

mental management, urban planning, waste disposal, and related fields in government and industry may choose from a variety of course offerings. The economic and social implications as well as the technological aspects of resource management are included in the option courses. You must select one course from each of the four following subject matter areas and a total of at least ten courses (30 credits): soil, water, wildlife, or range conservation and economics; ecology, plant biology, or crop production; earth, mineral, or climactic resources; math, statistical, or computer sciences.

OPTION: Soil and Water Science

The soil and water science option is for students interested in careers in water management and water quality. Employment opportunities exist with irrigation districts, consulting firms, and government agencies dealing with water management and quality. The optimum use of water in semi-arid areas is emphasized through selection of courses in the technical and social sciences. You must select one course from each of the four following subject matter areas and a total of at least ten courses (30 credits): soil and water engineering; ecology; crop production and protection; math, statistical, or computer sciences.

DEGREE: Bachelor of Science in Environmental Science

MAJOR: Environmental Science

The environmental science major is a multidisciplinary program based on a strong general science curriculum and an environmental curriculum that focuses on environmental problems and solutions. Options permit an area of specialty. Although administered by the Department of Agronomy and Horticulture, a multidisciplinary advisory committee recommends curriculum and other changes to the program. The program is rigorous to make graduates competitive for environmentally oriented careers in industry and government. You must earn at least a grade of C in the Basic Background, Core Requirements, and Options courses.

Basic Background Courses

BIOL 111G, Natural History of Life.....	3
BIOL 211G, Cellular and Organismal Biology.....	3
BIOL 311, Microbiology.....	3
C E 151, Introduction to Civil Engineering.....	3
CHEM 111, CHEM 112, General Chemistry I, II.....	8
CHEM 211, Organic Chemistry.....	4
E ST 311G, Statistical Applications.....	3
GEOG 111G, Geography of the Natural Environment.....	4
GEOLOGY 111G, Survey of Geology.....	4
MATH 191, MATH 192, Calculus and Analytic Geometry I, II.....	6
PHYS 215, Engineering Physics I.....	3
SOIL 252, Soils.....	3
SOIL 252L, Soils Laboratory.....	1

Core Requirements

E S 110G, Introduction to Environmental Science.....	4
E S 256, Environmental Science.....	3
E S 301, Principles of Ecology.....	3
E S 312, Emergency Response to Hazardous Material Incidents.....	2
E S 330, Environmental Management Seminar I.....	1
E S 361, Basic Toxicology.....	3
E S 370, Environmental Soil Science.....	3
E S 422, Environmental Chemistry.....	3
E S 430, Environmental Management Seminar II.....	1
E S 452, Geohydrology.....	3
E S 453, Regulatory Toxicology.....	2
E S 458, Ecology of Inland Waters.....	3
E S 462, Sampling and Analysis of Environmental Contaminants.....	3
E S 470, Environmental Impacts of Land Use.....	4

Options

One option (area of specialty) must be chosen by the student. Seven options are available (chemistry, geology, soils, wildlife, water, special analysis and environmental economics). Four upper-division courses (12 credits) from a short list are selected by the student. Advisers have lists of the appropriate sources for each option.

ANIMAL and RANGE SCIENCES

Professor Mark M. Wise, department head

Professor Tim T. Ross, assistant department head

Professors Allred, Hallford, Hawkins, Holechek, McDaniel, Petersen, Ross, J. Thomas; **Associate Professors** Bailey, Burcham; M. Thomas; **Assistant Professors** Abbott, Cibils, Fernald, Soto, Ivey, Löest, Turner; **Co-operators (USDA)** Anderson, Barrow, Estell, Fredrickson, Gibbens, Havstad, Herrick, Peters, Sullivan (CES)
(505) 646-2514; ascience@nmsu.edu

DEGREE: Bachelor of Science in Agriculture

MAJOR: Animal Science

OPTION: Animal Industry

OPTION: Science

OPTION: Food Technology

MAJOR: Rangeland Resources

MINORS: Range Science

Livestock Production

Horse Management

The Department of Animal and Range Sciences provides opportunities for you to follow a variety of interests in modern scientific agriculture. The animal science curriculum provides a background for many phases of the food animal industry, from farm animal production on rangelands to management positions in the food processing industry to highly technical careers in research. The range science curriculum provides you with knowledge necessary to deal with all aspects of the multiple uses of rangelands. These curricula allow you to acquire the background necessary to adjust easily to variations in specific job opportunities. If you are majoring in either animal science or range science, you must meet general education requirements, have a minimum of 54 credits of upper-division courses (numbered 300 and above), and complete a minimum of 35 credits in courses with Agriculture and Home Economics prefixes.

