

AXED 445, Planning and Methods in Career and Technical Education.....	3
AXED 446, Methods of Teaching Agricultural and Technology Education.....	6
AXED 447, Directed Teaching in Agricultural or Technology Education.....	6-10
EDUC 315, Multicultural Education	3
E T 317, Manufacturing Technology	3
E T 320, Applications Software for Engineering Technologists.....	3
E T 340/341, AC and DC Circuits and Lab.....	5
E T 342, Digital Electronics I.....	3
E T 357, Introduction to Security Technology.....	3
E T 365, Building Utilities	3
E T 479, Developing and Managing Educational Networks.....	3
E T 480, Design and Problem Solving in Engineering and Technology.....	3
RDG 414, Content Area Literacy	3
SPED 350, Survey of Programs for Exceptional Learners	3

MINOR: Agricultural and Extension Education

The department offers a minor in agricultural and extension education, which may be earned by completion of 18 credits in the department. The minor must include 9 credits of upper-division courses with a minimum of two courses at the 400 level.

Accreditation

The Department of Agricultural and Extension Education is accredited by the National Council for the Accreditation of Teacher Education.

AGRICULTURAL ECONOMICS and AGRICULTURAL BUSINESS

Professor Octavio A. Ramirez, department head

Professors Catlett, Clary, Diemer, Falk, Fowler, Gorman, Libbin, Skaggs, Torell, Ward; **Assistant Professors** Hadjigeorgalis, Hurd, Lillywhite; **College Associate Professor** Bullock, Crawford; **College Assistant Professor** Hawkes; **Adjunct Associate Professor** Dewitt; **Adjunct Assistant Professor** Alvarez (505) 646-3215

DEGREE: Bachelor of Science in Agriculture**MAJOR: Agricultural Economics and Agricultural Business****AREAS OF CONCENTRATION:**

Farm Business Management
Ranch Business Management
Marketing and Sales
Business Management
Finance
Computer Applications and Data Management
Agricultural Communications
Natural Resources Management
Agricultural Chemical Sales
Agricultural Records and Financial Controls
International Agricultural Business
International Development
Environmental Economics
Pre-Law
MS-Prep

COLLEGE REQUIREMENTS

College required constants are listed under the heading "College of Agriculture and Home Economics." Specific courses meeting these and the university general education requirements are included below in departmental requirements. A total of 128 credits are required for graduation. At least 54 credits must be at the 300+ level. You will develop schedules for specific semesters with the help of your academic adviser.

GENERAL AND DEPARTMENTAL REQUIREMENTS

Verbal and Written	
ENGL 111G, Rhetoric and Composition.....	4
ENGL 203G, 211G, 218G, 311G, or 318G	3

COMM 253G or 265G or AXED 201G.....	3
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Quantitative

MATH 115, Intermediate Algebra	3
MATH 142G, Calculus for the Biological and Management Sciences I	3
E ST 311G, Statistical Applications	3

Computer

AG E 250G, Life with Microcomputers	3
AG E 450G, Advanced Microcomputer Applications in Agriculture.....	3

General Education

General education courses are designated by a G suffix in the list of general education courses in the "General Information" chapter.

General education science with lab.....	4
Historical Perspectives	3
Human Thought/Behavior	3
Literature or Fine Arts	3
Viewing a Wider World.....	6

General Business

ACCT 251, Management Accounting	3
ACCT 252, Financial Accounting.....	3
MKTG 300+ course.....	3
MGT 309, Human Relations in Business or MGT 332, Human Resources Management	3
FIN 341, Financial Analysis and Markets	3
BLAW 317, Business Law I, or BLAW 316, Legal Environment of Business	3

Economic Theory

ECON 251G, Principles of Macroeconomics.....	3
ECON 252G, Principles of Microeconomics.....	3
ECON 371, Intermediate Microeconomic Theory.....	3
ECON 372, Intermediate Macroeconomic Theory.....	3

Applied Economics/Business

AG E 100, Introductory Agricultural Economics and Business.....	3
AG E 236, Agribusiness Management Principles	3
AG E 305/MKTG 305, Marketing and Pricing Agricultural Products.....	3
AG E 337G/ECON 337G, Natural Resource Economics or AG E 384G/ECON 384G, Water Resource Economics	3
AG E 400, Seminar	1
AG E 425, Agribusiness Financial Management.....	3
AG E 445G, Agricultural Policy	3
AG E 385, Applied Production Economics	3
AG E 499, Senior Project or AG E 456, Agribusiness Management.....	3

In addition to the department and general requirements listed above, you may also select 15 hours from one of the fifteen available areas of concentration. The specific class requirements for each option are on file in the department and are available either through general advising and/or by request.

