher education, community and nontraditional educational settings.

EMD 581. Design, Development, and Administration of Distance Education Programs 3 cr.
Quality distance education programs require skills in new policy development, program administration, and faculty training to reconfigure existing courses for delivery via voice, video, and data.

EMD 582. Community College Administration 3 cr.
An overview of the history, role, objectives and patterns governing the effectiveness of the community college.

EMD 585. Elements of Research 3 cr.
Survey and analysis of research methods and designs focusing on sound educational research and its presentation.

EMD 586. Multicultural Leadership in Education 3 cr.
Examine cultural diversity and how appropriate understanding, leadership and instructional strategies can be used to reach all learners. Enhances understanding of what it means to be an educator in culturally diverse contexts. Restricted to majors.

EMD 587. Educational Politics and Community Relations 3 cr.
Politics, policies, and community relations impacting PK-12 and postsecondary education.

EMD 588. Evaluation Design in Education 3 cr.
This course focuses on evaluation and accountability models; application to educational programs.

EMD 590. Basing Decision on Data: PK-12 3 cr.
Analysis of accountability data and other evidence to support educational decision making. Disaggregating and interpreting assessment data to guide improvement of instruction. Moving from evidence to plans for action. Prerequisite: EMD 569.

EMD 595. Current Topics 1-6 cr.
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 6 credits.

EMD 598. Independent Studies 1-3 cr.
Individual investigation in special topic areas. Requires prior approval of project advisor.

EMD 599. Master’s Thesis 0-88 cr.
Thesis.

EMD 600. Doctoral Research 1-88 cr.
Research. Same as EMD 620.

EMD 620. Doctoral Seminar 1-3 cr.
A study of current issues in educational administration at the national, state, and local levels.

EMD 622. Quantitative Research I 3 cr.
Explores quantitative research methods and models, and their application in the field of educational leadership. Prerequisite: consent of instructor. Restricted to majors.

EMD 623. Qualitative Research I 3 cr.
Explores qualitative research methods and models, and their application in the field of educational leadership. Prerequisite: consent of instructor. Restricted to majors.

EMD 630. Concepts of Leadership in Education 3 cr.
Survey of concepts of leadership in general and educational leadership in particular. Consideration of implications for practice. Restricted to majors.

EMD 640. Management of Student Services in Higher Education 3 cr.
History and overview of student services (e.g., admissions, counseling, registration, financial aid, housing, food services, student organizations) and a review of management components used in student services. Restricted to Doctoral EMD majors.

EMD 650. Higher Education Law 3 cr.
This advanced course is designed to review the impact of the judiciary on higher education. The legal standing of institutions of higher education on issues of staff rights, student rights, and tort liability will be addressed. In addition, the impact of local ordinances, state and federal laws and regulations will be examined. This course is restricted to doctoral students.
EMD 655. Higher Education Finance and Funding 3 cr.
This advanced course examines the impact and process of financing and funding higher education. The course is an examination of higher education finance as it relates to operational budgets, capital budgets, and policy issues which impact the financing of higher education. This course is restricted to doctoral students.

EMD 660. Educational Leadership, Supervision and Evaluation 3 cr.
This advanced course will cover leadership, supervision, and evaluation in PK-12 and postsecondary education. This course is restricted to doctoral students.

EMD 665. Higher Education Administration 3 cr.
This is an advanced course that provides an overview of higher education in the United States including history, mission, and governance, in the context of organizational theory. This course is restricted to doctoral students.

EMD 670. Advanced Internship 1-6 cr.
For those pursuing an advanced degree to meet the field work requirement. To bear an appropriate subtitle. Graded S/U.

EMD 671. Foundations of Educational Administration 3 cr.
Advanced course about the political, economic, and social forces on policy making and governance of PK-12 and post-secondary education. Restricted to Doctoral EMD majors.

EMD 672. Community College Administration 3 cr.
This advanced course will provide an overview of the history, role, objectives, and patterns governing the effectiveness of the community college. This course is restricted to doctoral students.

EMD 675. Higher Education Administration 3 cr.
This advanced course offers an overview of economic and financial concerns relating to the public school system of the United States. This course is restricted to doctoral students.

EMD 676. Educational Financial Management 3 cr.
Advanced course in which the legal processes of education, major court decisions, and the legislative process will be studied. This course is restricted to doctoral students.

EMD 682. Quantitative Research II 3 cr.
Advanced quantitative methods of research and implementation in the field of educational leadership. Prerequisite: EMD 622 and consent of instructor. Restricted to majors.

EMD 685. Elements of Research 3 cr.
Advanced survey and analysis of research methods and designs focusing on sound educational research and its presentation. This course is restricted to doctoral students.

EMD 688. Evaluation Design in Education 3 cr.
Advanced course that focuses on evaluation and accountability models; application to educational programs. This course is restricted to doctoral students.

EMD 690. Dissertation Seminar 3 cr.
Same as BIL, COP, EDCD, RDG, SPED 683.

EMD 698. Selected Topics 1-6 cr.
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 6 credits per semester and a total of 12 credits overall.

EMD 700. Doctoral Dissertation 0-9 cr.
Dissertation. Minimum of 3 credits per regular semester. May be taken for a maximum of 36 credits. Consent of instructor required.

**SPECIAL EDUCATION/COMMUNICATION DISORDERS**

Department website: http://education.mnmsu.edu/sped/
(575) 846-2402
spedcd@mnmsu.edu

M.B. Salas-Provance, Ph.D., department head
(University of Illinois-Urbana) speech and hearing science, multicultural, cleft lip and palate; Y. Bae, Ph.D. (University of Illinois-Urbana) voice, resonance disorders; M. Brown, Ph.D. (University of Nevada - Las Vegas) special education and secondary special education; Z. Chai, Ph.D. (University of Georgia) early childhood special education; K. Chinn, Ed.D. (Lamar University) deaf education/deaf studies; K. Cronin, Ph.D. (University of California Riverside) special education, autism; L. Mason, Ed.D. (University of Northern Colorado) special education, visual impairment, orientation and mobility; A. Medina, MS (University of Minnesota) bilingual services; A.Y. Patterson, Ph.D. (University of Illinois Urbana) neuropsychics, fluency assessments; D. Rhein, Ph.D. (University of Arizona) bilingual language assessment, literacy; L. Salas, Ph.D. (New Mexico State University) bilingual special education; L. Spencer, Ph.D. (University of Iowa) speech and hearing science, language and literacy acquisition in children with hearing loss; T. Trammell- Yebba (New Mexico State University) childhood language and articulation; A. Valdez, Ph.D. (University of New Mexico) educational psychology.

Emeriti: E. Poel, Ph.D. (New Mexico State University); A. Gallegos, Ed.D. (New Mexico State University) low-incidence disabilities

**DEGREE: Master of Arts**

**MAJOR: Communication Disorders**

**CONCENTRATION: Autism Spectrum Disorders**

**CONCENTRATION: Special Education**

**CONCENTRATION: Special Education Administration**

**CONCENTRATION: Special Education/Deaf-Hard of Hearing**

**CONCENTRATION: Speech-Language Pathology**

**DEGREE: Specialist in Education**

**MAJOR: Curriculum and Instruction**

**CONCENTRATION: Special Education Administration**

**CONCENTRATION: Special Education/Deaf-Hard of Hearing**

**CONCENTRATION: Special Education**

**DEGREE: Doctor of Education**

**MAJOR: Special Education**

**CONCENTRATION: Bilingual/Multicultural Special Education**

**DEGREE: Doctor of Philosophy**

**MAJOR: Special Education**

**CONCENTRATION: Bilingual/Multicultural Special Education**

**MINOR: Communication Disorders**

**MINOR: Deaf Education**

**MINOR: Special Education**

The Department of Special Education/Communication Disorders offers programs designed for students with career goals as master special education teachers, special education consultants and directors, school psychologists, and speech-language pathologists in school, community, and medical settings, or as higher education faculty in the fields of special education (SPED) and communication disorders (CD). The program in conjunction with general education is NCATE approved.

The department offers programs leading to the Master’s degree. The M.A. in education with emphasis in special education can be earned with the following emphasis: general special education (i.e., noncategorical), mild-to-moderate disabilities (behavior disorders, learning disabilities, and mental retardation), early-childhood special education, bilingual special education, deaf/hard-of-hearing education, and visual impairment. Students who have earned a bachelor’s degree and who are seeking special education licensure must enroll in a graduate degree program. Depending on the individual student’s needs and experiences, programs can be designed to lead toward special education licensure, visual impairment licensure and specialization in categorical areas.

The M.A. in Communication Disorders offers a specialization in speech-language pathology. The program is designed primarily for students who are interested in becoming speech-language pathologists in schools, hospitals, community-based clinical facilities, or private practice. The programs for students entering without a communication disorders background are generally one year longer. The programs are designed to provide the academic background and clinical-practicum experience for meeting state and national certification and licensure requirements.
The master's degree program in speech-language pathology is accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association. Enrollment in graduate courses in communication disorders is limited to individuals in good standing in the Graduate School. In addition, the licensure courses in the communication disorders curriculum are restricted to CD majors. To complete a course of study, each student must meet the program’s academic and clinical competency criteria, as well as the recommendation of state and national certifying bodies for educational licensure and clinical certification. Only those courses in which a grade of B or higher has been earned will apply toward the program of study. If a student earns a grade lower than a B grade in any course, he or she will meet with the Communication Disorders Graduate Faculty Selective Review Committee to determine a consequent course of action before proceeding with the next module of the program.

Admission to the department’s M.A. programs is based on the evaluation of a portfolio of materials that includes:

- Undergraduate GPA
- Graduate GPA (if applicable)
- Psychometric score on the Miller Analogies Test or the Graduate Record Exam (aptitude portion) for SPED program applicants
- Psychometric score on the Graduate Record Exam (aptitude portion) for CD program applicants
- An academic vita
- A one-page letter of interest in which the candidate cites relevant background experiences and personal motives for applying to the program.
- Three letters of reference
- Other optional materials (as available) such as samples of writing, evidence of scholarship, indication of membership in a group traditionally underrepresented in graduate programs, or extenuating factors heightened by applicants in their letters of interest.

The department offers three advanced degrees in curriculum and instruction with emphasis in special education: the Specialist in Education (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Philosophy (Ph.D.).

The Ed.S. provides additional study beyond the M.A. to prepare the student for leadership roles within his or her field. An Ed.S. degree can be earned in School Psychology. An Ed.S. project is required.

The Ed.D. program is designed to provide advanced professional training and to develop further ability in the scholarly study of professional problems. This program is intended primarily for students pursuing careers that emphasize teaching, administration, and service delivery.

The Ph.D. program has a theoretical and research orientation requiring the student to demonstrate competency with two of the following research tools: (a) advanced statistics, (b) computer language, and (c) foreign language.

The residency requirements for the Ed.D. and Ph.D. are described in the section “Requirements for Higher Degrees.”"Three years’ teaching experience, or the equivalent, is required for admission to doctoral programs. Applicants for the Ed.S. degree must have at least one year of successful teaching experience prior to receiving the degree.

The following psychometric scores are required for admission to the Ed.D. and Ph.D. programs: Miller Analogies Test and Graduate Record Examination (aptitude).

For detailed information on admission requirements, stipends, and program requirements, write to the Department of Special Education/Communication Disorders, MSC 3SPF, NMSU, P.O. Box 30001, Las Cruces, New Mexico 88003-8001.

**COMMUNICATION DISORDERS**

CD 476. American Sign Language III  
Continuation of CD 375, ASL II. Focus on more complex grammatical features. Students will comprehend and generate medium length stories, narratives, and discussions including culturally significant topics. Prerequisite: CD 375. 3 cr.

CD 490. Training in Professional Teamwork  
Team development including critical thinking, problem solving, and decision making. Prerequisites: C or better in CD 452, CD 460, and CD 461, and minimum 3.0 GPA, or consent of instructor. 3 cr.

CD 491. Selected Topics  
Individual and/or group study of selected topics. To be identified by subtitle. Prerequisite: prior arrangement with faculty. May be repeated for a maximum of 12 credits. 1-6 cr.

**C D 501. Phonetics** 3 cr.  
The science of phonetics, including work with the International Phonetic Alphabet. Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher. Restricted to majors. Same as CD 390 with differentiated assignments for graduate students.

**C D 502. Anatomy and Physiology of Speech Mechanisms** 3 cr.  
Structure and function of systems underlying human speech sound production and processing including nervous, respiratory, and articulatory components. Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher. Restricted to majors. Same as CD 370 with differentiated assignments for graduate students.

**C D 503. Speech Science** 3 cr. (2+3P)  
Basic concepts and theories in acoustics, speech production, and speech perception. Laboratory experience with instrumental measurement and analysis of speech systems. Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher. Restricted to majors. Same as CD 380 with differentiated assignments for graduate students.

**C D 504. Language Disorders** 3 cr.  
Bases, symptoms, etiologies, and treatment of language disorders. Includes review of normal language acquisition. Prerequisite(s): C or better in CD 221. B or better in CD 301/C D 509, CD 302/C D 507, CD 321, CD 322/C D 502, CD 323/C D 501, and minimum 3.0 GPA. Taught with CD 325. Restricted to CD Level Graduate Students majors.

**C D 505. Research Methods** 3 cr.  
Introduction to basic qualitative, quantitative, and single subject research methodology in speech-language pathology and audiology. Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher. Restricted to majors.

**C D 506. Clinical Procedures** 3 cr.  
Clinical and procedures associated with the clinical and supervisory processes. Provide opportunities to complete the supervised clinical observation requirement for participation in clinical practicum. Prerequisite(s): C or better in CD 221. B or better in CD 301/C D 509, CD 302/C D 507, CD 321, CD 322/C D 502, CD 323/C D 501, and minimum 3.0 GPA. Same as CD 328. Restricted to CD Level Graduate Students majors only.

**C D 509. Language Acquisition** 3 cr.  
Normal development of communication across the age span. Includes language sampling and analysis. A minimum grade of B- in all graduate courses and a minimum overall GPA of 3.0 required. Taught with CD 360 with differentiated assignments for graduate students. Restricted to CD majors and LING majors.

**C D 521. Professional Issues and Practices in Communication Disorders** 3 cr.  
This course includes a range of topics pertinent to students entering professional practice as speech-language pathologists including current legal, ethical, and clinical service provision issues. Restricted to majors. Prerequisites: minimum of 3.0 in all graduate courses required.

**C D 523. Assessment of Communication Disorders** 3 cr.  
Diagnostic theories and management of communication disorders using standardized and descriptive methodology. Includes the practice of interviewing, testing, and oral and written reporting. Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher. Restricted to majors.

**C D 525. Pediatric Language and Disorders** 3 cr.  
Normal communication development of neonates, infants, toddlers, and preschoolers; etiologies, and treatment of cognitive, linguistic and social elements of communication problems in family systems. Prerequisites: minimum grade of B- and an overall GPA of 3.0 or higher. Restricted to majors.

**C D 530. School Age Language and Disorders** 3 cr.  
Normal communication-learning development of elementary, secondary, and postsecondary students; etiologies, diagnosis, and treatment of interpersonal communication and language-based academic disorders. Prerequisites: a minimum grade of B- in all graduate courses and an overall GPA of 3.0 or higher. Restricted to majors.

**C D 535. Aphasias** 3 cr.  
Etiologies, diagnosis, assessment, and treatment of adult aphasias. Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher. Restricted to majors.

**C D 542. Articulation and Phonological Disorders** 3 cr.  
Advanced study of the symptoms, etiologies, assessment, and clinical management of articulation and phonological disorders. Prerequisites: a minimum grade of B- in all graduate courses and a minimum overall GPA of 3.0 is required. Restricted to majors.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SPED 457</td>
<td>Braille II: Literacy Skills for Students with Visual Impairments</td>
<td>3 cr</td>
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<tr>
<td></td>
<td>This course will cover the Nemeth Braille code for mathematics, the abacus,</td>
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<td></td>
<td>the use of technology for Braille, foreign languages, music and Braille</td>
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<td></td>
<td>translation programs. Taught with SPED 538 and SPED 638 with differentiated</td>
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<td></td>
<td>assignments. Consent of instructor required. Prerequisite(s): SPED 495 or</td>
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<td>SPED 538 or SPED 638 or Consent of Instructor.</td>
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<tr>
<td>SPED 460</td>
<td>Instructional Strategies of Teaching Visually Impaired</td>
<td>3 cr</td>
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<td></td>
<td>This course covers assessment, curricular adaptation, knowledge of transition</td>
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<td>age, young children with multiple disabilities, and assistive technology.</td>
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<td>Prerequisite: Braille I, Braille II and Consent of Instructor Consent of</td>
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<td>instructor required. Prerequisite(s): Braille I and Braille II and consent of</td>
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<td>instructor.</td>
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<tr>
<td>SPED 461</td>
<td>Introduction to Assessment of Diverse Exceptional Learners</td>
<td>3 cr</td>
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<td></td>
<td>Theory and use of norm and criterion-referenced instruments and learning</td>
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<td>theories in the classroom; planning of prescriptive instructional programs.</td>
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<tr>
<td>SPED 462</td>
<td>Working with Young Children with Special Needs, Ages Birth-2</td>
<td>3 cr</td>
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<tr>
<td></td>
<td>Provides competencies for working with infants and toddlers (birth-2) with</td>
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<td></td>
<td>exceptionalities and their families. Neo-natal, home-based, and community-</td>
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<td>based programs and issues are included. Same as ECED 465 and SPED 504.</td>
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<tr>
<td>SPED 463</td>
<td>The Learning Disabled Student in a Diverse Society</td>
<td>3 cr</td>
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<tr>
<td></td>
<td>Current definitions, conceptualizations, and techniques. Taught with</td>
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<td></td>
<td>SPED 566 SPED 666 with differentiated assignments. Prerequisite(s): SPED 500</td>
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<td></td>
<td>or consent of instructor. Restricted to SPED majors.</td>
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<tr>
<td>SPED 464</td>
<td>Behavior Disorders in a Diverse Society</td>
<td>3 cr</td>
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<td></td>
<td>An in-depth study of the classification, characteristics, educational needs,</td>
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<td>and professional literature regarding individuals with behavior disorders.</td>
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<td>Taught with SPED 567 and SPED 667 with differentiated assignments.</td>
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<td>Prerequisite(s): SPED 350 or SPED 500 or consent of instructor. Restricted</td>
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<td>to SPED majors.</td>
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<td>SPED 465</td>
<td>Experiential Learning in Career/Technical Education for Exceptional in a</td>
<td>3 cr</td>
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<td>Diverse Society</td>
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<td></td>
<td>Addresses the planning, delivering and evaluation of experiential learning</td>
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<td>activities for students with special needs. Specific strategies for working</td>
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<td>with students with special needs in a shop or laboratory setting within the</td>
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<td>Career and Technical Education environment will be included. Taught with</td>
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<td>AXED 569 and SPED 569. Prerequisite(s): SPED 350 or SPED 500 or consent of</td>
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<td>instructor. Restricted to SPED majors.</td>
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<tr>
<td>SPED 470</td>
<td>Life Span Development and Transition in a Diverse Society</td>
<td>3 cr</td>
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<tr>
<td></td>
<td>Special problems associated with transitions over the life span, with</td>
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<td>emphasis on adolescent and adult needs. Attention to service approaches for</td>
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<td>public schools, sheltered workshops, residential hospitals, and group homes.</td>
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<tr>
<td>SPED 480</td>
<td>Secondary Curriculum, Methods, and Materials for Special Education in a</td>
<td>3 cr</td>
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<tr>
<td></td>
<td>Diverse Society</td>
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<td></td>
<td>Curriculum theory and development for elementary special education programs.</td>
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<td>Various teaching methods utilized with secondary exceptional learners and</td>
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<td>techniques for identifying, adapting, and developing materials will be</td>
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<td>addressed. Taught with SPED 580.</td>
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<tr>
<td>SPED 481</td>
<td>Practicum in Education, Equity and Cultural Diversity</td>
<td>2-6 cr</td>
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<td></td>
<td>Supervised experience in special education settings. One semester (2 credits)</td>
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<td></td>
<td>required. Prerequisite(s): SPED 350 and SPED 360 or consent of instructor.</td>
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<tr>
<td>SPED 482</td>
<td>Student Teaching SPED</td>
<td>1-12 cr</td>
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<tr>
<td></td>
<td>Supervised teaching in a special education classroom and participation in</td>
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<td></td>
<td>a required seminar. Prerequisite: SPED 481 and admission to student</td>
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<td></td>
<td>teaching. May be repeated for a maximum of 6 credits. Restricted to special</td>
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<td>education majors. Same as SPED 582.</td>
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<tr>
<td>SPED 483</td>
<td>Early Childhood SPED Student Teaching</td>
<td>6 cr</td>
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<td></td>
<td>A student teaching experience designed for students studying early childhood</td>
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<td>special education. Prerequisites: SPED 281 and admission to student teaching.</td>
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<td></td>
<td>Restricted to majors. Same as SPED 583.</td>
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<tr>
<td>SPED 485</td>
<td>Introduction to Autism</td>
<td>3 cr</td>
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<td></td>
<td>This course will provide an overview of autism spectrum disorders as a</td>
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<td></td>
<td>triad of impairments, including historical and theoretical perspectives,</td>
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<td>assessment issues, characteristics of autism, intervention programs, and</td>
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<td>family issues. Taught with SPED 585 and SPED 685.</td>
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<td>SPED 486</td>
<td>Behavior and Autism</td>
<td>3 cr</td>
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<td>This course will cover the first of the triad of impairments. Students will</td>
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<td></td>
<td>gain an understanding of the behaviors of children with autism. Students will</td>
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<td></td>
<td>examine several behavior management philosophies and research based</td>
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<td>interventions and how they can be applied in the educational setting.</td>
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<td>Attention will also be given to play skills. The family perspective and</td>
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<td>participation in the proactive behavior management process will be</td>
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<td>incorporated throughout the course. Taught with SPED 586 and SPED 686</td>
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<td>with differentiated assignments. Consent of instructor required. Pre/</td>
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<td>Corequisite(s): SPED 485 or SPED 586 or SPED 685.</td>
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<td>SPED 487</td>
<td>Social Skills and Autism</td>
<td>3 cr</td>
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<td>This course will cover the second of the triad of impairments. As a blend of</td>
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<td>research-based models and evidenced-based practical applications, students</td>
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<td>will gain an understanding of the social skill deficits often associated</td>
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<td>with autism spectrum disorders. Review current tools and strategies used to</td>
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<td>assess speech, language, and interaction skills. Use assessment results to</td>
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<td>identify needs and implement appropriate interventions. Explore a variety of</td>
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<td>intervention strategies aimed at building receptive, expressive, and pragmatic</td>
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<td></td>
<td>language of children functioning at a variety of levels along the autism</td>
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<td></td>
<td>spectrum. Taught with SPED 587 and SPED 687 with differentiated assignments.</td>
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<td>Consent of instructor required. Pre/Corequisite(s): SPED 485 or SPED 586 or</td>
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<td>SPED 685.</td>
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<td>SPED 488</td>
<td>Communication and Autism</td>
<td>3 cr</td>
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<td>This course will cover the third of the triad of impairments. Students will</td>
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<td>gain an overview of communication characteristics and difficulties often</td>
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<td>associated with autism spectrum disorders. Review current tools and</td>
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<td>strategies used to assess speech, language, and interaction skills. Use</td>
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<td>assessment results to identify needs and implement appropriate</td>
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<td>interventions. Explore a variety of intervention strategies aimed at building</td>
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<td>receptive, expressive, and pragmatic language of children functioning at a</td>
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<td>variety of levels along the autism spectrum. Taught with SPED 588 and SPED 688</td>
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<td>with differentiated assignments. Consent of instructor required. Pre/</td>
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<td>Corequisite(s): SPED 484 or SPED 584 or SPED 685.</td>
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<td>SPED 489</td>
<td>Topics</td>
<td>3 cr</td>
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<td>Offered under various subtitles which indicate the subject matter to be</td>
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<td></td>
<td>covered. May be repeated 3 times for a maximum of 9 credits.</td>
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<td>SPED 495</td>
<td>Directed Study courses in Special Education</td>
<td>1-3 cr</td>
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<td>Each course shall be identified by a qualifying subtitle. A maximum of 3</td>
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<td>credits per semester and a grand total of 9 credits.</td>
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<tr>
<td>SPED 496</td>
<td>Directed Study Courses in Special Education</td>
<td>1-3 cr</td>
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<td>Designed for students in the honors program. Each course will be identified</td>
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<td></td>
<td>by a qualifying subtitle. A maximum of 3 credits in any one semester and a</td>
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<td>grand total of 6 credits.</td>
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<td>SPED 650</td>
<td>Introduction to Special Education in a Diverse Society</td>
<td>3 cr</td>
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<td></td>
<td>This course introduces the field of special education to regular educators.</td>
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<td>SPED 651</td>
<td>Topics in Special Education</td>
<td>1-3 cr</td>
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<td>Offered under various subtitles which indicate the subject matter to be</td>
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<td>covered. Maximum of 6 credits, 3 credits per semester.</td>
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<td>SPED 502</td>
<td>Problems</td>
<td>1-3 cr</td>
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<td>Offered under various subtitles which indicate the subject matter to be</td>
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<td>covered. Maximum of 6 credits, 3 credits per semester.</td>
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<tr>
<td>SPED 503</td>
<td>Contemporary Development</td>
<td>1-3 cr</td>
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<td>Offered under various subtitles which indicate the subject matter to be</td>
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<td>covered. Maximum of 6 credits, 3 credits per semester.</td>
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<td>SPED 505</td>
<td>Introduction to Assessment of Diverse Exceptional Learners</td>
<td>3 cr</td>
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<td>Required for students seeking licensure at graduate level. Theory and use</td>
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<td>of norm-and criterion-referenced instruments and learning theories in the</td>
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<td>classroom; planning of prescriptive instructional programs with differenti-</td>
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<td>ated assignments for graduate students.</td>
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<td>SPED 506</td>
<td>High Incidence Disabilities in a Diverse Society</td>
<td>3 cr</td>
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<td>Examines those areas of disability that most frequently occur in the special</td>
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<td>education population, including mental retardation, learning disabilities,</td>
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<td>communication disorders, and behavioral and emotional disorders.</td>
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SPED 507. Low Incidence Disabilities in a Diverse Society 3 cr.
Examines those disabilities that occur less frequently in the special education population, including learning disorders, autism, and other severe manifestations. Taught with SPED 607 with differentiated assignments.

SPED 509. Reading for Elementary Exceptional Learners in a Diverse Society, K-6 3 cr.
Emphasizes reading diagnosis and materials for students with special developmental and learning problems. Taught with SPED 409.

SPED 510. Current Issues in Special Education for Teaching in Culturally Responsive Society 3 cr.
Theoretical and empirical bases for special education practices. Skill development in critical thinking, reading, and writing in relation to contemporary problems. Taught with SPED 610.

SPED 511. Reading for Secondary Exceptional Learners in a Diverse Society, 7-12 3 cr.
Extends information covered in SPED 509, which covers grades K-6. Strategies and materials are addressed. Taught with SPED 411.

SPED 513. Current Research in Special Education 3 cr.
Current investigations and research techniques.

SPED 515. Working with Families of Exceptional Learners in a Diverse Society 3 cr.
Methods and techniques for educators and other professionals in parent-professional relationships. Emphasis is placed on young children. Taught with SPED 415.

SPED 519. School Interventions and Organization in a Diverse Society 3 cr.
Introduces public school organization and laws and the psycho-sociological perspective of education. Curriculum and theory, teaching methods and materials will be presented and operationalized through a psycho-educational point of view. Restricted to majors. Taught with SPED 619.

SPED 520. Foundations of Education for Deaf & Hard of Hearing Students 3 cr.
An examination of historic and current developments in the education of the deaf and hard of hearing including: sound sensation/perception, cognition/intelligence, language/literacy, memory, psychosocial development, counseling, culture, and assessment. Taught with SPED 424 & SPED 622 with differentiated assignments.

SPED 523. Advanced Curriculum for Exceptional Learners 3 cr.
Strategies for developing curricula appropriate to handicapped and gifted learners. Prerequisite: SPED 360 or consent of instructor.

Developmental approach to language learning for individuals with hearing impairments including linguistic and cognitive potential, assessment and intervention strategies, and reading language. Taught with SPED 425 and SPED 623 with differentiated assignments. Prerequisite(s): C D 509.

SPED 526. Teaching Content Subjects to Preschool-Twelfth Grade for Deaf and Hard of Hearing Students 3 cr.
Curriculum and instructional procedures common to education of hearing impaired including reading, adaptations to regular curriculum, methods for planning, implementing, and translating diagnostic information into programming. Taught with SPED 426 & SPED 626 with differentiated assignments. Prerequisite(s): SPED 524.

SPED 527. Internship in Education of the Deaf and Hard of Hearing 1-8 cr.
Supervised internship in a deaf education classroom. Prerequisite: student teaching. May be repeated for a maximum of 6 credits. Restricted to deaf education majors.

SPED 528. Deafness: Psychological Theories, Assessments, and Accommodations 3 cr.
Developmental psychological and cognitive theories related to deafness. Assessment issues and accommodations for assessment of deaf and hard-of-hearing children. Restricted to majors. Taught with SPED 428 and SPED 626 with differentiated assignments. Prerequisite(s): SPED 524 or consent of instructor.

SPED 529. Literacy and Deafness 3 cr.
Covers literacy development framework. Methods for teaching reading and writing and for assessment of reading and writing skills in deaf and hard-of-hearing children. Taught with SPED 429 and SPED 629 with differentiated assignments. Restricted to majors. Prerequisite(s): SPED 524 or consent of instructor.

SPED 530. Reading for Elementary Exceptional Learners in a Diverse Society, K-6 3 cr.
Covers literacy development framework. Methods for teaching reading and writing and for assessment of reading and writing skills in deaf and hard-of-hearing children. Taught with SPED 429 and SPED 629 with differentiated assignments. Restricted to majors. Prerequisite(s): SPED 524 or consent of instructor.

Provides the history and theory of teaching students with visual impairments and multiple disabilities. An overview of educational, historical, and psychosocial effects of visual impairments on the individual and means of adapting with a visual impairment will be covered. Taught with SPED 462 and SPED 652 with differentiated assignments. Consent of instructor required.

SPED 533. Anatomy and Functions of the Visual System 3 cr.
This course will cover the structure and function of the eye and associated diseases and how vision is affected. Appropriate educational recommendations and functional vision assessment techniques will be emphasized. Taught with SPED 453 and SPED 653 with differentiated assignments Consent of instructor required. Prerequisite(s): SPED 532 or consent of instructor.

SPED 534. Visual Impairment with Multisensory Impairments 3 cr.
This course is an overview of education services for the student with visual impairments and multiple sensory impairments. Emphasis is on curricula, communication, behavior management, inclusion, transition, and independent living. Taught with SPED 454 and SPED 654 with differentiated assignments Consent of instructor required. Prerequisite(s): SPED 532 or SPED 533 or consent of instructor.

SPED 535. Reading for Secondary Exceptional Learners in a Diverse Society, 7-12 3 cr.
Extends information covered in SPED 509, which covers grades K-6. Strategies and materials are addressed. Taught with SPED 411.

SPED 536. Advanced Curriculum for Exceptional Learners 3 cr.
Strategies for developing curricula appropriate to handicapped and gifted learners. Prerequisite: SPED 360 or consent of instructor.

SPED 537. Independent Readings in Special Education 1-3 cr.
Each course shall be identified by a qualifying subtitle. Maximum of 6 credits, 3 credits per semester.

SPED 538. Braille I: Literacy Skills for Students with Visual Impairments 3 cr.
This course will cover the uncontracted and contracted literary Braille code and methods of teaching Braille to tactile readers. Taught with SPED 455 and SPED 655 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 455 or SPED 536 or SPED 656 consent of instructor.

SPED 539. Instructional Strategies of Teaching Visually Impaired 3 cr.
This course covers assessment, curricular adoption’s, knowledge of transition age, young children with multiple disabilities, and assistive technology. Taught with SPED 460 and SPED 659 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 455 or SPED 536 consent of instructor.

SPED 540. Technology and Exceptionality in a Diverse Society 3 cr.
This class will address the unique educational needs of learners with exceptionalities, and will provide information and practice in addressing those needs through the use of technology-based interventions. Taught with SPED 645.

SPED 541. Beginning Orientation and Mobility 3 cr.
Covers techniques, and overview of the profession of orientation and mobility. Prerequisite: consent of instructor. Restricted to majors.

SPED 545. Technology and Exceptionality in a Diverse Society 3 cr.
This course will cover the structure and function of the eye and associated diseases and how vision is affected. Appropriate educational recommendations and functional vision assessment techniques will be emphasized. Taught with SPED 453 and SPED 653 with differentiated assignments Consent of instructor required. Prerequisite(s): SPED 532 or SPED 533 or consent of instructor.

SPED 546. Field Experience in Education, Equity & Cultural Diversity 1-3 cr.
Supervised experience for the advanced student. Designed for both the practicing classroom teacher and nonteaching graduate student. May be repeated for a maximum of 6 credits. Prerequisite(s): SPED 350 and SPED 393, or SPED 550 and SPED 552, or consent of instructor.

SPED 547. Working with Young Children with Special Needs, Ages 3-8 3 cr.
Addresses competencies for working with young children with exceptionalities, ages three eight, and their families. Public school, private school, Head Start and other models are included. Prerequisite: SPED 500 or equivalent, or consent of instructor. Same as SPED 450 with differentiated assignments for graduate students. Same as ECED 550.

SPED 548. Special Needs in Early Childhood and Early Childhood Education 3 cr.
Theoretical and empirical bases for special education practices. Skill development in critical thinking, reading, and writing in relation to contemporary problems. Taught with SPED 610.

SPED 549. Contemporary Issues in Special Education 3 cr.
Provides the history and theory of teaching students with visual impairments and multiple disabilities. An overview of educational, historical, and psychosocial effects of visual impairments on the individual and means of adapting with a visual impairment will be covered. Taught with SPED 462 and SPED 652 with differentiated assignments. Consent of instructor required.

SPED 550. Beginning Orientation and Mobility 3 cr.
Covers techniques, and overview of the profession of orientation and mobility. Prerequisite: consent of instructor. Restricted to majors.

SPED 551. Assessment of Young Children, Birth Eight 3 cr.
Covers instruments and procedures for assessing young children and their families in order to determine atypical development. Screening, diagnostic, program planning, placement and evaluation issues are covered. Prerequisite: SPED 550 or consent of instructor. Same as SPED 451.

SPED 552. Introduction to Orientation and Mobility 3 cr.
The history and philosophy of orientation and mobility. The impact of visual impairment and other impairments to concept motor development, travel techniques, tactile maps, structured pre-cane orientation, and mobility assessment and instruction are covered. Prerequisite: consent of instructor. Restricted to majors.

SPED 553. Beginning Orientation and Mobility 3 cr.
Systems of orientation and mobility, indoor, and outdoor beginning cane techniques, and overview of the profession of orientation and mobility. Prerequisite: consent of instructor. Restricted to majors.
SPED 554. Intermediate Orientation and Mobility  
Intermediate skill development in outdoor cane travel including residential and small business districts. Strategies and methods necessary to conduct assessments and appropriate sequencing of skill acquisition based on individual needs. Prerequisite: consent of instructor. Restricted to majors.

SPED 555. Advanced Orientation and Mobility  
Advanced skill development in the development, administration, and supervision of orientation and mobility programs. Advanced cane skills including transportation systems and large business districts will be covered. Prerequisite: consent of instructor. Restricted to majors.

SPED 558. Intellectual Disabilities in a Diverse Society: An Introduction  
Dealing with history, philosophy, goals and objectives, classification, and characteristics of intellectual disabilities. Same as SPED 458 and SPED 559 with differentiated assignments for graduate students. Consent of instructor required. Prerequisite(s): SPED 350 or SPED 500. Restricted to SPED majors.

SPED 559. Classroom Management for Diverse Learners  
Behavior-change strategies for exceptional learners. Taught with SPED 459 with differentiated assignments for graduate students.

