# ANIMAL SCIENCES UNDERGRADUATE MAJOR (BS, HBS)

**This major offers the following option(s):**

- Animal Behavior
- Animal BioHealth/Pre-Professional
- Animal Production
- Equine
- Rangeland Science

Programs in animal sciences provide up-to-date information on methods of rearing livestock and poultry, that produce meat, milk, eggs, wool, and other animal products. In addition, the department addresses the care of animals that enhance human well-being through companionship, recreation, and human aid such as horses and companion animals. Essential to this information is knowledge generated from the fields of animal behavior/bioethics, genetics, nutrition, and physiology. The various teaching and research programs explore modern areas of animal biotechnology and data processing and how they apply to present day livestock and poultry production. Study in these areas provides the core around which various curricula leading to the BS degree in Animal Sciences can be developed. To allow students flexibility in course arrangement, three specialized program options are offered.

Increasing demands for livestock and poultry products by a rapidly expanding human population mean potential employment for well-trained individuals in such areas as farm, ranch, feedlot operation; meat, poultry, egg and milk processing, meat grading with the USDA; Federal Cooperative Extension Service, county and 4-H work; sales or technical employment with commercial feed, seed, and chemical companies and pharmaceutical houses; agricultural loan officer; government agency positions at local, state and federal levels; the Peace Corps; animal welfare auditing; as well as in journalism, mass media, and public policy. The expanding support structure for companion animals has created a growing job market for graduates in areas such as animal behavior consultant; veterinary technician (animal nurse); and business management. In addition, students become prepared to go on to advanced studies in animal sciences, veterinary medicine, and education.

Graduate students may pursue research projects through the Agricultural Experiment Station as part of their programs for MS or PhD degrees. Graduate areas of concentration are offered in animal nutrition, dairy production, embryo physiology, endocrinology, ethology, growth and development, livestock management, muscle biology and meat science, nutritional biochemistry, reproductive physiology.

## Cooperative Programs

Students transferring after one or two years at a community college should also be able to complete the requirements for a BS after three or two years, respectively.

## Rangeland Resource Management

Rangeland resource management is one of the family of natural resources professions important to the social, economic, and political development of Oregon, the nation, and the world. It is based upon ecological principles and is concerned with the restoration, improvement, conservation, and use of rangelands. Since range management is practiced on lands producing domestic and wild animals, timber, water, and recreation, concepts of integrated land use are included in the curriculum. A balance of soil, domestic animal, wildlife, ecology, and other biological sciences is realized in the educational program.

The curriculum includes university and departmental requirements for the BS degree and provides emphasis either in science, management, ecology, or allied disciplines. The BS degree is also offered on the campus of Eastern Oregon University at La Grande through an extension of the OSU Department of Animal and Rangeland Sciences. Facilities for study include classroom and field-oriented educational environments both on-campus and at locations throughout Oregon. Field trips are taken in conjunction with specific courses.

Graduate work leading to MAIS, MS, or PhD degrees may involve research on domestic or wild animals, rangeland nutrition, community ecology, physiology of rangeland plants, rangeland improvement, rangeland watershed, and riparian zone management, rangeland restoration, utilization and management, agroforestry and landscape ecology.

Summer employment with private industry, government agencies, and on range research projects makes possible learning experiences while earning a salary. Employment opportunities include resource management, research, Extension, ranch management, college and university teaching, business and industrial activities related to rangeland resources, and foreign agricultural and resource development assistance.

The Department of Animal and Rangeland Sciences is accredited by the Society for Range Management. It is recognized throughout the country as one of the leading institutions of rangeland management.

**Major Code: 125**

- Recall, integrate and apply essential core information about the key components of Animal Production. As part of the Animal Science curriculum, students are required to focus part of their attention on the production systems of two different species, which include all of our traditional commodities and companion animals. While the production of each species required different methods, this outcome will address understanding of production methods in general terms because each student completes a different series production classes.
- Recall, integrate and apply essential core information about the key components of Animal Reproduction. Reproduction is a basic part of Animal Science. Production of traditional animal species requires knowledge, background and understanding in the both the academic and applied functions of the reproduction process.
- Recall, integrate and apply essential core information about the key components of Animal Nutrition. Nutrition is a basic part of Animal Science. The Nutrition of traditional animal species is well understood requires knowledge, background and understanding in the both the chemistry and biochemistry as well as the practicality of formulation animal diets.
- Recall, integrate and apply essential core information about the key components of Animal Genetics and Breeding. Genetics is a basic part of Animal Science. Understanding the basics of genetics and the consequences of breeding are an important part of the overall production of traditional animal species and requires knowledge, background and understanding in the both the molecular and applied functions of the genetics and breeding.
- Recall, integrate and apply essential core information about the the ethical and behaviorial components of Animal production. In recent years the world view of animal has changed dramatically.