AGRONOMY and HORTICULTURE

Professor Paul W. Bosland, interim department head**Professor John G. Mexal, assistant department head**

Professors Bosland, Daugherty, Guldan, Harrington, Lindemann, Mexal, Monger, O'Connell, Sammis, Sengupta-Gopalan; **Associate Professors** Cramer, Flynn, Picchioni, Ray, St. Hilaire, Ulery; **Assistant Professors** Bottoms, Goss, O'Neill, Silva, Zhang (505) 646-3405; (505) 646-6041 (fax); (866) 884-7231 (toll free number)

DEGREE: Bachelor of Science in Agriculture**MAJOR: Agronomy****OPTION: Crop Consulting****OPTION: Plant Genetics****OPTION: General Agronomy**

OPTION: Agronomic Business
OPTION: Agronomic Journalism

MAJOR: Horticulture
OPTION: Ornamental Horticulture
OPTION: Landscape Design
OPTION: Horticulture Business
OPTION: Crop Consulting
OPTION: Plant Genetics

MAJOR: Soil Science
OPTION: Soils
OPTION: Environment and Resource Management
OPTION: Soil and Water Science

DEGREE: Bachelor of Science in Environmental Science

MAJOR: Environmental Science
OPTION: Soils
OPTION: Water
OPTION: Chemistry
OPTION: Geology
OPTION: Wildlife
OPTION: Environmental Economics
OPTION: Spacial Analysis

The undergraduate program in agronomy and horticulture prepares you for a variety of careers in agriculture and related fields. Accordingly, a flexible curriculum has been designed that will allow specific programs to be developed in consultation with the your academic adviser. Programs may also be developed if you wish to prepare for advanced studies in graduate school. In addition to the courses listed for each major, 35 credits must be taken in the College of Agriculture and Home Economics, and the university general education requirements must be met.

DEGREE: Bachelor of Science in Agriculture

MAJOR: Agronomy

Agronomy is an understanding of the principles of plant and soil science and an application of these principles in the production of crops. Commercial sector careers include positions in agricultural consulting companies, agricultural seed or chemical companies, research and development with commercial companies, and farm and/or ranch management. Careers in county, state or federal agencies are in the areas of USDA, Cooperative Extension Service, Soil Conservation Service, Forest Service and Bureau of Land Management.

Requirements of Agronomy Major

At least 24 credits from agronomy and soil science courses with a grade of C or above, including the following:

AGRO 100G, Introduction to Plant Science	4
AGRO 305, Principles of Genetics	3
AGRO 365, Principles of Crop Production	4
AGRO 447, Seminar	1
AGRO 483, Sustainable Production of Agronomic Crops	3
SOIL 252, Soils.....	3
SOIL 252L, Soils Laboratory.....	1
SOIL 312, Soil Management and Fertility.....	3
SOIL 312L, Soil Management and Fertility Lab	1
Other required courses include:	
AG E 250G, Life with Microcomputers	3
BIOL 111G, Natural History of Life, or BIOL 211G, Cellular and Organismal Biology	3
CHEM 111, 112, General Chemistry I, II.....	8
CHEM 211, Organic Chemistry	4
EPWS 311, Weed Science; or EPWS 303, Economic Entomology; or EPWS 310, Plant Pathology.....	4
E ST 311G, Statistical Applications	3
MATH – to equal the proficiency level of MATH 142G or MATH 185	3

Five options are available in the agronomy major. In addition to the completion of the requirements of the major listed above, you must elect an option and complete 25 credits from the requirements for that option. The

Agronomic Business and Agronomic Journalism options may be satisfied by obtaining a minor in business administration through the College of Business Administration and Economics or by obtaining a minor in journalism and mass communications through the College of Arts and Sciences, respectively. To deviate from the courses required within an option, you must file a formal petition, subject to approval by departmental committee. You should develop a specific program of study in consultation with a departmental agronomy adviser.