SPED 560. The Bilingual Exceptional Student  
Introduction to the field of bilingual/multicultural special education. Same as BIL 561, BIL 661, SPED 661.

SPED 562. Elementary Curriculum Methods and Materials for Special Education in a Diverse Society  
ESL and bilingual methods applied to bilingual exceptional students. Appropriate curriculum needs and materials development are also included. Taught with SPED 360, SPED 662.

SPED 563. Assessment and Consultation for Exceptional Multicultural Populations  
Covers formal and informal methods of assessment as well as consultation models for multicultural populations. Same as BIL 563, BIL 663, SPED 663.

SPED 565. Socio-cultural Perspectives in Bilingual/Multicultural SPED  
Covers a discussion of current issues impacting the education of exceptional minority students. Same as BIL 565, BIL 665, SPED 665.

SPED 566. The Learning Disabled Student in a Diverse Society  
Current definitions, conceptualizations, and techniques. Taught with SPED 466 with differentiated assignments for graduate students. Prerequisite(s): SPED 350 or SPED 500. Restricted to SPED majors.

SPED 567. Behavior Disorders in a Diverse Society  
An in-depth study of the classification, characteristics, educational needs, and professional literature regarding individuals with behavior disorders. Taught with SPED 467 and SPED 667 with differentiated assignments. Prerequisite(s): SPED 350 or SPED 500 or consent of instructor. Restricted to SPED majors.

SPED 568. Experiential Learning in Career/Technical Education for Exceptional Learners in a Diverse Society  
Addresses the planning, delivering and evaluation of experiential activities for students with special needs. Specific strategies for working with students with special needs in a shop or laboratory setting within the Career and Technical Education environment will be included. Taught with SPED 469 and AXED 469. Prerequisite(s): SPED 350 or SPED 500. Crosslisted with: AXED 569

SPED 570. Life Span Development and Transition in a Diverse Society  
Covers special problems associated with transitions over the life span, with emphasis on adolescent and adult needs. Attention to service approaches for public schools, sheltered workshops, residential hospitals, and group homes. Taught with SPED 470.

SPED 580. Curriculum, Methods, and Materials for Secondary Special Education  
Curriculum theory and development for elementary special education programs. Various teaching methods utilized with secondary exceptional learners and techniques for identifying, adapting, and developing materials will be addressed. Taught with SPED 480.

SPED 581. Student Teaching SPED  
Required for students seeking licensure at graduate level. May be repeated for a maximum of 6 credits. Prerequisites: bachelor’s degree, SPED 548, and admission to student teaching. Restricted to majors. Same as SPED 482 with differentiated assignments for graduate students.

SPED 586. Behavior and Autism  
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 488 and SPED 688 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 587. Social Skills and Autism  
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 487 and SPED 687 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 486 or SPED 686.

SPED 588. Communication and Autism  
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 486 and SPED 688 with differentiated assignments. Consent of instructor required. Prerequisites: SPED 486 or SPED 586 or SPED 686.

SPED 589. Masters Degree Seminar  
Capstone review of current issues in special education. Each student will participate in a practice comprehensive oral exam.

SPED 590. Special Research Problems  
Individual investigation either analytical or experimental. May be repeated for a maximum of 6 credits, 3 credits per semester.

SPED 599. Master’s Thesis  
0-88 cr. Thesis.

SPED 600. Doctoral Research  
1-88 cr. Research.

SPED 603. Special Education in a Diverse Society  
This course introduces the field of special education to Ph.D. students. Taught with SPED 500. Consent of instructor required. Prerequisite(s): MA Degree. Restricted to SPED & CD majors.

SPED 605. Independent Study Topics in Special Education  
1-6 cr. A problem and seminar course for those pursuing an advanced graduate degree. Each course to bear an appropriate subtitle.

SPED 606. High Incidence Disabilities in a Diverse Society  
Examines those areas of disability that most frequently occur in the special education population, including mental retardation, learning disabilities, communication disorders, and behavioral and emotional disorders. Taught with SPED 506. Prerequisite: Master’s Degree. Restricted to SPED and CD majors.

SPED 607. Low Incidence Disabilities  
Examines those disabilities that occur less frequently in the special education population, including hearing loss, visual disorders, autism, and other severe manifestations. Taught with SPED 507 with differentiated assignments.

SPED 610. Current Issues in Special Education for Teaching in a Culturally Responsive Society  
3 cr. Required for students seeking the Ed.D./Ph.D. Taught with SPED 510.

SPED 613. Current Research in Special Education  
3 cr. Required for students seeking the Ed.D./Ph.D. Prerequisite: M.A. degree. Restricted to majors. Same as SPED 513.
SPED 618. School Intervention and Organization in a Diverse Society 3 cr.
Introduces public school organization and law and the psycho-sociological perspective of education. Curriculum and theory, teaching methods and materials will be presented and operationalized through a psycho-educational point of view. Restricted to majors. Taught with SPED 519.

An examination of historic and current developments in the education of the deaf and hard of hearing including: sound sensation/perception, cognition/intelligence, language/identity, memory, psychosocial development counseling, culture, and assessment. Taught with SPED 524 and SPED 622 with differentiated assignments.

SPED 623. Language Development for Deaf & Hard of Hearing Students 3 cr.
Developmental approach to language learning for individuals with hearing impairments including linguistic and cognitive potential, assessment and intervention strategies, and reading language. Taught with SPED 425 and SPED 525 with differentiated assignments.

SPED 626. Teaching Content Subjects to Preschool- Twelfth Grade for Deaf and Hard of Hearing Students 3 cr.
Curriculum and instructional procedures common to education of hearing impaired including reading, adaptations to regular curriculum, methods for planning, implementing, and translating diagnostic information into programming. Taught with SPED 426 and SPED 526 with differentiated assignments.

SPED 628. Deafness: Psychological Theories, Assessments and Accommodations 3 cr.

SPED 629. Literacy and Deafness 3 cr.

Provides the history and theory of teaching students with visual impairments and multiple disabilities. An overview of educational, historical, and psychosocial effects of visual impairments on the individual and means of adapting with a visual impairment will be covered. Taught with SPED 432 and SPED 532 with differentiated assignments. Consent of instructor required.

This course will cover the structure and function of the eye and associated diseases and how vision is affected. Appropriate educational recommendations and functional vision assessment techniques will be emphasized. Taught with SPED 433 and SPED 533 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 432 or consent of instructor.

SPED 634. Visual Impairment with Multisensory Impairments 3 cr.
This course is an overview of education services for the student with visual impairments and multiple sensory impairments. Emphasis is on curricula, communication, behavior management, inclusion, transition, and independent living. Taught with SPED 434 and SPED 534 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 432 or consent of instructor.

This course will cover the uncontracted and contracted literary Braille code and methods of teaching Braille to tactile readers. Taught with SPED 436 and SPED 536 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 432 or SPED 633 or consent of instructor.

SPED 638. Braile II: Literacy Skills for Students with Visual Impairments 3 cr.
This course will cover the Nemeth Braille code for mathematics, the abacus, the use of technology for Braille, foreign language, music and Braille translation programs. Taught with SPED 438 and SPED 538 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 455 or SPED 536 or SPED 638.

SPED 639. Instructional Strategies of Teaching Visually impaired 3 cr.
This course covers assessment, curricular adaptive s, knowledge of transition age, young children with multiple disabilities, and assistive technology. Taught with SPED 439 and SPED 539 with differentiated assignments. Consent of instructor required. Prerequisite(s): Braile I and Braile II and consent of instructor.

SPED 640. Internship in Special Education 1-6 cr.
Each course bears a qualifying subtitle. Maximum of 6 credits per semester. 1 cr.

SPED 645. Technology and Exceptionality in a Diverse Society 3 cr.
This class will address the unique educational needs of learners with exceptionalities, and will provide information and practice in addressing those needs through the use of technology-based interventions. Taught with SPED 545.

SPED 658. Intellectual Disabilities in a Diverse Society: An Introduction 3 cr.
Dealing with history, philosophy, goals and objectives, classification, and characteristics of intellectual disabilities. Taught with SPED 458 and SPED 558 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 350 or SPED 500. Restricted to SPED majors.

SPED 661. The Bilingual Exceptional Student 3 cr.
Same as BIL 561, BIL 661, SPED 561.

SPED 662. Elementary Curriculum Methods and Materials for Special Education in a Diverse Society 3 cr.
ESL and bilingual methods applied to bilingual exceptional students. Appropriate curriculum needs and materials development are also included. Taught with SPED 360, SPED 562.

SPED 663. Assessment and Consultation for Exceptional Multicultural Population 3 cr.
Covers formal and informal methods of assessment as well as consultation models for multicultural populations.

SPED 665. Sociocultural Perspectives in Bilingual/Multicultural SPED 3 cr.
Same as BIL 565, BIL 665, SPED 565.

SPED 666. The Learning Disabled Student in a Diverse Society 3 cr.
Current definitions, conceptualizations, and techniques. Taught with SPED 466 and SPED 566 with differentiated assignments. Prerequisite(s): SPED 350 or SPED 500. Restricted to SPED majors.

SPED 667. Behavior Disorders in a Diverse Society 3 cr.
An in-depth study of the classification, characteristics, educational needs, and professional literature regarding individuals with behavior disorders. Taught with SPED 467 and SPED 567 with differentiated assignments. Prerequisite(s): SPED 350 or SPED 500 or consent of Instructor. Restricted to SPED majors.

SPED 685. Introduction to Autism 3 cr.
This course will provide an overview of autism spectrum disorders as a triad of impairments, including historical and theoretical perspectives, assessment issues, characteristics of autism, intervention programs, and family issues. Differentiated Assignments. Taught with SPED 585 and SPED 485.

SPED 686. Behavior and Autism 3 cr.
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 486 and SPED 586 with differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 485 or SPED 585.

SPED 687. Social Skills and Autism 3 cr.
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 487 and SPED 587 with differentiated assignments. Consent of instructor required. Pre/Corequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 688. Communication and Autism 3 cr.
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 488 and SPED 588 and differentiated assignments. Consent of instructor required. Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 690. Doctoral Seminar 1-4 cr.
The seminar will engage doctoral students in scholarly dialogue and production. It will assist in preparing them for future careers in leadership roles. Same as CD 690.
SPED 698. Selected Topics in Special Education 1-8 cr.
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.

Offered primarily for those pursuing the research requirements for the Ed.S. degree. Course may be repeated up to a maximum allowed for this degree. Each research project will be designated by a qualifying subtitle.

SPED 700. Dissertation 0-9 cr.
Credit may be earned by students who have successfully completed their doctoral comprehensive exams and presented their dissertation proposals to their committees. At least 18 credits are required during the course of dissertation study. May be repeated for a maximum of 24 credits. Restricted to majors.
CHEMICAL ENGINEERING

Department Website: http://chemeng.nmsu.edu/

drocksr@nmsu.edu

D.A. Rockstraw*, Department Head, Ph.D. (Oklahoma)- activated carbon, chemical process design, analysis & simulation, catalysis and reaction kinetics; P.K. Anderson, Ph.D. (California-Berkeley)- chemical process simulation, engineering education, electrochemical systems; C.E. Brewer, Ph.D. (Iowa State)- biomass thermochemical processing, sustainable agriculture, biorenewable resources; S. Deng, Ph.D. (Cincinnati)- absorption, nanoporous materials, hydrogen fuel cells, water treatment; A. Ghassemi, Ph.D. (NMSU)- environmental management, advanced water treatment, renewable energy, pollution prevention and process control; J. Houston, Ph.D. (Texas A&M)- biomedical engineering, biophotonics, flow cytometry; H. Luo, Ph.D. (Tulane)- nanostructured materials, thin films, magnetism, electrochemistry, photovoltaics; T.A. Manz, Ph.D. (Purdue)- quantum chemistry simulations, advanced materials; J.A. Martinez, Ph.D. (California-Davis)- novel energetic nanostructured materials, quantum transport phenomena, thermoelectronics; M.C. Mitchell*, Ph.D. (Minnesota)- statistical mechanics, computer modeling and simulation, thermodynamic characterization of aerospace fuels

*Registered Professional Engineer

DEGREE: Master of Science in Chemical Engineering

DEGREE: Doctor of Philosophy

MAJOR: Engineering

CONCENTRATION: Chemical Engineering

The Department of Chemical Engineering offers graduate study leading to the Master of Science degree and the Ph.D. with an emphasis in chemical engineering. Admission to the program is in accord with the general regulations of the Graduate School. The Graduate Record Examination (GRE) General Test is required for all applicants. All graduate students are required to pass all graduate engineering courses with a minimum grade of B.

DEGREE: Master of Science in Chemical Engineering

The graduate program is intended to provide advanced education in chemical engineering. The program of study leading to the M.S. consists of 32 credits which includes required core courses (12 credits), tools courses (6-9 credits), chemical engineering elective courses (3-6 credits), thesis (6 credits) and graduate seminar (2 credits). The required courses are:

- **CHE 501** – Intermediate Thermodynamics for Chemical Engineers (3 credits)
- **CHE 506** – Intermediate Transport Phenomena (3 credits)
- **CHE 516** – Numerical Methods in Chemical Engineering (3 credits)
- **CHE 542** – Intermediate Reactor Analysis and Design (3 credits)
- **CHE 590** – Graduate Seminar (2 credits; 1 credit/semester for two semesters)
- **CHE 599** – Master’s Thesis (6 credits)

The tools courses must be selected from the list below. Chemical engineering electives must be selected from courses numbered 450-589. The thesis may be pursued in absentia at various industrial sites by special arrangement.

- **CHEM 521** – Chemical Instrumentation
- **CHEM 526** – Advanced Analytical Chemistry
- **CHEM 528** – Electroanalytical Techniques

**Required Courses:**

- **CHE 689** – Graduate Seminar (3 credits; 1 credit/semester for three semesters)
- **CHE 700** – Doctoral Dissertation (minimum 9 credits)
- An Independent Research Program (minimum 9 credits)

The chemical engineering electives must be selected from courses numbered 450-589 or 600-689. The two elective courses must be letter-graded course work numbered 500 or greater (excluding seminar courses, independent study courses from any engineering or natural science (e.g. Biology, Chemistry, Mathematics, Physics, Statistics) graduate program.

Courses which will satisfy the tools course electives are given below. If a student wishes the faculty to consider accepting another course as an experimental tools or analysis tools elective, they must submit a request in writing to the department head. The graduate faculty will then vote to approve or disapprove the request.

**Experimental Tools**

- **A ST 505** – Statistical Inference I
- **A ST 506** – Statistical Inference II
- **BCHE 494** – Techniques in Genetic Engineering
- **BIOL 506** – Biological Electron Microscopy
- **BIOL 591** – Principles of Confocal Microscopy
- **BIOL 592** – Microscopy Practicum
- **CHEM 471** – Instrumental Methods of Analysis
- **CHEM 472** – Analytical Methods for Toxic Organics and Metals in the Environment
- **CHEM 521** – Chemical Instrumentation
- **CHEM 526** – Advanced Analytical Chemistry
- **CHEM 528** – Electroanalytical Techniques
Analysis Tools
A ST 503 – SAS Basics
A ST 504 – Statistical Software Applications
C S 450 – C Programming
C S 452 – Java Programming
C S 475 – Artificial Intelligence I
E E PHYS 577 – Fourier Methods in Electro-Optics
MATH 517 – Complex Variables
MATH 518 – Fourier Series and Boundary Value Problems
MATH 519 – Calculus of Variations and Optimal Control
MATH 531 – Ordinary Differential Equations
MATH 532 – Partial Differential Equations
PHYS 495 – Mathematical Methods of Physics I
PHYS 496 – Mathematical Methods of Physics II

All graduate students must select a thesis or dissertation advisor by the end of their first semester in the chemical engineering graduate program. Graduate teaching and research assistantships, fellowships, and traineeships are available. For consideration for financial assistance, completed applications must be received by March 1. All support is contingent upon availability, eligibility and satisfactory progress toward the degree.

For further information on the Department of Chemical Engineering, please consult the web page http://chemeng.missouri.edu.

CHEMICAL ENGINEERING

CH E 451. Engineering Economy 3 cr.
Discounted cash flows, economics of project, contract and specifications as related to engineering design. Same as I E 451.

Concepts in chemical engineering process design, including: capital and manufacturing cost estimation; discounted cash flows; interest; taxes; depreciation; profitability analysis; project specifications. Prerequisite(s): CH E 307 and CH E 441.

CH E 452 L Chemical Process Simulation 1 cr. (3P)
Construction and convergence of chemical processes in a process simulator. Students will understand how to access variables, define and converge design specifications and convergence tear/recycle streams. Prerequisite(s): CHE 352L. Corequisite(s): CHE 452.

CH E 455. Chemical Plant Design 3 cr.
Analysis of integrated process plants. Design for optimum operability, reliability, safety, and control. Process analysis of performance, optimization, and energy integration (pinch technology). Requires individual solution of the AICHE student contest problem, or equivalent, according to rules of contest. Written report covering work is required. Prerequisite(s): CH E 452.

CH E 455 L Chemical Plant Simulation 1 cr. (3P)
Construction, convergence, and optimization of chemical processes in a process simulator. Dynamic process simulation and control. Prerequisite(s): CH E 412, CH E 452L. Corequisite(s): CH E 456.

CH E 456. Advanced Chemical Process Simulation 3 cr.
Advanced techniques in computational simulation of chemical processes using process simulation software. Restricted to CH E majors. Prerequisite: CH E 452L or consent of instructor.

CH E 464. Polymer Science 3 cr.
Synthesis, structure, property relationships of synthetic polymers. Prerequisite: CH E 361.

CH E 466. Fuel Cell and Hydrogen Technology 3 cr.
Introduction to fundamentals and applications. Includes the thermodynamics, electrochemical kinetics and fuel cell electrode catalyst; systems and design and reforming; hydrogen production, storage, and safety; applications of fuel cells in stationary power generation, portable power, and automobiles. Prerequisites: CHEM 111G and PHYS 215G.
CH E 513. Intermediate Chemical Engineering Data Analysis (s) 3 cr.
Intermediate topics in the design and analysis of typical chemical engineering experiments. Topics covered include: linear models, constrained experimental space, non-linear models, model discrimination, and response surface methodologies. Consent of instructor required.

CH E 516. Numerical Methods in Chemical Engineering 3 cr.
Survey of numerical methods for solving problems commonly encountered in heat and mass transfer, fluid mechanics, and chemical reaction engineering.

CH E 530. Environmental Management Seminar I 1 cr.
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research.

CH E 539. Intermediate Environmental Modeling 3 cr.
Same as CH E 436 with differentiated assignments for graduate students. Prerequisite(s): MATH 392 or CH E 201.

CH E 541. Chemical Kinetics and Reactor Engineering (s) 3 cr.
Same as CH E 441 with differentiated assignments for graduate students. Prerequisite: Consent of Instructor.

CH E 542. Intermediate Reactor Analysis and Design (s) 3 cr.
Application and analysis of equations of continuity to multicomponent reaction systems. Introduction to homogeneous and heterogeneous catalysis, single-phase combustion, and shock reaction systems. Chemical engineering majors must earn B or better.

CH E 566. Fuel Cell and Hydrogen Technology 3 cr.
Same as CH E 466 with differentiated assignments for graduate students.

CH E 568. Intermediate Adsorption 3 cr.
Same as CH E 468, with differentiated assignments for graduate students.

CH E 577. Intermediate Biochemical Engineering 3 cr.
Introductory course includes both biomedical and biochemical engineering topics; tissue engineering, biomedical systems, artificial organs, biology from an engineering viewpoint, engineering principles of bio-processes, biochemical engineering, physiologic systems modeling and introduction to applications for recombinant DNA technology. Taught with CH E 477 with differentiated assignments for graduate students.

CH E 590. Graduate Seminar 1 cr.
Presentations on topics of professional interest in chemical engineering. Includes seminars by faculty, graduate students, and invited speakers from academia, government, and industry. Required each semester for every M.S. student. All graduate degree candidates required to give seminar. May be repeated for a total of 6 credits. Restricted to majors.

CH E 592. Intermediate Selected Topics 1-4 cr.
Lecture and/or laboratory instruction on selected topics of current research interest. Subtitled in the Schedule of Classes. Prerequisite: consent of instructor and department head. May be repeated for a total of 6 credits. Restricted to majors.

CH E 598. Special Research Programs 1-3 cr.
Individual investigations either analytical or experimental. May be repeated for a maximum of 6 credits.

CH E 599. Master’s Thesis 0-88 cr.
Thesis.

CH E 621. Advanced Topics in Unit Operations, Equipment Design, and Operation 3 cr.
Selected topics of current interest in analysis of unit operations, equipment design and operation, and/or closely related areas. May be subtitled in the Schedule of Classes. Prerequisite: consent of instructor.

CH E 690. Graduate Seminar 1 cr.
Presentations on topics of professional interest in chemical engineering. Includes seminars by faculty, graduate students, and invited speakers from academia, government, and industry. Required each semester for every Ph.D. student. All candidates for graduate degrees required to give seminar. May be repeated for a maximum of 8 credits. Restricted to majors.

CH E 695. Special Research Program 3 cr.
Advanced topics for current research. Course subtitled in the Schedule of Classes. May be repeated up to 6 credits. Prerequisite(s): Consent of instructor.

CH E 700. Doctoral Dissertation 0-88 cr.
Individual research in selected topics of current interest in chemical engineering. Prerequisite: must be doctoral student or have consent of department head.

CIVIL ENGINEERING

Department website: http://cagesun.nmsu.edu/
(575) 646-3801
wales@nmsu.edu

K. R. White,* Ph.D. (Texas Tech–emeritus)– structural design; P. Bandini, Ph.D. (Purdue)– geotechnical engineering; A. S. Bawazir, Ph.D. (New Mexico State)– agricultural/water resources engineering; D. Cortes, Ph.D. (Georgia Tech)– geotechnical engineering; R. L. Idris, Ph.D. (New Mexico State)– structural engineering; R. B.Jacques,* Ph.D. (Virginia Polytechnic)– environmental engineering; D. Jackegu, Ph.D. (Texas–A&M)– structural engineering; N. N. Khan- dan,* Ph.D. (Drexel)– environmental engineering; J. P. King,* Ph.D. (Colorado State)– agricultural/water resources engineering; P. T. Martin, Ph.D. (Nottingham, UK)– transportation engineering; C. Newton, Ph.D. (Washington)– structural engineering; L. Papelis, Ph.D. (Stanford); Z. Saman,* Ph.D. (Utah State)– agricultural engineering, water resources, B. Weldon, Ph.D. (Notre Dame)– structural engineering; P. Xu, Ph.D. (ENIGREF, Paris, France).

Registered Professional Engineer
# Board Certified Environmental Engineer (BCEE)

DEGREE: Master of Science in Civil Engineering

DEGREE: Master of Science in Environmental Engineering

DEGREE: Doctor of Philosophy

MAJOR: Engineering

CONCENTRATION: Civil Engineering

The Civil Engineering Department offers excellent opportunities for advanced study and professional training in several fields leading to the M.S.C.E., M.S. ENV, and the Ph.D. degrees. Among the currently active areas are environmental (water and wastewater treatment, hazardous waste, and sitework remediation); geotechnical (experimental soil mechanics, foundations, and other geosystems, and pavement geotechnics); water resources (surface and ground water, irrigation and drainage, erosion and sediment transport); hydraulics (open channel and structures); structural mechanics (emphasis on bridge design and inspection); structural design, and structural health monitoring/NDE.

The department has excellent facilities including some 15 teaching and/ or research laboratories with facilities for mechanical, chemical, and biological research. The outstanding feature of the program is the energetic, highly motivated faculty and the low student-faculty ratio. The department currently has several ongoing research projects of various size and scope employing graduate students.

Office space is normally provided for those students pursuing an advanced degree. Teaching and research assistantships are available to qualified students.

Students enrolling for graduate work in civil engineering must have received a bachelor’s degree in engineering or one of the allied fields. A candidate for the master’s degree may choose either a thesis or a nonthesis option. When a student enrolls for the M.S., a doctoral committee is formed to assist the student in planning a program appropriate to the student’s background and goals and to administer the required examinations. All Ph.D. candidates in civil engineering must have a demonstrated proficiency in English and two research tools. A student must complete the Ph.D. program in five years.

The student must demonstrate proficiency in English and two research tools. The student must complete a program in five years.

Exceptions to these requirements must be approved by the head of the department.

STRUCTURAL ENGINEERING

Thesis Option

Prerequisite Courses:
C E 365, Indeterminate Structural Analysis
C E 444, Structural Steel Design (based on AISC)
C E 445, Reinforced Concrete Design (based on ACI)
Required Courses:
- C E 501, Advanced Mechanics of Materials .................................................. 3
- C E 515, Finite Element Methods ................................................................. 3
- C E 544, Advanced Design of Steel Structures ........................................... 3
- C E 546, Advanced Concrete Design ........................................................... 3
- C E 571, Structural Dynamics .................................................................. 3

Option Courses:
- At least 9 credits from the following list (1):
  - C E 502, Advanced Mechanics of Steel Structures .................................... 3
  - C E 504, Advanced Engineering Design ................................................... 3
  - C E 509, Deep Foundations ...................................................................... 3
  - C E 543, Advances in Concrete Technology ........................................... 3
  - C E 547, Bridge Engineering ..................................................................... 3
  - C E 546, Advanced Wood and Masonry Design ....................................... 3
  - C E 564, Wood Design ........................................................................... 3
  - C E 555, Masonry Design ......................................................................... 3
  - C E 572, Earthquake Engineering ............................................................. 3
  - C E 571, Pavement Analysis and Design .................................................. 3
  - C E 615, Advanced Finite Element Analysis ............................................ 3
  - C E 645, Prestressed Concrete Analysis and Design ................................ 3

Required Courses:
- C E 599, Master's Thesis ......................................................................... 6
  (A maximum of 6 credits are counted toward the Master's Degree program)

Total credits: 24 credits of coursework and 6 credits of Master's Thesis research.

GEOTECHNICAL ENGINEERING

Thesis Option

Prerequisite Courses:
- One course in Geological Sciences: GEOL 111 or higher
- One course in Reinforced Concrete (based on ACI): C E 445 or higher
- C E 357, Soil Mechanics (with lab)
- C E 457, Foundations Design

Required Courses:
- C E 506, Advanced Soil Mechanics ......................................................... 3
- C E 509, Deep Foundations ....................................................................... 3
- C E 585, Slope Stability Analysis and Design ........................................... 3

Optional Courses:
- (Can be taken as C E 503. A maximum of 6 credits of C E 503 are counted toward the Masters Degree program)
  - At least 6 credits from the following list:
    - C E 485, Design of Earth Dams .......................................................... 3
    - C E 577, Ground Improvement ............................................................. 3
    - GE EN 452, Geohydraulics or C E 581, Ground Water Hydrology ......... 3
  - At least 6 credits from the following list:
    - C E 515, Finite Element Methods (or similar course) ........................... 3
    - C E 575, Plasticity Theory .................................................................... 3
    - C E 577/479, Pavement Analysis and Design ....................................... 3
    - C E 586, Geotechnical Earthquake Engineering .................................. 3
  - At least 3 credits from courses outside the area or department (1):
    - Geological Sciences or Geophysics course (for example: GEOL 470, GPHY 451) .... 3
    - A ST 505, Statistical Inference I or similar statistics course ................... 3
    - C E 543, Advances in Concrete Technology ....................................... 3
    - C E 545, Advanced Concrete Design .................................................. 3
    - C E 596/503, Special Design Program ............................................... 3
    - ENVE 465, Solid and Hazardous Waste System Design .................... 3
  - Course in mathematics, numerical methods, or programming (450 or higher) .. 3

Research Credits:
- C E 599, Master’s Thesis (A maximum of 6 credits are counted toward the Masters Degree program) .... 6
- Total credits: 24 credits of coursework and 6 credits of Master’s Thesis research (2)(3)

Notes:
- (1) The optional courses outside the area or department should be previously approved by the academic advisor or student's Graduate Committee.
- (2) International students must be registered at least 9 credits per semester.
- (3) International students may be required to take English language courses to show proficiency in English.

WATER RESOURCES ENGINEERING

Thesis Option

Prerequisite Courses: (Total of 30 credits required)
- Core Courses ....................................................................................... 12
- Statistics .............................................................................................. 3
- Area of Interest Courses ........................................................................ 9
- Thesis (C E 599, Master’s Thesis) ......................................................... 6

Non-Thesis Option (Total of 30 credits required):
- Core Courses ....................................................................................... 12
- Statistics .............................................................................................. 3
- Area of Interest Courses ........................................................................ 15

Foundation Requirements
- 1. ABET-Accredited B.S. in Civil, Agricultural, Geological Engineering, or closely related field or equivalent (as per existing CAGE Department regulations)
- 2. One course in surface water hydrology
- 3. One course in hydrogeology or geohydrology
- 4. At least three semesters of hydraulic and hydraulic design

Core Courses (15 credits from following courses):
- A ST 505, Statistical Inference I or advanced statistics class if student is qualified
- C E 531, Open Channel Hydraulics ......................................................... 3
- C E 557, Water Resources Development ................................................ 3
- C E 581, Groundwater Hydrology and Modeling .................................... 3
- C E 582, Statistical Hydrology ............................................................... 3

Area of Interest Courses (Flexible):

Agricultural/ Civil/ Environmental Engineering
- A EN 458, Design of Water Wells/ Pumping Systems
- A EN 475, Soil and Water Conservation Engineering
- A EN 479, Irrigation and Drainage Engineering
- A EN 479, Irrigation System Design and Management
- CE 482, Hydraulic Structures
- CE 483/503, Surface Water Hydrology
- CE 485/504, Design of Small Earth Dams
- CE 682, Hydrodynamics II
- ENVE 557, Surface Water Quality Modeling Control
- ENVE 630, Fate and Transportation of Environmental Contaminants
- GE EN 452/C E 503, Geohydraulics
- I E 487, GIS Practicum
- I E 500, GIS Modeling and System Modeling
- SOIL 651, Advanced Soil Chemistry
- SOIL 652, Advanced Soil Physics

Modeling/Fluid Mechanics
- M E 530, Intermediate Fluid Mechanics
- M E 533, Computational and Theoretical Fluid Mechanics
- M E 560, Engineering Analysis II- Numerical Methods

Management/ Optimization
- I E 533, Linear Programming
- I E 534, Nonlinear Programming
- I E 535, Discrete Optimization

Institutional Aspects:
- AG E 484, Water Resources Economics
- BLAW 527, Negotiation and Dispute Resolution
DEGREE: Master of Science in Environmental Engineering

Environmental engineering at New Mexico State University provides unique educational and research opportunities at the graduate level in the fields of water quality, water treatment, water pollution control, wastewater treatment, groundwater protection, and hazardous waste management. The program is designed to provide students with opportunities to develop skills in environmental engineering and to participate in research that addresses real-world problems.

REQUIRED CURRICULUM

The graduate environmental engineering program of the CAGE department expects all M.S. and Ph.D. students to meet certain requirements in pursuit of an advanced degree. Some of these requirements are related to the quantity, level, and quality of coursework. This Graduate Catalog details what is expected as a minimum for graduation, but it is up to the student and his/her advisor and graduate committee to determine the plan of study for the student. The student and his/her advisor will create this plan of study in the first semester of graduate work.

Students desiring to work toward an advanced degree in environmental engineering must have completed undergraduate preparation similar to that required for a Bachelor of Science degree in an ABET accredited engineering program or must have adequate background, as determined by the graduate faculty of the program. The program administrator will approve exceptions to these requirements.

The environmental engineering faculty will form a committee for every entering student. The faculty will evaluate the student's record and determine which deficiencies and/or core courses, if any, are needed by the student. For all professional non-thesis programs, the department head will review the committee's decision. In order to provide consistency among plans of study for graduate students and to set a minimum set of core pertinent courses, it is the policy of the graduate environmental engineering program that each graduate student will fulfill the following course requirements (or equivalent).

Required Background Courses

The following courses may be required if the student did not take a similar course at the undergraduate level, as negotiated with the general faculty committee.

C E 366, Fundamentals of Environmental Engineering 3 cr.
C E 382 Hydraulic Systems Design 3 cr.

Elective Courses (3 cr.)

A minimum of six credits must be completed in graduate level courses and must be approved by the advisor and committee members.

CIVIL ENGINEERING

A EN 452, Geohydrology 3 cr.
A EN 459, Design of Wells/Pumping Systems 3 cr.
E S 462, Sampling and Analysis of Environmental Contaminants 3 cr.
C E 557, Water Resources Development 3 cr.
E NVE 510, Environmental Engineering Seminar 1-3 cr.
E NVE 551, Unit Processes/Operation of Water Treatment 3 cr.
E NVE 553, Chemical Theories of Environmental Engineering 3 cr.
E NVE 554, Microbiological Theories of Environmental Engineering 3 cr.
E NVE 555, Advanced Waste Management 3 cr.
E NVE 590, Professional Engineering Experience 3 cr.
G E 452, Geohydrology 3 cr.

AGRICULTURAL ENGINEERING

A EN 459, Design of Water Wells/Pumping Systems 3 cr.
C E 567, Water Resources Development 3 cr.
C E 576, Water Resources Undergraduate Seminar 3 cr.
A EN 475, Soil and Water Conservation 3 cr.
E NVE 537, Environmental Engineering Seminar 1-3 cr.
A EN 478, Irrigation and Drainage Engineering 3 cr.
C E 385, Quality Assurance for Environmental Engineering 3 cr.
A EN 498, Special Topics 1-3 cr.

CIVIL ENGINEERING

C E 400, Engineering Economy and Law 3 cr.
C E 405, Engineering Economics 3 cr.
C E 450, Engineering Economics Honors 3 cr.
C E 452, Geohydrology 3 cr.
C E 455, Solid and Hazardous Waste Systems Design 3 cr.
C E 456, Environmental Engineering Design 3 cr.

Core Courses - All of the following core courses are required (12 cr.):

E NVE 551, Unit Processes/Operation of Water Treatment 3 cr.
E NVE 552, Unit Processes/Operations of Wastewater Treatment 3 cr.
E NVE 553, Chemical Theories of Environmental Engineering 3 cr.
E NVE 554, Microbiological Theories of Environmental Engineering 3 cr.
E NVE 555, Advanced Waste Management 3 cr.

Thesis or Professional Experience for MS students

E NVE 590, Professional Engineering Experience 3 (may replace E NVE 455 or 456) and E NVE 598, Environmental Engineering Practicum 6, or E NVE 599, Master's Thesis (for students pursuing the thesis option).

Dissertation, Research Tools for Ph.D. Students

A minimum of two research tools 3 cr. each.

E NVE 700, Doctoral Dissertation 18 cr.

Professional Development Electives for the Non-thesis option (outside the college of engineering):

M.S. program: A minimum of six credits in graduate-level communications, management, economics and/or other relevant disciplines. These courses will be selected by the student and must be approved by the environmental engineering faculty (6 cr.).

Elective Courses (3 cr.)

A EN 459, Design of Water Wells/Pumping Systems 3 cr.
C E 557, Water Resources Development 3 cr.
E S 462, Sampling and Analysis of Environmental Contaminants 3 cr.
C E 557, Water Resources Development 3 cr.
E NVE 510, Environmental Engineering Seminar 1-3 cr.
E NVE 554, Microbiological Theories of Environmental Engineering 3 cr.
E NVE 555, Advanced Waste Management 3 cr.
E NVE 630, Fate and Transport of Environmental Contaminants 3 cr.
G E 452, Geohydrology 3 cr.

Agricultural Engineering

A EN 459, Design of Water Wells and Pumps 3 cr.
C E 557, Water Resources Development 3 cr.
C E 557, Water Resources Undergraduate Seminar 3 cr.
A EN 475, Soil and Water Conservation 3 cr.
E NVE 537, Environmental Engineering Seminar 1-3 cr.
A EN 478, Irrigation and Drainage Engineering 3 cr.
C E 385, Quality Assurance for Environmental Engineering 3 cr.
A EN 498, Special Topics 1-3 cr.

