

## Animal/Equine Science Courses

**AGRI 192 01(0-0-2). Orientation to Agricultural Systems. F**

Freshman inquiry course in agriculture. Information and skills necessary to succeed in majors in the agricultural sciences.

**AGRI 292 01(1-0-0). Transfer Seminar. F, S**

Transfer inquiry course in agriculture. Information and skills necessary to succeed in majors in the agricultural sciences.

**+ANEQ 101 03(3-0-0). Food Animal Science. F, S**

Development, organization, trends, and management of the livestock industry; emphasis on applying science to the production of food and fiber.

**+ANEQ 102 04(3-2-0). Introduction to Equine Science. F**

Equine physiology, production systems and management systems as it pertains to the equine industry and management. Limited to Animal Science and Equine Science majors until prior to semester beginning.

**ANEQ 201A-B 02(0-4-0). Preparation of Horses for Competition. F, S**

Prerequisite: Instructor approval.

Development of skills to prepare and present horses in competitions aimed at enhancing their value. A) Western. B) English.

**ANEQ 202 01 (1-0-0). Safety in Horse Handling. F**

Horse handling safety skills.

**ANEQ 203 02 (1-2-0). Equine Management. S**

Prerequisite: ANEQ 102

Equine management and care techniques with hands-on experience.

**ANEQ 230 03(3-0-0). Farm Animal Anatomy and Physiology. F, S, SS**

Prerequisite: Three credits of 100-level life.

Basic concepts of farm animal anatomy and physiology; emphasis on growth, digestion and reproduction.

**+ANEQ 249 01 (1-2-0). Introduction to the Trail Riding Industry. F, S**

Prerequisite: Written consent of instructor

Emphasis on horse care, regulations, first aid, health, training, and hosting a trail ride.

**ANEQ 250 03(1-4-0). Live Animal and Carcass Evaluation. F, S**

Prerequisite: ANEQ 101 or ANEQ 102.

Growth, development, and value-determining characteristics of market animals.

**ANEQ 286 01(1-2-0). Livestock Practicum. F, S**

Prerequisite: ANEQ 101 or concurrent registration or ANEQ 102 or concurrent registration.

Livestock breeds and terminology; classification of feedstuffs; livestock handling and care; basic animal management techniques, hands-on experience.

**ANEQ 292 01(1-0-1). Equine Industry Seminar. S**

Prerequisite: ANEQ 102.

An overview of the equine industry, industry careers and prepares student for directed study in their applied and elective courses in Equine Science.

**ANEQ 300A-W. Topics in Animal Sciences. F, S**

- A) Livestock Handling 01(1-0-0). F, S
- B) BSPM 300. Livestock entomology 01(1-0-0). S  
Prerequisite: 3 credits of BZ or Life at the 100 level. Credit not allowed for both ANEQ 300B and BSPM 300.
- E) Family Ranching 01(1-0-0). S  
Prerequisite: ANEQ 101 or ANEQ 102
- L) Quality Assurance 02(2-0-0). S  
Prerequisite: ANEQ 101 or ANEQ 102
- N) Seedstock merchandising. 02(1-2-0). F  
Prerequisite: Junior or Senior standing. Overview of beef seedstock industry, including hands-on selection, management, and marketing of cattle. Course required to apply for seedstock team.
- +R) Calving and Calf Care 02 (1-2-0). S  
Prerequisite: ANEQ 310; ANEQ 478; senior standing
- T) Event, fair, and show management 01(1-0-0).  
Prerequisite: ANEQ 101 or ANEQ 102. Credit not allowed for both ANEQ T and ANEQ 358.
- U) Seedstock Sale Management. 02(2-0-0). S  
Prerequisite: ANEQ 300N.  
Develop, plan, and implement an effective seedstock cattle sale based on genetic information, customer service principles, and client relationships.
- W) Equine Manure Management 01(1-0-0). S  
Prerequisite: ANEQ 101 or ANEQ 102. Practices that maximize benefits of manure to soils and crops while minimizing hazards to air and water quality; complying with regulations.

**ANEQ 310 03(3-0-0). Animal Reproduction. F, S**

Prerequisite: ANEQ 230 or BMS 230.  
Anatomy and physiology of the reproductive system; causes of reproductive failure in farm animals; methods of improving reproductive performance.

**ANEQ 312 02(1-2-0). Animal Ultrasonography. F**

Prerequisite: ANEQ230; ANEQ310  
Fundamentals and application of using ultrasound in farm animals; basic reproductive technologies; utilizing ultrasound as a management tool.