OPTION: Crop Consulting

Required courses marked with an asterisk ().*

AGRO 365, Principles of Crop Production*	4
AGRO 462, Plant Breeding*.....	3
AGRO 492, Diagnosing Plant Disorders*	3
AG E 236, Agribusiness Management Principles	3
AG E 315G, World Agriculture and Food Problems	3
AG E 450, Advanced Microcomputer Applications in Agriculture.....	3
AGRO 311, Weed Science	4
B A 202, Small Business Enterprise.....	3
EPWS 314, Plant Physiology	3
EPWS 455, Advanced Insect Pest Management.....	3
EPWS 456, Biological Control.....	3
HORT 471, Plant Mineral Nutrition	3
HORT 485, Vegetable Crop Management.....	3
SOIL 312, Soil Management and Fertility.....	3
SOIL 312L, Soil Management and Fertility Lab	1
SOIL 456, Irrigation and Drainage	3
SPAN 111, Elementary Spanish I.....	4
SPAN 211, Intermediate Spanish I	3

OPTION: Plant Genetics

Required courses marked with an asterisk ().*

AGRO 303G, Genetics and Society.....	3
AGRO 305L, Genetics Techniques.....	1
AGRO 340, Plant Tissue Culture Methods	3
AGRO 449, Special Problems (Independent Research)	1-3
AGRO 462, Plant Breeding.....	3
AGRO 486, Intermediate Genetics*.....	3
ANSC 423, Animal Breeding	3
BIOL 431, Genetic Aspects of Population Biology.....	3
BIOL 467, Evolution.....	3
BIOL 478, Molecular Biology of Microorganisms	3
CHEM 341, Survey of Biochemistry*	3
EPWS 314, Plant Physiology*.....	3
HORT 452, Independent Studies in Bioinformatics.....	1-3
MOLB 470, Genome Analysis and Bioinformatics	3

OPTION: General Agronomy

Required courses marked with an asterisk ().*

AG E 236, Agribusiness Management Principles	3
AG E 305, Marketing and Pricing Agricultural Products.....	3
AG E 315G, World Agriculture and Food Problems	3
AGRO 357, Climatology	3
AGRO 391, Internship	1-3
AGRO 471, Plant Mineral Nutrition*.....	3
AGRO 492, Diagnosing Plant Disorders*.....	3
BIOL 312, Plant Taxonomy	4
BIOL 313, Structure and Function of Plants*.....	4
BLAW 316, Legal Environment of Business.....	3
EPWS 314, Plant Physiology	3
HORT 250, Plant Propagation.....	3
HORT 350, Arboriculture	3
HORT 485, Vegetable Crop Management.....	3
RGSC 294, Rangeland Resource Management.....	3
RGSC 325, Rangeland Restoration Ecology.....	3
RGSC 465, Public Lands Policy and Analysis.....	3
SOIL 456, Irrigation and Drainage	3
SUR 221, General Surveying	3

OPTION: Agronomic Business

ACCT 251, Management Accounting	3
ACCT 252, Financial Accounting.....	3
AG E 236, Agribusiness Management Principles	3

B A 202, Small Business Enterprise.....	3
ECON 251G, Principles of Macroeconomics.....	3
ECON 252G, Principles of Microeconomics.....	3
MKTG 313, Retail Management.....	3
Four of the following courses:	
BLAW 316, Legal Environment of Business.....	3
FIN 306, Principles of Finance.....	3
MGT 315G, Human Relations in Organizations.....	3
MGT 344, Production and Operations Management.....	3
MKTG 303, Principles of Marketing.....	3