Civil Engineering

C E 400, Engineering Economy and Law 3 cr.
C E 405, Engineering Economics 3 cr.
C E 450, Engineering Economics Honors 3 cr.
C E 452, Geohydrology 3 cr.
C E 455, Solid and Hazardous Waste Systems Design 3 cr.
C E 456, Environmental Engineering Design 3 cr.

Core Courses - All of the following core courses are required (12 cr.):

E NVE 551, Unit Processes/Operation of Water Treatment 3 cr.
E NVE 552, Unit Processes/Operations of Wastewater Treatment 3 cr.
E NVE 553, Chemical Theories of Environmental Engineering 3 cr.
E NVE 554, Microbiological Theories of Environmental Engineering 3 cr.
E NVE 555, Advanced Waste Management 3 cr.

Thesis or Professional Experience for MS students

E NVE 590, Professional Engineering Experience 3 (may replace E NVE 455 or 456) and E NVE 598, Environmental Engineering Practicum 6, or E NVE 599, Master's Thesis (for students pursuing the thesis option).

Dissertation, Research Tools for Ph.D. Students

A minimum of two research tools 3 cr. each.

E NVE 700, Doctoral Dissertation 18 cr.

Professional Development Electives for the Non-thesis option (outside the college of engineering):

M.S. program: A minimum of six credits in graduate-level communications, management, economics and/or other relevant disciplines. These courses will be selected by the student and must be approved by the environmental engineering faculty (6 cr.).

Elective Courses (3 cr.)

A EN 459, Design of Water Wells/Pumping Systems 3 cr.
C E 557, Water Resources Development 3 cr.
E S 462, Sampling and Analysis of Environmental Contaminants 3 cr.
C E 557, Water Resources Development 3 cr.
E NVE 510, Environmental Engineering Seminar 1-3 cr.
E NVE 554, Microbiological Theories of Environmental Engineering 3 cr.
E NVE 555, Advanced Waste Management 3 cr.
E NVE 630, Fate and Transport of Environmental Contaminants 3 cr.
G E 452, Geohydrology 3 cr.
C E 455. Masonry Design  3 cr.
Theory and design of masonry structural members and systems subjected to gravity and lateral loads. Taught every other year, alternates with C E 454, Wood Design. Prerequisites: C E 301 and C E 315. Corequisites: C E 311 and C E 365.

C E 457. Foundation Design  3 cr. (2+3P)
Application of principles of classical soil mechanics to the design and analysis of shallow and deep foundations and retaining structures. Prerequisite(s): C E 357.

C E 459. Geomechanics and Rock Engineering  3 cr. (2+3P)
Application of rock mechanics principles to the design and construction of structures in and on rock, including design of rock support systems, rock slopes and blasting/excavation techniques. Prerequisite(s): C E 357.

C E 460. Site Investigation  3 cr. (2+2P)
Investigation and characterization of surficial and subsurface geologic materials and ground water for civil engineering projects. Includes exploration program, drilling and sampling, rock and soil classification and logging, groundwater monitoring, profiles, and interpretation of geotechnical reports. Prerequisite(s): C E 357. Pre/Corequisite(s): C E 457.

C E 469. Structural Systems  3 cr. (2+3P)

C E 470. Design of Municipal and Hazardous Waste Landfills  3 cr.
Solid waste and application of geotechnical engineering principles and methods to the site selection and design of municipal and hazardous waste landfills. Prerequisite(s): C E 357 and C E 452, or consent of instructor.

C E 471. Highway Engineering  3 cr. (2+3P)
Highway systems design and management. Prerequisite: C E 357, STAT 371, or consent of instructor.

C E 477. Construction Engineering  3 cr.
Construction planning, equipment, and methods. Prerequisites: C E 357 and C E 450.

C E 479. Pavement Analysis and Design  3 cr.
Covers stresses and deflections in pavement layers, material characterization, flexible and rigid pavement design by AASHTO, mechanistic design, rehabilitation concepts. Taught with C E 537. Extra work required for graduate credit. Prerequisite(s): C E 357.

C E 482. Hydraulic Structures  3 cr.
Engineering design of water-regulating structures. Prerequisites: C E 301 and C E 382.

C E 483. Surface Water Hydrology  3 cr.
Hydrologic cycle and relationships between rainfall and surface water runoff. Prerequisite: C E 331 or consent of instructor.

C E 485. Design of Earth Dams  3 cr.
Engineering design applied to site selection, foundation inspection and treatment, hydrology and hydraulics, stability, and seepage analysis. Economic and environmental factors. Prerequisite(s): C E 357.

C E 497. Senior Seminar  2 cr.
Selected topics on the civil engineering profession and orientation for professional practice. Preparation for the FE exam. Corequisite: application for degree.

C E 498. Special Topics  1-3 cr.
Prerequisite: consent of department head. May be repeated for a maximum of 9 credits.

Study of stress and strain in two and three dimensions, theories of failure, stress concentrations, asymmetrical bending, curved beams, beams on elastic foundations, column theories, torsion, thick-wall cylinders. Prerequisites: C E 301, MATH 392. Same as M E 501.

C E 502. Advanced Mechanics of Steel Structures  3 cr.
Advanced structural mechanics applicable to steel structures. Includes inelastic behavior, plastic analysis, column and frame stability and torsion. Prerequisite: C E 444.

C E 503. Special Design and Analysis Program  3-6 cr.
Design and analysis covering subject matter of an approved 450 undergraduate departmental course plus an additional report or project. Course may be submitted in the Schedule of Classes. Prerequisite: consent of instructor/committee. May be repeated once for a total of 6 credits.

C E 504. Advanced Engineering Design  3 cr.
Advanced engineering design covering subject matter of a selected capstone undergraduate design course plus an additional report or project. May be substituted. Prerequisite: consent of instructor/committee.

C E 505. Advanced Mechanics of Concrete  3 cr.
Advanced structural mechanics applicable to concrete structures. Topics include: nonlinear-elastic/plastic modeling and analysis of reinforced concrete structures, seismic behavior of reinforced concrete structures, and deformation of members under various loads. To be taught along with C E 485. Prerequisite(s): C E 445.

C E 506. Advanced Soil Mechanics  3 cr.
Stress and strain analyses in soil, stress paths; drained and undrained shear strengths of granular soils and clays, consolidation, liquefaction, soil improvement. Prerequisite: C E 457 or consent of instructor.

C E 507. Design of Earth Retaining Structures  3 cr.
Lateral earth pressure theory, soil-reinforcement interaction, and analysis and design of rigid and flexible earth retaining structures for support of fills and excavations, including retaining walls, mechanically stabilized earth (MSE) walls, sheet pile walls, anchored walls, tiebacks and soil nailing. Prerequisite(s): C E 357. Pre/Corequisite(s): C E 457.

C E 509. Deep Foundations  3 cr.
Behavior, analysis and design of pile and pier foundations subjected to axial and lateral loads. Prerequisite: C E 457 or consent of instructor.

C E 515. Finite Element Methods  3 cr.
Introduces the finite element method. Topics may include beam, frame, plane stress, plane strain, axisymmetric, and 3-D stress elements. Includes static and dynamic analysis. Uses readily available finite-element software. Prerequisite: graduate standing or consent of instructor.

C E 530. Environmental Management Seminar I  1 cr.
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research.

C E 531. Open Channel Hydraulics  3 cr.
Theoretical and applied hydraulics of open channels, with emphasis on nonuniform flow, rapidly varied flow, and wave formation. Prerequisite: C E 382 or consent of instructor.

C E 543. Advances in Concrete Technology  3 cr.
Advanced topics related to concrete materials, including mixture proportioning with nontraditional admixtures, roles and side effects of concrete admixtures, durability of concrete, nondestructive testing of concrete, creep, and shrinkage. Prerequisites: C E 311 and C E 445.

C E 544. Advanced Design of Steel Structures  3 cr.
Connection design; beam, column, and beam-column stability and design; and seismic frame design. Prerequisites: C E 444 and C E 468.

C E 545. Advanced Concrete Design  3 cr.
 Prestressed concrete, ultimate strength theory, design of shell structures. Prerequisites: C E 445 and C E 468.

C E 547. Bridge Engineering  3 cr.
Topics related to prestressed concrete, reinforced concrete and steel bridge design according to the AASHTO specifications; bridge analysis and evaluation. Prerequisite: C E 469 or consent of instructor. May be repeated for a maximum of 6 credits.

C E 550. Environmental Management Seminar II  1 cr.
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research.

C E 554. Wood Design  3 cr.
Theory and design of wood structural members and systems subjected to gravity and lateral loads. Design project required. Taught every other year, alternates with C E 555 - Masonry Design.

C E 555. Masonry Design  3 cr.
Theory and design of masonry structural members and systems subject to gravity and lateral loads. Design project required. Taught every other year, alternates with C E 554 - Wood Design.

C E 557. Water Resources Development  3 cr.
Students function as members of a consulting panel and prepare reports on major water resources development problems. Political, financial, and social aspects of water resources development are considered as well as scientific and technical details. Background: C E 450. Corequisite: C E 483, or C E 482.

C E 571. Structural Dynamics  3 cr.
Response of elastic structure to dynamic loading. Moving load, earthquake and blast loading. Prerequisite: C E 468 or consent of instructor.

C E 572. Earthquake Engineering  3 cr.
Earthquake characteristics; seismic loads; elastic and inelastic response; analysis and design of buildings for earthquakes. Prerequisites: graduate standing and consent of instructor.
C E 575. Plasticity Theory 3 cr. Introduce the basic theory of plasticity and its applications in design and modeling of engineering materials. Prerequisite: CE 301.

C E 576. Continuum Mechanics 3 cr. An introduction to the main principles of continuum mechanics: the stress tensor, deformation, and flow, constitutive relations, and applications to common solids and fluids. Prerequisite: CE 301.

C E 577. Pavement Analysis and Design 3 cr. Covers stresses and deflections in pavement layers, material characterization, flexible and rigid pavement design by AASHTO, mechanistic design, rehabilitation concepts. Prerequisite(s): C E 357 or consent of instructor.

C E 579. Ground Improvement 3 cr. Review soil properties and the need for ground improvement, introduce different kinds of ground improvement techniques. Prerequisites: CE 357.


C E 582. Statistical Hydrology 3 cr. Application of statistical techniques to hydrologic data, including distributions, hypothesis testing, linear models, non-parametrics, and time-series and stochastic models. Background: C E 510, E ST 465, or consent of instructor.


C E 596. Special Topics 1-3 cr. May be repeated for a maximum of 6 credits. Prerequisite: consent of department head.

C E 598. Special Research Programs 1-3 cr. Individual investigations either analytical or experimental. May be substituted. Maximum of 3 credits per semester.


C E 600. Doctoral Research 1-88 cr. Research.

C E 604. Advanced Engineering Topics 3 cr. In depth study of a topic at the forefront of environmental engineering & science. Journal papers will be critically reviewed and students will be asked to write an analysis of the topic and present their thoughts orally.

C E 615. Advanced Finite Element Methods 3 cr. Finite element method with emphasis on stress analysis. May include development and use of plane stress, plane strain, and 3-D shell elements. Includes static, dynamic, and nonlinear analysis. Prerequisite: graduate standing.

C E 645. Prestressed Concrete 3 cr. Behavior of prestressed concrete; design of statically determinate and indeterminate structures; estimation of prestress loss; flexure and shear strength; deflections and stress control; composite behavior and design. Prerequisites: graduate standing and consent of instructor.

C E 692. Topics in Hydrodynamics II 3 cr. Selected topics in flow-in-open channels, flow-through porous media, and transport of sediments and contaminants. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

C E 698. Special Research Programs 1-3 cr. May be substituted. May be repeated for a maximum of 9 credits.


ENVIRONMENTAL ENGINEERING

ENVE 455. Solid and Hazardous Waste Systems Design 3 cr. Design of processes and facilities used in the transport, storage, treatment, and disposal of solid and hazardous wastes. Prerequisite: C E 356 or consent of instructor.


ENVE 482. Sampling and Analysis of Environmental Contaminants 3 cr. (1-6P) Theory, application, methodology, and instrumentation used in the sampling and analysis of environmental contaminants. Prerequisites: C E 256 and E S 256. Same as E S 462.

ENVE 487. Air Pollution Control Systems Design 3 cr. An introduction to sources and nature of air pollution, regulations, and risk analysis. Detailed study of air pollution control technologies and design of air pollution control equipment. Prerequisite: senior or graduate standing. Restricted to C E, CH E, or M E majors. Main campus only.


ENVE 551 L. Unit Processes/Operation of Water Treatment Laboratory 1 cr. (3P) Practical laboratory covering design of unit operations/processes using bench scale and small pilot scale facilities. Restricted to: ENGR majors.

ENVE 552. Unit Processes/Operation of Wastewater Treatment 3 cr. Modeling of transport phenomena in natural and engineered systems for predicting the fate of contaminants in the air, soil, sediment, and water compartments of the ecosystem. Prerequisites: C E 555 and consent of instructor.

ENVE 552 L. Unit Processes/Operation of Wastewater Treatment Laboratory 1 cr. (3P) Dry laboratory emphasizing design of common unit operations/processes in biological treatment. Prerequisite: consent of instructor. Corequisite: ENVE 552L. Restricted to majors.

ENVE 553. Chemical Theories of Environmental Engineering 3 cr. Theoretical aspects of physical chemistry applied to the solution of environmental engineering problems. Emphasis on carbonate equilibria solubility, buffering and redox conditions. Prerequisite: consent of instructor.


ENVE 559. Special Research Programs 1-3 cr. Individual investigations either analytical or experimental. May be repeated for a maximum of 6 credits. Restricted to majors.

ENVE 599. Master’s Thesis 0-88 cr. Thesis. May be repeated for a maximum of 6 credits.

ENVE 638. Fate and Transport of Environmental Contaminants 3 cr. Modeling of transport phenomena in natural and engineered systems for predicting the fate of contaminants in the air, soil, sediment, and water compartments of the ecosystem. Prerequisites: C E 555 and consent of instructor.

SURVEYING ENGINEERING

SUR 450. Senior Project 1 cr. Research project prepared by student. Includes class presentation. Students will learn how to research after the end of their formal education. Prerequisite(s): Senior Standing.

SUR 451. Advanced Survey Measurements, Analysis, and Adjustments 3 cr. (2-3P) Rigorous analysis of theory of observations as applied to surveying. Conventional topics of error ellipses, least squares, and survey pre-analysis, etc., to be addressed. Emphasis on computer applications for adjustments and analysis. Prerequisite(s): SUR 320, SUR 351, (MATH 280 or MATH 480). Pre/Corequisite(s): STAT 371.

SUR 452. Land Development Design 3 cr. (2-3P) Covers different phases of land development process. Study of New Mexico subdivision and condominium laws. Site evaluation includes boundary, control topographic surveys, and environmental and cultural considerations. Students design lot and building arrangements and streets. Prerequisite(s): SUR 312, SUR 328. Pre/Corequisite(s): DRFT 153.

SUR 461. Introduction to Satellite Geodesy 3 cr. (2-3P) Overview of astronomy concepts, summary of celestial mechanics, history of satellite positioning, modern positioning techniques, impact of gravity, review of geodetic standards and specifications, logistics of GPS data collection, GPS data processing, network adjustments, and evaluation of spatial data accuracy. Prerequisite(s): SUR 361 and (MATH 280 or MATH 480).

SUR 464. Land Information Systems Applications 3 cr. (2-3P) Concepts of real property, land tenure and ethics, and land registration systems; the function and design of multipurpose cadastral and land information systems. Prerequisite(s): SUR 264, SUR 312, and SUR 330.
ELECTRICAL AND COMPUTER ENGINEERING

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V. S. Oklobdzija, department head, Ph.D. (California-Los Angeles)– low-power VLSI design; D. K. Borah, Ph.D. (Australian National)– digital communication systems; L. E. Boucheron, Ph.D. (California-Santa Barbara)– digital image and signal processing; S. M. Brahma, Ph.D. (Clemson)– energy systems; S. Cho, Ph.D. (Georgia Tech)– electro-optics; J. Cook, Ph.D. (New Mexico State)– computer architecture; C. D. Dreusere, Ph.D. (California-Santa Barbara)– digital image and signal processing; M. Daveo, Ph.D. (Nebraska-Lincoln)– electromagnetics; P. L. DeLeon, Ph.D. (Colorado)– digital signal processing; P.M. Furth, Ph.D. (Johns Hopkins)– analog/mixed-signal VLSI; L. DeLeon, Ph.D. (Colorado)– digital signal processing; P.M. Furth, Ph.D. (Johns Hopkins)– analog/mixed-signal VLSI; S. Cho, Ph.D. (Georgia Tech)– communications and signal processing; J. Klewer, Ph.D. (Kiel)– communications and signal processing; W. Liu, Ph.D. (Missouri Science & Tech)– control of energy systems; K. T. Ng, Ph.D. (Ohio State)– bio-electromagnetics; R. A. Paz, Ph.D. (Illinois)– robust control theory; R. R. Prasad, Ph.D. (New Mexico State)– intelligent control systems; J. Ramirez-Angulo, D.Sc. (Stuttgart-Germany)– analog/mixed-signal VLSI; S. Ranada, Ph.D. (Florida)– energy systems; S. Stochaj, Ph.D. (Maryland)– real-time computer systems; D. Voelz, Ph.D. (Illinois)– electro-optics

DEGREE: Master of Science in Electrical Engineering

DEGREE: Doctor of Philosophy
MAJOR: Engineering
CONCENTRATION: Electrical Engineering

MINOR: Electrical Engineering

The Klipsch School of Electrical and Computer Engineering offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. Areas of emphasis for masters and doctoral students are communications, computer engineering, control systems, digital and signal processing, electromagnetic, electric energy systems, analog and mixed signals, microelectronics and VLSI. Research in the above areas currently being conducted by the faculty ensures that doctoral candidates will work on the frontier of knowledge in these areas. The graduate programs are intended to provide broad graduate-level training in electrical engineering. In addition, appropriate courses in computer science, industrial engineering, mathematics, physics, and business management may be integrated into a graduate student's program of study.

Students desiring to work toward an advanced degree in electrical engineering must have completed undergraduate preparation substantially equivalent to that required for the Bachelor of Science in Electrical Engineering degree at this institution. For students with undergraduate degrees in other disciplines, see below. For further information on the Klipsch School of Electrical and Computer Engineering, please consult the web page http://www.ece.nmsu.edu/.

RESEARCH FACILITIES AND HIGHLIGHTS

There are extensive computer and research facilities available in the Klipsch School of Electrical and Computer Engineering. The school has numerous PC workstations contained within three different open computing labs and several research laboratories. Teaching workstations operate under Windows 7, but have access to Ubuntu (Linux) through VirtualBox. Researchers requiring larger computational resources have access to the departmental 16 processor HP Integrity rx9800 supercomputer (each of the 16 processors consists of a 4 core IA-64 processor), and a 128-processor “Beowulf” distributed memory parallel computer. An SGI Altix 8200CE cluster with a total of 22 compute nodes (2 Quadcore 4.0GHz Xeon processors with 16GB RAM per node), and a total of 15TB of storage is also available for engineering research. The internal network consists of a 10Gbit/sec fiber optic backbone with 100 Mbit/sec Ethernet connections to all desktop machines. The Electrical Engineering building is linked to a large number of remote computers on campus via NMSUNet and to computers at other universities and research laboratories via the VBNs and the Internet.

The Center for Telemetry and Telemeasuring hosts the Manuel Lujan, Jr. Space Tele-Engineering Program and the Frank Carden Chair for Telemetry and Telemeasuring. Faculty and staff in the Center are involved in education and research programs focusing on telecommunications, communication theory, coding and information theory, wireless networks, digital signal processing, optical and radio frequency communications, and digital image processing. The Center has several major research sponsors including NASA, the Department of Defense, and the National Science Foundation. The director of the Center and the Frank Carden Chair is Professor Dr. Charles Creusere.

The Advanced Speech and Audio Processing Laboratory is used for both teaching and research in digital signal processing (DSP). Current research areas include speaker recognition, signal enhancement, low-bit rate coding, embedding, DSP, and GPU-based pattern recognition for speech processing. The laboratory is equipped with two state-of-the-art compute servers equipped with Intel Core i7-960 3.2 GHz and NViDIA C2050 GPU processor. Research sponsors for the laboratory include Air Force Research Laboratories, Army Research Laboratory, National Geospatial-Intelligence Agency, Freescale Semiconductor, NASA, Motorola, National Science Foundation, and Texas Instruments. The director of the laboratory is Dr. Philip L. De Leon.

The New Mexico State University R.L. Golden Particle Astrophysics Lab (PAL) is dedicated to measuring and interpreting cosmic ray spectra in an effort to better understand the structure of our universe. Recent measurements of the galactic positron and electron spectra have connections to the dark matter mystery and to the identification of sources of cosmic rays. Additional studies of solar particles (measured along with cosmic rays) will help in the understanding of how solar eruptions affect the earth. The director of PAL is Dr. Steven Stochaj.

The Electromagnetics (EM) and Microwave Laboratory is used for both teaching and research in electromagnetic fields. Current research areas include propagation through dispersive media (soil, seawater, foliage, biological tissues), UWB radar and remote sensing system design and analysis, antenna analysis, synthesis, and design, bio-electromagnetics, brain mapping, computational physics, electromagnetic interference and compatibility, high performance computing, and nondestructive evaluation. Research sponsors for the laboratory include American Heart Association, Department of Defense, Los Alamos National Laboratory, NASA, NSF, National Institutes of Health, Sandia National Laboratories, and White Sands Missile Range. The Director of the Electromagnetics and Microwave Laboratory is Dr. Kwong T. Ng.

New Mexico State University’s program in Electric Utility Management (EUMP) is sponsored by a group of public and private electric utility companies and industrial organizations and hosts the PNW Chair for Utility Management and the Kersting Professorship. The Master of Science in Electrical Engineering degree program includes course work in public utilities regulation and is designed to prepare the student for a future engineering management position in the electric utility industry. An industry advisory committee provides the vital connecting link between the electric utility industry and the university, so that a coordinated effort may be achieved in realizing the following program objectives: (1) to provide a program of study at the graduate level in the planning, operation, and management of electric power generation, transmission, distribution, and utilization; (2) to supply the electric utility industry with the highest caliber of new engineering and management talent; and (3) to provide the university with the required financial and technical support to ensure a quality program. In addition, faculty in EUMP work with M.S. and Ph.D. students to conduct funded research sponsored by Sandia National Laboratories, EPRI, NSF, DOE, CEC and the electric utility industry. Much of the current research is focused on renewable energy integration, protection, advanced control and optimization, and customer driven microgrids. Laboratory facilities are available in the El Paso Electric Power Systems Laboratory. The program works closely with the Institute for Energy and Environment (IEE) and with Southwest Technology Development Institute (SWTDI) which hosts the solar energy experiment station. The director of the EUMP and PNW Chair for Utility Management is Dr. Sabah Banada.

Faculty and students in the VLSI Laboratory are involved in the design and analysis of analog and mixed-signal microelectronic circuits and systems. Current research areas include high-frequency analog VLSI design; low-voltage, low-power circuits; high performance operational amplifiers and operational transconductance amplifiers; power management circuits; analog image processing, and CMOS image sensors. Research sponsors include the Los Alamos...
National Laboratories and Agilent technologies. The director of the VLSI Laboratory is Dr. Jaime Ramirez-Angulo.

The Electro-Optics program at NMSU offers unique opportunities to undergraduate and graduate students interested in pursuing a career in electro-optics, applied optics, photonics, or optical engineering by combining the optics resources of the Klipsch School and the Physics Department. Most of the optics classes are cross-listed in the two departments. The Klipsch School’s Electro-Optics Research Laboratory (EORL) provides a variety of research opportunities in areas such as multispectral and polarimetric imaging, free-space optical communications, adaptive optics, nanophotonics and integrated electro-optic sensors and systems. Sponsors include the Air Force Office of Scientific Research, Sandia National Laboratories, Air Force Research Laboratory, Army Research Laboratory, NASA, National Geospatial-Intelligence Agency and the National Science Foundation. SPIE Fellow Dr. David G. Voelz is the director of the EORL and NMSU’s Electro-Optics program.

The Computer Networking Lab (CNL) supports teaching and research in Internet and wireless sensor networks. The mission of CNL is to provide students with the opportunity to do cutting-edge research that has high practical relevance. Currently, research projects in CNL include secure data dissemination in wireless sensor networks, solar-powered sensor networks, and RFID sensor networks. The major research sponsors of CNL include US Army, DHS, Intel, Los Alamos National Lab, and Sandia National Lab. CNL is directed by Dr. Hong Huang.

Students and faculty associated with the Advanced Computer Architecture Performance and Simulation (ACAPS) Laboratory conduct research in the areas of performance modeling and simulation techniques, micro-architecture power optimization, performance analysis and optimization of large-scale scientific applications, and heterogeneous HPC computing for field-deployable systems. Equipment in the lab includes numerous state-of-the-art workstations, several contemporary servers, nvidia Tesla GPUs, Xilinx FPGAs, and more than 8TB of storage. ACAPS sponsors include the National Science Foundation, the Army High Performance Computing Research Center (AHPCRC), Sandia National Laboratories, Hewlett-Packard, and IBM. The laboratory’s director is Dr. Jeanine Cook.

The Advanced Computer Engineering Laboratory (ACSEL, www.acsel-lab.com) is engaged in solving problems related to high-performance and low-power computing systems with focus on VLSI chip engineering. ACSEL members are experts in high-speed digital circuits as well as low-power and ultra-low power design, specializing in energy efficient design, low-power digital circuit libraries and optimal relationship between computational energy and speed. ACSEL broader expertise is in Computer Arithmetic, Media Signal Processing, Hardware Security, Computer Architecture and Super-Computing. ACSEL sponsors are major computer and semiconductor companies such as: IBM, Intel, AMD, Fujitsu etc. as well as Semiconductor Research Council (SRC) and NSF. The director of ACSEL is IEEE Fellow, Dr. Vojin G. Oklobdzija.

The Rio Grande Institute for Soft Computing (RioSoft) is committed to serving private-sector and U.S. government needs in researching and developing intelligent decision-support systems and tools that aid in many aspects of strategic decision-making. Soft computing which includes fuzzy logic, neural networks, and evolutionary computation are used for modeling, analysis, and control of complex dynamical processes in various software-hardware integrated architectures. In addition RioRoboLab, a NASA Ames funded laboratory, provides facilities for research and development of intelligent autonomous and semi-autonomous systems focusing on advanced concepts of energy harvesting and energy scavenging from ambient energy sources. Research sponsors include the Defense Threat Reduction Agency, Defense Advanced Research Projects Agency, Los Alamos National Laboratory, and NASA. The director of RioSoft and RioRoboLab is Dr. Nadipuram (Ram) Prasad.

The Kazda Control Systems Laboratory is dedicated to the support of education and research in the area of Control Systems. Research involves collaborative efforts with the Mechatronics Lab in the Department of Mechanical and Aerospace Engineering, covering a wide area of robotics applications. The current thrust is a joint effort of M, E, EE, and E in the Reduced-Gravity/Biomechanics (RDB) Lab. This lab is sponsored by the National Science Foundation under the Major Research Instrumentation (MRI) grant. The purpose of the lab is to develop a reduced gravity simulator that can be used for research in Mechanical Engineering, Electrical Engineering, Human Biodynamic modeling, Ergonomics, Medical Rehabilitation, Dance, and Space Applications. The director of Kazda Control Systems Laboratory is Dr. Robert Paz.

SUPPORT FOR GRADUATE STUDENTS

A number of teaching assistantships, research assistantships, and fellowships are available. Teaching assistants are recommended by individual faculty for selection by the ECE Department’s Graduate Studies Committee. International students must pass university screening prior to being eligible for selection as a TA. Nominations for new TAs are made by the advisor after a student is admitted. Research assistants are hired directly by the faculty member who has received a contract or grant for research.

The College of Engineering awards graduate scholarships and fellowships on behalf of Electrical and Computer Engineering. These include: the MIT/Lincoln Laboratory Fellowship, the Paul and Valerie Klipsch Grad Scholarship, the Admiral Paul Arthur Grad Scholarship, and the Barry Neil Rappaport Grad Scholarship. Applications can be completed on-line at http://engr.nmsu.edu/scholarships.shtml on or before March 1. The Electrical Utility Management Program has a limited number of fellowships for students interested in pursuing master’s degrees in electrical energy systems.

ADMISSION

Prospective graduate students for the Master of Science or Doctor of Philosophy in Electrical Engineering must first meet the entrance requirements of the Graduate School. The prospective US graduate student should make formal application to the Graduate Student Services office (http://gradschool.nmsu.edu/admit-form.html). International graduate students must start with the Admissions Office (http://international.nmsu.edu/admissions.html). Official transcripts from all undergraduate and graduate institutions must be sent directly to the Graduate School. In addition, the student must arrange to have an official copy of the GRE (Graduate Record Examination) General Test scores sent to the Graduate School. International students must also submit their TOEFL (Test of English as a Foreign Language) scores. If the applicant meets the Graduate School’s minimum requirements, the application is sent to the Klipsch School’s Graduate Studies Committee for review. U.S. residents are given every chance of being successful in the pursuit of a graduate degree. If they do not meet the requirements of the Klipsch School, they can enter the Graduate School as ‘undeclared’ where they must demonstrate competence in two or more graduate-level EE courses before they re-apply.

REQUIREMENTS FOR PH.D. DEGREE

The Program Educational Objectives for the Doctorate in Electrical Engineering are:

1. That graduates obtain relevant, productive employment performing research in academia, government, or industry, and/or are teaching at institutions of higher education.
2. That graduates obtain relevant, productive employment with the private sector or in government and/or pursue additional advanced degrees.

The Ph.D. program is open to students with a master’s degree. Exceptionally well qualified students may petition for direct entry to the Ph.D. program without first obtaining a master’s degree.

Option 1 - Ph.D. with completed MS degree

1. Complete undergraduate deficiency coursework, if the student admitted has both master’s and bachelor’s degrees in fields other than electrical engineering. Complete graduate deficiency coursework, which consists of three graduate core courses from three different areas of emphasis, if the student has a master’s degree in a field other than electrical engineering.
2. Complete a minimum of 18 credits beyond the master’s degree course work with the following restrictions:
   a. EE courses must be numbered 500 or higher. Non-EE courses must be 450 or higher.
   b. At least half of the 18 credits must be taken in the Klipsch School (EE, E).
   c. At most 6 credits may be research, for example, E E 600, Doctoral Research, and E E 590 courses that are not listed as regular courses in the schedule.
   e. If the MS degree is not EE, exclude credits from graduate deficiency coursework.

Option 2 - Direct Ph.D. with B.S.E.E or equivalent, but no MS degree

1. Complete three graduate core courses.
2. Complete a minimum of 42 credits of graduate coursework, including the three graduate core courses with the following restrictions:
   a. At least half of the 42 credits must be numbered 500 or higher.
   b. At least half of the 42 credits must be taken in the Klipsch School (EE).
   c. At most 9 credits may be research, for example, E E 600, Doctoral Research, and E E 590 courses that are not listed as regular courses in the schedule.
   f. At least half of the credits must be taken with other than a single professor.

Common Requirements for all Ph.D. candidates
3. Participate in one semester of research seminars (E E 501, 1 cr.)
4. Take and pass the Ph.D. qualifying exam.
5. Pass a comprehensive examination. The examination must be part written and part oral. The specific format of the exam is at the discretion of the examination committee. It may cover course work, include a proposal for dissertation research, and may be preceded by a written exam.
7. Submit evidence for a minimum of two publications related to the dissertation research, one of which is submitted to an internationally-recognized journal, such as IEEE Transactions, and the second of which may be with a professional conference, such as an IEEE conference.
8. Pass a final oral exam which defends the dissertation.

Other limitations and requirements that apply to all Ph.D. degrees are described elsewhere in this catalog.

PH.D. QUALIFYING EXAM
The Ph.D. Qualifying Exam is typically offered on the Monday just prior to the beginning of each semester. The format is one half day written exam. The examination indicates a readiness for research at the graduate level. Students answer a total of six questions with two coming from each of three areas of emphasis. Taking three graduate core courses (listed below) prepares students for the Ph.D. qualifying exam.

REQUIREMENTS AND OPTIONS FOR M.S.E.E. DEGREE
The Program Educational Objectives for the Master of Science Program in Electrical Engineering are:
1. That graduates successfully apply advanced skills and techniques in one or more areas of emphasis.
2. That graduates obtain relevant, productive employment with the private sector or in government and pursue additional advanced degrees.
3. That graduates obtain relevant, productive employment with the private sector or in government and pursue additional advanced degrees.

Three options exist for the Master of Science in Electrical Engineering degree. The requirements for each option are listed below:
1. Thesis- 24 credits of course work plus 6 credits of E E 599 plus oral exam
2. Technical Report - 27 credits of course work plus 3 credits of E E 598 plus oral exam
3. Course Work Only- 30 credits of course work plus oral exam or the graduate portion of the Ph.D. qualifying exam

Credits of E E 490/498/499, C S 457/467/477/487, BCS 472, COMM 485, and SPCD 470/490 do not count toward a graduate degree. Credits of E E 590, Selected Topics, are limited to a total of 9, of which at most 6 may be credits for courses that don't appear as regular classes in the printed schedule. Each area of specialization may have additional requirements for students in those areas. Other limitations and requirements that apply to all master’s degrees are described elsewhere in this catalog.

B.S./M.S. PROGRAM
This program option is designed to provide a means for ECE undergraduates to obtain both a B.S.E.E. and a M.S.E.E. degree with 154 credit hours of coursework (normally: B.S.E.E. = 130 hours, M.S.E.E. = 30 hours; total = 160 hours). Students electing to utilize this option will follow the existing undergraduate curriculum for the first seven semesters. In the final undergraduate semester, two graduate courses (~450 level) will be taken in lieu of two ECE electives listed in the undergraduate curriculum. The student receives a B.S.E.E. degree at this point. A M.S.E.E. program can be completed in three additional semesters. Students must obtain prior approval of the department before starting this program option.

GRADUATE CORE COURSES AND BREADTH ELECTIVES
The M.S.E.E. program requires students to participate in one semester of research seminars (E E 501, 1 cr.) and take two graduate core courses from two different areas of emphasis. In addition, either a third graduate core course or one graduate breadth course must be taken from a third area of emphasis. If a student wishes to pursue a Ph.D., the third class should come from the core class list as preparation for the Ph.D. qualifying exam. The graduate core courses, specialty areas, and credits are listed below for the Graduate Core Courses and the Graduate Breadth Electives:

Graduate Core Courses:
EE 515, Electromagnetic Theory I (Electromagnetics) .............................................. 3 cr.
EE 523, Analog VLSI Design (Microelectronics/VLSI) .............................................. 3 cr.
EE 528, Optical Sources, Detectors, Radiometry (Electro-optics) or .......................... 4 cr.
EE 529, Lasers and Applications (Electro-optics) ...................................................... 4 cr.
EE 543, Power Systems III (Electric Energy Systems) .............................................. 3 cr.
EE 545, Digital Signal Processing II (Digital Signal Processing) ............................... 3 cr.
EE 551, Control Systems Synthesis I (Control Systems) ......................................... 3 cr.
EE 563, Computer Performance Analysis I (Comp. Engineering) or ......................... 3 cr.
EE 564, Advanced Computer Architecture I (Comp. Engineering) ............................ 3 cr.
EE 571, Random Signal Analysis (Communications) .............................................. 3 cr.

The graduate breadth electives are listed below:
EE 524, Digital VLSI Design (Microelectronics/VLSI) .............................................. 3 cr.
EE 537, Power Electronics (Electric Energy Systems) .............................................. 3 cr.
EE 541, Antennas and Radiation (Electromagnetics) ............................................... 3 cr.
EE 555, Advanced Linear Systems (Control Systems and Digital Signal Processing) .......................... 3 cr.
EE 581, Digital Communications I (Communications) .............................................. 3 cr.