Understanding the behavior of traditional animal species and the ethical implications of production methods of these species is critical as students move into industry.

Departmental requirements may be utilized to satisfy baccalaureate core and non-departmental minor requirements.

| Code | Title | Credits |
|---|---|---|
| **Baccalaureate Core** [1] | | |
| Select 51 credits | | 51 |
| **Skills Courses** | | |
| *Fitness* | | |
| HHS 231 | *LIFETIME FITNESS FOR HEALTH | |
| HHS 241 | *LIFETIME FITNESS (or PAC course) | |
| *Mathematics* | | |
| *Writing I* | | |
| WR 121 | *ENGLISH COMPOSITION (Must be taken in first 45 credits) | |
| *Writing II* | | |
| *Speech* | | |
| COMM 111 | *PUBLIC SPEAKING | |
| or COMM 114 | *ARGUMENT AND CRITICAL DISCOURSE | |
| or COMM 218 | *INTERPERSONAL COMMUNICATION | |
| **Perspective Courses** [2] | | |
| *Biological Science (Lecture/Lab)* | | |
| *Cultural Diversity (CD)* | | |
| *Literature and the Arts (LA)* | | |
| *Physical Science (Lecture/Lab or Lab)* | | |
| *Social Processes and Institutions (SPI)* | | |
| AEC 250 | *INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY (recommended) | |
| or ECON 201 | *INTRODUCTION TO MICROECONOMICS | |
| *Western Culture (WC)* | | |
| *Difference, Power, and Discrimination (DPD)* | | |
| **Synthesis Courses** [3] | | |
| *Contemporary Global Issues (CGI)* | | |
| *Science, Technology, and Society (STS)* | | |
| **Animal Sciences Core** | | |
| ANS 100 | ORIENTATION TO ANIMAL AND RANGELAND SCIENCES | 1 |
| ANS 121 | *INTRODUCTION TO ANIMAL SCIENCES | 4 |
| ANS 207 | SOPHOMORE SEMINAR | 2 |
| ANS 251 | PRINCIPLES OF ANIMAL FOODS TECHNOLOGY | 3 |
| ANS 311 | PRINCIPLES OF ANIMAL NUTRITION | 3 |
| ANS 313 | APPLIED ANIMAL NUTRITION: FEEDS AND RATION FORMULATION | 4 |
| ANS 314 | ANIMAL PHYSIOLOGY | 4 |
| ANS 316 | REPRODUCTION IN DOMESTIC ANIMALS | 4 |
| ANS 317 | REPRODUCTION IN DOMESTIC ANIMALS LABORATORY | 1 |
| ANS 378 | ANIMAL GENETICS | 4 |
| ANS 420 | ^ETHICAL ISSUES IN ANIMAL AGRICULTURE | 3 |
| Select two animal industry courses from the following: | | 6-7 |
| ANS 215 | BEEF/DAIRY INDUSTRIES | |
| ANS 216 | SMALL RUMINANT/SWINE INDUSTRIES | |
| ANS 217 | POULTRY INDUSTRIES | |
| ANS 220 | INTRODUCTORY HORSE SCIENCE | |
| ANS 280 | COMPANION ANIMAL MANAGEMENT | |
| Select two production courses from the following: | | 6-8 |
| ANS 430 | EQUINE SYSTEMS I: EXERCISE SCIENCE | |
| or ANS 431 | EQUINE SYSTEMS II: NUTRITION | |
| or ANS 432 | EQUINE SYSTEMS III: REPRODUCTION | |
| ANS 433 | POULTRY MEAT PRODUCTION SYSTEMS | |
| or ANS 434 | EGG PRODUCTION SYSTEMS | |
| ANS 436 | SHEEP PRODUCTION SYSTEMS | |
| ANS 439 | DAIRY PRODUCTION SYSTEMS | |
| ANS 445 | BEEF PRODUCTION SYSTEMS | |
| ANS 456 | COMPANION ANIMAL PRODUCTION SYSTEMS | |
| ANS 460 | SWINE PRODUCTION SYSTEMS | |
| Select two courses of advanced ANS classes or electives: | | 6 |
