

RANGELAND ECOLOGY AND MANAGEMENT - BS, RANCH MANAGEMENT OPTION

Students majoring in Rangeland Ecology and Management are taught to integrate knowledge and technology in a systems approach to manage land for sustainable utilization of natural resources. Emphasis is placed on conservation and maintenance of biological diversity in wet to arid environments and sustainable production, conservation and function of land. Rangelands comprise approximately 50% of the land area of the United States and the world. Natural resources on rangelands provide many products and values for society including: livestock grazing, habitat for game and non-game wildlife, water for urban and agricultural uses, recreational opportunities, minerals, oil and gas. The expansiveness and diversity of rangelands require that knowledge and technology be drawn from numerous disciplines.

Employment opportunities are diverse. They include all aspects of natural resource management, including ranch management, environmental consulting, conservation and natural resource planning on private lands and with state and federal agencies. Students also find employment in agribusiness sales, marketing, agricultural finance real estate, consulting and reclamation. Students can also pursue professional careers in teaching agricultural science.

Two options in the Rangeland Ecology and Management curriculum provide the opportunity for specialization in a minor field.

Ranch Management Option

Designed for students preparing for careers in ranch management and agribusiness. This option emphasizes management and utilization of rangeland for livestock and wildlife production. It provides excellent preparation for students desiring to obtain a Master of Agriculture degree in ranch management. Employment opportunities are available on private ranches, businesses, and industries supporting ranches and with state and federal agencies.

Emphasis Areas

Ecology

Designed for students to explore and specialize in a diverse array of ecological topics. They study plants and animals and the ecological principles essential for effective conservation, management and restoration of the land and associated natural resources. They are prepared for careers in resource monitoring, management and conservation with state and federal agencies and the private sector.

Environmental Science

Designed for students preparing for professional careers in environmental management. The coursework includes a basic foundation of ecological sciences, plant taxonomy and rangeland management with emphasis on plants, water and soils. Job opportunities are available in environmental consulting firms, public utility companies, municipalities and federal environmental agencies. The curriculum provides a good foundation for

students planning to pursue graduate studies in watershed management, environmental sciences, pollution control or waste management.

Preveterinary Medicine

Prepares students for admission to the professional program in veterinary medicine. Students planning to work in large animal practice would benefit from studies in rangeland ecology and management.

Range/Soil Conservation

Designed to qualify students as range management specialists or soil conservationists with the federal government. The curriculum will provide students with competitive ratings with federal Civil Service for positions with the Natural Resources Conservation Service, Forest Service and Bureau of Land Management. Various electives and work experience may be used to increase the rating score. Job opportunities are also available in private and state organizations.

Teaching

For students majoring in rangeland ecology and management who wish to teach. Directed electives may be chosen so that, following this curriculum, the student is eligible to enter the induction year as a teacher of agricultural science under the Texas Education Agency Plan. Off-campus student teaching is required.

Watershed Resources

For students preparing for a professional career in watershed management. Graduates qualify for employment as range management specialists and soil conservationists or, with proper selection of electives, as hydrologists. Opportunities are also available in environmental consulting firms, public utility companies, land reclamation firms, municipalities, secondary school education and private land management.

Program Requirements

First Year

Fall		Semester Credit Hours
AGEC 105	Introduction to Agricultural Economics	3
ESSM 201	Exploring Ecosystem Science and Management	1
RENK 205 & RENK 215	Fundamentals of Ecology and Fundamentals of Ecology-Laboratory	4
Select one of the following:		4
BIOL 101	Botany	
BIOL 113	Essentials in Biology	
HORT 201 & HORT 202	Horticultural Science and Practices and Horticultural Science and Practices Laboratory	
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) ¹		3

Semester Credit Hours

15

Spring

ANSC 107 & ANSC 108	General Animal Science and General Animal Science Laboratory	4
CHEM 119	Fundamentals of Chemistry I	4
ESSM 281	Seminar in Ecosystem Science and Management	1
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) ¹		3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) ¹		3
Semester Credit Hours		15

Second Year**Fall**

ESSM 302	Wildland Plants of North America	3
ESSM 314	Principles of Rangeland Management Around the World	3
ESSM 351/ REN R 405 or REN R 405/ ESSM 351	Geographic Information Systems for Resource Management or Geographic Information Systems for Resource Management	3
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts) ¹		3
Mathematics (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#mathematics)		3
Semester Credit Hours		15

Spring

ANSC 320	Animal Nutrition and Feeding	3
ESSM 301	Wildland Watershed Management	3
ESSM 313	Vegetation Sampling Methods and Designs in Ecosystems	3
Government/Political science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#government-political-science) ^{1,2}		3
Mathematics (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#mathematics)		3
Semester Credit Hours		15

Summer

American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) ¹		3
Semester Credit Hours		3

Third Year**Fall**

ANSC 302	Basic Beef Cattle Production	3
AGEC 325	Principles of Farm and Ranch Management	3
ESSM 315	Rangeland Inventory and Monitoring	1
ESSM 316	Range Ecology	3
SCSC 301	Soil Science	4
Semester Credit Hours		14

Spring

ESSM 303 or ESSM 304	Agrostology or Rangeland Plant Taxonomy	3
ESSM 306 or ESSM 311	Plant Functional Ecology and Adaptation or Biogeochemistry and Global Change	3
ESSM 317	Vegetation Management	3
Government/Political science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#government-political-science) ^{1,2}		3
Emphasis area elective ³		3
Semester Credit Hours		15

Fourth Year**Fall**

ESSM 415 or REN R 410	Range Analysis and Management Planning or Ecosystem Management	4
ESSM 481	Senior Seminar	1
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture) ¹		3
Emphasis area elective ³		3
Emphasis area elective ³		3
Semester Credit Hours		14

Spring

Select one of the following:		3
AGEC 350	Environmental and Natural Resource Economics	
ESSM 318	Coupled Social and Ecological Systems	
ESSM 404	Changing Natural Resource Policy	
ESSM 406	Natural Resources Policy	
Emphasis area elective ³		3
Emphasis area elective ³		3
General elective		3
General elective		2
Semester Credit Hours		14
Total Semester Credit Hours		120

¹ Graduation requirements include a requirement for 3 hours of International and Cultural Diversity (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>) courses and 3 hours of Cultural Discourse (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/>) courses. A course satisfying a Core category, a college/department requirement, or a free elective can be used to satisfy this requirement. Select in consultation with an academic advisor.

² Credit by examination may be used to substitute 3 hours of POLS 206 or POLS 207.

³ To be selected from an approved list in consultation with an academic advisor.