

TARLETON STATE UNIVERSITY

DEPARTMENT OF ANIMAL SCIENCES

INFORMATION FOR GRADUATE STUDENTS

The Department of Animal Sciences offers a Master of Science in Agriculture with two tracks: (1) the **non-thesis track** and (2) the **thesis track**, which is research based. The purposes of these tracks differ somewhat according to the objectives, plans, and employment areas of individual students. The following provides general information concerning the two tracks.

Non-thesis track

The MS (non-thesis track) may be attractive to both full-time students and to part-time or commuting students who desire advanced course work beyond the BS degree. It is a more general degree with course work flexibility to allow students to design a program emphasizing specialized interests in specific subject areas, or one emphasizing broader-based advanced studies. This degree should be considered “terminal”, meaning that, in most cases, it will not qualify nor prepare the recipient for further graduate study at the Ph.D. level. General requirements include 36 semester hours of advanced course work in agriculture and supporting fields above the bachelor’s degree.

Thesis track

The MS (thesis track) may be attractive to students who not only desire advanced course work, but who also wish to develop a deeper, more thorough understanding of a specific aspect of animal science. Usually, pursuit of this degree necessitates full-time and uninterrupted graduate enrollment. This is the degree track that should be pursued if there is an intention to continue one’s education at the Ph.D. level, or if there is a desire for employment in the more scientific or technological segments of the animal industry. Furthermore, the experience gained in research methodology, the scientific process, and technical writing is invaluable in enhancing and broadening one’s employment and advancement opportunities when compared to the non-thesis track. General requirements include 30 semester hours of advanced course work in agriculture and supporting fields above the bachelor’s degree, plus an original research project under the direction of a graduate faculty member and preparation of a thesis. Upon acceptance of the thesis, 6 semester hours (AGRI 5886) will be awarded.

ADMISSION

Upon approval for admission by the Dean of the College of Graduate Studies, the student should contact the Department of Animal Sciences for assignment to a graduate advisor. If it is the student’s intent to pursue an MS (thesis track) then the student must consult with the graduate faculty concerning potential research projects and thesis topics. Because of the close interaction and cooperation required between the student and the graduate faculty advisor, pursuit of the MS (thesis track) degree must be arranged in

advance. As soon as possible thereafter, and normally prior to completion of more than 12 hours, the student selects an advisory committee, which then assumes the advisory role. The student is encouraged to select one committee member from outside of the Animal Sciences Department. The student is responsible for securing committee approval of a formal degree plan and submitting the degree plan with an application for candidacy for the master's degree to the Graduate Dean.

COMMITTEE SELECTION

1. **Select a committee chair.** Without question, this is the most important person on the committee. The chair must be a full-time faculty member in the department.
2. **Select the remaining committee members.** The Thesis committee must consist, at a minimum, of the chair and two additional committee members. *In consultation with the chair*, the two committee members should be chosen based upon expertise in your area of study. *The purpose of the committee is to ensure that you engage in a study that is of high quality.* The remaining members may be current members of the department. But at a minimum, one of the members must be a full-time faculty member in the department, and the other must be a graduate faculty member at Tarleton State University. With the approval of your committee chair, additional members may be added to your committee.

CURRICULUM

All students must complete a minimum of 36 credit hours of graduate work. A rigid, standard curriculum required of all students is not imposed; instead, the graduate curriculum is individually planned within certain guidelines by each student and approved by the advisory committee and the Dean of the College of Graduate Studies. Two-thirds (24 hours) of the total 36 hours must be 5000-level courses. A maximum of 12 hours may be chosen from an approved list of upper level undergraduate courses with additional requirements to receive graduate credit and/or from prearranged problems courses.

APPROVED UNDERGRADUATE COURSES

- ANSC 308 - Physiology of Reproduction
- ANSC 310 - Principles of Equine Reproduction
- ANSC 313 - Sheep and Goat Production
- ANSC 315 - Animal Diseases and Parasites
- ANSC 319 - Animal Breeding
- ANSC 321 - Meat Science
- ANSC 324 - Horse Nutrition
- ANSC 325 - Equine Exercise Physiology
- ANSC 403 - Beef Cattle Production
- ANSC 405 - Anatomy and Physiology of Farm Animals
- ANSC 406 - Animal Nutrition
- ANSC 408 - Environmental Physiology
- ANSC 410 - Swine Production
- ANSC 412 - Meat Processing and Merchandising
- ANSC 426 - Big Game Ecology and Management
- ANSC 430 - Horse Enterprise Management
- ANSC 440 - Advanced Dairy Ration Balancing and Records Management
- ANSC 450 - Feed Analysis
- ANSC 458 - Laboratory Topics in Animal and Food Sciences
- D S 302 - Feeding and Management of Dairy Cattle
- WLDM 375 - Conservation of Natural Resources

CURRENT GRADUATE COURSE INVENTORY

Current Course Inventory - ANSC

504-3 Ruminant Nutrition. (3-0) Survey of current knowledge and concepts in ruminant physiology and biochemistry, their literature and experimental basis and relation to current and future practice and investigation. Prerequisites: ANSC 406 and graduate classification.