| ANS 315 | *CONTENTIOUS SOCIAL ISSUES IN ANIMAL AGRICULTURE | |
| ANS 321 | AVIAN EMBRYO | |
| ANS 333 | EQUINE STABLE MANAGEMENT | |
| ANS 341 | ANIMAL BEHAVIOR AND COGNITION | |
| ANS 351 | ADVANCED PRINCIPLES OF ANIMAL FOODS TECHNOLOGY | |
| ANS 380 | PRINCIPLES OF ANIMAL ANATOMY AND PHYSIOLOGY | |
| ANS 385 | FOUNDATIONS OF MAMMALIAN HISTOLOGY | |
| ANS 390 | GROSS ANATOMY OF DOMESTIC ANIMALS | |
| ANS 401 | RESEARCH | |
| ANS 410 | ANIMAL SCIENCE INTERNSHIP (3 credit maximum will count toward the two-class requirement) | |
| ANS 427 | APPLIED PHYSIOLOGY OF REPRODUCTION | |
| ANS 435 | APPLIED ANIMAL BEHAVIOR | |
| ANS 441 | TOPICS IN ANIMAL LEARNING | |
| ANS 446 | GRAZING LIVESTOCK PRODUCTION | |
| ANS 452 | LIVESTOCK HOUSING AND WASTE MANAGEMENT | |
| ANS 511 | DIGESTIVE PHYSIOLOGY AND NUTRITION OF RUMINANT ANIMALS | |
| ANS 512 | MONOGASTRIC AND POULTRY NUTRITION | |
| Additional ANS Production Systems Course (3) | | |
| Select 20 credits from any courses in the agricultural field or natural resources area | | 20 |
| *Physical and Biological Sciences* | | |
| BI 221<br>& BI 222<br>& BI 223 | *PRINCIPLES OF BIOLOGY: CELLS<br>and *PRINCIPLES OF BIOLOGY: ORGANISMS<br>and *PRINCIPLES OF BIOLOGY: POPULATIONS | 12 |
| Select one of the following chemistry groups: | | 15 |
| Group A | | |
| CH 121<br>& CH 122<br>& CH 123 | GENERAL CHEMISTRY<br>and *GENERAL CHEMISTRY<br>and *GENERAL CHEMISTRY | |
| Group B | | |
| CH 231<br>& CH 261 | GENERAL CHEMISTRY<br>and *LABORATORY FOR CHEMISTRY 231 | |
| CH 232<br>& CH 262 | GENERAL CHEMISTRY<br>and *LABORATORY FOR CHEMISTRY 232 | |
| CH 233<br>& CH 263 | GENERAL CHEMISTRY<br>and *LABORATORY FOR CHEMISTRY 233 | |
| CH 331 | ORGANIC CHEMISTRY | 4 |
| or BB 331 | *INTRODUCTION TO MOLECULAR BIOLOGY | |
| MB 230 | *INTRODUCTORY MICROBIOLOGY | 4 |
| MTH 111 | *COLLEGE ALGEBRA | 4 |
| MTH 112 | *ELEMENTARY FUNCTIONS | 4 |
| *Statistics* | | |
| ST 201 | PRINCIPLES OF STATISTICS | 4 |
| or ST 351 | INTRODUCTION TO STATISTICAL METHODS | |
| *Business* | | |
| Select one course from the following: | | 3-4 |
| AEC 211 | AGRICULTURAL AND FOOD MANAGEMENT | |
| AEC 221 | AGRICULTURAL AND FOOD MARKETING | |
| AEC 388 | AGRICULTURAL LAW | |
| BA 260 | INTRODUCTION TO ENTREPRENEURSHIP | |
| **Total Hours** | | **180** |

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Baccalaureate Core Course

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Writing Intensive Course (WIC)

1

Please reference the baccalaureate core course catalog (http://catalog.oregonstate.edu/earning-degrees/bcc/) for a list of approved courses

2

No more than two courses (or lecture/lab combinations) from any one department may be used by a student to satisfy the Perspectives category of the core

3

The two courses used to fulfill the Synthesis requirement may not be in the same department