DEGREE: Bachelor of Science in Agriculture

MAJOR: Animal Science

The animal industry option includes courses that prepare you for work in many phases of the livestock industry, such as livestock production on farms and ranches, the meat industry, the feed industry, livestock breed associations, and livestock publications. The science option provides you with a strong background in technical science and prepares you for advanced studies leading to graduate or professional degrees. Food technology option prepares you for a career in food processing, which includes meat, dairy, and other food-related areas.

Animal Science Core of Requirements (Required of Industry and Science options)

ANSC 100, Introductory Animal Science.....	3
ANSC 303, Livestock, Meat, and Wool Evaluation, or both ANSC 265 and ANSC 355, Horse Judging.....	4
ANSC 304, Feeds and Feeding.....	3
ANSC 305, Principles of Genetics.....	3
ANSC 370, Anatomy and Physiology of Farm Animals.....	4
ANSC 402, Animal Science Seminar.....	1
ANSC 421, Physiology of Reproduction.....	3
ANSC 422, Animal Nutrition.....	3
ANSC 423, Animal Breeding.....	3
BIOL 111G/111L, Natural History of Life or BIOL 211G/211L, Cell and Organismal Biology.....	4
CHEM 111, General Chemistry.....	4
COMM 265G, Principles of Human Communication, or AXED 201G, Effective Leadership and Communication in Agricultural Organizations.....	3
ECON 201G, Introduction to Economics.....	3
ENGL 111G, Rhetoric and Composition.....	4

E ST 311G, Statistical Applications	3
MATH 142G, Calculus for the Biological and Management Sciences I, or MATH 185, College Algebra, or MATH 191, Calculus and Analytic Geometry I	3
RGSC 294, Rangeland Resource Management.....	3

OPTION: Animal Industry

ANSC 200, Introduction to Meat Animal Production	3
ANSC 220, Animal Science Career Development	1
ANSC 261, Introduction to Animal Metabolism.....	3
ANSC 325, Mastering Financial Agricultural Statements.....	3
Meat science electives (two courses): ANSC 262, ANSC 301, ANSC 306, or ANSC 363	6
Production electives (three courses): any three production courses offered in the department.....	9
Plant science electives (one course): RGSC 307, RGSC 318, RGSC 325, RGSC 440, SOIL 252, AGRO 365	3-4
Business electives (one course): ACCT 251, AG E 305, AGE 440, FIN 303G, MGT 315G, MGT 312	3

OPTION: Science

BCHE 341, Biological Chemistry.....	4
CHEM 112, General Chemistry II.....	4
CHEM 211, Organic Chemistry, or CHEM 313, Organic Chemistry I.....	4
Meat science electives (one course): ANSC 262, ANSC 301, ANSC 306, ANSC 363	3
Production electives (two courses): ANSC 314, ANSC 414, ANSC 415, ANSC 416, ANSC 417.....	6
Designated electives (one course): MATH 191, MATH 192, PHYS 211, 212, PHYS 211L, 212L	3-4
Designated electives (one course): ANSC 462, ANSC 480, ANSC 484, TOX 461 or TOX 361	3
Credits sufficient to bring total to 128.	

OPTION: Food Technology**Food Technology Core Requirements**

ANSC 100, Introductory Animal Science	3
HORT 100, Introductory Plant Science	3
HNFS 251, Human Nutrition	3
ANSC 262, Introduction to Meat Science	3
HNFS 263, Food Science I	3
ANSC 304, Feeds and Feeding	3
HNFS 320, Food Microbiology	3
HNFS 325, Food Analysis	3
ANSC 363, Meat Technology	3
ANSC 402, Animal Science Seminar	1
HNFS 421, Food Chemistry	3
ANSC 422, Animal Nutrition	3
HNFS 426, Dairy Products Manufacturing	3
HNFS 447, Experimental Foods	3
FCSC 400, Research Methods	3

Other Designated Requirements

CHEM 111, General Chemistry I	4
CHEM 112, General Chemistry II.....	4
CHEM 211, Organic Chemistry	4
BCHE 341, Survey of Biochemistry	4
PHYS 211 and 211 L, General Physics and Lab	4
E ST 311G, Statistical Applications	3
BIOL 211G and 211L, Cellular and Organismal Biology and Lab.....	4
ENGL 111G, Rhetoric and Composition	4
ENGL 318G, Technical and Scientific Communication (may substitute ENGL 203G, ENGL 211G, ENGL 218G, or ENGL 311G).....	3
MATH 142G, Calculus for Biological and Management Sciences (may substi- tute MATH 180 or MATH 185)	3
AXED 201, Effective Leadership and Communications in Agricultural Organi- zations (may substitute COMM 253 or COMM 265)	3
ECON 201, Introduction to Economics	3
AG E 250, Life with Microcomputers (may substitute C S 110G or BCS 110G)	3

