

About the Department

Welcome to the Animal and Range Sciences Department at Montana State University. Come and learn with world class Animal and Range Science faculty. Supportive faculty members are dedicated to teaching

students in a unique blend of classroom and outdoor laboratory settings. Students are encouraged to be involved in the educational process through internships and undergraduate research. As Montana's Land Grant institution, teaching, research, and outreach are emphasized. The unique combination of teaching and research allows students direct access to cutting edge research and technology. Students also have the opportunity to actively participate in the varied and statewide research and outreach programs within the Animal and Range Sciences Department and associated programs that directly serve the livestock industry.

The mission of the Animal and Range Sciences Department is to create, evaluate and communicate science-based knowledge to enhance the management of Montana's livestock and rangeland resources in ways that are economically, socially and ecologically sustainable. Faculty and staff are dedicated to transferring their knowledge and enthusiasm about all aspects of animal production and natural resources to their students. We care deeply about student education and keep our student-to-instructor ratio low to maximize the learning experience. Students appreciate this opportunity to personally get to know the faculty.

Our degree programs are supported by field laboratories and facilities that provide once-in-a-lifetime opportunities and real-world experiences. The close working relationships that faculty have with large and small ranches, other Land Grant Universities, the National Park Service, USDA Forest Service, Montana Fish Wildlife and Parks, Bureau of Land Management, and Natural Resources Conservation Service provides opportunities for students to investigate and formulate solutions to real world problems. These close working relationships lead to numerous opportunities for internships, summer employment and careers.

Montana State University's College of Agriculture is the ideal setting for students interested in natural resources, ecology, biotechnology and relations among humans, wild and domestic animals, and their environment. Many of our "labs" are outdoors in the mountains, valleys and rangelands of beautiful southwestern Montana.

Curriculums are science-based and emphasize critical thinking, problem-solving and communication skills in and outside the classroom. Just as you are drawn to Montana for its unique balance of learning and lifestyle, our professors have chosen Bozeman for its dynamic, collaborative and inspiring setting.

The MSU College of Agriculture is supported by the Montana Agricultural Experiment Station (MAES), which conducts relevant research for the people of Montana, and MSU Extension, which disseminates research findings through a network of county and reservation offices and other venues. Many College of Agriculture faculty and staff are fully or partially funded by MAES or MSU Extension.

If you want to be challenged, meet inspiring people, and prepare for a professional career in one of the most beautiful places on earth, the MSU College of Agriculture is for you.



For more information, contact:

Animal and Range Sciences

P.O. Box 172900 • Bozeman, MT 59717-2900

Tel: 406-994-5582 • Fax: 406-994-5589

animalrange@montana.edu

<http://animalrange.montana.edu>



THIS PHOTOGRAPH SHOWS A HORSE AND CATTLE BY KEVIN GARDNER

Montana State University Animal & Range Sciences

Sustainable, science-based programs that serve the livestock industry and natural resource managers



Undergraduate and Graduate Degree Programs

Bachelor of Science in Animal Science

In Animal Science you will gain a firm foundation in biological and natural sciences, animal breeding and genetics, reproduction, physiology, nutrition, and livestock production and management. Coursework can be directly applied to production environments in the western United States. Unique class work that incorporates sustainable resource management and wildlife-livestock interactions is offered. You will choose one of three options leading to a Bachelor of Science degree in Animal Science. These options let you customize your curriculum to meet your career goals.

The Livestock Management and Industry Option

stresses the application of scientific principles to livestock production. These principles may integrate elements of economics, range ecology, genetics, physiology, nutrition and other disciplines to develop sustainable livestock production systems and to address industry issues. This option focuses on sustainable livestock systems, business, and management skills as they relate to livestock enterprises and production service industries. This option allows flexible coursework to prepare you to manage livestock enterprises or to be employed in companies that produce and market livestock feeds, health and other service products. You will also be prepared for careers with a variety of organizations such as breed associations, commodity groups, livestock publications and government agencies. The required internship allows you to “try before you buy” your career and provides invaluable industry experience and contacts.



The **Equine Science Option** combines science and technology with practical elements of equine management to meet the growing needs of the equine industry. Required science-based equine courses include nutrition, reproduction, form-to function, lameness and management. Economics and business management courses are integral to the option. Recent internships (required) have included assisting at breeding, counseling and equine therapy facilities, veterinary clinics, stables, equine programs at summer camps, BLM’s wildhorse program, and working as wranglers.

The **Science Option** emphasizes greater depth in the basic biological sciences. The required classes in this option allow you to prepare for pre-professional programs such as veterinary and human medicine. Some students in this option continue their education by attending graduate school. You can customize your program to emphasize physiology, nutrition or genetics. Students in the science option can choose to conduct a research project or complete an internship to introduce them to the different areas they may work in after finishing their degree.

The **Animal Science Minor** is a secondary area of academic specialization. Students from other majors can complement their major with a minor in Animal Science. Students take introductory and advanced classes in Animal Science to strengthen their knowledge of the industry.



Bachelor of Science in Natural Resources and Rangeland Ecology

Natural Resources and Rangeland Ecology is a multidisciplinary program that seeks to teach students to balance the different uses of an ecosystem to sustain resources and serve all users whether they are human or animal, wild or domestic. You will learn to integrate and apply concepts from soil science, plant ecology, ungulate nutrition and community dynamics to develop appropriate management systems.