## Major Code: 125

| | | |
|---|---|---|
| **First Year** | | |
| **Fall** | | **Credits** |
| ANS 100 | ORIENTATION TO ANIMAL AND RANGELAND SCIENCES | 1 |
| ANS 121 | *INTRODUCTION TO ANIMAL SCIENCES | 4 |
| CH 121 | GENERAL CHEMISTRY | 5 |
| MTH 111<br>or WR 121 | *COLLEGE ALGEBRA (or COMM)<br>or *ENGLISH COMPOSITION | 4 |
| | Credits | 14 |
| **Winter** | | |
| CH 122 | *GENERAL CHEMISTRY | 5 |
| MTH 112<br>or WR 121 | *ELEMENTARY FUNCTIONS (or COMM)<br>or *ENGLISH COMPOSITION | 4 |
| ANS Industries | | 3 |
| Bacc Core | | 3 |
| | Credits | 15 |
| **Spring** | | |
| CH 123 | *GENERAL CHEMISTRY | 5 |
| WR 121 | *ENGLISH COMPOSITION (or COMM) | 3 |
| HHS 231 | *LIFETIME FITNESS FOR HEALTH | 2 |
| Bacc Core | | 3 |
| Electives | | 3 |
| | Credits | 16 |
| **Second Year** | | |
| **Fall** | | |
| BI 221 | *PRINCIPLES OF BIOLOGY: CELLS | 4 |
| WR II | | 3 |
| ANS Industries | | 3 |
| Ag Courses | | 3 |
| Electives | | 3 |
| | Credits | 16 |
| **Winter** | | |
| BI 222 | *PRINCIPLES OF BIOLOGY: ORGANISMS | 4 |
| ANS 251 | PRINCIPLES OF ANIMAL FOODS TECHNOLOGY | 3 |
| ANS Industries | | 3 |
| Bacc Core | | 3 |
| Electives | | 3 |
| | Credits | 16 |
| **Spring** | | |
| ANS 207 | SOPHOMORE SEMINAR | 2 |
| BI 223 | *PRINCIPLES OF BIOLOGY: POPULATIONS | 4 |
| HHS 241 | *LIFETIME FITNESS (or PAC) | 1 |
| Business Course | | 3 |
| Bacc Core | | 3 |
| Electives | | 3 |
| | Credits | 16 |
| **Third Year** | | |
| **Fall** | | |
| ST 201<br>or ST 351 | PRINCIPLES OF STATISTICS<br>or INTRODUCTION TO STATISTICAL METHODS | 4 |
| ANS 311 | PRINCIPLES OF ANIMAL NUTRITION | 3 |
| ANS 378 | ANIMAL GENETICS | 4 |
| CH 331<br>or BB 331 | ORGANIC CHEMISTRY<br>or *INTRODUCTION TO MOLECULAR BIOLOGY | 4 |
| | Credits | 15 |
| **Winter** | | |
| ANS 313 | APPLIED ANIMAL NUTRITION: FEEDS AND RATION FORMULATION | 4 |
| ANS 314 | ANIMAL PHYSIOLOGY | 4 |
| ANS Production | | 3 |
| Bacc Core (Synthesis) | | 3 |
| | Credits | 14 |
| **Spring** | | |
| Upper-Division ANS | | 3 |
| Ag Credits | | 4 |
| Electives or ANS Production | | 4 |
| Bacc Core | | 3 |
| | Credits | 14 |
| **Fourth Year** | | |
| **Fall** | | |
| ANS 420 | ^ETHICAL ISSUES IN ANIMAL AGRICULTURE (Taken any term of senior year) | 3 |
| Upper-Division ANS course | | 3 |
| ANS Production | | 3 |
| Other Ag Course | | 3 |
| Electives | | 3 |
| | Credits | 15 |
| **Winter** | | |
| Bacc Core (Synthesis) | | 3 |
| Ag Courses | | 3 |
| MB 230 | *INTRODUCTORY MICROBIOLOGY | 4 |
| Electives | | 4 |
| | Credits | 14 |
| **Spring** | | |
| ANS 316 | REPRODUCTION IN DOMESTIC ANIMALS | 4 |
| ANS 317 | REPRODUCTION IN DOMESTIC ANIMALS LABORATORY | 1 |
| Ag Courses | | 4 |
| Electives | | 6 |
| | Credits | 15 |
| | Total Credits | 180 |