Designated ANSC Electives (Pick 9 credit hours)

ANSC 301, Animal and Carcass Evaluation	3
ANSC 314, Swine Production	3
ANSC 261, Introduction to Animal Metabolism	3
ANSC 370, Animal and Physiology of Farm Animals	3
ANSC 390, Internship	3
ANSC 414, Sheep and Wool Production	3
ANSC 416, Beef Production	3
ANSC 417, Dairy Production.....	3
ANSC 461, Toxicology I	3

MAJOR: Rangeland Resources

The following course work prepares you for study and management of rangelands through an integrated ecological approach with special emphasis on rangeland plants, livestock, wildlife, soils, and watersheds. The course work is also well designed for those who want to continue study in graduate school. Any undergraduate student majoring in Range Science must earn a grade of C or higher in Range Science (RGSC prefix) courses to satisfy degree requirements. Students earning a D or F in a Range Science (RGSC prefix) course will be expected to repeat that course until the student earns a grade of C or higher. The following courses are required for a major in rangeland resources.

Range Science Core Requirements

AG E 250, Life with Microcomputers	3
ANSC 261, Principles of Animal Metabolism, or CHEM 211, Organic Chemis- try	3
BIOL 211G, Cell and Organismal Biology	3
BIOL 301, Ecology	3
CHEM 111, General Chemistry I	4
CHEM 112, General Chemistry II	4
COMM 265G, Principles of Human Communication, or AXED 201G, Effective Leadership and Communication in Agricultural Organizations	3
ECON 201G, Introduction to Economics; 251 G, Principles of Macroeconom- ics; or 252G, Principles of Microeconomics	3
EPWS 314, Plant Physiology	3
E ST 311 G, Statistical Applications	3
RGSC 150, Introduction to Range Science Major	1
RGSC 294, Rangeland Resource Management	3
RGSC 307, Rangeland Grasses	3
RGSC 316, Rangeland Plants	2
RGSC 317, Rangeland Communities	3
RGSC 318, Watershed Management	3
RGSC 325, Rangeland Restoration Ecology	3
RGSC 402, Seminar	1
RGSC 440, Rangeland Resource Ecology	4
RGSC 452, Rangeland Analysis	4
RGSC 460, Advanced Rangeland Management	4
SOIL 252, Soils	3
SOIL 252L, Soils Laboratory	1
SOIL 472, Soil Morphology and Classification	4
WLSC 255, Principles of Natural Resource Management	3

MINOR: Horse Management

A minor in Horse Management consists of at least 20 credits.

ANSC 103, Introductory Horse Science.....	3
ANSC 265, Horse Evaluation	2
ANSC 288, Horse Fitting and Selling.....	3
ANSC 289, Management of Equine Operations or ANSC 390, Internship	3
ANSC 304, Feeds and Feeding.....	3
ANSC 320, Applied Horsemanship or ANSC 321, Applied Horsemanship II.....	3
ANSC 383, Equine Reproductive Management or ANSC 415, Horse Production.....	3

MINOR: Livestock Production

A minor in Livestock Production consists of at least 19 credits

ANSC 100, Introductory Animal Science or ANSC 200, Introductions to Meat Animal Production.....3

ANSC 262, Introduction to Meat Science.....3

ANSC 303, Livestock, Meat, and Wool Evaluation.....4

ANSC 304, Feeds and Feeding3

Students must complete at least 2 courses from the following list: ANSC 314, Swine Production; ANSC 414, Sheep and Wool Production; ANSC 415, Horse Production; ANSC 416, Beef Production; ANSC 417, Dairy Production.....6

MINOR: Range Science

A minor in Range Science consists of at least 18 credits.