M.S.E.E. COURSEWORK OPTION FINAL EXAM
The M.S.E.E. Coursework Option Final Exam is typically offered on the Monday just prior to the beginning of each semester. The format is a half-day written exam. Students answer a total of four questions with two coming from each of two areas of emphasis. Taking two graduate core courses (listed above) prepares students for the exam. The coursework option is limited to students who receive one semester or less from the department in the form of a teaching or research assistant.

REQUIREMENTS FOR STUDENTS WITHOUT B.S.E.E. DEGREE OR EQUIVALENT
Students without a B.S.E.E. degree or equivalent preparation will be expected to take classes covering the core knowledge required in our B.S.E.E. program. This includes mathematics through differential equations and basic engineering physics. The student’s graduate advisor will prepare an individualized deficiency schedule, based on the student’s academic background and work experience. The following course from our undergraduate program will be considered deficiencies for students without a B.S.E.E.

EE 161, Computer Aided Problem Solving ............................................................. 4 cr.
EE 162, Digital Circuit Design ............................................................................... 4 cr.
EE 210, Engineering Analysis I ............................................................................. 4 cr.
EE 260, Embedded Systems ................................................................................. 4 cr.
EE 280, DC and AC Circuits ................................................................................. 4 cr.
EE 310, Engineering Analysis II ............................................................................ 3 cr.
EE 312, Signals and Systems I ................................................................................ 3 cr.
EE 314, Signals and Systems II ............................................................................... 4 cr.
EE 351, Applied Electromagnetics ......................................................................... 4 cr.
EE 380, Electronics I ............................................................................................. 4 cr.

ELECTRICAL AND COMPUTER ENGINEERING
EE 452, Introduction to Radar .............................................................................. 3 cr.
Basic concepts of radar. Radar equation; detection theory. AM, FM, and CW radars. Analysis of tracking, search, MTI, and imaging radar. Taught with E E 548. Restricted to undergraduate students. Prerequisite(s): C or better in E E 210 and E E 351. Pre/Corequisite(s): E E 496.
E E 453. Microwave Engineering 3 cr.
Techniques for microwave measurements and communication system design, including transmissions lines, waveguides, and components. Microwave network analysis and active device design. Taught with EE 521. Restricted to undergraduate students. Prerequisite(s): C or better in E E 351. Restricted to: Main campus only.

E E 454. Antennas and Radiation 3 cr.
Basic antenna analysis and design. Fundamental antenna concepts and radiation integrals. Study of wire antennas, aperture antennas, arrays, reflectors, and broadband antennas. Taught with EE 541. Restricted to undergraduate students. Prerequisite(s): C or better in E E 351. Restricted to: Main campus only.

E E 460. Space System Mission Design and Analysis 3 cr.
Satellite system design, including development, fabrication, launch, and operations. A systems engineering approach to concepts, methodologies, models, and tools for space systems. Prerequisite: junior standing.

E E 461. Systems Engineering and Program Management 3 cr.
Modern technical management of complex systems using satellites as models. Team projects demonstrate systems engineering disciplines required to configure satellite components. Prerequisite(s): Junior standing.

E E 469. Communications Networks 3 cr. (2-3P)
Introduction to the design and performance analysis of communications networks with major emphasis on the Internet and different types of wireless networks. Covers network architectures, protocols, standards and technologies; design and implementation of networks; networks applications for data, audio and video; performance analysis. Taught with EE 569. Prerequisite(s): C or better in E E 162 and (E E 210 or STAT 371).

E E 471. Modern Experimental Optics 2-3 cr. (4P)
Advanced laboratory experiments in optics related to the material presented in E E 470. May be repeated up to 3 credits. Crosslisted with: PHYS 471. Prerequisite(s)/Corequisite(s): E E 470.

E E 473. Introduction to Optics 3 cr.
The nature of light, geometrical optics, basic optical instruments, wave optics, aberrations, polarization, and diffraction. Elements of optical radiometry, lasers and fiber optics. Prerequisite(s): PHYS 216G or PHYS 217. Crosslisted with: PHYS 473

E E 475. Automatic Control Systems 3 cr.
Design and synthesis of control systems using state variable and frequency domain techniques. Compensation, optimization, multi-variable system design techniques. Prerequisite(s): C or better in E E 314.

Representation, analysis and design of discrete-time systems using time-domain and z-domain techniques. Microprocessor control systems. Prerequisite: C or better in E E 314.

E E 477. Fiber Optic Communication Systems 4 cr. (3-3P)
Fundamental characteristics of individual elements (transmitters, detectors, and fibers) of fiber optic communication systems. Design and characterization of high-speed, multichannel fiber optic communication links. Introduction to fiber optic distribution. Taught with E E 527. Prerequisite(s): C or better in E E 351 or PHYS 461. Crosslisted with: PHYS 477.

E E 478. Fundamentals of Photonics 4 cr. (3-3P)

E E 479. Lasers and Applications 4 cr. (3-3P)
Laser operating principles, characteristics, construction and applications. Beam propagation in free space and fibers. Laser diode construction and characteristics. Hands-on laboratory. Taught with EE 529. Prerequisite(s): C or better in E E 351 or PHYS 461. Crosslisted with: PHYS 479.

E E 480. Introduction to VLSI 4 cr. (3-3P)
Introduction to analog and digital VLSI circuits implemented in CMOS technology. Design of differential amplifiers, opamps, CMOS logic, flip-flops, and adders. Introduction to VLSI fabrication process and CAD tools. Prerequisite(s): C or better in E E 260 and E E 380.

E E 482. Electronics II 3 cr.
Feedback analysis, application of operational amplifiers, introduction to data converters, analog filters, oscillator circuits. Prerequisite: C or better in E E 161 and E E 380.

E E 483. RF Microelectronics 3 cr.
Analysis, design and implementation of RF integrated circuits in CMOS/ BiFET technologies. Low noise amplifiers and mixers, power amplifiers, wideband amplifiers, oscillators, phase-locked frequency synthesizers. Taught with E E 519. Restricted to undergraduate students. Prerequisite(s): C or better in E E 480 and E E 351. Restricted to: Main campus only.

E E 485. Analog VLSI Design 3 cr. (2-3P)
Analysis, design, simulation, layout and verification of CMOS analog building blocks, including references, opamps, switches and comparators. Teams implement a complex analog IC. Taught with E E 523. Restricted to undergraduate students. Prerequisite(s): C or better in E E 312 and E E 480. Restricted to: Main campus only.

E E 486. Digital VLSI Design 3 cr.
An introduction to VLSI layers. Static and dynamic logic design, memory circuits, arithmetic operators, and digital phase-locked loops. Taught with E E 524. Restricted to undergraduate students. Prerequisite(s): C or better in E E 260 and E E 380.

E E 486 L Digital VLSI Design Laboratory 1 cr. (3P)
Simulation, schematic capture, layout, and verification using software tools of material presented in E E 486. An introduction to measurement of digital VLSI circuits. Taught with E E 524L. Prerequisite(s): C or better in E E 260 and E E 380. Prerequisite: Consent of instructor.

E E 488. Selected Topics 1-3 cr.
Prerequisite: Consent of instructor. May be repeated for a maximum of 9 credits. Graduate students may not use credits of E E 488 toward an M.S. or Ph.D. in electrical engineering.

E E 493. Power Systems III 3 cr.
Analysis of a power system under abnormal operating conditions. Topics include asymmetrical three-phase fault, theory of symmetrical components, unsymmetrical faults; system protection, and power system stability. Taught with E E 543. Restricted to undergraduate students. Prerequisite(s): C or better in E E 391. Pre/Corequisite(s): E E 431.

E E 494. Distribution Systems 3 cr.
Concepts and techniques associated with the design and operation of electrical distribution systems. Taught with E E 544. Restricted to undergraduate students. Prerequisite(s): C or better in E E 431. Prerequisite: Consent of instructor.

E E 496. Introduction to Communication Systems 4 cr. (3-3P)
Introduction to the analysis of signals in the frequency and time domains. A study of baseband digital transmission systems and digital/analog RF transmission systems. Introduction to telecom systems as well as satellite systems. Prerequisite(s): C or better in E E 314.

Techniques for transmitting digital data over commercial networks. Topics include baseband and bandpass data transmission and synchronization techniques. Taught with E E 502. Recommended foundation: E E 496. Prerequisite(s): E E 210 and E E 314.

E E 500. Special Problems 1-9 cr.
Prerequisite: Consent of instructor. May be repeated for a maximum of 9 credits.

E E 501. Research Topics in Electrical and Computer Engineering 1 cr.
Ethics and methods of engineering research; contemporary research topics in electrical and computer engineering. Taught with E E 401 with differentiated assignments for graduate students.

E E 514. Biosensor Electronics 3 cr.
Course provides students with knowledge of basic integrated analog and RF blocks and how to combine these circuits into systems for biomedical applications. Target areas are in physiology, brain-machine interfaces, neural recording and stimulation. Lecture includes details on amplifiers, current-mode circuits, A/D converters, low-power radio transmitters and receivers, and simulation and layout of VLSI circuits. Lectures are in the form of recent paper reviews and discussion. Includes teamwork, written and oral communication, and realistic technical requirements.

E E 515. Electromagnetic Theory I 3 cr.
Electromagnetic theory of time-harmonic fields in rectangular, cylindrical and spherical coordinates with applications to guided waves and radiated waves. Induction and equivalence theorems, wave equations, and variational principles applied to engineering problems in electromagnetics. Recommended preparation is E E 351 or equivalent. Restricted to: Main campus only.

E E 516. Electromagnetic Theory II 3 cr.
Continuation of E E 515.
E E 518. Integrated Power Management Circuits
Design and analysis of power management integrated circuits, including linear voltage regulators, voltage references, buck, boost, and buck-boost DC-DC converters, and charge pumps. Extensive use of CAD tools are used to simulate these circuits. Prerequisite(s): E E 486 or E E 524. Pre/Corequisite(s): E E 485 or E E 523.

E E 519. RF Microelectronics
Analysis, design and implementation of RF integrated circuits in CMOS/BJT technologies. Low noise amplifiers and mixers, power amplifiers, wideband amplifiers, oscillators, phase-locked frequency synthesizers. Recommended preparation is E E 351 and E E 480 or equivalent. Taught with E E 485 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 520. A/D and D/A Converter Design
Practical design of integrated data converters in CMOS/BJT technologies, OP-AMPS, comparators, sample and holds, MOS switches, element mismatches. Nyquist rate converter architectures: flash, successive approximation, charge redistribution, algorithmic, two step, folding, interpolating, pipelined, delta-sigma converters. Prerequisite(s): E E 523. Restricted to: Main campus only.

E E 521. Microwave Engineering
Techniques for microwave measurements and communication system design, including transmission lines, waveguides, and components. Microwave network analysis and active device design. Recommended preparation is E E 351 or equivalent. Taught with E E 485 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 522. Advanced Analog VLSI Design
Design of high-performance operational amplifiers; class-AB, rail-to-rail, low-voltage, high-bandwidth, fully-differential. Design of linear operational transconductance amplifier, high-frequency integrated filters, four-quadrant multipliers, and switched-capacitor circuits. Prerequisite(s): E E 523.

E E 523. Analog VLSI Design
Analysis, design, simulation, layout and verification of CMOS analog building blocks, including references, opamps, switches and comparators. Teams implement a complex analog IC. Recommended preparation is E E 312 and E E 480 or equivalent. Taught with E E 485 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 524. Digital VLSI Design
An introduction to VLSI layers. Static and dynamic logic design, memory circuits, arithmetic operators, and digital phase-locked loops. Taught with E E 486 with differentiated assignments for graduate students. Recommended foundation: E E 260 and E E 380. Taught with: E E 425 with differentiated assignments for graduate students.

E E 524 L. Digital VLSI Design Laboratory
Simulation, schematic capture, layout, and verification using software tools of material presented in E E 524. An introduction to measurement of digital VLSI circuits. Taught with E E 486L with differentiated assignments for graduate students.

E E 525. Introduction to Semiconductor Devices
Energy bands, carriers in semiconductors, junctions, transistors, and optoelectronic devices, including light-emitting diodes, laser diodes, photodetectors, and solar cells. Recommended preparation is E E 380 and E E 351. Taught with: E E 425 with differentiated assignments for graduate students.

E E 526. CMOS Image Sensors
Design, simulation, layout and testing of CMOS image sensors. Covers passive-pixel, active-pixel, and logarithmic photo-sensors, readout circuitry, and timing circuits for automatic frame generation. Includes teamwork, written and oral communication, and realistic technical requirements. Prerequisite(s): E E 480 or E E 524. Pre/Corequisite(s): E E 485 or E E 523.

E E 527. Fiber Optic Communication Systems
Fundamental characteristics of individual elements (transmitters, detectors, and fibers) of fiber optic communication systems. Design and characterization of high-speed, multichannel fiber optic communication links. Introduction to fiber optic distribution. Recommended foundation: E E 351 or PHYS 461. Taught with: EE 471 with differentiated assignments for graduate students. Crosslisted with: PHYS 527.

E E 528. Fundamentals of Photonics
Ray, wave and guided optics, lasers and thermal sources, radiometry, photon detection and signal-to-noise ratio. Elements of photonic crystals, polarization, acoustic-optics, electro-optics, and optical nanostructures. Taught with E E 478 with differentiated assignments for graduate students. Recommended foundation: (PHYS 216 or PHYS 217) and E E/PHYS 473. Crosslisted with: PHYS 528.

E E 529. Lasers and Applications
Laser operating principles, characteristics, construction and applications. Beam propagation in free space and fibers. Laser diode construction and characteristics. Hands-on laboratory. Recommended foundation: E E 351 or PHYS 461. Taught with: EE 479 with differentiated assignments for graduate students. Crosslisted with: PHYS 529.

E E 530. Environmental Management Seminar I
Same as CH E 530, C E 530, I E 530.

E E 531. Power System Modeling and Computational Methods
Development and analysis of fast computational methods for efficient solution of large scale power-system problems. Algorithms for constructing the bus impedance matrix; sparse matrix techniques; partial inverse methods; compensation of mutual coupling. Pre/Corequisite(s): E E 543. Restricted to: Main campus only.

E E 532. Dynamics of Power Systems
Transient and dynamic stability of power systems; synchronous machine modeling and dynamics; prediction and stabilization of system oscillations. Recommended preparation is E E 490 or equivalent. Restricted to: Main campus only.

E E 533. Power System Operation
AGC, economic dispatch, unit commitment, operations planning, power flow analysis and network control, system control centers. Recommended preparation is E E 493 or equivalent. Restricted to: Main campus only.

E E 534. Power System Relaying
Fundamental relay operating principles and characteristics. Current, voltage, directional, differential relays; distance relays; pilot relaying schemes. Standard protective schemes for system protection. Operating principles and overview of digital relays. Recommended preparation is E E 493 or equivalent.

E E 535. Power System Reliability and Risk Assessment
Probability applications in power systems; stochastic modeling of power system components and networks. Reliability modeling and analysis of generation systems, composite (generation and transmission) systems, interconnected systems, distribution systems, industrial and commercial systems. Analysis of risk in power systems; understanding of causes and remedial measures. Prerequisite: consent of instructor.

E E 536. Power System Overvoltage Transients
Introduction of the origin and analysis of overvoltage and other transients in power systems. Basic principles of design to control and protect against overvoltages and to provide an overview of applicable standards and testing methods. Use of the electromagnetic transients program (EMTP). Recommended preparation is E E 493 or equivalent. Restricted to: Main campus only.

E E 537. Power Electronics
Basic principles of power electronics and its applications to power supplies, electric machine control, and power systems. Recommended preparation is E E 314, E E 380, and E E 391. Taught with E E 422 with differentiated assignments for graduate students.

E E 538. Advanced Distribution Systems
Continuation of E E 494 and E E 544. Emphasis is directed toward the overall coordinated protection of distribution feeders. Distribution system reliability, performance indexes and economies are presented. Recommended preparation is E E 494 or equivalent. Restricted to: Main campus only.

E E 539. Electric Power Quality
Power quality, harmonics, and related problems in electric power systems, their causes, and effects. Applicable standards, instrumentation, analysis procedures, and mitigation. Recommended preparation is E E 493 or equivalent. Restricted to: Main campus only.

E E 541. Antennas and Radiation
Basic antenna analysis and design. Fundamental antenna concepts and radiation integrals. Study of wire antennas, aperture antennas, arrays, reflectors, and broadband antennas. Recommended preparation is E E 351 or equivalent. Taught with E E 454 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 542. Power Systems II
Analysis of a power system in the steady-state. Includes the development of models and analysis procedures for major power system components and for power networks. Recommended preparation is E E 391 or equivalent. Taught with E E 431 with differentiated assignments for graduate students. Restricted to: Main campus only.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>E E 543</td>
<td>Power Systems III</td>
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<tr>
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<td>Analysis of a power system under abnormal operating conditions. Topics include symmetrical three-phase faults, theory of symmetrical components, unsymmetrical faults, system protection, and power system stability. Recommended preparation is E E 431 or equivalent. Taught with E E 498 with differentiated assignments for graduate students. Restricted to: Main campus only.</td>
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<td>E E 544</td>
<td>Distribution Systems</td>
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<td>Concepts and techniques associated with the design and operation of electrical distribution systems. Recommended preparation is E E 542 and E E 543. Taught with E E 494 with differentiated assignments for graduate students.</td>
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<td>E E 545</td>
<td>Digital Signal Processing II</td>
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<td>Non-ideal sampling and reconstruction, oversampling and noise shaping in A/D and D/A, finite word length effects, random signals, spectral analysis, multirate filter banks and wavelets, and applications. Recommended preparation is E E 395 or equivalent. Restricted to: Main campus only.</td>
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<td>E E 548</td>
<td>Introduction to Radar</td>
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<td>Basic concepts of radar. Radar equation; detection theory, AM, FM, and CW radars. Analysis of tracking, search, MTI, and image radar. Recommended preparation is E E 310, E E 351, and E E 496 or equivalent. Taught with E E 452 with differentiated assignments for graduate students. Restricted to: Main campus only.</td>
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<td>E E 549</td>
<td>Smart Antennas</td>
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<td>Smart antenna and adaptive array concepts and fundamentals, uniform and planar arrays, optimum array processing. Adaptive beamforming algorithms and architectures: gradient-based algorithms, sample matrix inversion, least square mean, recursive least mean square, sidelobe cancellers, direction of arrival estimations, effects of mutual coupling and its mitigation. Taught with E E 449. Recommended foundation is E E 314 and E E 351.</td>
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<td>E E 551</td>
<td>Control System Synthesis I</td>
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<td>An advanced perspective of linear modern control system analysis and design, including the essential algebraic, structural, and numerical properties of linear dynamical systems.</td>
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<tr>
<td>E E 552</td>
<td>Control System Synthesis II</td>
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<td>An overview of optimal controls for linear dynamical systems, analysis and design of control systems using Lyapunov techniques, control system design using semidefinite programming. An introduction to stochastic filtering and control.</td>
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<td>E E 555</td>
<td>Advanced Linear Systems</td>
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<td>Advanced level study of linear systems and associated mathematical tools including linear equations, spectral theory, normal matrices, projections, quadratic forms, discrete and continuous time dynamical systems. Recommended preparation is MATH 480 or equivalent. Restricted to: Main campus only.</td>
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<td>E E 557</td>
<td>Energy Harvesting</td>
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<td>An introduction to computer network security, addressing security protocols, cryptography, and information assurance. Recommended preparation is E E 469 or equivalent and C programming skills. Restricted to: Main campus only.</td>
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<tr>
<td>E E 561</td>
<td>Sequential Machines I</td>
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<td>Fault detection of combinational circuits.</td>
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<td>Representation, equivalents, reduction,</td>
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<td>decomposition and fault detection of sequential machines.</td>
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<td>Recommended preparation is E E 363 or equivalent. Restricted to: Main campus only.</td>
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<td>E E 562</td>
<td>Computer Performance Analysis I</td>
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<td>Issues involved and techniques used to analyze performance of a computer system. Topics covered include computer system workloads; statistical analysis techniques such as principal component analysis, confidence interval, and linear regression; design and analysis of experiments; queuing system analysis; computer system simulation; and random number generation. Recommended foundation: E E 210 and E E 363.</td>
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<td>E E 564</td>
<td>Advanced Computer Architecture I</td>
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<td>Multiprocessor and distributed computer</td>
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<td>architectures; models of parallel computation;</td>
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<td>processing element and interconnection network</td>
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<td>structures, and nontraditional architectures.</td>
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<td>Recommended preparation is E E 363 or equivalent. Crosslisted with: C 5973.</td>
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<td>E E 565</td>
<td>Pattern Recognition</td>
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<td>Statistical pattern classification, supervised and unsupervised learning, feature selection and extraction, clustering, image classification and syntactical pattern recognition. Prerequisite: E E 571 or equivalent.</td>
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<td>E E 566</td>
<td>Parallel Computer Architecture I</td>
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<td>Parallel computer architectures primarily focused on message-passing architectures, but including shared-memory architectures. Scalability of multiprocessors, directory-based cache coherence, synchronization, profiling models, the parallelization process, workload-driven analysis and evaluation. Recommended preparation is E E 383 or C S 473.</td>
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<td>E E 568</td>
<td>Wireless Networks</td>
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<td>Challenges of node mobility and wireless channels. Protocols and architectures for wireless data communications. Modeling and simulation of wireless networks. Advanced topics in wireless networks from current literature. Recommended preparation is E E 469 or equivalent. Restricted to: Main campus only.</td>
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<td>E E 569</td>
<td>Communications Network</td>
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<td>Introduction to the design and performance analysis of communications networks with major emphasis on the Internet and different types of wireless networks. Covers network architectures, protocols, standards and technologies; design and implementation of networks; networks applications for data, audio and video; performance analysis. Taught with E E 469. Recommended foundation is E E 162 and (E E 210 or STAT 371).</td>
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<td>E E 571</td>
<td>Random Signal Analysis</td>
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<td>Application of probability and random variables to problems in communication systems, analysis of random signal and noise in linear and nonlinear systems.</td>
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<td>E E 572</td>
<td>Modern Coding Theory</td>
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<td>Error control techniques for digital transmission and storage systems. Introduction to basic coding bounds, linear and cyclic block codes, Reed-Solomon codes, convolutional codes, maximum likelihood decoding, maximum a posteriori probability decoding, factor graphs, low density parity check codes, turbo codes, iterative decoding. Applications to data networks, space and satellite transmission, and data modems. Recommended foundation is E E 210 and E E 496.</td>
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<td>E E 573</td>
<td>Signal Compression</td>
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<td>Fundamentals of information source encoding and decoding. Includes information theory bounds on source coding, lossless coding algorithms, scalar quantizing and vector quantizing. Prerequisite: E E 521.</td>
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<td>E E 577</td>
<td>Fourier Methods in Electro-Optics</td>
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<td>Linear systems theory, convolution and Fourier transformation are applied to one-dimensional and two dimensional signals encountered in electro-optical systems. Applications in diffraction, coherent and incoherent imaging, and optical signal processing. Recommended foundation: E E 312 and E E 528. Crosslisted with: PHYS 577</td>
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<td>E E 578</td>
<td>Optical System Design</td>
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<td>Optical design software is used to study optical systems involving lenses, mirrors, windows and relay optics. Systems considered include camera lenses, microscopes and telescopes. Recommended foundation: E E 370, E E 528 and E E 577. Crosslisted with: PHYS 578</td>
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<tr>
<td>E E 581</td>
<td>Digital Communication Systems I</td>
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<td>Techniques for transmitting digital data over commercial networks. Topics include baseband and bandpass data transmission and synchronization techniques. Recommended foundation is E E 210, E E 314, and E E 498. Taught with E E 497.</td>
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<td>E E 583</td>
<td>Personal Communications Systems</td>
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<td>Cellular systems, propagation, modulation,</td>
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<td>multiple access, and spread spectrum techniques for mobile radio, as well as smart antennas, networking, and standards for wireless systems. Prerequisite: E E 571.</td>
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<td>E E 584</td>
<td>Mathematical Methods for Communications and Signal Processing</td>
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<td>Applications of mathematical techniques from estimation theory, optimization principles and numerical analysis to the problems in communications and signal processing. Prerequisites: E E 571 and E E 555 or knowledge of linear algebra.</td>
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<td>E E 585</td>
<td>Telemetrying Systems</td>
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<td>Covers the integration of components into a command and telemetry system. Topics include analog and digital modulation formats, synchronization, link effects, and applicable standards. Recommended preparation is E E 395, E E 496, and E E 497, or equivalent. Restricted to: Main campus only.</td>
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<td>E E 586</td>
<td>Information Theory</td>
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<td>This class is a study of Shannon's measure of information and discusses mutual information, entropy, and channel capacity, the noiseless source coding theorem, the noisy channel coding theorem, channel coding and random coding bounds, rate-distortion theory, and data compression. Prerequisite(s): E E 571 or STAT 515. Restricted to: Main campus only. Crosslisted with: MATH 599</td>
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</table>
DEGREE: Master of Science in Industrial Engineering

DEGREE: Doctor of Philosophy
MAJOR: Engineering
CONCENTRATION: Industrial Engineering

The Department of Industrial Engineering offers graduate work leading to the degrees of Master of Science in Industrial Engineering and Doctor of Philosophy with specialization in industrial engineering. Areas of emphasis include computer modeling, operations research and systems engineering, manufacturing systems, quality, and reliability engineering.

Departmental admission requirements in addition to those of the Graduate School must be considered on an individual basis because of the diversity of backgrounds of applicants in the program. An applicant should meet or correspond directly with the department as a first step in determining his or her specific admission status. Applicants should present mathematics preparation equivalent to 9 credits of calculus for engineers, 3 credits of differential equations, and 3 credits of calculus-based probability and statistics.

Minimum credit-hour requirements for the master’s degree may be met in any of the following ways: (1) 24 semester credits approved course work and 6 semester credits of thesis (E E 599) for a total of 30 semester credits, (2) 27 semester credits approved course work and 3 semester credits of project (E E 598) for a total of 30 semester credits, or (3) 30 semester credits of approved course work. Approved course work must meet all requirements of the Graduate School, represent a consistent master’s program in relation to a student’s graduate study goals as determined through consultation with the graduate program adviser, and be approved by a program committee of the graduate faculty of the department. Programs in the focus areas of engineering management, computer modeling, operations research, or manufacturing engineering can be developed with the aid of a faculty advisor.

Departmental facilities and equipment are available to support research efforts of graduate students, including computer terminals and laboratories. In addition to departmental facilities, supporting facilities such as the Manufacturing Technology and Engineering Center and five interdisciplinary Research Clusters are available for research work.

The Ph.D. program is research oriented with the final product being the dissertation. The general information chapter in this catalog describes the Ph.D. The program in industrial engineering also includes the following additions: the course work must include at least 12 credits at the 500 level in a related field, 6 credits of 600-level research courses covering two areas, and 18 credits of 700-level courses following successful completion of the comprehensive examination. The department does not have any foreign language or research tool requirements. Interested individuals should correspond directly with the department to determine eligibility for admission.

INDUSTRIAL ENGINEERING

The Ph.D. program is research oriented with the final product being the dissertation. The general information chapter in this catalog describes the Ph.D. The program in industrial engineering also includes the following additions: the course work must include at least 12 credits at the 500 level in a related field, 6 credits of 600-level research courses covering two areas, and 18 credits of 700-level courses following successful completion of the comprehensive examination. The department does not have any foreign language or research tool requirements. Interested individuals should correspond directly with the department to determine eligibility for admission.

Industrial Engineering

1 E 451. Engineering Economy
   3 cr. Discounted cash flows, economics of project, contract and specifications as related to engineering design. Same as CH E 451.

1 E 453. Leadership and Motivation
   3 cr. Theories of leadership and motivation. Motivational programs for complex organizations. Relationships between organizational power, authority, and management styles. Prerequisite: MGT 309 or consent of instructor. Same as MGT 453.

1 E 460. Evaluation of Engineering Data
   3 cr. Analysis of engineering systems possessing variability, employing regression, analysis of variance, distribution theory, and experimental design methods. Prerequisite: I E 311 or equivalent.

1 E 466. Reliability
   3 cr. Application of statistical theory to engineering reliability estimation, reliability improvement, and the analysis of reliability test data. Prerequisite: I E 311 or equivalent.

1 E 467. Discrete-Event Simulation Modeling
   4 cr. Basic modeling concepts, organizations of simulations, input data analysis, random variate generation, simulation design and analysis, model validation, output analysis, and management of simulations. Differentiated graduate assignments. Prerequisite: I E 311 or equivalent. Same as I E 567.

1 E 477. Ergonomics in Manufacturing Systems
   3 cr. Ergonomic analysis applied to manufacturing engineering environments. Covers: task analysis, workplace assessment and design, computer-integrated manufacturing, and legal/regulatory issues in manufacturing task and workplace design.
I E 478. Facilities Planning and Design 3 cr.
Plant location methods, total process analysis, process integration, materials handling analysis, and traditional and computerized plant layout methodologies. Prerequisite: I E 316. Corequisite: I E 424.

I E 479. Integrated Manufacturing 3 cr.
Automated process planning as a link between CAD and CAM. Emphasis on information flows and modeling concepts, design data analysis, feature recognition and generative planning. Prerequisite: knowledge of a programming language or consent of instructor. Same as I E 579.

I E 480. Senior Design 3 cr. (2-2P)
Multi-disciplinary team design project for external clients. Involves semester long activities including major design report and presentation. Prerequisites: senior standing, I E 467.

I E 490. Selected Topics 1-3 cr.
Prerequisite: consent of the head of the department. May be repeated for a maximum of 9 credits.

I E 505. Directed Readings 1-3 cr.
Prerequisite: consent of the head of the department. May be repeated for a maximum total of 6 credits.

I E 515. Stochastic Processes Modeling 3 cr.
Introduction to the use of stochastic processes in the modeling of physical and natural systems. Use of generating functions, conditional probability and expectation, Poisson processes, random walk models, Markov chains, branching processes, Markov processes, and queuing processes in an applied setting. Prerequisites: I E 311 or equivalent; and MATH 392 or equivalent.

I E 522. Queuing Systems 3 cr.
Elements and classification of queuing systems, single server models, multi-server models, cost analysis and applications. Prerequisite: I E 311 or equivalent.

I E 523. Advanced Engineering Economy 3 cr.
Theoretical basis for engineering economy methods, problems of cost estimation, replacement, nonmonetary factors, and feasibility studies. Same as E 523.

I E 524. Advanced Production and Inventory Control 3 cr.
Organization and functions of manufacturing planning and control systems including forecasting, MRP, capacity planning, JIT systems, scheduling and inventory control. Same as I E 424 with differentiated assignments.

I E 525. Systems Synthesis and Design 3 cr.
Examination of the production management complex in terms of its components and the synthesis of these components into an effective operating unit. Development of input-output models representing the basis structure of all production activities. Same as E 525.

I E 530. Environmental Management Seminar 1 cr.
Same as C I E 530, E I E 530, CH E 530.

Key concepts, terminology, paradigms, and methods of operations research: Linear programming including assignment and transportation algorithms; stochastic analysis, including inventory control and queuing systems; general approaches, including goal, integer, nonlinear and dynamic programming.

I E 533. Linear Programming 3 cr.
Linear programming problem formulation, simplex algorithm, theory of linear programming, duality, revised simplex algorithm, and sensitivity analysis.

I E 534. Nonlinear Programming 3 cr.
Theoretical and computational methods to solve optimization problems in engineering, statistics, economics, and operations research. Topics include convexity, optimality conditions, Newton’s method, Lagrange multipliers, search algorithms for unconstrained and constrained problems, as well as barrier and penalty methods. Prerequisite: MATH 380 or equivalent.

I E 535. Discrete Optimization 3 cr.
Combinatorial Optimization problems using both integer programming and graph theoretic approaches. Emphasis on modeling and computational algorithms.

I E 537. Large Scale Systems Engineering 3 cr.
Systems engineering approaches to large-scale complex technological and societal problems. Concepts of interaction and structural graphs, matrices, delta, and Gantt charts. The hall matrix approach, structural concepts, reachability matrices, and cross impact-analysis, modeling and decision making.

I E 538. Fundamentals of Transportation and Routing in Logistics 3 cr.
Introduction to the conceptual, methodological, and mathematical foundations of transportation and routing problems in logistics system. Emphasis on mathematical modeling and computational algorithms.
MECHANICAL AND AEROSPACE ENGINEERING

Department website: http://mae.nmsu.edu/
Graduate Program Website: http://mae.nmsu.edu/degree_programs/grad/(575) 646-3502
ilesie@nmsu.edu

I.H. Leslie, department head, **Ph.D. (Stanford)– heat transfer, renewable energy; E. A. Butterch, Ph.D. (Auburn)– nonlinear dynamics, vibrations, controls, mechanism design; C. Cai, Ph.D. (Michigan)– rarefied gasdynamics, gaskinetic theory and gaskinetic CFD, propulsion, plasmdynamics and space weather, hypersonic flows; T. Charalamopoulos, Ph.D. (SUNY Buffalo)– combustion, heat transfer, renewable energy; V. K. S. Choo, Ph.D. (Liverpool)– composite materials, computer applications; E. G. Conley, ** Ph.D. (Michigan State)– optics, experimental mechanics, design; G. V. Garcia, Ph.D. (Texas A&M)– damage detection, experimental mechanics, vibration; J. Genio, **Ph.D. (Minnesota)– dynamics, vibrations, solid mechanics; H. C. Hardhee, **Ph.D. (Texas-Austin)– electrical interconnections, geophysical instruments; K. Kota, Ph.D. (Central Florida)– heat transfer, multiscale surface engineering; Y.S. Lee, Ph.D. (Illinois Urbana - Champaign)– aerothermodynamic, fluid-structure interaction, nonlinear system identification, O. Ma, Ph.D. (McGill)– dynamics, control, and robotics; Y. H. Park, Ph.D. (Iowa)– design optimization, computational solid mechanics; A. K. Sanyal, Ph.D. (Michigan)– nonlinear control and estimation, geometric mechanics, control of aerospace vehicles; I. Sevastianov, Ph.D. (St. Petersburg, Russia)– micromechanics of materials, mechanics of biomaterials, mathematical physics; B. N. Shashikanth, Ph.D. (Southern California)– fluid mechanics, dynamical systems, control; F. Shu, Ph.D. (Purdue)– experimental fluid dynamics, biofluidics and turbulent flow, M. Wei, Ph.D. (Illinois Urbana-Champaign)– computational fluid mechanics, aeroacoustics, control and optimization

*Registered Professional Engineer (NM) **Registered Professional Engineer (state other than NM)

DEGREE: Master of Science
MAJOR: Aerospace Engineering

DEGREE: Master of Science
MAJOR: Mechanical Engineering

DEGREE: Doctor of Philosophy
MAJOR: Aerospace Engineering

DEGREE: Doctor of Philosophy
MAJOR: Engineering
CONCENTRATION: Mechanical Engineering

MINOR: Mechanical Engineering

Graduate programs of study are available leading to the degrees of Master of Science and Doctor of Philosophy in Aerospace Engineering, the Master of Science in Mechanical Engineering, and the Doctor of Philosophy in Engineering with a concentration in Mechanical Engineering. Areas of active research in mechanical engineering include the following: experimental fluids with application to wind power, modeling and analysis of machining processes, micro-mechanics and cross property connections, computational mechanics with application to reservoir geomechanics, renewable energy, nonlinear dynamics and vibration, reduced order modeling in multibody dynamics, structural dynamics and fluids, robotics, composite materials and nanomaterials. Areas of active research in aerospace engineering include the following: computational, theoretical and experimental aerodynamics with application to flapping wing propulsion and fluid-structure interaction, aerelasticity and flutter, space dynamics and control, spacecraft motion estimation, rarefied gasdynamics and space propulsion, ground simulation of reduced gravity environments, structural health monitoring, and unmanned aerial systems. Laboratory facilities supporting graduate research include a large subsonic wind tunnel, a large water channel, a robotics, controls and UAVs lab, a reduced gravity simulation lab, a space dynamics and controls lab, and a composite materials lab. A mechanical testing lab is also available in the College of Engineering.