The program presents a holistic approach to interactions among rangeland and ecosystem components. You will ultimately learn to apply that knowledge to manage natural resource systems. This degree will prepare you for careers with land and wildlife management agencies, range livestock production, energy development companies, and natural resource consulting. You can customize your degree program by selecting one of two options.

The Rangeland Ecology and Management Option

emphasizes balancing science with the needs of a sustainable ecosystem. You will learn to collect natural resource and production information that allows you to develop a multiuse plan for land resources. You will analyze ecological information and learn to develop flexible plans for areas to have sustainable watersheds, wildlife habitat, recreation and livestock production. This degree option will prepare you to work for state, federal and private land agencies such as the U.S. Forest Service, the Bureau of Land Management, and the Natural Resources Conservation Service.

The Wildlife Habitat Ecology and Management Option

offers you the opportunity to study a multidisciplinary approach to wildlife, livestock and their habitats. You learn to develop integrated approaches and plans to create or rejuvenate habitat for all classes of wildlife. You will also learn how multi-species communities are important to a healthy ecosystem. This degree option will prepare you to work in careers in the U.S. Forest Service, the Bureau of Land Management, the Natural Resources Conservation Service, state wildlife agencies, conservation groups, and environmental consulting firms.

The Natural Resources and Rangeland Ecology Minor

is a secondary area of academic specialization. A minor in this area complements several majors offered at MSU and expands career opportunities.

Graduate Degree Programs

You can earn a Master of Science or Doctor of Philosophy in Animal and Range Sciences emphasizing Animal Science, Range Science, or Biology. Students finishing graduate programs will have employment opportunities with companies such as Land-o-Lakes, Cargill, and ConAgra, and Government entities such as Montana Fish Wildlife and Parks, the U.S. Forest Service, the Natural Resources Conservation Service, and the National Park Service.

Animal Science

Students emphasizing Animal Science at the graduate level design and complete research in an area that parallels current programs in Animal and Range Sciences, including nutrition, breeding and genetics, physiology, production systems, and growth and development. Supporting coursework may include biology, biochemistry, statistics, and natural resources and rangeland ecology.

Range Science

Students emphasizing Range Science at the graduate level design and complete research in areas that reflect the expertise of the range faculty, including range ecology, habitat management, watershed management, grazing management, riparian ecosystems, and plant-animal and livestock-wildlife interactions. The program prepares you for mid-level careers in rangeland management, wildlife management, habitat management, natural resource conservation, research, and land use planning.



Biology

Students emphasizing Biology design and complete research in one or more of the following areas: biology, muscle physiology, biochemistry, and entomology. This program prepares students for careers in specialty fields within animal or range sciences, meat science, or entomology.

Undergraduate, Graduate and Postdoctoral Research Opportunities

The scientists in the Animal and Range Sciences Department are known for their commitment to hands-on experiences for students. Classroom work is enhanced by the opportunity for field and lab work using specialized equipment that can be applied in their chosen career. You will be encouraged to pose real world questions and develop experiments to solve problems alongside faculty researchers.

The Department conducts cooperative research with the USDA Livestock and Range Research Laboratory at Miles City, Montana, and the USDA Sheep Experiment Station at Dubois, Idaho. Animal research and teaching facilities for beef, sheep and horses are available at the Red Bluff Research Ranch, 30 miles west of Bozeman, the Fort Ellis Research Center near Bozeman, and the Northern Agricultural Research and Teaching (BART) Farm is just minutes from campus for unique and creative learning. A unique research and learning opportunity can be found at the Wool Lab, one of only three wool research facilities in the United States.

Students will enjoy a 40,000 square foot, state-of-the-art Animal Biosciences teaching and research building designed specifically for the Animal and Range Sciences Department. This new building will allow for the growth and expansion of education and research programs to better meet current and future needs of agriculture, natural resources, and the range-livestock industry. A planned USDA Agricultural Research Service research facility, which will focus on functional beef cattle genomics, will complement research within the Department. More information is available at: www.ag.montana.edu/abs.htm.



Internships and Job Opportunities

Students in the Livestock Management and Industry Option and the Equine Science Option are required to complete an industry internship to graduate. Students in the Science Option can complete an industry internship or a research project to complete their program of study. Internships allow students to experience different aspects of the animal industry to determine if their area of study matches their career expectations. Besides providing valuable work experiences, internships provide an opportunity to network with industry leaders.

Students can select an internship from various sources. Current students and recent graduates have completed internships with zoos, veterinary clinics, county extension offices, feed supply and sales companies, cattle ranches, feedlots and equine boarding facilities. Examples of other available internships include 5 Rivers Cattle Feeders, Cayuse Cattle Company, Deseret Ranches, Harris Ranch, Reyers Embryonics, American Simmental Association, Safeway and Hormel. Some students have ventured overseas to New Zealand and Australia for their internship, or enrolled through the university’s international exchange program to work with foreign producers for the experience and to increase their understanding of the global market place. Many internship opportunities have resulted in permanent job offers upon degree completion.



Natural Resources and Rangeland Ecology students have ample opportunities for summer employment with state and federal agencies, and natural resource-related consulting firms. These summer employment opportunities often lead to careers with those agencies or firms, or to “cooperative education agreements,” which lead to a career in a particular agency such as the U.S. Forest Service, the Natural Resources Conservation Service or the Bureau of Land Management upon graduation.