RGSC 294, Rangeland Resource Management.....3

RGSC 316, Rangeland Plants2

RGSC 325, Rangeland Restoration Ecology.....3

RGSC 452, Rangeland Analysis.....4

Students must complete at least 2 courses from the following list:

RGSC 302G, Forestry and Society.....3

RGSC 307, Rangeland Grasses3

RGSC 317, Rangeland Communities3

RGSC 318, Watershed Management.....3

RGSC 440, Rangeland Resource Ecology4

RGSC 460, Advanced Rangeland Management.....4

ENTOMOLOGY, PLANT PATHOLOGY, and WEED SCIENCE

Professor H. Grant Kinzer, department head

Professors Byford, Ellington, Kemp, Lindsey, Schroeder, Sterling, Thomas; *Associate Professors* English, Pierce, Sanderson, Thompson; *Assistant Professors* Bundy, Creamer, Hanson, Sanogo; *Adjunct Professors* Banks, Berkson, Bleiweiss, Miller

(505) 646-3225

DEGREE: Bachelor of Science in Agriculture

MAJOR: Agricultural Biology

OPTION: Agricultural Chemical Sales

Applied Biology

Entomology

Environmental Biology

Pest Management

MINORS: Pest Management

Entomology

Plant Pathology

Weed Science

College requirements are 35 credits in the College of Agriculture and Home Economics. Specific courses that meet these and the university general education requirements and additional courses in biology, chemistry, mathematics, and seminar are included below in departmental requirements. A total of 128 credits are required for graduation. At least 55 credits must be 300-level courses and above. Schedules in specific semesters will be developed with the help of a student's academic adviser.

DEGREE: Bachelor of Science in Agriculture

MAJOR: Agricultural Biology

The agricultural biology course work prepares you for a variety of careers in the biological sciences and agriculture. You will develop your curriculum with an academic adviser to attain your individual goals. Many

will pursue advanced degrees in the sciences or prepare for admittance to professional schools (medical, dental, etc.). A diverse program is offered with five separate options that allow you to tailor your program for careers in the commercial sector, such as agricultural consulting, chemical sales, and pest management or for careers with county, state, or federal agencies, such as research technicians, inspectors, and extension agents.

Departmental Requirements

Courses marked with an asterisk (*) are required to fulfill general education requirements.

AG E 250G, Life with Microcomputers, or C S 110G, Computer Literacy.....3

ANSC/BIOL 305, Genetics.....3

BIOL 111G, Natural History of Life, and BIOL 211G, Cellular and Organismal Biology.....6

BIOL 311, General Microbiology.....3

BIOL 313, Structure and Function of Plants, or BIOL 322, Zoology.....3

CHEM 111, 112, General Chemistry I, II*.....8

COMM 265G, Principles of Human Communication, or COMM 253G, Public Speaking, or AXED 201G, Effective Leadership and Communication in Agricultural Organizations*.....3

ECON 201G, ECON 251G, or ECON 252G*.....3

ENGL 111G, Freshman Composition*.....4

ENGL 311G, Advanced Composition, or ENGL 318G, Advanced Technical and Professional Communication*.....3

EPWS 100, Introduction to Pest Management.....3

EPWS 100L, Pest Management Laboratory.....1

EPWS 303, Economic Entomology.....4

EPWS 310, Plant Pathology.....4

EPWS 311, Weed Science.....4

EPWS 447, Seminar.....1

E ST311G, Statistical Applications*.....3

SOIL 252, Soils.....3

General education electives from the following categories:

- Historical Perspectives.....3
- Human Thought and Behavior.....3
- Literature or Fine Arts.....3
- Viewing a Wider World.....6

Agricultural Biology Options

In addition to the departmental requirements listed above, you must also complete all of the courses in at least one of the options listed below. Courses with higher numbered prefixes may replace courses listed as departmental requirements in some cases. Courses marked with an asterisk (*) are required to fulfill general education requirements.

OPTION: Agricultural Chemical Sales

Offered jointly with the Department of Agricultural Economics and Agricultural Business.

ACCT 251, Management Accounting.....3

BLAW 316, Legal Environment of Business.....3

EPWS 390, Internship.....2-3

EPWS 481, Nematology, or EPWS 462, Parasitology.....3

EPWS 492, Diagnosing Plant Disorders.....3

MATH 115, Intermediate Algebra or above.....3

MATH 142G, Calculus for Biological and Management Sciences I*.....3

MKTG 312, Personal Selling.....3

PHYS 110G, Introduction to Physics or above.....4

Approved Electives in AG E.....9

OPTION: Applied Biology/Preprofessional

The Applied Biology option prepares you for professional advancement including admittance to medical, dental, veterinary, and graduate schools. Students interested in the health professions must register with the Health Professional Advisory Committee no later than the sophomore year.

BCHE 341, Survey of Biochemistry.....4

CHEM 313, 314, 315, Organic Chemistry I, II, and Lab.....8

MATH 180, Matrices and Linear Programming.....3

MATH 185, College Algebra.....3

MATH 191, 192, Calculus and Analytical Geometry I, II.....6

PHYS 211, 211L, General Physics I, General Physics I Laboratory.....4

PHYS 212, General Physics II.....3