In addition to fulfilling the basic requirements for admission to the Graduate School, applicants are expected to have an undergraduate degree equivalent to a B.S. in mechanical or aerospace engineering from a university accredited by ABET. Graduate students whose BS degree is in a discipline other than A E or M E will normally be required to take undergraduate courses in M E or A E in order to prepare for graduate course work; such undergraduate preparatory work will be determined by the graduate coordinator on a case by case basis. A candidate for the master’s degree must choose one of two options: a thesis option or a course-only option. Both options require a minimum of 30 credits of graduate study.

Doctoral candidates must complete a program of study determined by the student and his or her advisory committee. The student must successfully pass a written qualifying examination (administered during the student’s first year of full-time study) and a written and oral comprehensive examination administered after approximately 80 percent of the course work is completed. The student must submit and defend an acceptable dissertation based on independent investigation in a field of study approved by the advisory committee. The requirements for the M.S. and Ph.D. degrees are stated below.

DEGREE: Master of Science
MAJOR: Aerospace Engineering (30 CREDITS)

Students may select one of two options for completing their M.S. degree. Selection of a particular option must be made during the first semester of study in conjunction with selecting a permanent advisor.

Thesis Option

- M E 570
- At least 18 credits of A E graduate courses (up to six credits of M E graduate courses may be substituted with the approval of the Graduate Coordinator)
- All course must be 500 level or above
- The program of study may include three credits of A E 509 (individualized studies) and/or up to six credits of A E 510 (special topics courses offered formally on a one time basis)
- Publication requirement– refereed conference proceeding accepted or a refereed journal article in review by graduation. The M.S. thesis can be a reformatted version of this paper. Exceptions may be made on a case by case basis by the department head.

Coursework Option

- M E 570 and one core course from 4 of the 5 following topic areas:
  a. Space Dynamics: A E 561 Spacecraft and Attitude Dynamics and Control, A E 582 Astrodynamics
  c. Structural Dynamics and Control: A E 512 Vibrations, A E 506 Aerelasticity, A E 527 Controls
  d. Mechanics: M E 572 Elasticity, M E 504 Continuum Mechanics
  e. Engineering Analysis: M E 580 Numerical Analysis, M E 518 Finite Elements
- Four additional A E courses (500 level or above) which may be core courses listed above, research area courses, A E 509, or A E 510. Graduate M E courses may be substituted for A E courses with the approval of the Graduate Program Coordinator.

DEGREE: Master of Science
MAJOR: Mechanical Engineering (30 CREDITS)

Students may select one of two options for completing their M.S. degree. Selection of a particular option must be made during the first semester of study in conjunction with selecting a permanent advisor.

Thesis Option

- M E 570
- At least 18 credits of M E graduate courses (up to six credits of A E graduate courses may be substituted with the approval of the Graduate Coordinator)
- All course must be 500 level or above.
- The program of study may include three credits of M E 509 (individualized studies) and/or up to six credits of M E 510 (special topics courses offered formally on a one time basis)
- Publication Requirement: refereed conference proceeding accepted or a refereed journal article in review by graduation. The M.S. thesis can be a reformatted version of this paper. Exceptions may be made on a case by case basis by the department head.
Coursework Option
• M E 570 and one core course from 4 of the 5 following topic areas:
  a. Solid Mechanics: M E 502 Elasticity, M E 504 Continuum Mechanics
  b. Thermal Science: M E 503 Thermodynamics, M E 540 Intermediate Heat Transfer
  c. Fluids: M E 530 Inter. Fluid mechanics, M E 533 Computational fluid mechanics
  d. Dynamics and Vibrations: M E 511 Dynamics, M E 512 Vibrations
  e. Engineering Analysis and Control: M E 580 Num. analysis, M E 518 Finite element analysis, M E 527 Control of mechanical systems
• Four additional M E courses (500 level or above) which may be core courses listed above, research area courses, dual listed courses, M E 509, or M E 510. Graduate A E courses may be substituted for M E courses with the approval of the Graduate Program Coordinator.

Selection of MS Option and Permanent Advisor
Newly admitted graduate students will be assigned a temporary advisor for the first semester, but they must select a degree option and permanent advisor before registering for the second semester.

In considering a decision about option and advisor, the student should arrange to meet with several members of the graduate faculty during the first six weeks of study to discuss specific educational objectives. The student can use these meetings to become familiar with faculty interests and research projects currently in progress. The faculty member must agree (in writing) to serve as the student’s advisor.

All students must pass a final examination. The final examination is to be conducted by the student’s advisory committee and is taken after completing all coursework and thesis work for the thesis option, or all coursework for the course-only option.

Degree: Doctor of Philosophy
MAJOR: Aerospace Engineering

The student’s academic program is not judged satisfactory unless it prepares the student to contribute to the advancement of knowledge in the field of Aerospace Engineering. The Degree of Doctor of Philosophy is indicative of distinguished achievement in the areas of scholarship and original research. Therefore, a dissertation of high quality is required of all doctoral students in Aerospace Engineering. Students must follow the degree requirements listed below to complete the Ph.D. course of study.

• A minimum of 36 credit hours of coursework (500 level or above) beyond the Bachelor of Science degree, at least 18 of which must support the student’s research area.
• A minimum of 24 credit hours of research, A E 700 - Doctoral Dissertation, which may include a maximum of 6 credit hours of A E 600 Doctoral Research. A E 600 is intended for those students who have not completed the qualification examination, a prerequisite for A E 700.
• A student is required to have one refereed journal paper accepted and a second one accepted or in review by graduation. The Ph.D. dissertation can be a compilation and reformatted version of these published or accepted journal papers. Exceptions may be made on case by case basis by the Department Head.

Degree: Doctor of Philosophy
MAJOR: Engineering
CONCENTRATION: Mechanical Engineering

The student’s academic program is not judged satisfactory unless it prepares the student to contribute to the advancement of knowledge in the field of Mechanical Engineering. The Degree of Doctor of Philosophy is indicative of distinguished achievement in the areas of scholarship and original research. Therefore, a dissertation of high quality is required of all doctoral students in Mechanical Engineering. Students must follow the degree requirements listed below to complete the Ph.D. course of study.

• A minimum of 36 credit hours of coursework (500 level or above) beyond the Bachelor of Science degree, at least 18 of which must support the student’s research area.
• A minimum of 24 credit hours of research, M E 700 - Doctoral Dissertation, which may include a maximum of 6 credit hours of M E 600 Doctoral Research. M E 600 is intended for those students who have not completed the qualification examination, a prerequisite for M E 700.
• A student is required to have one refereed journal paper accepted and a second one accepted or in review by graduation. The Ph.D. dissertation can be a compilation and reformatted version of these published or accepted journal papers. Exceptions may be made on case by case basis by the Department Head.

Ph.D. Program Transfer Credits:
A student who has completed a Master of Science degree in M E, A E, or a closely related field may transfer up to 24 credits of graduate coursework, approved by the student’s advisor, into a Ph.D. program of study.

Selection of Permanent Ph.D. Advisor
Newly admitted graduate students will be assigned a temporary advisor for the first semester. The student must select a permanent advisor before registering for the second semester. In selecting a permanent advisor, the student should arrange to meet with several members of the graduate faculty during the first six weeks of enrollment to discuss specific objectives. The student should use these meetings to become familiar with faculty research interests and research projects currently in progress. The faculty member must consent (in writing) to serve as the student’s advisor.

Policies governing the Ph.D. written qualifying examination, the Ph.D. written and oral comprehensive examination, the student’s Ph.D. committee, and the Ph.D. dissertation are contained in the department’s Graduate Program website.

Mechanical Engineering
M E 452. Introduction to Automation and Control System Design 3 cr. (2+3P)
Control system design and implementation. Emphasis on practical applications of traditional control algorithms to mechanical engineering applications in thermofluid systems and mechanical systems. Design of feedback analog and digital control systems. Introduction to robots and automation. Lab assignments include programming industrial robotic and automation systems.

M E 460. Applied Finite Elements 3 cr.
Introduction to the practical aspects of structural finite element modeling. Course focuses on providing a working knowledge of how to effectively incorporate finite element techniques into the design process. Prerequisite(s): Senior Standing.

M E 480. Nuclear Systems 3 cr.
Fundamentals of nuclear energy, systems, design, and analysis. Applications of nuclear energy in power production. Survey of modern nuclear systems. Prerequisite: MATH 192G or consent of instructor.

Current and future energy needs of the United States and the world will be considered primarily from the standpoint of renewable energy sources such as solar, wind, ocean, and biomass. Technical, economic, and environmental aspects of each technology will be addressed. Prerequisite(s): M E 341, and (M E 338 or A E 339).

M E 487. Mechatronics 3 cr. (2+3P)
Introduction to the analysis and design of computer-controlled electromechanical systems, including data acquisition and conversion, force and motion sensors, actuators, mechanisms, feedback control, and robotic devices. Students required to work in teams to construct and test simple robotic systems. Prerequisites: EE 201, and M E 345.

M E 502. Elasticity I 3 cr.
Introduction to stress tensor, strain tensor, constitutive law, energy theorems, plane stress and plane strain. Also covers torsion of shafts and propagation of stress waves in elastic solids.

M E 503. Thermodynamics 3 cr.
A comprehensive study of the first and second laws of thermodynamics, nonequilibrium processes, equations of state, and statistical thermodynamics.

M E 504. Continuum Mechanics 3 cr.
Basic introduction to the Mechanics of Continuous Media. Its aim is to prepare the student for more advanced courses in Solid and Fluid Mechanics. The topics to be covered include: introduction to Cartesian tensors, tensor algebra and calculus; Lagrangian and Eulerian kinematics; Cauchy and Piola-Kirchhoff stresses; general principles of conservation; constitutive theory for ideal fluids, Newtonian and non-Newtonian fluids, finite and linear elasticity.

Basic concepts in continuum mechanics, equations of the plastic state, equations of elastic-plastic equilibrium, criteria for yielding, initial and subsequent yield surfaces, two-dimensional and axisymmetric plasticity problems, dynamic problems. Prerequisite(s): M E 502.
M E 509. Individualized Study 3 cr.
Individualized study covering specialized topics in mechanical and aero-
space engineering. Consent of instructor required.

M E 510. Special Topics 1-6 cr.
Topics in mechanical engineering. May be repeated for a maximum of 6
credits. Prerequisite: consent of the department head.

M E 511. Dynamics 3 cr.
An advanced study of the dynamical behavior of systems of particles and
rigid bodies, with emphasis on the theoretical background of dynamics.

M E 512. Vibrations 3 cr.
Free and forced vibrations for discrete and continuous systems with sing-
ular or multiple degrees of freedom. Introduction to nonlinear and random
vibration and solution techniques for such systems.

M E 514. Advanced Composite Materials 3 cr.
Study on the anisotropic elasticity, strength of anisotropic materials and
micromechanics. Topics from micromechanics and macromechanics
through lattice theory and examples of plate bending, buckling and
vibration problems. Course taught on an as-needed basis.

M E 515. Non-Destructive Evaluation of Materials 3 cr.
Develop field equations for the propagation of elastic waves in materi-
als. Their application in non-destructive evaluation of materials will be
explored. Prerequisite: M E 570

M E 516. Fracture Mechanics 3 cr.
Brittle fracture of structures, elastic stress analysis of cracked compo-
nents, elasticity of singular stress fields, stress-field theory of fracture,
energy of fracture, static and dynamic failures, elastic-plastic fracture
mechanics, fatigue crack growth and life prediction under constant and
variable amplitude loading, environmental effects. Prerequisite(s): M E 502.

M E 517. Nonlinear Dynamics and Chaos 3 cr.
Singular points, periodic solutions, stability, and local bifurcations for
ODEs and maps; phase space methods, invariant manifolds, and Poin-
care maps; nonsmooth, periodic, time-delay, and Hamiltonian systems;
perturbation, averaging, and harmonic balance methods; center manifold
reduction and normal forms; strange attractors, Liapunov exponents,
fractal dimension; dissipative and Hamiltonian chaos

M E 518. Finite Element Analysis 3 cr.
Introduction to finite element method. Topics include mathematical
modeling, variational formulation, shape functions, truss, beam, solid, and
shell elements. Includes static, dynamic, and nonlinear analysis.

M E 520. Micromechanics 3 cr.
The course covers fundamentals of micromechanics: point force solution,
Eshelby’s problem, various approximate methods to calculate effective
material properties of inhomogeneous materials, variational principles of
the mechanics of composites. The history of micromechanics is discussed
from Navier and Cauchy to current state of the art. Prerequisite(s): M E 502.

M E 522. Mechanics of Plates and Shells 3 cr.
Pure bending of plates (Kirschhoff theory); rectangular, circular, and
annular plates under lateral loads; various edge conditions; effects of
transverse shear deformation; large deflections of plates; theory of thin
curved shells; deformations and stresses of cylindrical and conical shells.
Prerequisite(s): M E 502.

M E 523. Micromechanics of Composites 3 cr.
Introduce mathematical theories of micromechanics in composites. Prerequisite(s): M E 502.

M E 524. Advanced Topics in Mechanics 3 cr.
Numerical formulation and algorithms include: variational formulation and
variational constitutive updates, finite element discretiza-
tion, time integration algorithms and convergence analysis. Projects on
finite element procedures in linear and non-linear problems are included.

M E 525. Nonlinear Structural Dynamics 3 cr.
Modern techniques to analyze and simulate nonlinear dynamical systems
that arise in structural dynamics. The course will cover the following
topics: summary of linear theory of multi-degree of freedom systems;
nonlinearities encountered in structural dynamics; effects of
nonlinearity on structural response; nonlinear normal modes; reduced
order modeling methods; data analysis methods; and applications from
among aeroelasticity, energy pumping, structural health monitoring, sys-
tem identification, and others.

M E 526. Robotics 3 cr.
Introduction to the fundamentals of robotics with emphasis on solutions to
the basic problems in kinematics, dynamics, and control of manipula-
tors of serial type. Covers modeling of rigid body motion, kinematics of
articulated multibody systems, robot dynamics and simulation, sensing
and actuation, robot controls, and task planning.

M E 527. Control of Mechanical Systems 3 cr.
Rigorous introduction to the control of dynamical systems, with a focus on
mechanical systems. Includes basic systems theory, controllability, feed-
back and stabilization, observers and dynamic feedback, and applications of
methods to systems of importance in mechanical engineering.

M E 529. Nonlinear and Optimal Control 3 cr.
Introduction to optimal control theory, Pontryagin’s Maximum Principle,
control of simple mechanical systems, Lagrangian and Hamiltonian meth-
ods, introduction to geometric control-Lie algebras, distributions, control-
ability and observability

Application of exact and empirical solutions to fundamental flow prob-
lems, including viscous and inviscid behavior. These applications estab-
lish a theoretical basis for the origin and physical role of common terms in the
governing equations.

M E 532. Computational and Theoretical Fluid Mechanics 3 cr.
Application of fluid mechanics theory and computational approaches to
advanced flow problems, including viscous/inviscid and laminar/turbulent
behavior. Complex flow problems addressed through development of a
theoretical formulation, followed by application of computational fluid
dynamic (CFD) tools, and finally presentation and validation of solution
data. Prerequisite: M E 530 or consent of instructor.

M E 533. Advanced Computational Fluid Dynamics 3 cr.
Advanced techniques for large-scale numerical simulations of fluid flows:
spectral numerical methods, including Fourier and other expansions,
Galerkin and collocation projections, computational methods to solve
incompressible and compressible Navier-Stokes equations, high-resolution
methods for hyperbolic equations with discontinuous solutions, and issues
related to implementation on supercomputers. Prerequisite(s): M E 533.

M E 535. Turbulence and Chaos 3 cr.
Introduction to fundamentals of hydrodynamic stability, classical linear
stability analysis of parallel shear flows and rotating flows, nonlinear sta-
bility, basic concepts in turbulence theory Prerequisite(s): M E 533.

M E 537. Vortex Dynamics 3 cr.
Basic laws of inviscid vortex motion-Helmholz’s laws, Kelvin’s circula-
tion theorem. Singular vortex models—point vortices, vortex rings, vortex
patchs, vortex sheets-with applications to vortex-dominated flows in engi-
neering and nature. Numerical vortex methods Prerequisite(s): M E 533.

M E 538. Experimental Methods in Fluid Mechanics 3 cr.
Flow visualization techniques for incompressible and compressible flows,
laser-based flow diagnostic methods, i.e., PIV (Particle Image Velocim-
etry), basic aspects of wind-tunnel design

Fundamentals of conduction, convection, and radiation heat transfer.
Emphasis on the application of combined heat transfer to the solution of
problems not accessible at the undergraduate level.

M E 570. Engineering Analysis I 3 cr.
Introduction to engineering analysis with emphasis on engineering applica-
tions. Topics include linear algebra, linear ordinary differential equations,
and linear partial differential equations with focus on analytical methods.

M E 590. Advanced Topics in Mechanics 3 cr.
Course provides an in-depth introduction to the methods and analysis
techniques used in computational solutions of engineering mechanics
problems. Numerical formulation and algorithms include: variational
formulation and variational constitutive updates, finite element discretiza-
tion, time integration algorithms and convergence analysis. Projects on
finite element procedures in linear and non-linear problems are included.

M E 598. Special Research Programs 1-3 cr.
Individual investigations, either analytical or experimental. May be
repeated for a maximum of 6 credits.

M E 599. Master’s Thesis 0-88 cr.
Thesis.

M E 600. Doctoral Research 1-88 cr.
This course number is used for assigning credit for research performed
prior to successful completion of the doctoral qualifying examination.
AEROSPACE ENGINEERING

A E 509. Individualized Study 3 cr.
Individualized study covering specialized topics in aerospace engineering. Consent of instructor required. Restricted to AEME majors.

A E 510. Special Topics 1-6 cr.
Topics in aerospace engineering. May be repeated for a maximum of 6 credits. Consent of instructor required.

A E 525. Nonlinear Structural Dynamics 3 cr.
Modern techniques to analyze and simulate nonlinear dynamical systems that arise in structural dynamics. This course will cover the following topics: summary of linear theory and degree of freedom systems; sources of nonlinearity encountered in structural dynamics; effects of nonlinearity on structural response; nonlinear normal modes; reduced order modeling methods; data analysis methods; and applications from aerospace, energy pumping, structural health monitoring, system identification, and other. Crosslisted with: M E 525

A E 527. Control of Mechanical Systems 3 cr.
Rigorous introduction to the control of dynamical systems, with a focus on mechanical systems. Includes basic systems theory, controllability, feedback and stabilization, observers and dynamic feedback, and applications of methods to systems of importance in mechanical engineering. Consent of instructor required. Crosslisted with: M E 527

A E 529. Nonlinear and Optimal Control 3 cr.
Introduction to optimal control theory, Pontryagin’s Maximum Principle, control of simple mechanical systems, Lagrangian and Hamiltonian methods, introduction to geometric control-Lie algebras, distributions, controllability and observability. Crosslisted with: M E 529

Application of exact and empirical solutions to fundamental flow problems, including viscous and inviscid behavior. These applications establish a theoretical basis for the origin and physical role of common terms in the governing equations. Crosslisted with: M E 530

A E 533. Computational and Theoretical Fluid Mechanics 3 cr.
Application of fluid mechanics theory and computational approaches to advanced flow problems, including viscous/inviscid and laminar/turbulent behavior. Complex flow problems addressed through development of a theoretical formulation, followed by application of computational fluid dynamic (CFD) tools, and finally presentation and validation of solution data. Pre/ Corequisites: M E 530 or consent of instructor. Crosslisted with: M E 533

A E 552. Introduction to Gasdynamics 3 cr.
Gaskinetics, rarefied gasdynamics, collision dynamics; velocity distribution function, finite rate chemical process; thermal nonequilibrium and chemically reacting flows; introduction to quantum and statistical mechanics; Boltzmann equation and the BGK model; moments of the Boltzmann Equation; the Navier-Stokes Equation; the structure of shock waves.

A E 554. Introduction to Plasmadynamics and Space Weather 3 cr.
Equilibrium neutral gaskinetic theory, Neutral gas interactions: drag, contamination, erosion and glow; Particle Interactions, hypervelocity and shielding theory; Debye length & sheaths, plasma frequencies; Magneto-hydro-dynamics; Radiation theory, solar wind effects, cosmic rays; Plasma Interactions: surface charging, current collection, arcing. Radiation estimations; Solar wind; Magnetosphere.

A E 561. Spacecraft Attitude Dynamics and Controls 3 cr.
Rigid body kinematics and spacecraft attitude descriptions including Euler angles, Euler parameters, classical and modified Rodrigues parameters, and stereographic orientation parameters; Wahba’s problem, c-method, and QUEST algorithms; torque-free attitude dynamics; motion and stability due to spinning craft and gravity gradient torque; passive and active methods of attitude control; nonlinear regulator and attitude tracking using feedback control laws.

A E 562. Astrodynamics 3 cr.
Two-body problem, orbit analysis, and classical orbit determination methods; trajectory design and optimization; orbital maneuvers using impulsive or continuous thrust; relative motion and rendezvous; perturbations and Lagrange planetary equations; interplanetary mission design including gravity assists; introduction to the three-body problem, halo orbits, and invariant manifolds in mission design.

A E 564. Flight Dynamics and Stability 3 cr.
Static and dynamic aerodynamic coefficient force and moment modeling; steady flight; equations of motion; longitudinal and lateral stability; coupled motions; nonlinear effects; applications to aircraft and re-entry vehicles.

A E 566. Aerelasticity 3 cr.
Introduction to aerelasticity with emphasis on fluid-structure interactions occurring in aircraft. Phenomena considered include flutter/LCD (limit cycle oscillation), buffeting, divergence, and control reversal. Primary emphasis on structural dynamics, with use of simple aerodynamic models.

A E 575. Propulsion 3 cr.
Thermodynamics and dynamics of air breathing aircraft power plants; engine performance, off-design equilibrium running of turbojet engines; centrifugal compressors; jet, rocket, and ramjet engines; elective propulsion principles and devices for space vehicles.

A E 588. Special Research Programs 1-3 cr.
Individual investigations, either analytical or experimental. May be repeated for a maximum of 6 credits. Restricted to AEME majors.

A E 599. Master’s Thesis 0-88 cr.

A E 600. Doctoral Research 1-88 cr.
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination. Graded: Thesis/Dissertation.

A E 698. Special Research Programs 1-3 cr.
May be repeated for a maximum of 6 credits. Restricted to AEME majors.

A E 700. Doctoral Dissertation 0-88 cr.
College of Health and Social Services

Dean • Tilahun Adera
Associate Dean for Academic Affairs • Donna Wagner
Administrative Assistant Intermediate/Student Records • Sonya Chrisman
Senior Program Specialist • Robert Nosbisch

Public Health Sciences

Department Website: http://publichealth.nmsu.edu
(575) 646-4300
Mark J. Kittleson, PhD, FAAHB, FAFAHE, department head
kittle@nmsu.edu


Degree: Master of Public Health

Minor: Alcohol and Drug Counseling (Interdisciplinary)
Minor: Gerontology
Minor: Public Health
Minor: US/Mexico Border Health Issues

The Department of Public Health Sciences offers the Master of Public Health degree (M.P.H) in community health education, designed to prepare public health professionals in the breadth of public health practice while also including in-depth preparation in community health education. The degree program prepares public health professionals to function in a variety of settings, including health programs at the local, state, and federal government levels; profit and nonprofit organizations and agencies; worksite settings; and educational institutions. The MPH program is fully accredited by the Council on Education for Public Health (CEPH).

Admissions Requirements

Students may be admitted on a full-time or part-time basis to the on-campus program or in the fully online version of the program, which is delivered via distance education technologies. The online program has curriculum and degree requirements in common with the on-campus program, and is covered by the same CEPH accreditation. All coursework for the online degree can be completed off-campus utilizing web-based technologies and is aimed at meeting the needs of working students and others for whom a campus-based program is not an option. In addition to meeting all admissions requirements of the Graduate School, applicants must meet the following departmental requirements:

• Complete a short bio-sketch and an essay describing the applicant’s reasons for wishing to pursue the M.P.H. degree at NMSU. Any paid or volunteer work performed in a public health or related agency setting should also be described in detail, including length of work and descriptions of the work typically performed as part of the job.

• Scores from a recent administration of the GRE are required (verbal, quantitative, and analytical writing scores).

• Submit at least two letters of reference from former faculty and/or employers.

Admissions information and the departmental application forms may be requested by writing to the M.P.H. Graduate Coordinator, Department of Public Health Sciences, MSC 3HLS, NMSU, P.O. Box 30001 Las Cruces, NM 88003-8001, e-mail at mphapps@nmsu.edu, or obtained via the website: publichealth.nmsu.edu.

MPH Program Requirements (Required of All MPH Students)

I. Public Health Core Courses (18 credits)

MPH 510, Community and Psychosocial Aspects of Public Health ........................................3
MPH 520, Biostatistical Applications in Public Health ..........................................................3
MPH 530, Epidemiological Approaches to Disease Control and Prevention ..................3
MPH 540, Health Services System: Administration and Organization ............................3
MPH 550, Environmental Public Health Issues ..................................................................3

II. Community Health Education Core Courses (15 credits)

MPH 530, Foundations of Public Health Education ..............................................................3
MPH 552, Techniques of Health Communication/Education ..............................................3
MPH 573, Community Organization in Public Health ........................................................3
MPH 574, Program Planning, Evaluation, and Research ....................................................3
MPH 579, Research and Resources in Community Health ................................................3

III. Cultural Foundation Course (3 credits)

Select one course from the cultural foundation series numbered MPH 560-MPH 569

IV. Additional Requirements (4 credits)

MPH 596, Field Experience ..................................................................................................3
MPH 597, Graduate Public Health Seminar ........................................................................1

V. Thesis and Non-thesis Options

Choose one of the following options in consultation with your graduate advisor.

Thesis Option

MPH 599, Master’s Thesis ....................................................................................................4-6

Non-thesis Option (12 credits)

Elective ..................................................................................................................................3
Elective ..................................................................................................................................3
Elective ..................................................................................................................................3
Elective ..................................................................................................................................3

Note: MPH 500 may be required upon review of the MPH Admission Committee. Elective courses may include other MPH courses or 500-level courses from other departments. Some MPH courses are cross listed with HLS 400 level courses (e.g. HLS 467 Rural Health Issues and MPH 567 Rural Health Issues). Students who have previously taken one of these 400 level courses at NMSU, may not take the corresponding 500 level MPH course for degree completion credit.

The thesis option requires a total of 44-46 credit hours, while the non-thesis option requires 49 credit hours. Final examination for the non-thesis option includes both oral and written questions pertaining to the student’s graduate course work. Final examination for the thesis option consists of an oral defense of the thesis and related course work.

Selected elective and option courses may also be available during summer sessions.

Public Health Sciences

Admissions information and the departmental application forms may be requested by writing to the M.P.H. Graduate Coordinator, Department of Public Health Sciences, MSC 3HLS, NMSU, P.O. Box 30001 Las Cruces, NM 88003-8001, e-mail at mphapps@nmsu.edu, or obtained via the website: publichealth.nmsu.edu.

MPH Program Requirements (Required of All MPH Students)

I. Public Health Core Courses (18 credits)

MPH 510, Community and Psychosocial Aspects of Public Health ........................................3
MPH 520, Biostatistical Applications in Public Health ..........................................................3
MPH 530, Epidemiological Approaches to Disease Control and Prevention ..................3
MPH 540, Health Services System: Administration and Organization ............................3
MPH 550, Environmental Public Health Issues ..................................................................3

II. Community Health Education Core Courses (15 credits)

MPH 530, Foundations of Public Health Education ..............................................................3
MPH 552, Techniques of Health Communication/Education ..............................................3
MPH 573, Community Organization in Public Health ........................................................3
MPH 574, Program Planning, Evaluation, and Research ....................................................3
MPH 579, Research and Resources in Community Health ................................................3

III. Cultural Foundation Course (3 credits)

Select one course from the cultural foundation series numbered MPH 560-MPH 569

IV. Additional Requirements (4 credits)

MPH 596, Field Experience ..................................................................................................3
MPH 597, Graduate Public Health Seminar ........................................................................1

V. Thesis and Non-thesis Options

Choose one of the following options in consultation with your graduate advisor.

Thesis Option

MPH 599, Master’s Thesis ....................................................................................................4-6

Non-thesis Option (12 credits)

Elective ..................................................................................................................................3
Elective ..................................................................................................................................3
Elective ..................................................................................................................................3
Elective ..................................................................................................................................3

Note: MPH 500 may be required upon review of the MPH Admission Committee. Elective courses may include other MPH courses or 500-level courses from other departments. Some MPH courses are cross listed with HLS 400 level courses (e.g. HLS 467 Rural Health Issues and MPH 567 Rural Health Issues). Students who have previously taken one of these 400 level courses at NMSU, may not take the corresponding 500 level MPH course for degree completion credit.

The thesis option requires a total of 44-46 credit hours, while the non-thesis option requires 49 credit hours. Final examination for the non-thesis option includes both oral and written questions pertaining to the student’s graduate course work. Final examination for the thesis option consists of an oral defense of the thesis and related course work.

Selected elective and option courses may also be available during summer sessions.
DUAL DEGREE PROGRAM

DUAL MPH/MSW Degree Program

The department of Public Health Sciences and the School of Social Work offer a dual MPH/MSW degree program. The two degrees are: Master of Public Health (MPH) in Community Health Education and Master of Social Work (MSW). Student interested in pursuing the dual degree program must:

• Prepare and submit separate admissions applications to both programs
• Notify each program in writing of the intent to pursue the dual degree program
• Be officially admitted to both degree programs
• Notify the MPHE and MSW degrees of the intent to pursue the dual degree program
• Complete all course requirements
• Complete separate final examinations for both degree programs

If you are interested in pursuing this option please call and talk with the Graduate Program Coordinator. The dual degree waives some courses from each program and students enrolled in this program should expect to complete the program in 3 years.

GERONTOLOGY

GERO 450. Health Promotion for the Older Adult 3 cr.
Common health concerns and lifestyle issues relevant to older adults. Facts about the content area, health behaviors, and practices to promote health and prevent disease; program development strategies applicable to a variety of settings. Same as MPH 557.

GERO 451. Aging and Public Policy 3 cr.
Exploration of public policies relating to elders, historical development, current status and trends in public policy for this age group. Impact of political behavior of elders on policy making and implementing processes.

GERO 456. Biological Aspects of Aging 3 cr.
Aging, the developmental process of the body determined by cellular changes influenced by lifestyle, genetics, and environment. Investigates these changes, how health promotion influences them, and when they are considered a disease. Same as MPH 556.

GERO 493. Adulthood and Aging 3 cr.
Normal transitions in later life; those occurring from 40 years of age to the end of life are discussed. Changes in interpersonal relationships and adaptations commonly made by individuals and meeting those alterations are presented through research findings, case studies, and autobiographies. Same as MPH 593.

GERO 494. Aging in a Multicultural Society 3 cr.
Study and comparison of aging in the southwestern multicultural society with emphasis on health care. Same as MPH 594.

GERO 495. International Aging and Intellectual Disabilities 3 cr.
Graduate course for policy planners and staff trainers working in the field of Intellectual Disabilities. The course content will be relevant to service provision in developed and developing countries with emphasis on diverse cultures. The consequences of increased longevity for both social and health provision and family careers are covered.

GERO 498. Independent Study 1-3 cr.
Individual studies with prior approval of health science department head. Prerequisite: senior standing and consent of instructor. May be repeated for maximum of 6 credits.

HEALTH SCIENCE

HL S 450. Epidemiology 3 cr.
Epidemiologic approaches to disease prevention and control. Factors influencing health status. Restricted to C HL, E S and HNFS majors. Cross-listed with: E S 450

HL S 451. Biometrics and Health Research 3 cr.
Critical analysis of community health research and related methodologies. Prerequisite(s): E ST 311G. Restricted to C HL majors.

HL S 452. Environmental Health 3 cr.
Introduction to environmental health designed to address public health issues. Prerequisite(s): Junior or Senior standing. Restricted to C HL, HNFS and E S majors. Crosslisted with: E S 454
HL S 473. Health Program Planning 3 cr.
Planning and development of community health education interventions for behavior change at the individual, family, social network levels of practice. Emphasis on applying program-planning models and designs into a grant-writing project. Restricted to C HL majors.

HL S 475. Methods of Community Health Education 3 cr.
Responsibilities of health educators, analysis of social forces affecting health needs, application of wide range of health education methods and instructional media, and program implementation skills. Taught with MPH 575. Prerequisite(s): HL S 275. Restricted to C HL majors.

HL S 476. Theoretically-Based Interventions 3 cr.
Identifying and developing interventions to problematic health-related behaviors. Taught with MPH 576. Prerequisite(s): HL S 473. Restricted to C HL majors only.

HL S 478. Health Program Evaluation and Research 3 cr.
Covers the application of research and evaluation models for decision-making program and policy development of community health education interventions. Focus on the individual, family, and social network levels of practice. Prerequisite: HL S 473. Restricted to community health majors. Same as MPH 578.

HL S 480. Communicable Disease Control 3 cr.
Provide an understanding of the microbiology of pathogenic organisms and a public health approach to the control of disease. Instruction through WebCT. Taught with MPH 580.

HL S 481. Public Health Preparedness and Response 3 cr.
This course is designed to teach students about the role of public health in emergency preparedness and response. It focuses on the nature of public emergencies as well as the role various sectors have in responding to them. One purpose of this online course is to introduce students to the basics of disaster preparedness and responding to disasters, and to build a base for further development in responder training. The course provides training and resources for a basic understanding of the Incident Command System (ICS) and National Incident Management System (NIMS). Same as HL S 481 with differentiated assignments for graduate students. Crosslisted with: MPH 581

HL S 486. Special Topics 3 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. Same as MPH 586.

HL S 490. Independent Study 1-6 cr.
Individual studies with prior approval of department head. Maximum of 12 credits. Prerequisites: consent of instructor.

An examination of the multiple dimensions of health from international and cultural views, mind-body interaction, and health promotion assessment and intervention techniques. Same as MPH 591.

HL S 492. Health Care of the Aged 3 cr.
General concepts and principles of aging. Introduces students to the aging process and assists them in understanding the various aspects of growing old.Same as MPH 592.

HL S 496. Community Health Education Field Experience 1-6 cr.
Senior-standing community health education majors will integrate and apply various concepts related to actual community health education practice. Experience aims to prepare students to integrate the competencies and responsibilities of community health education. Approximately 55 hours at field agency required per credited hour. May be repeated for a maximum of 6 credits. Consent of instructor required. Prerequisite(s): HL S 475 or concurrent enrollment. Corequisite(s): HL S 497. Restricted to C HL majors.

HL S 497. Senior Seminar in Community Health Education 1 cr.
Critical analysis of issues in CHE and health care. Readings focus on social, economic, cultural, and political issues as they affect the profession and practice. Emphasis on future, local, national, and international health trends. Prerequisite(s): HL S 475 or consent of instructor. Corequisite(s): HL S 496. Restricted to C HL majors.

HL S 499. Problems in Health Education 3 cr.
Provides opportunity for synthesis of program planning, implementation, and evaluation methodologies in the preparation and delivery of health education topics. Some field trips will be required. Prerequisite(s): Either HL S 395, HL S 478, HL S 476, or consent of instructor. Restricted to C HL majors.
MPH 561. Health Disparities: Determinants and Interventions 3 cr.
Investigates: descriptions of health disparities and measurement issues; physical and environmental factors, behavioral and emotional variables; impact of aging of the populations, increased racial and ethnic diversity, and technological developments; intervention strategies and evaluation results. Same as HL S 461.

MPH 562. Hispanic Health Issues 3 cr.
Cultural differences that aid or hinder communication with Hispanic clients and the application of cross-cultural communication skills. Some field trips may be required. Same as HL S 462 with differentiated assignments for graduate students.