505-3 Advanced Livestock Production. (3-0) Survey of current knowledge and concepts in breeding and reproduction, nutrition, and modern management of livestock. Review of past and present research and application to future practice. Prerequisites: ANSC 308 and graduate classification.

506-3 Assisted Breeding Technology. (2-2) Theory and practice of assisted breeding technology in modern breeding programs for farm livestock and other animal species. Prerequisites: ANSC 308 and AGRN 309 or equivalents.

520-3 Beef Cattle Feedlot Management. (3-0) A study of the operation of industrial feedlots. Design of feedlots, economics, technical nutrition, cattle management, marketing, and consumer relations. Prerequisites: ANSC 309 and graduate classification.

540-3 Advanced Dairy Ration Balancing and Records Management. (1-4) Students will learn to evaluate real-life dairy rations and feeding management strategies and make suggestions for improvements. Students also will learn to evaluate dairy herd management records and make management recommendations based on those records. The course is for students who desire advanced practical training in applied nutrition and dairy herd management. Credit for both ANSC 540 and either D S 440 or ANSC 440 will not be awarded. Prerequisite: D S 302 or equivalent.

586-v Animal Science Problems. (Credit variable) Advanced studies in animal science problems and procedures. Problems assigned according to experience, interest, and needs of individual student.

590-3 Special Topics. (3-2) Selected topics in animal sciences offered as needed and dependent upon departmental, faculty, and student interests. May be repeated as topics vary. Instructor approval required prior to registration. Recent topics include: Processed Meats; Advanced Beef Cattle Production; Animal Growth and Development; Advanced Meat Goat Production.

588-v Thesis. (1 to 6-0) Scheduled when the student is ready to begin the thesis. No credit until the thesis is completed. Prerequisite: Approval of instructor of record.

599-3 Practicum, Field Problems, or Internship. (3-0) Prepared and supervised work experience in and animal science related position with a public or private related business organization. May be repeated for a total of 6 hours credit. Prerequisite: approval of student's graduate committee. Field experiences fee \$50.

Current Course Inventory - AGRN

501-4 Plant Breeding. (3-3) Specialized study of genetics as related to plant breeding. Methods of improving crop plants through hybridization, inbreeding and selection, heterosis, ploidy, quantitative characters, and induced mutation. Prerequisites: AGRN 309 and graduate classification. Lab fee \$5.

510-4 Vegetative Influences. (3-3) Effects of plants on their environment, microclimate, soil properties, water yield, watershed management, forage production, and range management practices. Prerequisites: Graduate classification and approval of instructor of record. Lab fee \$5.

511-3 Advanced Genetics. (3-0) Impact of molecular genetics and biotechnology in agriculture and industry; evaluation of changes, discoveries, and potential of genetic engineering; assessment of related ethical impact on society. Credit for both AGRN 511 and GEN 511 will not be awarded. Prerequisite: AGRN 309 or GEN 309 or equivalent.

527-3 Environmental Soil Science. (3-0) This course applies fundamental concepts of soil science to environmentally significant reactions in soil. It will cover background information useful to students new to the discipline, including the chemistry of inorganic and organic soil components, soil acidity and salinity, and ion exchange and redox phenomena. Discussion will also extend to sorption/desorption, oxidation/reduction of metals and organic chemicals, rates of pollutant reactions, and technologies for remediating contaminated soils. Credit for AGRN 427 and AGRN 527 will not be awarded. Prerequisites: AGRN 301 and graduate classification.

530-3 Soil Physical Properties and Management. (3-0) Soil physical characteristics and their relationship to soil management; emphasis placed on the methods of measuring soil and soil conservation. Prerequisites: AGRN 301 and graduate classification.