OPTION: Agronomic Journalism

BLAW 316, Legal Environment of Business.....	3
COMM 421, Interviewing.....	3
GOVT 343, Domestic Policy.....	3
JOUR 210, Writing for the Print Media.....	3
JOUR 290, Radio-Television Production I.....	3
JOUR 300, Introduction to Advertising.....	3
JOUR 310, Print Reporting I.....	3
JOUR 313, Radio Reporting.....	3
JOUR 319, Photojournalism I.....	3
JOUR 374, Introduction to Public Relations.....	3
MKTG 303, Principles of Marketing.....	3
MKTG 314, Advertising Strategy.....	3

DEGREE: Bachelor of Science in Agriculture**MAJOR: Horticulture**

Horticulture includes a wide variety of topics that relate to fruit, vegetable, and ornamental crops, and their uses. Careers range from production management to processing and marketing, retail and wholesale management, greenhouse and nursery production, floriculture, landscaping, turf management, research and development, various service activities and positions with local, state, and federal agencies.

Requirements of Horticulture Major

Each of the following courses is required:

BIOL 111G, Natural History of Life, or BIOL 211G, Cellular and Organismal Biology.....	3
BIOL 314, Plant Physiology.....	3
CHEM 111, 112, General Chemistry I, II or CHEM 114 and CHEM 211.....	8
EPWS 303, Economic Entomology.....	4
EPWS 310, Plant Pathology.....	4
HORT 447, Seminar.....	1
MATH 142G, Applied Mathematics for the Biological and Social Sciences; or MATH 185, College Algebra.....	3
SOILS 252, Soils.....	3

At least 29 credits from horticulture courses with a grade of C or above.

Choose from the following courses:

HORT 100G, Introductory Plant Science.....	4
HORT 115, Introduction to Forestry.....	3
HORT 200, Special Topics.....	1-4
HORT 210, Ornamental Plants I.....	4
HORT 211, Ornamental Plants II.....	4
HORT 240, Floral Quality Evaluation and Design.....	2
HORT 241, Floriculture Field Practicum.....	1
HORT 250, Plant Propagation.....	3
HORT 300, Special Topics.....	1-4
HORT 301, Introduction to Landscape Horticulture.....	3
HORT 302G, Forestry and Society.....	3
HORT 305, Principles of Genetics.....	3
HORT 305L, Genetics Techniques.....	1
HORT 307, Landscape Design.....	3
HORT 308, Landscape Construction.....	3
HORT 310, Medicinal Herbs.....	3
HORT 310L, Medicinal Herbs Laboratory.....	1
HORT 330, Organic Fall Vegetable Production (f).....	3
HORT 331, Organic Spring Vegetable Production (s).....	3
HORT 340, Plant Tissue Culture Methods.....	3
HORT 350, Arboriculture.....	2
HORT 360, Biological Information Systems.....	3
HORT 365, Principles of Crop Production.....	4
HORT 391, Internship.....	1-3

HORT 401, Turf Management.....	4
HORT 420, Postharvest Biology and Technology.....	4
HORT 447, Seminar.....	1
HORT 449, Special Problems.....	1-3
HORT 450, Special Topics.....	1-4
HORT 452, Independent Studies in Bioinformatics.....	1-3
HORT 460, System Analysis & Automation in Biological Laboratories.....	3
HORT 462, Plant Breeding.....	3
HORT 465, Landscape Case Studies.....	3
HORT 471, Plant Mineral Nutrition.....	3
HORT 475, Woody Plant Physiology.....	3
HORT 484, Ornamental Plant Production and Management.....	4
HORT 485, Vegetable Crop Management.....	4
HORT 486, Intermediate Genetics.....	3
HORT 488, Greenhouse Management.....	4
HORT 492, Diagnosing Plant Disorders.....	3

Five options are available in the horticulture major. In addition to the completion of the requirements of the major listed above, you must elect an option and complete the requirements for that option. You should develop a specific program of study in consultation with a departmental horticulture adviser. If you want to apply for certification as a professional horticulturist, you should also complete HORT 305, Genetics, and either BCHE 341, Biochemistry, or CHEM 211, Organic Chemistry.