MPH 563. Interdisciplinary Seminar 3 cr.
Problem-based approach to case study analysis designed to install a broader appreciation of health issues and multidisciplinary collaboration. May be repeated for a maximum of 8 credits under different subtitles. Same as CHSS 463, HL S 463 with differentiated assignments for graduate students.

MPH 565. International Health Problems 3 cr.
Comparison of domestic health programs and problems with those in other parts of the world; emphasis on political parameters and delivery processes. Additional attention is focused on the health issues of the U.S.-Mexico border. Same as HL S 465 with differentiated assignments for graduate students.

MPH 566. International Health Practicum 1-3 cr.
Intensive examination of health practices and beliefs from a cultural perspective. Focus on health structure, index of diseases, morbidity, mortality, and epidemiological approaches to planning. Required travel (personal travel, lodging, and related expenses are extra). Same as HL S 466 with differentiated assignments for graduate students.

MPH 567. Rural Health Issues 3 cr.
Comprehensive overview of rural health services with southwestern United States and New Mexico focus. Prerequisite: HL S 306 or MPH 500. Taught with HL S 467.

MPH 568. Coping with Loss and Grief: A Cross-Cultural Perspective 3 cr.
A cross-cultural perspective to death, loss, and grief. Hospice philosophy of caring for the dying will be included. Same as HL S 468 with differentiated assignments for graduate students.

MPH 569. U.S.-Mexico Border Health Issues 3 cr.
Interdisciplinary analysis of the impact of living conditions and health issues of communities along the U.S.-Mexico border and of the strategies and initiatives to address these issues. Problem-based learning, case analysis, lecture, guest speakers, Web-CT based instruction, and field trips. Same as HL S 469.

MPH 570. Foundations of Public Health Education 3 cr.
Social, behavioral, and educational aspects of disease prevention and health promotion. Includes history and theoretical basis of health education. Prerequisite: MPH 510. Restricted to MPH majors.

MPH 571. Health Informatics 3 cr.
The application of technology to engage communities and individuals in behavioral and environmental change processes. The course will focus on the use of technology to describe the magnitude of health problems and their sources; analyze risk factors; identify community strengths from which strategies may be defined and tools created to intervene, prevent problems, and promote health and well-being; and continuously evaluate, refine, and implement what works. Taught with HL S 471.

MPH 572. Techniques of Health Communication/Education 3 cr.
Application of a wide range of communication and education theories/methods, including program planning and evaluation in public health programming. Prerequisite: MPH 570. Restricted to MPH majors.

MPH 573. Community Organization in Public Health 3 cr.
Strategies for identifying and involving community leaders, community needs assessment, small area analysis and planning, and community-level development strategies. Prerequisite: MPH 570. Restricted to MPH majors.

MPH 574. Health Program Planning 3 cr.
Covers process of successful public health education program planning and grant writing. Prerequisite(s): MPH 570.

MPH 575. Methods of Community Health Education 3 cr.
Responsibilities of health educators, analysis of social forces affecting health needs, application of wide range of health education methods and instructional media, and program implementation skills. Prerequisites: MPH 570 or concurrent enrollment. Taught with HL S 475.

MPH 576. Theoretically-Based Interventions 3 cr.
Identifying and developing interventions to problematic health-related behaviors. Prerequisite: MPH 570. Taught with HL S 476.

MPH 578. Evaluative Approaches in Public Health 3 cr.
Survey and analyses of health testing and evaluation procedures, uses and limitations of knowledge and attitude tests, behavioral inventories, check lists, questionnaires, interviews, and other techniques. Prerequisite(s): MPH 570.

MPH 579. Research and Resources in Community Health 3 cr.
Exploration of available public health research studies, data, results and implications. Prerequisite(s): MPH 520. Restricted to MPH majors.

MPH 580. Communicable Disease Control 3 cr.
Provides an understanding of the microbiology of pathogenic organisms and a public health approach to the control of disease. Instruction through WebCT. Taught with HL S 480.

MPH 586. Special Topics 3 cr.
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. Taught with HL S 486.

MPH 590. Independent Study 1-6 cr.
Individual studies with prior approval of department head. May be repeated for a maximum of 6 credits.

An examination of the multiple dimensions of health from international and cultural views, mind-body interaction, and health promotion assessment and intervention techniques. Same as HL S 491 with differentiated assignments for graduate students.

MPH 592. Health Care of the Aged 3 cr.
General concepts and principles of aging. Introduces students to the aging process and assists them in understanding the various aspects of growing old. Same as HL S 492 with differentiated assignments for graduate students.

MPH 593. Adulthood and Aging 3 cr.
Normal transitions in later life; those occurring from 40 years of age to the end of life are discussed. Changes in interpersonal relationships and adaptations commonly made by individuals and meeting those alterations are presented through research findings, case studies, and autobiographies. Same as GERO 493 with differentiated assignments for graduate students.

MPH 594. Aging in a Multicultural Society 3 cr.
Study and comparison of aging in the southwestern multi-cultural society with emphasis on health care. Same as GERO 494 with differentiated assignments for graduate students.

MPH 596. Field Experience 1-4 cr.
Student will work in a public health setting under the supervision of an experienced public health professional and will use acquired knowledge and skills to conduct a project which addresses a specific public health problem or program need. Projects are agreed upon by the student and faculty. Prerequisite: Consent of department head. May be repeated for a maximum of 4 credits. Restricted to MPH majors.

MPH 597. Graduate Public Health Seminar 1 cr.
Capstone seminar for advanced-standing MPH students. Restricted to MPH majors. Prerequisite: MPH 570. May be repeated for a maximum of 2 credits.

MPH 599. Master's Thesis 1-6 cr.
Minimum of 4 credits required but may be repeated for a maximum of 6 credits. Restricted to MPH majors. PR grading.

NURSING

School Website: http://www.nmsu.edu/~nursing/
(575) 646-4387
khuttlin@nmsu.edu

W. Borges, Ph.D. (UT Houston Health Science Center)– chronic disease, self-management interventions, health disparities, M. Hoke, Ph.D. (New Mexico State)– health disparities, curriculum and instruction, community health nursing; K. Huttlinger, Ph.D. (Arizona)– nursing, anthropology, diabetes, Native American health disparities; B. Keele, Ph.D. (Kansas)– community, clinical practice research, health disparities; T. Keller, Ph.D. (St. Louis)– health care policy, health and nursing administration, professional issues; I. Mullins (Georgia State)– health promotion, health disparities, M. Pase, M.S.N. (Vanderbilt)– advanced
The Doctor of Nursing Practice (DNP) is a doctoral degree for nurses at the highest level of nursing practice. The American Association of Colleges of Nursing (AACN) has proposed that the DNP degree will be the level of entry for all advanced practice nurses by 2015. Practice-focused doctoral nursing programs prepare leaders for the highest level of practice and is the terminal practice degree. The School of Nursing offers the Bachelor’s of Science degree in Nursing (BSN) to DNP and the Master’s of Science in Nursing (MSN) to DNP degree. Applications are accepted on an annual basis in early spring for fall cohorts in Family Psych/Mental Health Nursing, Adult/Gerontologic Health and Public/Community Health on even numbered years. Enrollment is limited and there is no transfer between clinical specialties. Only full-time enrollment is accepted for the BSN to DNP, however, there is a part-time option for the MSN to DNP. Students in the BSN to DNP must take a qualifying examination after completing one year of course work. All students complete a final comprehensive exam and scholarly project.
DNP Students: Core Courses

NURS 500, Applied Statistics for the APN ............................................................... 3
NURS 502, Interdisciplinary Leadership ................................................................... 3
NURS 507, Research in Nursing ............................................................................... 3
NURS 511, Advanced Pathophysiology for Clinical Nursing ................................. 3
NURS 512, Advanced Clinical Pharmacology ......................................................... 3
NURS 515, Advanced Nursing Assessment ................................................................ 3
NURS 518, Genetics and Health .............................................................................. 3
NURS 530, Health Promotion .................................................................................. 3
NURS 567, Nursing Informatics .............................................................................. 3
NURS 651, Applied Nursing Science for the APN ................................................... 3
NURS 652, Translational Methods and Evidence-Based Practice ............................ 3
NURS 658, The Aging Adult .................................................................................... 3
NURS 669, Advanced Clinical Residency .................................................................. 1-20(4/32)
NURS 699, Clinical Scholarly Project ...................................................................... 1-6

Family Psych/Mental Health Nurse Practitioner

NURS 506, Environment of Professional Practice .................................................... 3
NURS 540, Advanced Psychosocial Nursing ............................................................ 3
NURS 549, Innovations & Complexity in Health Care Systems ............................. 3
NURS 559, Addictive Disorders .............................................................................. 3
NURS 650, Pharmacology for Advanced Practice .................................................. 2
NURS 660, Family, Psych/Mental Health Nursing I .............................................. 5(2/12P)
NURS 662, Family, Psych/Mental Health Nursing II ............................................. 5(2/12P)
NURS 664, Family, Psych/Mental Health Nursing III ............................................ 5(2/12P)

Adult/Gerontology Health Nurse Practitioner

NURS 670, Diagnostic Reasoning ........................................................................... 3
NURS 671, Primary Care in Acute Illness ................................................................. 3
NURS 672, Primary Care in Chronic Disease ......................................................... 4(2/4P)
NURS 673, Integrated Primary Care ....................................................................... 3(1/6P)
NURS 676, Women’s Health .................................................................................. 3
NURS 684, Life-style Change & Adherence with Diverse Populations ..................... 3

Public/Community Health

MPH 590, Environment and Public Health Issues .................................................. 3
NURS 680, Advanced Public/Community Health I ................................................. 3
NURS 681, Advanced Public/Community Health II, Assessment & Planning ......... 4(2/6P)
NURS 682, Advanced Public/Community Health III, Implementation & Evaluation . 4(2/6P)
NURS 683, Advanced Public/Community Health IV, Roles & Administration ........ 4(3/4P)
NURS 684, Life-style Change & Adherence with Diverse Populations ..................... 3
NURS 685, Epidemiology for Advanced practice P/CH ........................................... 3

MSN to DNP

NURS 500, Applied Statistics for the APN ............................................................... 3
NURS 502, Interdisciplinary Leadership ................................................................... 3
NURS 507, Research in Nursing ............................................................................... 3
NURS 518, Genetics and Health .............................................................................. 3
NURS 530, Health Promotion .................................................................................. 3
MPH 530, Epidemiologic Approaches to Disease Control and Prevention ............ 3
NURS 567, Nursing Informatics .............................................................................. 3
NURS 649, Innovations & Complexity in Health Care Systems ............................. 3
NURS 651, Applied Nursing Science for the APN ................................................... 3
NURS 652, Translational Methods and Evidence-Based Practice ............................ 3
NURS 668, Advanced Clinical Residency .................................................................. 1-20(4/32)
NURS 699, Clinical Scholarly Project ...................................................................... 1-6

DEGREE: Doctor of Philosophy

MAJOR: Nursing

Applications for the Ph.D. in Nursing are accepted once a year in the early spring. Admission into the program begins with an on-campus, week-long Summer Seminar held in May and is an annual requirement for matriculation in the program. Full and part-time options are available.

NURS 660, Philosophy of Science in Nursing ......................................................... 3
NURS 661, Theory I: Methods and Processes of Nursing Knowledge .................... 3
NURS 662, Theory II: Contemporary Substantive Nursing Knowledge ................... 3
NURS 666, Qualitative Methods in Nursing Research ............................................ 3
NURS 670, Translational Methods in Nursing Research ......................................... 3
NURS 671, Advanced Nursing Education: Pedagogy and Roles ............................. 3
NURS 672, Advanced Health Care Statistics I ......................................................... 3
NURS 673, Mixed Methods ..................................................................................... 3
NURS 674, Measurement in Culturally Diverse Border Populations ....................... 3
NURS 675, Issues in Studying Health of Culturally Diverse & Border Populations .... 3

Those enrolled as Ph.D. students have dissertation and non-dissertation options (check with advisor). All students must complete a written and oral examination after completing 41-47 credit hours.

NURSING

NURS 460. Strategies for Student Success ............................................................... 3 cr.
This course is designed to assist and support students as they identify learning needs and develop a plan for successfully mastering nursing knowledge. Course activities and assignments will be designed to address student's self-identified learning goals to enhance their opportunity for success. Restricted to NURS, BSN, BSNP, BSNR majors.

NURS 465. Physical Assessment and Evaluation of Child Abuse ............................ 3 cr.
This course will acquaint the student with physical assessment of specific injuries found in children who have experienced physical abuse and neglect. Topics will include patient interviewing techniques, taking a medical history, evaluating developmental milestones, and elements of the physical examination. Consent of instructor required.

NURS 470. Nursing Organization and Management .............................................. 3 cr.
Concepts of organization and delivery of care to groups of patients based on the nursing process. Emphasis on the roles of the nurse as manager, leader, and change agent within health-care organizations.

NURS 472. Community and Population Focused Nursing ........................................ 6 cr. (3+6P)
Synthesis of nursing, social, and public health science to develop health promotion, disease prevention, and protection strategies for communities and populations. Clinical component included.

NURS 475. Issues and Trends in Professional Nursing .......................................... 3 cr.
Explores the challenges associated with issues and trends in health care and the legal and ethical implications of professional nursing practice.

NURS 476. Nursing Organization & Management for the RN: Clinical .................... 3 cr. (6P)
Nursing process applied to organization, management, and delivery of health care. An integrating experience for the R.N. student designed to facilitate the transition to professional practice. Students work with mentors in a clinical setting to develop professional nursing roles related to leadership and management.

NURS 477. Nursing Organization and Management for the RN ............................. 3 cr.
Course covers nursing organization, leadership, and management principles, theories, and research for the practicing RN. Restricted to BSNC majors.

NURS 479. Nursing Care for Complex Patients ...................................................... 8 cr. (2+12P)
Principles and priorities of nursing care for patients across the life span experiencing complex care problems. Includes integrating experiences designed to facilitate the transition from student to professional nurse. Includes clinical component.

NURS 490. Independent Study .................................................................................. 1-3 cr.
Individual studies with prior approval of department head.
NURS 500. Applied Statistics of Advanced Practice Nursing 3 cr. Provides the logic and appropriate use of statistical techniques most commonly used. Emphasis is on underlying logic of procedures, the appropriate use of underlying assumptions of procedures, interpretation of results from statistical software and evaluation of published results of the procedures. Statistical software will be used. Prerequisite(s): Admission to DNP Program. Restricted to DNP majors.

NURS 502. Interdisciplinary Leadership in Advanced Practice Nursing 3 cr. This course is designed to critically examine leadership theory and its application within interdisciplinary teams for the advanced practice nurse. Mechanisms for asserting power, influence, change, and conflict resolution techniques appropriately will be discussed. Prerequisite(s): Admission to DNP Program. Restricted to DNP majors.

NURS 506. Health Policy and the Environment of Professional Nursing Practice 3 cr. Conceptual approach to understanding and analyzing the environment of professional nursing practice. Focus on the impact of health care economics, financing, law and regulation, ethics and health policy on individual and collaborative nursing practice. Restricted to majors.


NURS 508. Professional Roles for Advanced Nursing Practice 3 cr. Role preparation for advanced nursing practice. Emphasis on core concepts and responsibilities for development of expertise in health promotion, disease prevention, and other advanced nursing practices. Restricted to majors.


NURS 514. Psychopharmacology for Advanced Practice 3 cr. Principles of clinical psychopharmacology with emphasis on clinical application of major drug classifications including decision making, prescribing, drug monitoring and patient education.


NURS 516. Diagnosis and Management 3 cr. This course is designed to enhance the student’s knowledge of differential diagnosis based on physical assessment through both didactic and clinical methods. Students apply clinical problem-solving skills to determine differential diagnoses and use, interpret and apply laboratory and diagnostic techniques to determine the final diagnosis in adult patients. Prerequisite: NURS 515.

NURS 518. Genetics and Health 2 cr. Assess the impact of emerging genetic technologies on healthcare at the individual, system and population level. Prerequisite(s): Admission to DNP Program. Restricted to DNP majors.

NURS 519. Child and Adolescent Health 3 cr. This course provides an overview of child and adolescent health including conceptual and theoretical foundation for advanced nursing practice in child and adolescent health. Developmental changes that occur throughout infancy, childhood, and adolescence will be explored along with an overview of interventions that are used to maintain optimum health in this population. Requires knowledge and skills of the management of acute and chronic conditions in children and adolescents incorporating the family will be included. A holistic approach which incorporates inter-professional collaboration will be used throughout the course.

NURS 521. Concepts of Adult Health I 3 cr. (2+4P) The course establishes the foundation for a framework of collaborative practice in an advanced nursing practice role and is designed to facilitate the development of a theoretical, practical and evidence-based foundation for management of complex health dysfunctions/alterations in the chronically ill adult. The focus of the didactic and clinical components of the course is on nursing and medical diagnosis and management, pharmacological and non-pharmacological treatments, and an interdisciplinary approach to patients experiencing chronic diseases across the continuum care. Clinical experience include the implementation and evaluation of Medical-Surgical Nursing - Clinical Nurse Specialist roles in primary, secondary, and/or tertiary settings. Illness management, health promotion, and risk reduction are integrated into the assessment and management plans for adult patients. Prerequisite(s): NURS 511, NURS 512, and NURS 515. Restricted to MSN majors.

NURS 522. Concepts of Adult Health II 3 cr. (2+4P) The course builds on Adult Health I with a focus on the management of complex health dysfunctions/alterations in the acutely and critically ill adult. Through didactic information and clinical experience, students develop the knowledge base and psychomotor skills central to planning, implementing and evaluating health care for patients with complex health problems commonly seen in acutely and critically ill adults across the continuum of acute care delivery systems. Illness management, health promotion, and risk reduction are integrated into the assessment and management plans for adult patients. Prerequisite(s): NURS 521. Restricted to MSN majors.

NURS 523. Concepts of Adult Health III - CNS Practicum 3 cr. (2+4P) This course builds on Adult Health I and II and is designed to transition the graduate nursing students into the Clinical Nurse Specialist role. Emphasis is placed on enhancing competencies within the three spheres of influence of the CNS (patient, nursing, personnel, organization/network) and developing characteristics essential to CNS practice. A major focus is to identify strategies that promote appropriate clinical outcomes of care and cost-efficient utilization resources. Restricted to NURS majors. Prerequisite: NURS 522.

NURS 530. Promoting Health Behavior 3 cr. Emphasis is on the role of the advanced practice nurse in facilitating health behavior change. The impact of health status on health behavior, ethical issues relate to health promotion, and the processes for promoting healthy behaviors are explored. Theoretical models of behavior change and primary, secondary, and tertiary prevention concepts serve as a basis for developing nursing interventions that promote behavior change.


NURS 532. Advanced Community Health Nursing: Program Planning and Evaluation 3 cr. (2+4P) Analysis of the impact of cultural, ecological, environmental, and epidemiological influences on the health of the community and populations at risk. Emphasis on strategies for program planning and evaluation. Prerequisite: NURS 531.


NURS 537. Principles of School Nursing 3 cr. Principles, theoretical frameworks and trends in school nursing; documentation and analysis of models of school nursing practice; identification of issues and future directions; program planning, development, implementation and evaluation; and research applicable to school health. Prerequisite: consent of instructor.

NURS 538. Nursing Leadership in School Health Programs 3 cr. Principles, theoretical framework, and trends of school nursing leadership within the coordinated school health program. Focus on qualifications, roles, and competencies of school nurse administrators; documentation and analysis of school health models; identification of issues and future directions; program planning, development, implementation, and evaluation; and research into school health and leadership roles. Prerequisite: consent of instructor. Restricted to majors.
NURS 539. Pediatric Health Assessment for School Nurses 3 cr.
Assessment theory and skills for advanced clinical practice. Emphasis on
assessment of the pediatric age group from birth through adolescence
in the school setting. Prerequisite: consent of instructor. Restricted to
majors.

NURS 540. Advanced Psychosocial Pathology for Psychiatric-Mental Health
Nursing 3 cr.
In-depth study of psychosocial pathology, factors contributing to psycho-
social dysfunction, and diagnostic reasoning basic to advanced-practice
psychiatric mental health nursing; emphasis on etiology and differential
diagnoses.

NURS 541. Psychiatric-Mental Health Nursing I 3 cr.
The first in a three-course series assisting students in learning and
practicing principles of adult psychotherapy using psychodynamic and
cognitive/behavioral theories within a holistic framework. The concepts
of personality development are examined as students learn to work thera-
peutically with individuals from a diverse cultural and socioeconomic
background to develop intervention strategies. Content focuses on man-
agement of clients with neurobiological disorders, stressing application
of current psychotherapy outcomes research. Must obtain a “B” or better to
pass the course.

NURS 542. Psychiatric-Mental Health Nursing II 3 cr.
The second in a three-course series in which students continue to develop
skills in the practice of psychotherapy in a variety of settings with both
individuals and families. This course focuses on family mental health and
family functioning. Family dynamics and processes, theories and research
are examined as the student continues to develop a conceptual framework
to guide clinical practice. Emphasis is placed on increasing understand-
ing of conceptual frameworks and strategies including the role of cultural
influences within the family. Must obtain a “B” or better to pass the course.
Prerequisites: NURS 541 and NURS 546. Corequisite: NURS 547.

NURS 543. Psychiatric-Mental Health Nursing III 2 cr.
The third in a three-course series that assists students in continuing to
develop skills to function as a nurse psychotherapist with individuals,
families, and groups. Focuses on an advanced study of dysfunctional
processes of communication and interpersonal relationships and the
therapeutic use of groups for adult clients with a diversity of psychiatric
problems and psychosocial stressors. Emphasis is placed on critically
analyzing models of group interventions, group dynamics, and processes,
including their relevance to a culturally diverse clientele with a variety of
lifestyles. Prerequisites: NURS 542 and NURS 547. Corequisite: NURS 548.
Restricted to majors.

NURS 544. Cross-Cultural Approaches to Border/Rural Community Mental
Health 3 cr. (2-2/7)
Principles of epidemiology and a cultural lens to explore community men-
tal health assessment, intervention and evaluation of culturally diverse
rural/US-Mexico border communities. Emphasis is on understanding
the social/cultural context of community mental health practice, building
collaborative relationships within culturally diverse communities and
advancing the APA s role as a culturally proficient empowerment agent.

NURS 545. Addictive Disorders 3 cr.
Focus on care of the individual with addictive disorders. The impact on
the individual as well as the community will be examined. Advanced
practice nursing interventions based on theoretical and research based
knowledge of addictions will be addressed. Treatment of addictive dis-
orders and their relevance to culturally diverse clientele with a variety of
lifestyles will be evaluated. Consent of instructor required.

NURS 546. Psychiatric-Mental Health Practicum I 1 cr. (4P)
Practice component for the adult psychiatric-mental health clinical spe-
cialist/nurse practitioner students.

NURS 547. Psychiatric-Mental Health Practicum II 2 cr. (8P)
Practice component for the adult psychiatric-mental health clinical spe-
cialist/nurse practitioner students. Prerequisite: NURS 541 and NURS 546.
Corequisite: NURS 542.

NURS 548. Psychiatric-Mental Health Practicum III 1 cr. (4P)
Practice component for the adult psychiatric-mental health clinical spe-
cialist/nurse practitioner students. Prerequisite: NURS 542 and NURS 547.
Corequisite: NURS 453.

NURS 550. Curriculum and Teaching in Nursing 3 cr.
Seminar and guided experiences in curriculum development and teach-
ing of nursing, including planning, developing, implementing, and evaluat-
ing classroom and clinical instruction. Students work with a preceptor
and submit a video tape or audio tape of teaching a unit of instruction.
Restricted to NURSING majors.

NURS 551. Measurement and Evaluation in Nursing Education 3 cr.
Integration of concepts of assessment and evaluation into a nursing edu-
cation framework. Students analyze assessment, evaluation concepts,
models, and frameworks for applicability for students, faculty, curricula,
and programs. Restricted to NURSING majors.

NURS 552. Computer Technologies for Nurse Educators 3 cr.
Covers a variety of computer technologies including principles for dis-
tance learning, use of the Internet in teaching and learning and integrat-
ing computer technologies into the teaching-learning process. Emphasis
is given to theoretical frameworks that guide the selection, use and inte-
gration of computer technologies in nursing education programs.

NURS 553. Human Resource Management in Nursing 3 cr.
Contemporary approaches to the development and management of nurs-
ing resources that complement organizational vision, strategies and man-
agement goals. Management of a diverse, quality workforce that results
in an improved organizational performance. Performance evaluation,
motivation, professional development and legal and regulatory aspects
will be explored.

NURS 566. Seminar in Nursing Administration - Roles 3 cr.
Role preparation for the nurse administrator as manager, leader, col-
laborator and change agent. Synthesis of concepts from management
and nursing as a basis for role effectiveness in nursing administration.
Corequisite: NURS 555.

NURS 567. Nursing Informatics 3 cr.
This course is designed to meet the needs of the nurse administrator
and advanced practice nurse in acquiring informatics knowledge for the
use of information technology in meeting today’s health care challenges.
Areas of concentration include informatics, competencies, knowledge
management, acquisition, and implementation of health care information
systems and the electronic health record. The role of the nurse adminis-
trator and advanced practice nurse in each of these areas will be empha-
sized. Consent of instructor required.

NURS 571. Pharmacology of Addiction for Advanced Practice Nurses 3 cr.
Concepts and principles of the pharmacology of psychoactive substances
and the addiction process; including decision making, prescribing, drug
monitoring and patient education.

NURS 572 L. Pharmacology of Addiction Laboratory 1 cr. (1P-2P)
Analysis and applications of concepts and principles of the pharmaco-
logy of psychoactive substances and the addiction process, including
pharmacological approach to treatment in selected simulated situations.
Prerequisite(s): NURS 572.

NURS 573. Cardiovascular/Renal Nursing 3 cr.
This course emphasizes the comprehensive management of individuals
with acute and chronic cardiovascular/renal diseases within the context
of family and communities using a case-based approach. Prerequisite(s):
Graduate status or permission of instructor.

NURS 574. Oncology Nursing 3 cr.
This course presents the clinical aspects of cancer diagnosis, the clinical
management of major cancers, and their treatment modalities. The course
will also focus on supportive therapies for the cancer patient and symptom
management. Prerequisite(s): Graduate status or permission of instructor.

NURS 575. Professional Roles for Masters Entry to Practice 3 cr.
Role preparation for Masters entry into nursing. Emphasis on differentiat-
ing between the multiple roles of the nurse prepared at the graduate level.
Exploration of the diversity of nursing roles in health care. Restricted to
MSN majors.

NURS 590. Independent Study 1-10 cr.
Individual studies and directed research with prior approval of depart-
ment head. May be repeated on a different topic. Prerequisite: consent of
instructor. May be repeated for a maximum of 20 credits.

NURS 591. Preceptorship: Prescription Drugs, Medicines and Other
Therapeutics 1-11 cr. (4-14P)
The course provides preceptorized clinical experiences that provide
advanced practice nursing students opportunities for practice and mas-
tery of skills for management of culturally diverse patients within their
designated specialty area to include prescribing drugs, medicines and other
therapeutics, as well as monitoring the effects of the prescribed
management. It requires the student to demonstrate integration, synthe-
sis and application of assessment, diagnosis and management to include
health promotion of patients with acute and/or stable chronic health
conditions. Graded: S/U. Prerequisite(s): NURS 542 or NURS 530 or NURS
521. Restricted to MSN majors.
NURS 595. Advanced Field Work in Nursing 1-6 cr. (4-24P)
Faculty-supervised, independent work in student's advanced practice role. Field work normally taken after the core and designated specialty courses. Minimum of three field-work credits (12 contact hours) required in major area of study. May be repeated for a maximum of 12 credits. Prerequisites: NURS 532 and NURS 561. Restricted to majors. Graded S/U.

NURS 597. Special Topics 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. Prerequisite: consent of instructor. May be repeated for a different subject area. May be repeated for a maximum of 8 credits.

NURS 600. Philosophy of Science in Nursing 3 cr.
Offers a framework for asking both ontological and epistemological questions about knowledge, human science, and nursing science.

NURS 601. Theory I: Methods and Processes of Nursing Knowledge Development 3 cr.
Building on the Philosophy of Science course, the student will engage in analysis and critique of both developmental processes and composition of intellectual frameworks. Diverse approaches to knowledge will be used to appraise and critique historical and contemporary milestones in the development and evaluation of nursing thought. Emphasis is also placed on implications of theory and knowledge development as related to multicultural and rural issues. Prerequisite(s): NURS 600.

NURS 602. Theory II: Contemporary Substantive Nursing Knowledge 3 cr.
Critically examine existing & evolving substantive knowledge drawn from nursing and other disciplines. Focus on the construction, analysis, and current substantive nursing knowledge, including evaluation of relationships among theories, evidence and explanation will be pursued. Special attention will be given to existing and evolving theories applicable to rural, multicultural and educational settings. Prerequisite: NURS 601.

NURS 606. Quantitative Methods in Nursing Research 3 cr.
Focus on approaches to developing nursing knowledge by means of quantitative research methods as applied to clinical problems, theoretical modeling of human responses to health and illness, and health policy issues. Emphasizes detailed analysis and critique of non-experimental and experimental designs, issues pertaining to sampling and statistical power, the reliability and validity of measurers, and uses and abuses of descriptive and inferential statistics in nursing research literature. Students are expected to develop sufficient discernment to read, critique, evaluate, and discuss the quality, significance, and limitations of published quantitative nursing research. Prerequisite: NURS 621.

NURS 607. Qualitative Methods in Nursing Research 3 cr.
Major methodological traditions of qualitative research and their applications to knowledge development and clinical research in nursing are the emphasis. Overview of at least one computer-assisted qualitative data analysis software application. Students will engage in detailed critique and discussion of significant nursing investigation representing various qualitative approaches and traditions.

NURS 608. Field Methods in Qualitative Research 3 cr.
The purpose of this course is to provide opportunities for students to engage in, analyze and evaluate various procedures and techniques used to gather qualitative data. Major data collection approaches including ethnography, phenomenology, grounded and critical theory are discussed. Students have the opportunity to participate in mini-field work projects while gathering expertise in field techniques used in qualitative research. Issues such as role of literature in qualitative research, investigator as an instrument, ethical dilemmas, field entry and departure, and reflexivity are analyzed as they relate to the process of gathering and interpreting qualitative data. Prerequisites: NURS 601 or consent of instructor.

NURS 610. Nursing Education: Pedagogy and Roles 3 cr.
Teaching-learning process in the clinical and classroom settings. Focuses on educational patterns and pathways in nursing and the roles of faculty in academe. Educational reform is analyzed in relationship to diversity in students, faculty, practice settings and technology-driven learning environments. Instructional designs, teaching strategies, and outcome evaluations are examined for their pedagogic use. The development of critical thinking outcomes, mentorships and partnerships to meet the needs of students are addressed. The course examines issues and challenges that impact the educational process such as student and faculty recruitment, the changing healthcare environment, differentiation of practice, advanced practice, reduced resources and links with theory and research.

NURS 620. Advanced Health Care Statistics I 3 cr.
This course provides knowledge, skills and practice in collecting, analyzing and interpreting data. The following quantitative techniques will be examined and utilized using SPSS: principle of measurement, probability, principles of parametric and non-parametric techniques, Kolmogorov-Smirnov test, comparison of means, correlation analyses, use of psychometric techniques, binomial test, sign test, McNemar test, median test, Cochran Q test, Phi coefficient, Fisher’s Exact test, Mann-Whitney U, Kruskal-Wallis test, Wilcoxon Signed Ranks and Spearman Rho. A graduate level statistics course completed within three years prior to the date of expected admission is desirable. Restricted to majors.

NURS 621. Advanced Health Care Statistics II 3 cr.
This course is the second of a two-semester quantitative statistical course designed to provide knowledge, skills and practice in collecting, analyzing, and interpreting data. The following quantities techniques will be examined and utilized using SPSS: analysis of variance (ANOVA), analysis of covariance (ANCOVA), linear, multiple, and logistic regression, structural equation modeling (SEM), principle components analysis, and factor analysis. Restricted to majors. Prerequisite: NURS 620.

NURS 622. Mixed Methods 3 cr.
Presents a brief overview of research paradigms with emphasis on formulating research questions, aims and methods for a mixed method/model approach. Students may use proposals developed in earlier qualitative and quantitative research classes to devise mixed method proposal integrating readings on these methods and own research interests. Prerequisite: NURS 606 and NURS 607.

NURS 624. Measurement in Culturally Diverse Border Populations 3 cr.
The focus of this course is the development of essential competencies required to locate, select, evaluate, and use instruments to operationalize nursing variables. Ethical considerations in nursing research and research issues in diverse populations will be discussed. Specific attention is given to the process of moving from concept to construct, measurement theory, validity/reliability issues, and measurement issues in diverse populations including literacy, social desirability bias, sensitive data, translations, and cultural equivalency. Prerequisite(s): Admission to PhD program in Nursing; NURS 606; NURS 621; or consent of Instructor. Restricted to PhD in Nursing majors.

NURS 620. Issues in Studying Health of Culturally Diverse and Border Populations 3 cr.
Health of culturally diverse and border populations will analyze the unique characteristics and future trends of health care and professional nursing using the southwestern U.S., and the U.S.-Mexico border area as the case exemplar. Course content includes identifying and examining health care issues from multi-contextual local, national, and international perspectives. Strategies to examine and affect health will incorporate rigorous critical reflection and dialogue, analysis and synthesis of ideas drawing on multi-disciplinary literature, and experiences with working with community-based organizations and local advocacy groups to develop action plans for research and health care services.

NURS 631. Population Based Approaches to Health Promotion 3 cr.
Population based approaches to health promotion focuses on preparing nursing students to identify, critically analyze and evaluate health promotion initiatives in culturally diverse and border populations using the southwestern U.S. and U.S.-Mexico border as the case exemplar. It examines historical, socio-economic, legal and professional issues associated with health promotion and policy initiatives. It considers prospects for social change, political movements and alternative approaches to develop and hasten adaption of health promotion initiatives in partnership with communities, advocacy groups and health care agencies.

NURS 640. Chronic Diseases: A Health Promotion Approach in Underserved Populations 3 cr.
Focus on the interrelationships of various chronic diseases and conditions in the understanding of how co-morbidities influence the prevention and health promotion in the infant, school-age child, adolescent, young, middle, and older adult. Students will apply and synthesize an understanding of chronic conditions such as cancer, cardiovascular disease, diabetes mellitus, COPD, asthma, osteoporosis, and sickle cell disease, among others, and how the various aspects of these conditions are interrelated, particularly in underserved populations resulting in health care disparities.
NURS 660. Behavioral Approaches and Determinants of Nursing and Health 3 cr.
Focuses on how behavioral/mental health concepts are applied in determining health outcomes for individuals, families, and communities. Students will apply and synthesize theoretical constructs within practice and research focusing on behavioral/mental health concepts. Health outcomes are viewed in a traditionally holistic manner in that health outcomes are discussed as an integral part of the human experience of healing and health.

NURS 651. Applied Nursing Science for the APN 3 cr.
Explores the philosophical and scientific underpinnings for nursing knowledge relevant to the role of the doctorate of nursing practice. Prerequisite(s): Admission to DNP program and NURS 500. Restricted to DNP majors.

NURS 652. Translational Methods and Evidenced Based Practice II 3 cr.
Designed to prepare DNP student to demonstrate advanced levels of clinical judgment, systems thinking, and accountability in design, delivery, and evaluating evidence based on care to improve patient outcomes. Translate evidence into their specialty practice environment. Prerequisite(s): Admission to DNP program, NURS 651. Restricted to DNP majors.

NURS 655. Psychopharmacology for Advanced Practice 2 cr.
Principles of advanced clinical psychopharmacology with emphasis on clinical application of major drug classification including decision making, prescribing practices, drug monitoring, and patient education. Prerequisite(s): Admission to DNP program, NURS 512. Restricted to DNP majors.

NURS 658. The Aging Adult 3 cr.
This course focuses on the care and management of older adults and their families. Content is directed at assessment and management of acute and chronic presentations of illness and complex, multiple health problems across the health care continuum. It will include examination of the psycho-socio-cultural processes which influence the behavioral patterns, coping, and adaptation of older adults. Prerequisite(s): Admission to DNP program. Restricted to DNP majors.