540-3 Soil Mapping. (3-0) A field-based course in soil mapping incorporating landscape and vegetative interpretation, source sediment identification and introductory cartographic techniques. GIS techniques, aerial photo interpretation and county soil survey interpretations will also be incorporated in some settings. The course will be designed as a mini-session and will require travel to various areas across Texas to view a variety of different soils. Travel locations may include but are not limited to far west Texas, coastal areas, central Texas, etc. Students will be responsible for travel costs incurred. Taught every other summer. Prerequisites: AGRN 301, 3103 and graduate classification.

586-v Agronomy Problems. (Credit variable) Advanced problems in agronomy topics. Prerequisite: Approval of instructor of record.

Current Course Inventory - AGRI

560-3 Agricultural Research Methods. (3-1) The application of sampling and experimental designs to laboratory and field research for agricultural sciences. Data collection protocols, statistical analyses, instrumentation, computer applications, data presentation, and technical writing associated with plant and animal research. Students are required to design and complete an independent research project or complete components of a thesis.

580-3 Research and Writing for Agriculture. (3-0) Preparation of writing samples, technical reviews, and/or professional manuscripts related to various topics in agriculture. Prerequisite: approved research methodology course and approval of instructor of record.

585-v Agriculture Seminar. (Credit variable) A graduate seminar with content varying according to the needs and experiences of students and the instructor of record. May be repeated for up to three hours credit as content varies. Open to all students with graduate classification majoring in agriculture.

588-v Thesis. (1 to 6-0) Scheduled when the student is ready to begin the thesis. No credit until the thesis is completed. Prerequisite: Approved research methodology course and approval of instructor of record.

590-3 Special Topics. (3-2) Selected topics in agriculture offered as needed and dependent upon departmental, faculty, and student interests. May be repeated as topics vary. Instructor approval required prior to registration.

Current Course Inventory - BIOL

502-3 Ecological Plant Physiology. (3-0) The interrelations of plants and their environments with emphasis on those which are subject to manipulation. Critical processes such as dormancy, photosynthesis, nutrition, reproduction, and water relations and their interactions in survival and biomass production. Prerequisite: BIOL 336 or approval by the department head.

509-3 Cellular Biology. (3-0) A study of cellular morphology and function at the ultrastructural and molecular level. Prerequisites: Organic chemistry and 18 hours of BIOL or approval by the department head.

510-3 Epidemiology of Zoonoses. (3-0) The study of infections or infectious diseases transmissible under natural conditions between animals and humans. Prerequisites: BIOL 203 and 445 or approval by the department head.

520-3 Environmental Biology. (3-0) Study of humans' interactions with plants and animals within ecosystems to include environmental issues; conservation, utilization, and wise management of natural resources.

521-3 The Aquatic Environment. (3-0) A study of the basic principles involved in the ecology of the aquatic community including biotic and abiotic relationships. Emphasis placed on the sources of water contamination to include the effects of the contamination upon the changes in water chemistry and their possible biological implication. Prerequisite: 18 hours of

BIOL and 2 semesters of CHEM or approval by the department head.

530-3 Development of Modern Biological Concepts. (3-0) A study of the development of biological concepts and their impact upon science and society. Biographical as well as contemporary readings will be involved. Prerequisite: Graduate classification or approval by the department head.

531-3 Conservation Biology. (3-0) Principles of conservation biology. Study of how evolutionary change, dynamic ecology, and humans influence conservation of living organisms. Topics include population genetics, ecosystem conservation, habitat fragmentation, and practical applications of the sciences to conservation problems. Prerequisites: BIOL 303 and 401 or approval of department head.

586-v Biological Problems. (Credit variable.) Independent research under the supervision of an instructor. A formal report will be submitted to the instructor. A student may not count more than 6 hours of biological problems toward a degree. Lab fee \$10.

588-v Thesis. (1 to 6-0) Scheduled when the student is ready to begin the thesis. No credit until thesis is completed. Prerequisite: BIOL 598 and consent of major professor.

590-3 Special Topics. (3-0) Selected topics in an identified area of biology, biochemistry or biotechnology. May be repeated for credit as topics vary. Prerequisites: 12 hours of biology and 8 hours of chemistry or approval of department head.

598-3 Research Design and Analysis. (3-0) Statistical principles and techniques applicable to the procurement, analysis, and evaluation of quantitative data. Prerequisite: MATH 107 or approval by the department head.

599-3 Practicum, Field Problem, or Internship. (3-0) Supervised practice in specialized laboratory or professional settings. Prerequisites: 12 hours of biology and 8 hours chemistry or approval of department head.