**ANEQ 313/VS 313 03 (3-0-0). Prevention and Control of Livestock Diseases. F**

Prerequisite: ANEQ 230 or BMS 300; ANEQ 310; ANEQ 320; junior or senior standing. Credit now allowed for both ANEQ 313 and VS 313.  
Common ailments of livestock; sanitation and disease prevention and control.

**ANEQ 315 02(1-2-0). Equine Behavior. S**

Prerequisite: ANEQ 102; sophomore or higher standing.  
Equine behaviors related to training and learning.

**+ANEQ 320 04(3-3-0). Principles of Animal Nutrition. F, S**

Prerequisite: ANEQ 230 or BMS 300 or BMS 360; three credits 100-level chemistry.  
Understanding of nutrients and nutrient function required to support animal life through all physiological states. Required field trips.

**ANEQ 322 02(2-0-0). Pet Nutrition. F, S, SS**

Prerequisite: ANEQ 320; ANEQ 345; FSHN 350.  
Offered only as an online course through Continuing Education.  
Registration information at: <http://www.online.colostate.edu>  
Nutrients, nutrient requirements, feeding practices, food sources and management for companion animals (dogs, cats, birds, fish, reptiles, etc).

**ANEQ 323 02(2-0-0). Zoo Nutrition. F, S, SS**

Prerequisite: ANEQ 320; ANEQ 345; FSHN 350.  
Offered only as an online course through Continuing Education.  
Registration information at: <http://www.online.colostate.edu>  
Unique nutritional requirements of mammalian, avian, and reptile captive wild animals; management protocols needed.

**+ANEQ 325 02 (2-2-0) Equine Exercise Physiology. S**

Prerequisite: ANEQ 230 or BMS 300.

Overview of the main aspects of equine exercise physiology.

**ANEQ 328 03 (3-0-0) Foundations in Animal Genetics. S**

Prerequisite: ANEQ 101 or ANEQ 102; LIFE 102.

Foundational information of the influence of the genome and its genes on qualitative and quantitative traits in animal populations.

**ANEQ 330 03(3-0-0). Principles of Animal Breeding. S**

Prerequisite: BZ 350 or SOCR 330; three credits of 200 to 300 level statistics.

Genetic principles underlying animal improvement; elementary population genetics; heritability; systems of mating; selection.

**ANEQ 334 02(2-0-0). Principles of Equine Genetics. S**

Prerequisite: ANEQ 102; SOCR 330 or BZ 350 or MIP 450; STAT 301 or STAT 307 or STAT 315.

Principles of breeding and genetic improvement of horses, including qualitative and quantitative traits.

**ANEQ 340 03(0-6-0). Horse Training and Sale Preparation I. F**

Prerequisite: Instructor Approval.

Practical training skills using a yearling or two year old: in-hand, restraint, ground driving, longeing, first rides, stable management. (S)

**ANEQ 341 03(0-6-0). Horse Training and Sale Preparation II. S**

Prerequisite: ANEQ 340.

Skills in training for specific riding maneuvers, conditioning, and fitting for sale. Additional time outside of class required on weekends.

**ANEQ 344 04(3-2-0). Principles of Equine Reproductive. F**

Prerequisite: ANEQ 102; ANEQ 230 or BMS 300.

Principles of reproduction and reproductive management of the mare and stallion.

**ANEQ 345 03(3-0-0). Principles of Equine Nutrition: Equine Applications. F, S**

Prerequisite: ANEQ 102; ANEQ 230 or BMS 300; three credits 100-level chemistry; three credits of math.

Principles of nutrition; application in feeding horses in different physiological states to promote health and well-being.

**ANEQ 346 03(3-0-0). Equine Disease Management. F**

Prerequisite: ANEQ 230 or BMS 300.

Lameness and common diseases of horses.

**+ANEQ 349 01(0-2-0). Packing and Outfitting. F, S**

Prerequisite: ANEQ 102; instructor approval.

Business aspects of outfitting/packing the horse; hitches, knots, horse care; planning pack trips, setting up camp, overnight pack trip.

**ANEQ 351 02(1-2-0). Techniques in Therapeutic Riding. F, S**

Prerequisite: ANEQ 102.

Equine assisted activities including therapeutic horseback riding, hippotherapy, driving and vaulting, equine assisted mental health treatments, and programs for youth at risk.

**ANEQ 352 02(0-4-0). Introduction to Horse Evaluation. S**

Prerequisite: ANEQ102

Criteria and techniques for evaluation of horses; development of logical decision processes for establishing comparative value.