OPTION: Ornamental Horticulture

Select 4 courses from the following list:

HORT 210 or 211, Ornamental Plants I, II.....	4
HORT 250, Plant Propagation.....	3
HORT 301, Introduction to Landscape Horticulture.....	3
HORT 365, Principles of Crop Production.....	4
HORT 484, Ornamental Plant Production and Management.....	4
HORT 488, Greenhouse Management.....	4

Select 8 courses from the following list:

AG E 236, Agribusiness Management Principles.....	3
AG E 250G, Life with Microcomputers, or C S 110G, Computer Literacy.....	3
AG E 305, Marketing and Pricing Agricultural Products, or MKTG 303, Principles of Marketing.....	3
AG E 425, Agribusiness Financial Management.....	3
AGRO 311, Weed Science.....	4
BIOL 301, Principles of Ecology.....	3
BIOL 313, Structure and Function of Plants.....	3
BLAW 316, Legal Environment of Business.....	3
EPWS 452, Applied Pesticide Technology.....	3
EPWS 456, Biological Control.....	3
MGT 315G, Human Relations in Organizations.....	3
MKT 313, Retail Management.....	3
SOIL 312, Soil Management and Fertility.....	3

OPTION: Landscape Design

Required courses:

HORT 210, Ornamental Plants I.....	4
HORT 211, Ornamental Plants II.....	4
HORT 307, Landscape Design.....	3
HORT 308, Landscape Construction.....	3
HORT 465, Landscape: Case Studies.....	3

Select 8 courses from the following:

A EN 372, Landscape Irrigation Design or A EN 479, Irrigation Systems Design and Management.....	3
AG E 236, Agribusiness Management Principles.....	3
AG E 250G, Life with Microcomputers or C S 110G, Computer Literacy.....	3
AG E 437, Resource Economics for Engineers and Planners.....	3
ART 150, Drawing I or ART 151, Drawing II.....	3
AXED 331, Agricultural Structures.....	3
BLAW 316, Legal Aspects of Planning.....	3
BLAW 385G, Consumers and Law.....	3
E T 106, Technical Drawing.....	2
MGT 315G, Human Relations in Organizations.....	3
MKTG 303, Principles of Marketing.....	3
OEMN 150, Landscape Irrigation Systems.....	4

PLAN 201, Introduction to Planning and Community Development.....	3
PLAN 301, Legal Aspects of Planning	3
SOIL 350, Soils and Land Use	3
SPAN 111, Beginning Spanish.....	3

OPTION: Horticulture Business**Select 8 courses from the following list:**

For this option to satisfy the minor in Business Administration, nine credits must be upper division and nine credits must have one of the following prefixes: ACCT, BUSA, ECON, FIN, MGT, MKTG.

ACCT 251, Management Accounting	3
ACCT 252, Financial Accounting.....	3
AG E 236, Agribusiness Management Principles	3
AG E 250G, Life with Microcomputers	3
AG E 425, Agribusiness Financial Management	3
AG E 450, Advanced Microcomputer Applications in Agriculture.....	3
BLAW 316, Legal Environment of Business.....	3
BUSA 111, Business in a Global Society.....	3
ECON 251G, Principles of Macroeconomics.....	3
ECON 252G, Principles of Microeconomics.....	3
E ST 311G, Statistical Applications	3
FIN 306, Principles of Finance	3
MGT 309, Human Behavior in Organizations	3
MGT 315G, Human Relations in Organizations.....	3
MGT 332, Human Resources Management.....	3
MKTG 303, Principles of Marketing.....	3
MKTG 305, Marketing and Pricing Agricultural Products.....	3
MKTG 313, Retail Management.....	3

OPTION: Crop Consulting**Select 4 courses from the following list:**

HORT 365, Principles of Crop Production.....	4
HORT 420, Postharvest Biology and Technology	4
HORT 462, Plant Breeding	3
HORT 471, Plant Mineral Nutrition	3
HORT 485, Vegetable Crop Management.....	3
HORT 492, Diagnosing Plant Disorders.....	3

Select 8 courses from the following:

AG E 236, Agribusiness Management Principles	3
AG E 250G, Life with Microcomputers	3
AG E 315G, World Agriculture and Food Problems.....	3
AG E 450, Advanced Microcomputer Applications in Agriculture.....	3
AGRO 311, Weed Science.....	4
AGRO 483, Sustainable Production of Agronomic Crops	3
BIOL 301, Principles of Ecology	3
BIOL 313, Structure and Function of Plants.....	3
EPWS 372, Fungal Biology.....	3
EPWS 455, Advanced Insect Pest Management.....	3
EPWS 456, Biological Control.....	3
EPWS 481, Plant Nematology.....	3
HNFS 320, Food Microbiology	3
HNFS 421, Food Chemistry	3
SOIL 312, Soil Management and Fertility.....	3
SOIL 456, Irrigation and Drainage	3
SOIL 475, Soil Microbiology	3
SPAN 111, Elementary Spanish I.....	4
SPAN 211, Intermediate Spanish I	3

OPTION: Plant Genetics**Required courses:**

CHEM 211, Organic Chemistry	4
BCHE 341, Survey of Biochemistry	3
BCHE 342, Introductory Biochemistry Laboratory	1
E ST 311G, Statistical Applications	3
HORT 305, Principles of Genetics.....	3

Select at least 15 credits from the following courses:

AGRO 303G, Genetics and Society.....	3
ANSC 423, Animal Breeding	3
BCHE 396, Biochemistry and Biotechnology.....	3

BCHE 397, Experimental Biochemistry Laboratory.....	3
BCHE 494, Techniques in Genetic Engineering	4
BIOL 440, Molecular Systematics	3
BIOL 467, Evolution	3
BIOL 478, Molecular Biology of Microorganisms.....	3
EPWS 301, Agricultural Biotechnology.....	3
E ST 456, Statistical Methods and Data Analysis	3
HORT 305L, Genetics Techniques.....	1
HORT 340, Plant Tissue Culture Methods.....	3
HORT 449, Special Problems	1-3
HORT 452, Independent Studies in Bioinformatics.....	1-3
HORT 462, Plant Breeding	3
HORT 486, Intermediate Genetics	3
MOLB 470, Genome Analysis and Bioinformatics	3

DEGREE: Bachelor of Science in Agriculture**MAJOR: Soil Science**

Soil scientists are concerned with the physical, chemical, and biological characteristics and behaviors of soils, their description and classification, and their management for both agricultural and nonagricultural uses. Career opportunities include jobs with industry, environmental consulting firms, and federal, state, and local governments working on various environmental, agricultural, and ecological projects.

Requirements of Soil Science Major

In addition to the courses listed for each major, you must take 35 credits in the College of Agriculture and Home Economics, and you must meet university general education requirements. At least 24 credits of soil science related courses with a grade of C or above including:

SOIL 252, Soils.....	3
SOIL 252L, Soils Laboratory.....	1
SOIL 312, Soil Management and Fertility.....	3
SOIL 447, Seminar.....	1

Four of the following courses:

SOIL 424, Soil Chemistry	3
SOIL 456, Irrigation and Drainage	3
SOIL 472, Soil Morphology and Classification	4
SOIL 476, Soil Microbiology	3
SOIL 477, Soil Physics.....	3

Other required courses include:

Two courses (6 credits) from the following:

BIOL 111G, Natural History of Life.....	3
BIOL 211G, Cellular and Organismal Biology	3
BIOL 311, Microbiology	3
CHEM 111, 112, General Chemistry I, II.....	8
One additional CHEM course above CHEM 200, except CHEM 310G.....	3-4
GEOL 111G, Survey of Geology	4
MATH 142G, Applied Mathematics for the Biological and Social Sciences I or MATH 191, Calculus and Analytic Geometry 1.....	3
PHYS 211, General Physics I.....	4
A computer-oriented course above C S110G approved by the department.....	2-4

Soil Science Options

Three options are available in soil science. In each case, your academic adviser has a list of appropriate courses.

OPTION: Soils

Crop production and plant growth are emphasized in the general soils option. Soil management, soil conservation, and soil reclamation are related to plant growth for those students interested in both private industry and government employment opportunities as well as farm management. 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 or range management; crop production or protection; farm and ranch management and economics; math, statistical, or computer sciences.

OPTION: Environment and Resource Management

Soil science is integrated into the management of the environment and natural resources. Students interested in careers of conservation, environ-

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
GEOL 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