NURS 659. Addictive Disorders 3 cr.
Focus on care of the individual with addictive disorders. The impact on the individual as well as the community will be examined. Advanced practice nursing interventions based on theoretical and research based knowledge of addictions will be addressed. The pharmacology of psychoactive substances, the addiction process, and pharmacological approach to treatment will be included. Treatment of addictive disorders and their relevance to culturally diverse clientele with a variety of lifestyles will be evaluated. Prerequisite(s): Admission to DNP program. Restricted to DNP majors.

NURS 660. Psychiatric Mental Health Nursing I 5 cr. (2+12P)
The first in a three-course series in learning and practicing psychotherapy principles using psychodynamics and cognitive behavioral theories within a holistic framework. Personality development concepts are examined and applied to work therapeutically with children, adolescents, young adults, adults and older adults from diverse cultural and socioeconomic backgrounds to develop intervention strategies. Management of clients with neurobiological disorders and application of current research-based psychopharmacology outcomes is emphasized. Course includes supervised clinical practice. Prerequisite(s): Admission to DNP program. NURS 511, NURS 512. Restricted to NURP majors.

NURS 662. Psychiatric-Mental Health Nursing II 5 cr. (2+12P)
The second in a three-course series in which students continue to develop skills in the practice of psychotherapy in a variety of settings with both individuals and families. This course focuses on family mental health and family functioning. Family dynamics and processes, theories and research are examined as the student continues to develop a conceptual framework to guide clinical practice. Emphasis is placed on increased understanding of conceptual frameworks and strategies including the role of cultural influences within the family. Course includes supervised clinical practice. Prerequisite(s): Admission to DNP program. NURS 660. Restricted to: NURP majors.

NURS 664. Psychiatric Mental Health Nursing III 5 cr. (2+12P)
The third in a three-course series that assist students in continuing to develop skills to function as a nurse psychotherapist with clients across the lifespan as individuals, families, and groups. This course focuses on an advanced study of dysfunctional processes of communication and interpersonal relationships and the therapeutic use of a variety of groups for children, adolescent, young adult, adult and older adult clients with a diversity of psychiatric problems and psychosocial stressors. Emphasis is placed on critically analyzing models of group interventions, group dynamics and processes, including their relevance to a culturally diverse clientele with a variety of lifestyles. Course includes supervised clinical practice. Prerequisite(s): Admission to DNP program. NURS 662. Restricted to: NURP majors.

NURS 670. Diagnostic Reasoning 3 cr. (2+4P)
This course is designed to develop advanced knowledge of differential diagnosis based upon physical examination and laboratory and diagnostic tests. Students will be prepared to conduct a comprehensive health assessment of adult patients across the lifespan in a variety of clinical settings. Students apply, synthesize, and integrate advanced clinical problem solving and reasoning to determine differential nursing and medical diagnoses, interpret and apply laboratory and diagnostic techniques to determine a final judgment and diagnosis. Restricted to DNP majors.

NURS 671. Primary Care in Acute Illness 3 cr. (2+4P)
This course prepares students to use evidence to make clinical judgments which promote, restore, and maintain health of adult/gerontology clients/patients seeking primary care services. Emphasis will be placed on health promotion, disease prevention and common acute health problems of adult/gerontology clients/patients in diverse populations. Course includes supervised clinical practice in primary care settings with emphasis on care of adult and gerontology clients/patients. Restricted to DNP majors.

NURS 672. Primary Care in Chronic Illness 3 cr. (2+4P)
Students use an evidence based approach to primary care drawing upon theories, research, clinical knowledge and national standards to develop therapeutic plans for chronic health problems in the adult/gerontology client/patient. Focus is on comprehensive primary care management across settings, as well as evaluation of care approaches to adults and gerontology clients/patients. Students will examine the impact of contextual factors on health care services for adults and older adults with multi-system conditions. Course includes supervised clinical practice in primary care settings with emphasis on care of adult and gerontology clients/patients. Restricted to DNP majors.

NURS 673. Integrated Primary Care 3 cr. (1-8P)
This course focuses on advanced practice role development and the study of issues in health service delivery related to the practice of primary health care in multiple health care settings. A major component is inter-professional practice within an integrated care setting. Economics, legal, policy, and cultural/ethical aspects of care are discussed. Course includes supervised clinical practice. Restricted to DNP majors.

NURS 676. Women’s Health 3 cr. (2+4P)
The course will examine patient and family perspectives as well as health care system variables and societal issues that affect the organization and delivery of women’s health care. Students will engage in critical analysis of the evidence base concerning psychosocial and spiritual concerns and barriers to and opportunities for improving women’s health care across the diverse settings in which health care is delivered. Focus on evidence-based practice approaches to the primary care management of women. Course includes supervised clinical practice in primary care settings with emphasis on care of women. Restricted to DNP majors.

NURS 680. Advanced Public/Community Health Nursing I 3 cr. (2+4P)
Advanced public/community health nursing theoretical foundation with initial focus on advanced public/community health nursing scope with family assessment, intervention, and evaluation. Prerequisite(s): Admission to DNP Program. Restricted to DNP majors.

NURS 681. Advanced Public/Community Health Nursing II: Assessment & Planning 4 cr. (2+8P)
Focus is on assessment, analysis, and planning for populations/community health. Impact of culture, ecology, and environmental influences are considered. Wide range of assessment techniques, use of epidemiology, and identification of community/population assets/strengths are emphasized. Prerequisite(s): Admission to DNP program. Restricted to DNP majors.
NURS 682. Advanced Public/Community Health Nursing III: Implementation & Evaluation  
4 cr. (2+6P)  
In depth study of implementation and evaluation of full range of public/community health nursing interventions directed community/population levels. Prerequisite(s): Admission to DNP program. Restricted to DNP majors.

NURS 683. Advanced Public/Community Health Nursing IV: Roles & Administration  
4 cr. (3+6P)  
Role preparation for advanced public/community health nursing practice. Emphasis on examining diverse roles of advanced practice public/community health nurses, work with interdisciplinary team, and development of higher level administrative expertise. Prerequisite(s): Admission to DNP program. Restricted to DNP majors.

NURS 684. Lifestyle Change and Adherence Issues with Diverse Populations  
3 cr.  
Includes the critical examination of selected theories of health behavior on life style choices and adherence issues with diverse populations within the community setting. Emphasis is given to the analysis of health behavior in regard to planning, development, and evaluation of population based health programs. Restricted to DNP majors.

NURS 685. Epidemiology for Advanced Public/Community Health Nurse  
2 cr.  
Emphasis is on practical application of epidemiology on solving advanced public/community health nursing practice problems found in population/community assessment, intervention, and evaluation. Use of existing data bases and technology programs are covered. Prerequisite(s): Admission to DNP program. Restricted to DNP majors.

NURS 690. PhD Nursing Seminar: Developing Research in Nursing  
1-3 cr.  
Seminar to build nursing research skills broken into 3, 1 credit seminars that are taken throughout the PhD Program.

NURS 691. Independent Study  
1-6 cr.  
Individual studies and directed research with prior approval of department head. Prerequisite: consent of instructor. May be repeated for a maximum of 12 credits.

NURS 697. Professional Roles for Advanced Practice Clinical Nursing  
3 cr.  
This course will focus on providing an in depth understanding of the legal, historical, political, social, and ethical aspects of advanced practice nursing. Traditional and emerging roles for advanced practice nursing are examined. Prerequisite(s): Admission to DNP program, NURS 684 OR NURS 682. Restricted to DNP majors.

NURS 699. Clinical Scholarly Project  
1-4 cr.  
Building on the practice expertise of the DNP student, this series of credits is to provide the student with the opportunity to design an innovative clinical practice improvement project/program addressing an actual health care concern. Through mentored activities, the DNP student will identify, develop, implement, evaluate, and disseminate an independent analytic. Graded: S/U. Prerequisite(s): Admission to DNP program. NURS 692. Restricted to: NURP majors. S/U Grading (S/U, Audit).

NURS 700. Doctoral Dissertation  
1-9 cr.  
Dissertation may be repeated to maximum of 30 credits. Minimum requirements are 21 credit hours. Comprehensive examine is included within these 21 credits.

SOCIAL WORK

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Tina Hancock, DSW, Director

T. Barnett-Queen, Ph.D. (South Carolina)– technology and social work education, mental health, supervision; D. Barney, Ph.D. (Kansas)– adolescent health, human sexuality, HIV/AIDS, R. Blair, Ph.D. (Utah)– mental health, individual therapy; S. Burns, M.S.W. (Michigan)– direct practice; G. Calabria, M.S.W. (Texas)– mental health, social justice; J. de la Rosa, Ph.D. (Michigan)– program evaluation, research; M. Gurrola, Ph.D. (Arizona)– social justice, immigration; T. Hancock, D.S.W.– domestic violence, immigration; G. Leedy, Ph.D. (Louisiana)– mental health, community-based social work, public health; M. Ortiz, M.S.W. (NMSU)– cultural competence, practice, W. Whitlesey-Jerome, Ph.D. (Texas-Arlington)– mental health, policy, research

DEGREE: Master of Social Work
MINOR: Alcohol and Drug Counseling (Interdisciplinary)
MINOR: Gerontology (Interdisciplinary)

The School of Social Work offers full-time and part-time graduate study in Las Cruces and Albuquerque leading to the Master of Social Work (M.S.W.) degree. The program is designed to provide academic and fieldwork education with an emphasis in Advanced Generalist Practice with Populations of the Southwest based on the foundation first year of generalist practice. The program is fully accredited by the Council on Social Work Education (CSWE).

Admission to the program is in accordance with the general regulations of the Graduate School, which include a completed undergraduate degree from an accredited institution. In addition to applying to the Graduate School, application must also be made to the School of Social Work. The application to the School of Social Work spells out admission requirements that include submitting a application form, a written statement, a current resume and personal references and statistics course. Applicants having a degree from a non-liberal arts area must show coursework that includes two courses from the humanities, two from the natural and biological sciences (with one course containing content in human biology) and three from the behavioral and social sciences, with at least one course in sociology or psychology. Applicants are also required to complete a Basic Statistics course prior to beginning their MSW program of study. The program does not grant academic credit for work or other life experience in lieu of social work course or field content.

The School of Social Work is committed to ensuring a culturally diverse student population to enhance the social work profession at both state and national levels. To meet this goal of diversity, the school makes an effort to recruit and retain a diverse student population. Applicants who qualify for advanced standing may complete the program with 36 credits rather than 60 credits. Admission to the advanced-standing program is for highly qualified applicants who have a Bachelor of Social Work degree (B.S.W.) from a social work program accredited by the CSWE and earned within seven years of beginning the advanced standing program, a cumulative GPA of at least 3.0 (higher is preferred) in the last 60 hours and a two-year post BSW degree work experience. As part of the M.S.W. application, those applying to the advanced standing program will, in addition to meeting all admission requirements for the full-time, two-year program or part-time, three-year program, submit two additional letters of reference, one each from a B.S.W. field liaison and B.S.W. field supervisor or instructor, and a copy of the final B.S.W. field evaluation.

The requirements for the Master of Social Work degree include 60 credits of designated graduate courses (36 credits of designated graduate courses for those accepted for advanced standing), a cumulative grade-point average of at least 3.0 on a 4.0 scale in all course and fieldwork, and for those electing the thesis option, the completion of a thesis. The thesis requires a slightly different course of study, including an approved proposal. Those students who plan to pursue a doctoral degree are encouraged to elect the thesis option.

Note that all social work courses must be taken in sequence. Successful completion of course work for each semester is a prerequisite for the course work of the following semester.

Any social work graduate student who receives an F in a social work course is dismissed from the program and must reapply for admission to the MSW program. Any social work student who receives a D in a social work course must repeat the course. Any social work student who receives 2 D’s in social work courses is dismissed from the program and must reapply for admission to the MSW program.

An integral part of a graduate social work program is completing the practicum experience. For those enrolled in the two-year program, two practicum placements will be required (12 credits), which result in the student’s spending 950 hours in the field. For those students entering the program with advanced standing, one field placement (6 credits) is required, totaling 500 hours in the field. Students are offered a wide range of field settings in New Mexico and West Texas. Students should be prepared to travel some distance and be responsible for their own transportation costs.
APPLICATION DEADLINES

The deadline for complete applications is February 15th of each year.
• Early applications received by January 1st will be given first consideration for Graduate Assistantships.
• Late applications that are complete will be considered when received on a space available basis.

Course of Study:

Full-Time Program (60 cr.)
Advance-Standing (36 cr.)

YEAR ONE

Fall Semester (15 cr.)
MSW 505, Foundations of Professional Social Work ........................3 cr.
MSW 509, Sociocultural Concepts and Populations of the Southwest 3 cr.
MSW 510, Human Behavior and Social Environment I ....................3 cr.
MSW 520, Practice II: Social Work Practice I .................................3 cr.
MSW 551, Generalist Field Practicum I ............................................3 cr.

Spring Semester (15 cr.)
MSW 580, Social Problems and Social Welfare Policy ....................3 cr.
MSW 511, Human Behavior and Social Environment II .................3 cr.
MSW 521, Social Work Practice II ..................................................3 cr.
MSW 552, Generalist Field Practicum II .........................................3 cr.
MSW 560, Social Work Research ....................................................3 cr.

YEAR TWO

Fall Semester (15 cr.)
MSW 524 Practice III: Advanced Practice with Individuals ..........3 cr.
MSW 526, Practice V: Advanced Practice with Families ...............3 cr.
MSW 554, Advanced Generalist Field Experience I ......................3 cr.
MSW 561, Advanced Generalist Research ......................................3 cr.
or MSW 599, Graduate Thesis .................................................3 cr.
MSW or outside elective or MSW 547 Social Work Mental Health Practice 3 cr.

Spring Semester (15 cr.)
MSW 523, Policy Analysis and Change ........................................3 cr.
MSW 525, Practice IV: Advanced Generalist Practice with Groups 3 cr.
MSW 527, Practice VI: Advanced Practice with Organizations and Communities 3 cr.
MSW 555, Advanced Generalist Field Experience II ....................3 cr.
MSW or outside elective ..............................................................3 cr.

COURSE OF STUDY: ADVANCED STANDING (36 cr.)

Full-Time Advanced Standing begins in Summer and then follows Year Two schedule.

Summer
MSW 509, Sociocultural Concepts and Populations of the Southwest 3 cr.
MSW 598, Practice and Research ................................................3 cr.

MSW Electives (choose at least one to complete the two elective requirement)

MSW 501, Social Work Leadership and Administration
MSW 541, Alcohol and Other Drugs (AOD Minor)
MSW 542, Violence in the Family
MSW 543, Family and Children Welfare Practice
MSW 547, Social Work Mental Health Practice
MSW 553, Social Work with Hispanic Populations
MSW 564, Social Work with Native American Populations
MSW 565, Practice with the Elderly
MSW 590, Family and Children Welfare Policy
MSW 596, International Social Work
MSW 597, Special Topics

Other disciplines for one requirement:

COURSE OF STUDY: PART-TIME PROGRAM (60 cr.)

YEAR ONE

Fall Semester
MSW 505, Foundations of Professional Social Work .......................3 cr.
MSW 510, Human Behavior in the Social Environment I ................3 cr.

Spring Semester
MSW 511, Human Behavior in the Social Environment II ............3 cr.
MSW 560, Social Work Research ..................................................3 cr.

Summer
MSW 500, Social Problems and Social Welfare Policy ..................3 cr.
MSW 509, Sociocultural Concepts and Populations of the Southwest 3 cr.

YEAR TWO

Fall Semester
MSW 503, Policy Analysis and Change .......................................3 cr.
MSW 520, Social Work Practice I ................................................3 cr.
MSW 551, Generalist Field Practicum I ........................................3 cr.

Spring Semester
MSW 521, Social Work Practice II ................................................3 cr.
MSW 552, Generalist Field Practicum II ........................................3 cr.
MSW 561, Advanced Generalist Research ....................................3 cr.
or MSW 599, Graduate Thesis ..................................................3 cr.

Summer
MSW or outside elective ..............................................................3 cr.
MSW or outside elective ..............................................................3 cr.

YEAR THREE

Fall Semester
MSW 524, Practice III: Advanced Practice with Individuals ........3 cr.
MSW 526, Practice V: Advanced Practice with Families ...............3 cr.
MSW 554, Advanced Generalist Field Experience I ......................3 cr.

Spring Semester
MSW 525, Practice IV: Advanced Generalist Practice with Groups 3 cr.
MSW 527, Practice VI: Advanced Practice with Organizations and Communities 3 cr.
MSW 555, Advanced Generalist Field Experience II ....................3 cr.

PART-TIME ADVANCED STANDING (36 cr.)

YEAR ONE

Summer
MSW 559, Practice and Research ................................................3 cr.

Fall Semester
MSW 526, Practice V: Advanced Practice with Families ...............3 cr.
MSW 599, Sociocultural Concepts and Populations of the Southwest 3 cr.

Spring Semester
MSW 550, Policy Analysis and Change .......................................3 cr.
MSW or outside elective ..............................................................3 cr.

Summer
MSW or outside elective ..............................................................3 cr.

YEAR TWO

Fall Semester
MSW 524, Practice III: Advanced Practice with Individuals ........3 cr.
MSW 561, Advanced Generalist Research ....................................3 cr.
or MSW 599, Graduate Thesis ..................................................3 cr.
MSW 554, Advanced Generalist Field Experience I ......................3 cr.
Spring Semester

MSW 525, Practice IV: Advanced Generalist Practice with Groups 3 cr.

MSW 527, Practice V: Advanced Practice with Organizations and Communities 3 cr.

MSW 565, Advanced Generalist Field Experience II 3 cr.

MSW Electives

MSW 501, Social Work Leadership and Administration 3 cr.

MSW 541, Alcohol and Other Drugs (AOD Minor) 3 cr.

MSW 542, Violence in the Family 3 cr.

MSW 543, Family and Child Welfare Practice 3 cr.

MSW 553, Social Work Practice with Hispanic Populations 3 cr.

MSW 564, Social Work Practice with Native American Populations 3 cr.

MSW 565, Practice with the Elderly 3 cr.

MSW 590, Family and Child Welfare Policy 3 cr.

MSW 597, Special Topics 3 cr.

Related Outside Elective Examples (choose one graduate level):


JOINT DEGREE PROGRAM AND INTERDISCIPLINARY GRADUATE MINORS

Joint MSW/MPH Degree Program

The School of Social Work and the Department of Health Science offer a joint MSW/MPH degree program. The two degrees are: Master of Social Work (MSW) and Master of Public Health (MPH) in Community Health Education. Students interested in pursuing the joint degree program must:

• Prepare and submit separate admissions applications to both programs
• Notify each program in writing of the intent to complete the joint degree program
• Be officially admitted to both degree programs
• Notify the NMSU Graduate School of the intent to complete the joint degree program
• Complete all course requirements for both degree programs
• Complete separate final examinations for both degree programs

If you are interested in pursuing this option please call and talk to the Graduate Program Coordinator. It is anticipated that students in this program will take three academic years to complete the joint MSW/MPH degree programs.

INTERDISCIPLINARY GRADUATE MINORS

Minor in Alcohol and Drug Counseling

This minor involves the departments of: Counseling and Educational Psychology, Criminal Justice, Family and Consumer Science; Health Science; Nursing; and Social Work. Completion of this minor will prepare students for completion of the coursework necessary to take the exam for state licensure as a drug and alcohol counselor in the State of New Mexico. If you are interested in the minor please request an information sheet from the Graduate Program Coordinator that will outline the program requirements and specify the application process.

Minor in Gerontology

The Department of Health Science offers an online Graduate Minor in Gerontology. The Minor in Gerontology program is designed in part for non-traditional, location-bound students, who are working or otherwise occupied on a full-time basis. Health and human service professionals, current students, and others who are interested in acquiring basic knowledge in an interdisciplinary gerontology context are encouraged to consider this program. If you are interested in the minor please request an information sheet from the Graduate Program Coordinator that will outline the program requirements and provide contact information.

SOCIAL WORK

SWK 463. Social Work Practice with Hispanic Families 3 cr.

Theory and skills relating to social work practice with Hispanic families. Emphasis on strengthening and empowering Hispanic families to perform their caregiving roles in their own environment. Prerequisite: SWK 300, SWK 313, SWK 314 and SWK 400.

S WK 465. Practice with the Elderly 3 cr.

Concepts and skills needed for effective practice with older adults, their families, and others in their support systems. Attention to subgroups on an older population, including persons of color, health-impaired individuals, grandparent caregivers, and elderly gay men and women. Taught with MSW 565. Cannot receive credit for S WK 465 and MSW 565. Prerequisite(s): S WK 300, S WK 313, S WK 414 and S WK 415.

S WK 467. Social Work Research I 3 cr.

Development of knowledge and skills needed to build practice knowledge, evaluate service delivery, and be effective consumers of research knowledge. The first of a two-course sequence that covers research methods, history of research, ethics, problem formulation, research design, measurement, and instrumentation. Restricted to SW K majors.

S WK 568. Social Work Research II 3 cr.

Development of knowledge and skills needed to build practice knowledge, evaluate service delivery, and be effective consumers of research knowledge. The second of a two-course sequence that covers research literature, data collection, and data analysis. Prerequisite: S WK 467. Restricted to SWK majors.


Historical review and evolution of child welfare policies, initiatives and factors that influence child welfare service. Child welfare policies and services specific to the state of New Mexico are infused throughout the course. Taught with MSW 590. Cannot receive credit for S WK 490 and MSW 590. Prerequisite(s): S WK 313, S WK 314 and S WK 400.


This course examines how people are affected by political, economic, educational, social conditions, and the policies designed to address those conditions. Comparative analysis of social policies and practices in the United States and the developing world will be emphasized. Taught with MSW 596. Cannot receive credit for S WK 496 and MSW 596. Consent of instructor required.

S WK 497. Special Topics 1-3 cr.

Specific subjects to be announced in the Schedule of Classes. May be used as a mandatory practice elective. Prerequisite: junior or above standing, majors or consent of instructor. May be repeated for unlimited credit under different subtitles.

MASTERS OF SOCIAL WORK


An overview of social and economic problems in the United States and the historical and current social welfare policies aimed at alleviating these problems. Emphasis on developing an awareness and ability to change policies that impact vulnerable populations.

MSW 501. Social Work Leadership and Administration 3 cr.

Supervision, consultation, and administration in social services, emphasis on developing leadership skills. Prerequisite(s): MSW 520, MSW 521. Restricted to MSW majors.

MSW 503. Policy Analysis and Change 3 cr.

This course will emphasize policy practice focusing on policy analysis and creating and implementing policy change. Prerequisite(s): MSW 500. Restricted to MSW majors.


This is a comprehensive overview of social work. It serves as an introduction to the profession of social work, including its history, values and ethics, legal regulation, structure, philosophy and major fields of practice.

MSW 509. Sociocultural Concepts and Populations of the Southwest 3 cr.

Theoretical and sociohistorical perspectives on racism, sexism, ageism, heterosexism, classism, ableism, and other forms of discrimination and oppression. Cultural diversity, strengths, and Southwest and border issues are emphasized.

MSW 510. Human Behavior and the Social Environment I 3 cr.

The major theories of human behavior and the life span from conception to adolescence. Focuses both on the areas of concern and risk for client systems and on the opportunities and strengths in the social environment. Required. Restricted to MSW majors.

MSW 511. Human Behavior and the Social Environment II 3 cr.

Major theories of human behavior and the life span from young adulthood through old age. Focuses on the areas of concern and risk for client systems and on the opportunities and strengths in the social environment. Required. Prerequisite(s): MSW 510.
MSW 520. Social Work Practice I  3 cr.
This is the first course of a two-course sequence. An introduction to the
generalist crosscultural, social work practice perspective with individuals
and families, focusing on social work as a profession, social work knowl-
edge base, professional development, relationship building and assess-
ment with individuals and families within a framework of social work
values and ethics. Prerequisite(s): MSW 551. Pre/Corequisite(s): MSW 505
and MSW 510. Restricted to MSW majors.

MSW 521. Social Work Practice II  3 cr.
This is the second course of a two-course sequence. A continuation of the
generalist crosscultural, social work practice perspective with indi-
viduals and families, focusing on goal setting, contracting, implementation,
and outcome assessment. The course also applies the generalist practice
perspective and methods to larger systems: groups, organizations, and
communities and includes relationship building, assessment, goal set-
ting, contracting, implementation and outcome assessment within a
framework of social work values and ethics. Prerequisite(s): MSW 520.
Corequisite(s): MSW 552. Restricted to MSW majors.

MSW 524. Practice III: Advanced Practice with Individuals  3 cr.
This class builds on Foundation Year Practice courses (MSW 520, 521) by integrating theory and practice, and advancing skills in selecting, applying and evaluating practice interventions in a culturally sensitive manner with individuals. Prerequisite(s): MSW 520, MSW 521. Corequisite(s): MSW 554. Restricted to MSW majors.

MSW 525. Practice IV: Advanced Generalist Practice with Groups  3 cr.
This course will address the knowledge, values and skills needed to work effectively with diverse populations in group settings. The course will build on Foundation Year courses (MSW 520 and 521) by integrating theory and practice, and advancing skills in selecting, applying and evaluating practice interventions in a culturally sensitive manner with social work groups. Prerequisite(s): MSW 520, MSW 521, MSW 551, MSW 552. Restricted to MSW majors.

MSW 526. Practice V: Advanced Practice with Families  3 cr.
This class builds on Foundation Year Practice courses (MSW 520 and 521) by integrating theory and practice, and advancing skills in selecting, applying, and evaluating practice interventions in a culturally sensitive manner with families. Prerequisite(s): MSW 520, MSW 521, MSW 552. Corequisite(s): MSW 554. Restricted to MSW majors.

MSW 527. Practice VI: Advanced Practice with Organizations and Communities  3 cr.
This class builds on Foundation Year Practice courses (MSW 520, 521) by integrating theory and practice, and advancing skills in selecting, applying, and evaluating practice interventions in a culturally sensitive manner with organizations and communities. Prerequisite(s): MSW 520, MSW 521, MSW 524, MSW 525, MSW 554. Restricted to MSW majors.

MSW 541. Alcohol and Other Drugs  3 cr.
The prevalence of the major types of substance abuse. Addresses major
treatment approaches to substance abuse as well as theories related to
the causes and effects of such abuse in systems of different sizes.
Prerequisite(s): Consent of instructor.

MSW 542. Violence in the Family  3 cr.
Theory and skills relating to practice with families who victimize vulner-
able members. Includes physical, emotional and sexual abuse, incest, and
neglect. Emphasis on knowledge and skills in approaches that effectively
preserve and restore healthy family functioning. Prerequisite: consent of
instructor.

MSW 543. Family and Child Welfare Practice  3 cr.
Current issues and interventions in child protection, foster care, family
preservation and support, family reunification, adoption, and permanency
planning. Cannot receive credit for SWK 443 and MSW 543.

MSW 547. Social Work Mental Health Practice  3 cr.
Social work assessment and interventions of major mental health issues
across the life span with an emphasis on building resiliency and coping skills.
Attention will be paid to mental health disparities and the impact of culture on
mental health issues. Offered in the fall. Prerequisite(s): MSW 521.

MSW 551. Generalist Field Practicum I  3 cr.
Supervised professional practice in a community social service agency,
providing experiential instruction and learning. 225 clock hours required.
Seminar required. Graded: S/U. Pre/Corequisite(s): MSW 505, MSW 509,
MSW 510, MSW 520. Restricted to MSW majors.

MSW 552. Generalist Field Practicum II  3 cr.
Supervised professional practice in a community social service agency.
225 clock hours required. Seminar required. Prerequisite(s): MSW 520,
MSW 551. Pre/Corequisite(s): MSW 500, MSW 510, MSW 511, MSW 521,
MSW 580. Restricted to MSW majors.

MSW 553. Advanced Generalist Field Experience I  3 cr.
Supervised professional practice in a community social service agency
providing experiential learning in advanced generalist practice. 250
clock hours required. Seminar required. Prerequisite(s): MSW 552.
Corequisite(s): MSW 524, MSW 526. Restricted to MSW majors.

MSW 555. Advanced Generalist Field Experience II  3 cr.
Supervised professional practice in a community social service agency
providing experiential learning in advanced generalist practice. 250
clock hours required. Seminar required. Prerequisite(s): MSW 554.
Corequisite(s): MSW 525, MSW 527. Restricted to MSW majors.

MSW 559. Practice and Research  3 cr.
This course is required for all advanced standing students and is aimed at
providing the conceptual orientation for the concentration year graduate
program. The goal of this course is to enhance theory, practice, research,
and policy skills and knowledge in advanced generalist social work.
The key themes and concepts, presented, explored, and analyzed in this
course include: the fit between the Social Work Code of ethics and per-
sonal values and belief systems; use of evidenced based practice prin-
ciples to critique theories, policy, and practice and the interaction with
research modalities applicable to social work practice with individuals,
groups, organizations and communities. Restricted to MSW Advanced
Standing majors.

MSW 560. Social Work Research  3 cr.
Introduction to analytical skills used in social work research: problem
formulation, research designs, measurement, instrumentation, data col-
lection and analysis, use of human subjects in research, and application
of research knowledge to social work practice. Required. Restricted to
MSW students.

MSW 561. Advanced Generalist Research  3 cr.
Focused on advanced generalist practice research in multicultural set-
tings. Advanced skills to evaluate practice with individuals, families,
groups, organizations and communities in multicultural settings. Needs
assessment as well as program and practice evaluation are emphasized.
Prerequisite(s): MSW 560. Restricted to MSW majors.

MSW 563. Social Work with Hispanic Populations  3 cr.
This course focuses on advanced knowledge and skill development for
intervention with Hispanic populations. Emphasis is placed on under-
standing historical and contemporary cultural, social and political forces
shaping the worldview and life circumstances for Hispanic populations in
the US Southwest.

MSW 564. Social Work with Native American Populations  3 cr.
This course focuses on advanced knowledge and skill development for
intervention with Indigenous North American populations. Emphasis is
placed on understanding historical and contemporary cultural, social and
political forces shaping the worldview and life circumstances for Indig-
enous North American populations.

MSW 572. Pharmacology of Addictions  3 cr.
Concepts and principles of the pharmacology of psychoactive substances
and the addiction process: including the pharmacological approaches to
treatment. Corequisite: MSW 572L. Same as NURS 572.

Historical review and evolution of child welfare policies, initiatives and
factors that influence child welfare service. Child welfare policies and
services specific to the state of New Mexico are infused throughout
the course. Taught with SWK 490 with additional work required at the
graduate level. Cannot receive credit for both SWK 490 and MSW 590.
Prerequisite(s): SWK 300, SWK 313, SWK 314 and SWK 400.

MSW 591. Systemic Integration of Alcohol and Drug Issues  3 cr.
Capstone course for the alcohol and drug minor. Covers community,
agency, and systemic facilitation of prevention and intervention services
for substance-affected families. Prerequisites: acceptance into minor and
department prerequisites. Same as FCS 591.

MSW 595. Independent Study  1-3 cr.
Individual study to augment depth of knowledge in area related to course
study. Prerequisite: consent of instructor. May be repeated for maxi-
mum of 6 credits.

This course examines how people are affected by political, economic,
educational, social conditions, and the policies designed to address those
conditions. Comparative analysis of social policies and practices in the
United States and the developing world will be emphasized. Taught with
SWK 496 with additional work required at the graduate level. Cannot
receive credit for both SWK 496 and MSW 596. Consent of instructor
required.
MSW 597. Special Topics 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. Open to graduate students in related disciplines and to community professionals in related fields. Prerequisite: consent of instructor. May be repeated for unlimited credit under different subtitles.

MSW 599. Graduate Thesis 0-6 cr.
Required for thesis option. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits. Restricted to MSW students.
ADDITIONAL GRADUATE COURSES

CMI- CREATIVE MEDIA INSTITUTE

CMI 450. Advanced 2-D Animation 3 cr.
Advanced techniques in two dimensional animation including motion graphics and integration of live action. Prerequisite(s): CMI 350. Restricted to: ANVE,DFM majors.

CMI 451. Effects Animation & Dynamic Simulation 3 cr.
Overview of 3D dynamic simulations and effects. Creative projects and practical examples including fluids, particles, fields, soft body, and rigid body techniques. Consent of instructor required. Prerequisite(s): CMI 280, CMI 290 or permission of instructor. Restricted to: ANVE, DFM majors.

CMI 460. Technical Direction for Animation 3 cr.
Principles and practices of current animation technical development. Preliminary and detailed technical design, including advanced rigging, UI customization, Mel scripting, expressions, rendering systems, and pipeline development. Prerequisite(s): CMI 260 and CMI 270, CMI 290 or consent of instructor. Restricted to: ANVE, DFM majors.

CMI 470. Short 2-D Animation Production 3 cr.
This is a full-scale animation production class where students will be divided into teams according to the animation skills they have demonstrated in the beginning, intermediate, and advanced classes. Each team member will specialize in one important facet of the production process: character animation, background painting, technical direction, coloring, or story development and storyboarding. 4 to 8 minute animated shorts will be produced. Prerequisite(s): CMI 450, CMI 361. Restricted to: ANVE,DFM majors.

CMI 480. Screenwriting II 3 cr.
Students will write 2 short scripts, 10-15 pages each throughout the semester. Focus will be on learning how to take notes and rewrite. Script analysis will be in a workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. Prerequisite(s): ENGL 399 or CMI 399 or THTR 306 or consent of instructor. Restricted to: ENGL, DFM, ANVE majors. Crosslisted with: ENGL 480

CMI 490. Advanced Screenwriting 3 cr.
Students will prepare a 30-60 page screenplay. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. This course is aimed at preparing writers for the professional market. Consent of instructor required. Restricted to: ENGL, DFM, ANVE majors. Crosslisted with: ENGL 491

CMI 495. Internship 1-12 cr.

CMI 496. Media Law/Ethics 3 cr.
Overview of legal & ethical issues in creative media elements of business and commercial law. This class will focus on the fundamentals of entertainment law by exploring the business and legal relationships within film industries, and animation. Learn to anticipate and avoid legal problems prior to production. Key issues in the area of copyright law, sources of financing, distribution agreements, insurance and union consideration will be discussed. Restricted to: ANVE, DFM majors.

CMI 497. Portfolio Design and Development 3 cr.
Advanced graphic design projects with an emphasis on conceptual development, portfolio preparation, and professional practices. Define general marketing strategies, personal portfolio, and resumes. Define target, and penetrate personal target markets. Students develop individual promotional/demo packages. Prerequisite(s): Consent of instructor. Restricted to: ANVE, DFM majors.

CMI 498. Final Year Senior Project I: Production and Post Production 3-6 cr.
Senior Project I is the first half of a year-long concentration on a pre-approved creative project guided by a faculty member. Projects are narrative-driven and have an end product: screenplay, short film, documentary, 2-D or 3-D animated short, or pilot with treatment for television. May be repeated up to 9 credits. Prerequisite(s): Consent of instructor. Restricted to: ANVE, DFM majors.

CMI 499. Final Year Senior Project II: Production and Post Production 3-6 cr.
Senior Project II is the second half of a year-long concentration on a pre-approved project, guided by a faculty member. Projects are narrative-driven and have an end product: short film, documentary, 2-D or 3-D animated short, or pilot and treatment for television. May be repeated up to 9 credits. Prerequisite(s): CMI 498 and Consent of Instructor. Restricted to: ANVE, DFM majors.

CHSS- COMMUNITY HEALTH AND SOCIAL SERVICES

CHSS 460. Health Disabilities and Health Interventions 3 cr.
Exploration of culturally adapted health intervention strategies designed to address health disparities.

DANC- DANCE

DANC 450. Special Topics 1-3 cr.
Specific subjects to be announced in the Schedule of Classes. Prerequisite: consent of instructor.

DANC 451V. World Dance 3 cr.
Examination of dance forms from a cross-cultural perspective, focusing on the role of dance in different cultures around the globe. Same as HON 347V.

DANC 460. Dance History 3 cr.
History and development of dance forms from ancient cultures to today.

DANC 465. Senior Culminating Experience 1-6 cr.
Exit course for graduating seniors. Students will apply comprehensive knowledge of performance and production and/or pedagogy experience, to culminate in a dance production and/or teaching project. Restricted to: majors and minors. A minimum of 2 credit hours required for graduation.

DANC 466. Dance Pedagogy II 3 cr.
Teaching methods and class planning for dance curriculum at middle school and high school levels. Course must be passed with a grade of C or higher. Consent of instructor required. Prerequisite(s): DANC 300 or consent of instructor. Restricted to: Main campus only.

DANC 489. Advanced Choreographic Project 3 cr.
Individual directed studies in choreography with a culminating performance. Consent of instructor required. Restricted to Grad Dance Students majors.

DANC 499. Problems 1-3 cr.
Problems in dance education, dance pedagogy, dance performance and independent work in their solutions. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits. Restricted to majors and minors.

DANC 501. Directed Studies 1-6 cr.
Supervised projects and/or research in theoretical studies, inclusive of community service projects. Consent of instructor required.

DANC 550. Special Topics 1-6 cr.
Specific subjects offered in addition to standard academic curriculum. Course title to be announced in the Schedule of Classes. Consent of instructor required.

DANC 551. Movement as Social Text 3 cr.
Investigation of the meaning of movement and dance in different cultural, social, and historical contexts in both Western and non-Western dance forms. Emphasis will be placed on the nature of movement, its unique properties, the ways in which it conveys meaning, and its relationship to culture and society. Consent of instructor required.

DANC 567. Dance Internship I 3 cr. Internship opportunities in either dance education, dance performance/ production, or dance administration. Internship site determined by both Director of Dance Program and graduate student.

DANC 568. Advanced Theory of Dance Technique 1-6 cr. Advanced study of dance pedagogy, theory and practice of dance technique in one of the following styles of dance: ballet, modern, jazz, ballroom, Latin, tap, flamenco, ballet folklorico, or Spanish dance.

DANC 570. Dance Administration and Leadership 3 cr. The study and investigation of both management and leadership theories and how to apply these theories in practice.

DANC 599. Master’s Thesis 3 cr. This course is for graduate dance students who choose to write a thesis instead of a performance or teaching project.

DANC 600. Dance Research 3 cr. Literature review and development of research in the field of dance.

DANC 670. Dance Internship II 3 cr. Internship opportunities in either dance education, dance performance/production, or dance administration. Internship site determined by both Director of Dance Program and graduate student.

DANC 700. Doctoral Dissertation 3 cr. This course is for graduate dance students working toward their EdD or PhD in dance. A dissertation is required. Topic and format to be determined by dissertation committee chair and graduate student. Consent of instructor required. Restricted to Graduate Dance Majors majors.

**E T - ENGINEERING TECHNOLOGY**

E T 454. Advanced Construction Technology 3 cr. Contractor design and construction methods concerning formwork, special foundations, shoring, excavations, pilings, steel erection, and various material handling components. Prerequisite: E T 354 and E T 355.

E T 455. Cost Estimating and Scheduling 3 cr. Methods and techniques in construction estimating including final bid preparation, construction planning and scheduling using various network methods and other techniques. Prerequisite: junior or senior standing in E T.

E T 456. Analysis of Physical Security Systems 3 cr. The design, analysis and implementation of security systems and subsystems including threat detection and response, information and communications security, and physical protection. Prerequisite: junior standing.


E T 463. Computer Systems Administration 3 cr. A combination of topics in computer systems administration from E T 462. Prerequisite(s): E T 462 and E T 280.

E T 464. Advanced Windows Server Administration 3 cr. Learn about configuration and maintenance of programs in Windows Server such as Microsoft SQL Server, Microsoft Exchange, Oracle, DHCP, DNS, Apache WebServer, Tomcat Server, Load Balancing, Backups, File Sharing, Remote Administration and more. Prerequisite(s): E T 458 and E T 462.

E T 452. Intelligent Transportation Systems (ITS) 3 cr. Traffic flow theory, telecommunication and information technology application in transportation, system architecture and standards, transportation management, incident and emergency management, corridor management, dynamic route guidance, in-vehicle systems, and traffic signal timing. Consent of instructor required.

E T 477. Computer Networking II 3 cr. Advanced concepts in computer network design and applications including managing the campus network, virtual LANs (VLAN), network security, wireless networks, high-speed optical networks, voice over IP, and Linux networking. Prerequisite(s): E T 377.

E T 482. Concepts in Computer Integrated Manufacturing 3 cr. (2-2P) Current manufacturing concepts regarding the data, hardware, and software necessary for a computer integrated manufacturing system. Prerequisites: senior standing and consent of instructor. Same as E E 482 and M E 482.

E T 490. Selected Topics 1-3 cr. Selected topics in engineering technology and related areas. Prerequisite: consent of instructor.

**FREN - FRENCH**

FREN 451. Special Topics in French 1-3 cr. Selected topics relating to the cultures or literatures of the countries where French is spoken will be announced in the Schedule of Classes. Prerequisite: consent of instructor. May be repeated for a maximum of 12 credits.

FREN 453. Independent Studies in French 1-3 cr. Individualized, self-paced, projects for advanced students. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

FREN 462. Advanced Contemporary French Culture 3 cr. Advanced study of institutions, lifestyles and popular attitudes in modern France. Emphasis on everyday life rather than prestigious monuments in civilizations. Prerequisite: FREN 212 or consent of instructor.

FREN 466. Introduction to French Linguistics 3 cr. This course aims to introduce the basic concepts of contemporary linguistics and to show the French language functions with regard to form and meaning. Consent of instructor required. Prerequisite(s): Advanced level in French.

FREN 471. The French Novel 3 cr. Development of the novel and analysis of selected texts with emphasis on the nineteenth and twentieth centuries. Prerequisite(s): FREN 212 or consent of instructor.

FREN 472. The French Short Story 3 cr. Study and discussion of French short stories through the ages. Prerequisite(s): FREN 212 or consent of instructor.

FREN 478. Studies in Francophone Cultures Around the World 3 cr. Advanced studies of representative Francophone cultures through their history, literature, music, and films. Prerequisite(s): FREN 212 or consent of instructor.

FREN 485. Advanced French Civilization 3 cr. Advanced study of important events in French civilization from its origins to the twentieth century through the study and discussion of history, literature, fine arts and politics. Prerequisite(s): FREN 212 or consent of instructor.

FREN 486. Advanced Contemporary Women Writers in French 3 cr. Advanced study of literary texts by contemporary women writers in France and the Francophone world; emphasizes the cultural contexts that have defined women’s relationship to writing. Selections will vary from year to year. Prerequisite(s): FREN 212 or consent of instructor.

**G S - GRADUATE SCHOOL COURSES**

G S 500. Masters Non-Thesis Final Exam Credit 1 cr. Course for non-thesis masters students who have completed all program requirements except the final comprehensive exam. Prerequisites: advisor signature required. A maximum of 12 credits may be earned. Graded S/U.

G S 600. Doctoral Research 1-88 cr. Course number is used for assigning credit for research performed prior to successful completion of the doctoral comprehensive examination.

**ICT - INFORMATION AND COMPUTER TECHNOLOGY**

**ICT 451. Special Topics in German**  1-3 cr.  
Selected topics in German language, literature, or area studies. May be repeated for credit when topic changes. Prerequisite: consent of instructor. May be repeated for a maximum of 12 credits.

**ICT 453. Independent Studies in German**  1-3 cr.  
Individualized, self-paced projects, for advanced students. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

**ICT 466. Theatre Workshop in German**  3 cr.  
Seminar. Practical exercise in dramatic interpretation, also play production. Prerequisite: GER 212 or consent of instructor. May be repeated for a total of 6 credits.

**HONORS**

**HON 450V. The Sundt Honors Seminar**  3 cr.  
The Sundt Honors Seminar is a unique, experience-based, interdisciplinary seminar developed and taught by the holder of the Sundt Honors Professorship for the year. The subject of the course will vary according to the discipline of the Sundt Professor. The course may include a travel experience related to the seminar topic, hosting of outside specialists, or other unique activity. Open to students by application. Students selected for the course are named Sundt Scholars. Prerequisite(s): ENG 111G or equivalent.

**GER- GERMAN**

**GER 451. Special Topics in German**  1-3 cr.  
Selected topics in German language, literature, or area studies, announced in Schedule of Classes. May be repeated for credit when topic changes. Prerequisite: consent of instructor. May be repeated for a maximum of 12 credits.

**GER 453. Independent Studies in German**  1-3 cr.  
Individualized, self-paced projects, for advanced students. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

**ICT- INFORMATION AND COMPUTER TECHNOLOGY**

**ICT 451. Special Topics in Information and Communication Technology**  3 cr.  
Addresses the latest advances and topics in information and communication technology. Prerequisite(s): ICT 362 or E T 362 and ICT 363.

The design, analysis and implementation of security systems and subsystems including threat detection and response, information and communications, security, and physical protection. Prerequisite(s): junior standing.

**ICT 457. Introduction to Information Security Technology**  3 cr.  

**ICT 458. Database Design and Applications**  3 cr.  

**ICT 460. Advanced Topics in Multimedia Technologies**  3 cr.  
Addresses the latest multimedia technology advances and how they apply to the information and communication technology fields. Prerequisite(s): ICT 363.

Concepts relating to operating systems applications and interfacing with an introduction to systems administration. Setup and control of web servers and all common UNIX tasks. Prerequisite(s): (ICT 362 or E T 362) and ICT 363.

**ICT 463. Computer Systems Administration**  3 cr.  
A continuation of topics in computer system administration from ICT 462. Prerequisite(s): ICT 462 or E T 462.

**ICT 477. Computer Networking I**  3 cr.  
Advanced concepts in computer network design and applications including managing the campus networks, virtual LANs (VLAN), network security, wireless networks, high-speed optical networks, voice over IP, and Linux networking. Prerequisite(s): ICT 377 or E T 377.

**JPN- JAPANESE**

Individualized, self-paced projects for advanced students.
M SC- MILITARY SCIENCE

M SC 465. Leading Small Organization - Graduate Level  3 cr.
Practical opportunities to lead small groups in situations of graduated complexity. Use of small unit defensive tactics and opportunities to conduct training for graduate students. Leader Lab M SC 465L, three physical fitness sessions per week and weekend exercises required. Research paper required. Prerequisite: consent of PMS. Corequisite: MSC 465L. No S/U option.

M SC 465 L. Advanced Course Leadership Lab - Graduate Level  1 cr.
Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program. Students develop and refine leadership skills in positions of responsibility. Open only to students taking MSC 465. Prerequisite: consent of PMS. Corequisite: MSC 465L.

M SC 466. Graduate-Level Leading Small Organizations  3 cr.
Open only to students taking M SC graduate-level courses. Delegation and supervision based on case studies. Use of ethical decision making to enhance team performance. Three physical fitness sessions per week, weekend exercises, and a research paper required. Prerequisite: consent of PMS. Corequisite: M SC 466L.

M SC 466 L. Graduate-Level Leading Small Organizations Lab  1 cr.
Open only to students taking M SC graduate-level courses.

M SC 501. Leadership Challenges and Goal Setting  3 cr. (3+1P)
Planning, conducting, and evaluating activities of ROTC cadet organization. Articulation of goals and plans to attain them. Assessment of organizational skills and development of strategies to improve group cohesion. Leadership lab, three physical fitness sessions per week, weekend exercise, and research paper required. Consent of instructor required. Prerequisite(s): Consent of PMS. Corequisite(s): M SC 401L.

M SC 502. Transition to Lieutenant  3 cr. (3+1P)
Continuation of M SC 501. Identification and resolution of ethical dilemmas. Counseling and motivation techniques. Examination of tradition and law for officers. Leadership lab, three physical fitness sessions per week, weekend exercises, and research paper required. Consent of instructor required. Prerequisite(s): Consent of PMS. Corequisite(s): M SC 402L.

PE P- PROFESSIONAL PHYSICAL EDUCATION

PE P 455. Adapted Physical Education  3 cr.
Selection and scope of corrective activities in posture and body mechanics, and the adaptation of movement activities for the exceptional student. Prerequisite: junior or senior standing.

PE P 465. Senior Seminar  3 cr.
Capstone course for physical education. Prerequisite: senior standing. Graded S/U.

PE P 466. Methods of Teaching Secondary Physical Education  6 cr.
Theoretical and practical applications of curriculum, pedagogy and assessment for teaching secondary physical education. Provides the students opportunities to develop curriculum, teach, and assess student learning through a supervised practicum in both middle and high school physical education settings. Consent of instructor required. Prerequisite(s): PE P 315 and admittance to TEP required.

PE P 498. Problems  1-3 cr.
Problems in physical education and recreation and independent work in their solutions. A maximum of 3 credits during any one semester and a grand total of 6 credits. Prerequisites: senior standing and consent of instructor.

PE P 501. Special Topics  1-3 cr.
Offered under various subtitles that indicate the subject matter. May be repeated for a maximum of 3 credits per semester and a total of 6 credits overall.

PE P 504. Teaching Processes in Physical Education  3 cr.
Analysis of effective teaching and coaching. Systematic observation strategies will be employed to evaluate instructional variables such as feedback, climate, academic learning time, and styles of teaching.

PE P 505. Biomechanics  3 cr.
Mechanical and anatomical considerations applied to the analysis and teaching of human motion. Consent of instructor required. Prerequisite(s): SP M 305 or SP M 371 or consent of instructor.

PE P 515. Advanced Athletic Training Education  3 cr.
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainers’ Association Education Council. Consent of Instructor required.

PHIL - PHILOSOPHY

PHIL 462. Independent Studies  1-3 cr.
For students with a strong background in philosophy. Independent work in a specific area. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

PHIL 522. Environmental Ethics  3 cr.
An exploration of philosophical issues raised by environmentalism including: the preservation of endangered species and wilderness areas; hunting, zoo, and the treatment of animals; the natural/unnatural distinction; sustainable development; and economic vs. non-economic measures of the value of nature.

PHIL 532. Advanced Studies in Ethics and Global Poverty  3 cr.
Advanced philosophical scrutiny of and moral reflection on various aspects of global poverty and foreign aid. For example: Is poverty fundamentally a lack of income, or can it be understood as a failure to meet basic needs, or as a lack of valuable freedom? Do human rights exist? What, if any, are the moral obligations of rich countries to poor countries? Can foreign aid be immoral? How should the answers to these questions influence public policy? Restricted to: Main campus only.

PHIL 540. Science and Ethics  1-3 cr.
Ethical concerns facing researchers in the basic and applied biological sciences. Coverage of responsible conduct in research including scientific integrity and research misconduct, mentor/trainee responsibilities, data management, authorship, publication practices, human subjects, animal welfare, intellectual property, conflicts of interest and efforts to foster collaborative scientific inquiry. Discussion of ethical and societal implications of selected topics from a broad range of contemporary research areas (genetics, reproductive biology, environmental sciences, nanoscience, drug discovery, neuroengineering, neuroscience). Substituted. May be repeated for a maximum of 12 credits.

PHIL 548. Advanced Philosophical Writing  3 cr.
Advanced workshop on writing philosophy papers. Includes how to read and understand philosophical writing, organize a paper effectively, present a clear and forceful argument, and avoid common mistakes. Prerequisite(s): completed 18 hours of philosophy credit.

PORT- PORTUGUESE

PORT 453. Independent Luso-Brazilian Studies  1-3 cr.
Individualized, self-paced projects for advanced students in Luso-Brazilian studies.
PORT 513. Graduate Portuguese for Romance Language Students I 3 cr. 
Portuguese for beginners at the graduate level. May be completed on campus or via Study Abroad. Credit can be applied towards fulfilling the second language requirement. Credit is not accepted towards any graduate level major or minor.

PORT 514. Graduate Portuguese for Romance Language Students II 3 cr. 
Portuguese for beginners at the graduate level. May be completed on campus or via Study Abroad. Credit can be applied towards fulfilling the second language requirement. Credit is not accepted towards any graduate level major or minor. Prerequisite(s): Language placement exam or C or better in PORT 513, or consent of instructor.

SP M - SPORTS MEDICINE

SP M 451. Advanced Exercise Physiology 3 cr. 
Detailed study of the integrated response of neuromuscular, cardiovascular, and respiratory systems to acute and chronic exercise, nutrition, and environmental conditions with a strong emphasis on laboratory experiences. Prerequisite(s): SP M 271 and SP M 308 or consent of instructor. GPA of 2.75.

SP M 456. Exercise for Special Populations 3 cr. 
Fundamentals of kinesiology adapted for adults with various diseases and disabilities. Focus will be on the application of exercise assessment and prescription for selected conditions. Prerequisite(s): SPM 308 and SPM 330 or SPM 460. GPA of 2.75.

SP M 458. Physical Dimensions of Aging 3 cr. 
This course introduces students to physical, physiological, social, mental, and emotional aspects of human aging. Age-related changes in human function are discussed the context of applied healthcare settings, and the implications for appropriate physical activity and functional independence. Prerequisite(s): SP M 308. GPA of 2.75.

SP M 460. Principles of Strength and Conditioning 3 cr. 
Application of research, theory, and methods of high-intensity, resistive overload training. Performance-specific topics include management, nutrition. Prerequisite(s): SPM 308. GPA of 2.75.

SP M 460 L Principles of Strength and Conditioning Laboratory 1 cr. (2P) 
An applied examination of the theory, principles, and regulations associated with various strength and conditioning exercises to include but not limited to Olympic lifting, powerlifting, bodybuilding, plyometrics, speed, agility and speed-endurance development. Limit requirement for Kinesiology majors. Prerequisite(s): SPM 308. GPA of 2.75.

SP M 489. Topics in Athletic Training 1-3 cr. 
Problems in athletic training and independent work in their solutions. Consent of instructor required. Prerequisite(s): Junior or Senior status; Consent of ATEP director. Restricted to: Main campus only.

SP M 505. Psychology of Sport II 3 cr. 
Application of psychology in coaching and teaching sport skills to optimize athletic performance. Skills in understanding and conducting research emphasized. Consent of instructor required. Prerequisite(s): PE P 304 or consent of instructor.

SP M 509. Biomechanics 3 cr. 
Mechanical and anatomical considerations applied to the analysis and teaching of human motion. Consent of instructor required. Prerequisite(s): Either PE P 305 or SP M 371 or consent of instructor.

SP M 512. Inferential Statistics in Sports and Exercise Science 3 cr. 
A graduate course designed to teach students how to use and interpret inferential statistics using the scientific method. An understanding of sport and exercise science theory is prerequisite for students wishing to enroll in this course. Consent of instructor required.

SP M 515. Advanced Topics in Athletic Training Education 3 cr. 
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiency as described by the National Athletic Trainers’ Association Education Council. Consent of Instructor required.

SP M 551. Advanced Exercise Physiology 3 cr. 
Detailed study of the integrated response of neuromuscular, cardiovascular and respiratory systems to acute and chronic exercise, nutrition and environmental conditions with a strong emphasis on laboratory experience. Prerequisite: SP M 308 or consent of instructor. Same as SP M 451 with additional requirements for graduate credit.

SP M 556. Exercise for Special Populations 3 cr. 
Fundamentals of kinesiology adapted for adults with various diseases and disabilities. Focus will be on the application of exercise assessment and prescription for selected conditions. Taught with PE P 456 with additional work required at the graduate level. Consent of instructor required. Prerequisite(s): SPM 308 and SPM 330 or SPM 460.

SP M 558. Physical Dimensions of Aging 3 cr. 
This course introduces graduate students to physical, physiological, social, mental, and emotional aspects of human aging. Age-related changes in human function are discussed the context of applied healthcare settings, and the implications for appropriate physical activity and functional independence. Graduate students in this course are expected to participate in organizing and leading some of the class discussions and assisting in the identification of appropriate materials for the course.

SP M 560. Principles of Strength and Conditioning 3 cr. 
Application of research, theory, and methods of high-intensity, resistance training. Performance-specific topics include management, nutrition, exercise prescription, periodization, lifting techniques, testing, and evaluation. Course will emphasize standards set forth by the National Strength and Conditioning Association preparing students interested in sitting for the NSCA certification examinations. Prerequisites: SP M 305, SP M 308 or consent of instructor. Same as SP M 460 with additional requirements for graduate credit.

SP M 597. Project 1-3 cr. 
A scholarly project or practicum under the direction of a single faculty person in an area of coaching/teaching or sports management.

THTR- THEATRE ARTS

THTR 455. Advanced Lighting Design 3 cr. 
The design of lighting for live performance. Emphasis on conceptual aspects of design, as well as the uses of special techniques and effects. Crew requirements TBA. Prerequisite: THTR 355 or consent of instructor.

THTR 457. Advanced Computer Scenographics 3 cr. 
Project-oriented course for the advanced modeler. Projects focus on the creation of complex models, custom texturing and shading, virtual lighting, postproduction image work, and animation techniques. Students will develop digital portfolios. Prerequisite: THTR 357 and consent of instructor.

THTR 495. Directing II 3 cr. 
Advanced study of directing, with focus on theory, style, and concept. Prerequisite(s): THTR 395.

THTR 500. Introduction to Graduate Theatre Studies 3 cr. 
Advanced exploration of the theory, terminology, and integration of the various theatre artists involved in, and aspects of, theatrical practice.

THTR 510. Acting Theory and Pedagogy 3 cr. 
Study of the basics of Stanislavski acting theory and their application for the teaching and coaching of young actors. Students will be expected to act and coach acting in a studio setting.

THTR 530. Dramaturgy 3 cr. 
A practical course introducing the graduate student to principles and practices of script selection, analysis, editing, and theatrical research. Prerequisite(s): THTR 500 intro to Graduate Theatre Studies.

THTR 535. Directed Study 1-3 cr. 
For the highly motivated student. Independent projects and individual guidance. Graduate standing and consent of instructor required. May be repeated up to 6 credits.

THTR 540. Practical Problems in Theatre Production 3 cr. 
Seminar class dealing with issues surrounding theatre production and problem solving strategies for overcoming them.

THTR 541. Stagecraft & Lightcraft 3 cr. 
This course is designed to put into practice the theory from the scenic and lighting design course. Topics covered will include basic tool use, color theory, painting techniques, the hanging and focusing of lighting instruments as well as instrument selection.

THTR 542. Graduate Costume Craft: Theory and Practice 3 cr. 
Graduate study of the techniques and applications of costuming.

THTR 552. Graduate Costumes: History, Theory and Design 3 cr. 
Course focusing on the evolution of fashion through time and the theory of its application for theatrical productions.

THTR 553. Scenic and Lighting Design 3 cr. 
This course is designed to develop an understanding and foundation in the basic tools used in lighting and scenic design. Lighting topics include: electricity, light sources, optics, color theory, instrument types, design styles, history of theatrical lighting and selection of instrumentation for design. Scenic topics include: scenic design theory, communications tools designers use, script analysis and design strategies.

THTR 595. Directing/Producing Theory and Practice 3 cr. 
Theoretical and practical applications in directing and producing for the stage.
WS 450. Special Topics 3 cr.
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 400-level from any specific department. May be repeated under different subtitle(s).

WS 451. Women's Studies Practicum 3 cr.
Supervised field work in community setting relating to women. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

WS 453. Women and Politics 3 cr.
Crosslisted with: GOVT 353

WS 454. Women Crossing Borders 3 cr.
Experiences of women who cross class, race, cultural, national, or sexual borders including theories regarding women's interactions across borders. Emphasis will vary with professor and discipline.

WS 455. Feminist Research Methods 3 cr.
Feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work.

WS 459. Advanced Issues in Sex and Gender 3 cr.
Same as SOC 459.

WS 461. Women's Studies: Independent Study 3 cr.
Individual study of selected topic and writing of research paper. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

WS 463. Communication and Gender 3 cr.
Same as COMM 463.

WS 465. Sex, Gender and the Body 3 cr.
Examines forces at work in defining and differentiating gender, race, sexuality. How ideas about what is 'natural' and 'normal' for men and women shifted over time. Considers different discourses shaping embodied experiences and categories of identity. Prerequisite(s): None.

WS 466. Global Sexualities 3 cr.
Generates a global context to focus on sexual identity and orientation, sexual identity politics, romantic relationships, patterns of sexual behavior, sexual regulation and the impact of different cultures on individual sexualities. Taught with WS 568. Crosslisted with: SOC 468

WS 468. Gender and Sexuality in Hispanic Film 3 cr.
The study of gender and sexual orientation issues in relation to identity as portrayed in Hispanic cinema. Taught in Spanish but assignments accepted in English. Crosslisted with: SPAN 469

WS 471. Seminar in Feminist Theory 3 cr.
Current feminist theory. Topic changes by semester. Course subtitled in the Schedule of Classes. Prerequisite: None.

WS 474. Gender in East Asian History 3 cr.
Same as HIST 474.

WS 481. Hate Crimes and Hate Groups 3 cr.
Explores the phenomenon of hate-motivated violence. Examines the hate crime laws, organized hate groups and social theories attempting to explain violent hate.

WS 482. Gender and Popular Culture 3 cr.
Intensive study of the representations of gender in popular culture. Examines the historical, aesthetic, and cultural contexts of these representations and the various critical and theoretical lenses we use to understand them. Repeatable under different subtitles. Crosslisted with: ENGL 482

WS 484. Women's Literature 3 cr.
Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: ENGL 481

WS 485. Sex Crimes 3 cr.
Dynamics of sex crimes for victims and offenders; plus consideration of the legal correction systems' response to sex crimes. Same as CJ 485

WS 501. Advanced Women & Immigration 3 cr.
Advanced exploration of experiences of women immigrants as gender, race and class became increasingly important aspects of US immigration policies in the early 19th century. Explores role of gender in today's immigration experience.

WS 502. Advanced Transnational Feminisms 3 cr.
Advanced analysis of dimensions of gender, race, class, and sexuality in conjunction with nationalism, anti-capitalist struggles, religious fundamentalism, militarism, globalization, eco-critique, and the politics of resistance and social movements.

WS 503. Advanced Gender & Horror 3 cr.
Advanced analysis of anxieties and crises through the genre of horror as they relate to issues of gender, sexuality, feminism, and race. Traces ways horror films represent and reconfigure notions of sexuality and gender and ways they reinforce and/or challenge social norms.

WS 504. Advanced Arab-Muslim Feminisms 3 cr.
Advanced study of historical and contemporary arab-muslim feminisms and homosexuality in Islam. Explores and uses critical feminist theories, language, and methods to counter interlocking discourses of Islamophobia, gendering, and homophobia affecting arab-muslim women.

WS 505. Advanced Alternative Genders and Sexualities 3 cr.
Advanced study of the academic fields of Gay, Lesbian, Bisexual, Transgender (GLBT) and Queer Studies. Examines academic texts as well as literature and film from different historical moments and social/global sites.

Advanced critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Crosslisted with: CJ 520

WS 522. Graduate Study in a Literary Form or Genre 3 cr.
Same as ENGL 522.

WS 532. Advanced Issues in Women, Gender, and Culture 3 cr.
Same as ANTH 533.

WS 545. Advanced Victimology 3 cr.
Study of the risk factors in crime victimization, the impact of crimes upon victims, and the role of the victim in the criminal justice system, consideration of the impact of criminal justice policy on victim outcomes. Same as CJ 545.

WS 550. Special Topics 3 cr.
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 500-level from any specific department. May be repeated under different subtitle(s).

WS 551. Graduate Practicum in Women's Studies 3 cr.
Supervised field work in community setting relating to women. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits.

WS 554. Advanced Issues in Women Crossing Borders 3 cr.
Experiences of women who cross class, race, cultural, national, or sexual borders including theories regarding women's interactions across borders.

WS 555. Advanced Feminist Research Methods 3 cr.
Advanced feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work.

WS 561. Independent Graduate Research in Women's Studies 3 cr.
Individual study of selected topics and writing of a research paper. Prerequisite: consent of instructor. May be repeated for a maximum of 6 credits. Graded S/U.

WS 565. Advanced Sex, Gender & the Body 3 cr.
Advanced examination of forces at work in defining and differentiating gender, race, sexuality. How ideas about what is 'natural' and 'normal' for men and women shifted over time. Considers different discourses shaping embodied experiences and categories of identity.

WS 567. Global Sexualities 3 cr.
Generates a global context to focus on sexual identity and orientation, sexual identity politics, romantic relationships, patterns of sexual behavior, sexual regulation and the impact of different cultures on individual sexualities. Taught with WS 466. Crosslisted with: SOC 568

WS 569. Gender and Sexuality in Hispanic Film 3 cr.
The study of gender and sexual orientation issues in relation to identity as portrayed in Hispanic cinema. Taught in Spanish but assignments are accepted in English. Crosslisted with: SPAN 569

WS 571. Advanced Seminar in Feminist Theory 3 cr.
Current feminist theory. Topic changes by semester. Course subtitled in the Schedule of Classes.

WS 574. Gender in East Asian History 3 cr.
Same as HIST 474 with differentiated assignments for graduate students. Required for graduate credit.

WS 582. Gender and Popular Culture 3 cr.
Intensive study of the representations of gender in popular culture. Examines the historical, aesthetic, and cultural contexts of these representations and the various critical and theoretical lenses we use to understand them. Repeatable under different subtitles. Crosslisted with: ENGL 582
WS 584. Women’s Literature 3 cr.
Intensive study of literature by women, in particular historical, aesthetic,
cultural, or intellectual contexts. Repeatable under different subtitles.
Crosslisted with: ENGL 581

WERC-A CONSORTIUM FOR ENVIRONMENTAL EDUCATION AND TECHNOLOGY DEVELOPMENT

WERC 466. Fuel Cell and Hydrogen Technology 3 cr.
Same as Ch E 466. Prerequisites: CHEM 111G and PHYS 215G

WERC 471. Health Physics 4 cr.

Same as CH E 473. Consent of instructor required. Prerequisite(s): MATH 191G and (CHEM 111G or Chem 115). Crosslisted with: CH E 473

WERC 566. Fuel Cell and Hydrogen Technology 3 cr.
Crosslisted with: Ch E 566 with differentiated assignments for graduate students.

WERC 595. Special Topics 1-3 cr.
Lecture instruction on special topics such as energy, environment and economics. Prerequisite: consent of instructor. May be taken for a maximum of 6 credits.
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<tr>
<td>M SC, Military Science</td>
<td>179</td>
</tr>
<tr>
<td>MATH, Mathematics</td>
<td>91</td>
</tr>
<tr>
<td>MGMT, Management</td>
<td>116</td>
</tr>
<tr>
<td>MKST, Marketing</td>
<td>117</td>
</tr>
<tr>
<td>MPH, Health Science</td>
<td>163</td>
</tr>
<tr>
<td>MOLB, Molecular Biology</td>
<td>95</td>
</tr>
<tr>
<td>MSW, Masters of Social Work</td>
<td>173</td>
</tr>
<tr>
<td>MUS, Music</td>
<td>96</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N</th>
<th>166</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS, Nursing</td>
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</table>

<table>
<thead>
<tr>
<th>P</th>
<th>179</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE, Physical Education</td>
<td>179</td>
</tr>
<tr>
<td>PHI, Philosophy</td>
<td>179</td>
</tr>
<tr>
<td>PHYS, Physics</td>
<td>98</td>
</tr>
<tr>
<td>PL, Planning</td>
<td>82</td>
</tr>
<tr>
<td>PORT, Portuguese</td>
<td>180, 181</td>
</tr>
<tr>
<td>PSY, Psychology</td>
<td>101</td>
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<table>
<thead>
<tr>
<th>R</th>
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<tbody>
<tr>
<td>RBG, Reading</td>
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</tr>
<tr>
<td>RBSC, Range Science</td>
<td>37</td>
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<table>
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<tr>
<th>S</th>
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<tbody>
<tr>
<td>SWK, Social Work</td>
<td>173</td>
</tr>
<tr>
<td>SOC, Sociology</td>
<td>102</td>
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<tr>
<td>SOIL, Soil</td>
<td>47</td>
</tr>
<tr>
<td>SPAN, Spanish</td>
<td>105</td>
</tr>
<tr>
<td>SPED, Special Education</td>
<td>136</td>
</tr>
<tr>
<td>SP M, Sports Medicine</td>
<td>180</td>
</tr>
<tr>
<td>STAT, Statistics</td>
<td>93</td>
</tr>
<tr>
<td>SUR, Surveying Engineering</td>
<td>148</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>T</th>
<th>180</th>
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<tbody>
<tr>
<td>THTR, Theater Arts</td>
<td>180</td>
</tr>
<tr>
<td>TOX, Toxicology</td>
<td>64</td>
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<table>
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<tr>
<th>W</th>
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<tbody>
<tr>
<td>WS, Women Studies</td>
<td>182</td>
</tr>
<tr>
<td>WERC, Consortium for Environmental Education and Technology Development</td>
<td>181</td>
</tr>
<tr>
<td>WSAM, Water Science and Management</td>
<td>50</td>
</tr>
</tbody>
</table>
NEW MEXICO STATE UNIVERSITY
ACADEMIC CALENDAR 2013-2014

Fall Semester 2013
August 22 - December 13, 2013

Campus Housing Opens ................................................. August 18
Faculty Report ................................................................. August 19
Fall Convocation ............................................................... August 20
Instruction Begins ............................................................. August 22
Late Registration ............................................................... August 22
Deadline for Filing Degree Application ......................... August 30
(Students meeting requirements at end of fall)
Labor Day Holiday .............................................................. September 2
Deadline for Registration/Course Addition ................... September 3
Last Day to Drop Course with “W” ................................. October 15
(Except courses carrying designated dates)
Last Day to Withdraw from the University ... November 15
Thanksgiving Holiday for Students ................................... November 25-29
EXAM WEEK ................................................................. December 9-13
Last Day of Classes ........................................................... December 13
Commencement ............................................................... December 14
Campus Housing Closes .................................................. December 14
Final Grades Due ............................................................. December 17

Spring Semester 2014
January 16 - May 19, 2014

Faculty Report ................................................................. January 9
Curriculum study & improvement of instruction ............ January 9-10
Campus Housing Opens ............................................... January 12
Spring Convocation ......................................................... January 14
Program/Registration for New Students ..................... January 15
Instruction Begins ............................................................. January 16
Late Registration ............................................................... January 16
Martin Luther King Holiday ............................................ January 20
Deadline for Filing Degree Application .......................... January 24
(Students meeting requirements at end of spring)
Deadline for Registration/Course Addition .................. January 28
Last Day to Drop Course with “W” ................................. March 11
(Except courses carrying designated dates)
Spring Break ................................................................. March 24-28
Spring Holiday ............................................................... April 17
Last Day to Withdraw from the University ..................... April 18
EXAM WEEK ................................................................. May 5-9
Last Day of Classes ........................................................... May 9
Commencement ............................................................... May 10
Campus Housing Closes ................................................. May 10
Final Grades Due ............................................................. May 13

Summer Semester 2014
May 22 - August 1, 2014

Campus Housing Opens ................................................ May 21
Registration for New Students ........................................ May 21
Faculty Report ................................................................. May 21
Instruction Begins ............................................................. May 22
Memorial Day Holiday ..................................................... May 26
Deadline for Registration/Course Addition ................... May 29
Last Day to Drop Course with “W” ................................. June 26
Independence Day Holiday .............................................. July 4
Deadline for Filing Degree Application .......................... July 7
Last Day to Withdraw from the University ................. July 18
Last Day of Classes ........................................................... August 1
Campus Housing Closes .................................................. August 2
Final Grades Due ............................................................. August 5

Holidays for Administrative Offices 2013-2014

Labor Day ................................................................. September 2, 2013
Thanksgiving ......................................................... November 28-29, 2013
Winter Holiday ........................................................... Dec 23, 2013-Jan 1, 2014
Martin Luther King Holiday ........................................... January 20, 2014
Spring Holiday .............................................................. April 18, 2014
Memorial Day Holiday .................................................. May 26, 2014
Independence Day Observance .................................... July 4, 2014