**ANEQ 353 03(0-6-0). Advanced Horse Evaluation. F**

Prerequisite: ANEQ 352

Advanced criteria/techniques for horse evaluation; logical decision process development to establish comparative value; intercollegiate competition.

**ANEQ 354 03(0-6-0). Introduction to Livestock Evaluation. F**

Prerequisite: ANEQ 101.

Criteria and techniques for evaluation of livestock; development of logical decision processes for establishing comparative value.

**ANEQ 355 01(0-9-0). Advanced Livestock Evaluation. F, S**

Prerequisite: ANEQ 354. Course may be taken twice for a maximum of 2 credits.

Advanced criteria and techniques for evaluation of livestock; establishing comparative value; participating in intercollegiate competition.

**ANEQ 356 03(0-6-0). Introduction to Dairy Evaluation. F**

Criteria and techniques for evaluation of dairy cattle; development of logical decision processes for establishing comparative value.

**ANEQ 357 02(0-4-0). Advanced Dairy Evaluation. S**

Prerequisite: ANEQ 356

Advanced criteria and techniques for evaluation of dairy cattle; establishing comparative value; participating in intercollegiate competition.

**ANEQ 358 01(1-0-0). Equine Event and Sales Management. F**

Prerequisite: ANEQ 102.

Credit not allowed for both ANEQ 358 and ANEQ 300T.

Skills necessary to produce, organize, and promote equine related events

**ANEQ 359 01(1-0-0). Equine Sales Production. S**

Prerequisite: ANEQ 358; instructor approval.

Emphasizes skills necessary to host and evaluate an equine sale.

**ANEQ 360 03(3-0-0). Principles of Meat Science. F**

Prerequisite: Three credits 100-level chemistry.

Structure, composition, and biology of muscle and associated tissues; wholesomeness, nutritive value, and palatability of beef, pork, and lamb.

**ANEQ 361 03(0-6-0). Introduction to Meat Product Evaluation. F**

Criteria and techniques for evaluation of meat products; development of logical decision processes for establishing comparative value.

**ANEQ 362 01(0-4-0). Advanced Meat Production Evaluation. F, S**

Prerequisite: ANEQ 361. Course may be taken twice for a maximum of 2 credits.

Criteria and techniques for evaluation of meat products; establishing comparative value; participating in intercollegiate competition.

**ANEQ 363 01(0-2-0). Introduction to Wool and Fiber Evaluation. F**

Criteria and techniques for evaluation of wool; development of logical decision processes for establishing comparative value.

**ANEQ 364 01(0-2-0). Advanced Wool and Fiber Evaluation. S**

Prerequisite: ANEQ 363

Criteria and techniques for evaluation of wool; establishing comparative value; participating in intercollegiate competition.

**ANEQ 365 03(2-2-0). Principles of Teaching Therapeutic Riding. S**

Prerequisite: ANEQ 351; sophomore standing or above. Required field trips.

Practical experiences and knowledge of the techniques to be a professional certified therapeutic riding instructor.

**ANEQ 384 Var [1-5]. Supervised College Teaching. F, S, SS**

Prerequisite: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.

**ANEQ 386B-C. Equine Practicum.**

B) Equine reproductive management 02(1-2-0). S, SS

Prerequisite: ANEQ 344

C) Equine farrier management 01(0-2-0). S

Prerequisite: ANEQ 102

**ANEQ 440 03(3-0-0). Equine Production Industry and Issues. F, S**

Prerequisite: Any two of the following: ANEQ 334, ANEQ 344, ANEQ 345, ANEQ 346.

For students planning a career in the horse industry; management of facilities, production systems, personnel, marketing, and biological systems.

**ANEQ 441 02(2-0-0). Integrated Equine Science. F,SS**

Prerequisite: ANEQ 334; ANEQ 345; ANEQ 346.

Describe, understand, and integrate the newest scientific principles in equine sciences with equine management.

**ANEQ 442 02(0-4-0). Riding Instructor Training. F, S**

Prerequisite: ANEQ 102. Instructor approval

Teaching techniques; theory; handling of large mounted groups, beginner through advanced levels.

**+ANEQ 443 02(1-2-0). Applied Equine Nutrition. S**

Prerequisite: ANEQ 345

Applying principles of nutrition to feeding horses in different physiological states in an effort to promote their health and well-being. Required field trips.

**+ANEQ 444 02(2-0-0). Equine Business Management. S, SS**

Prerequisite: ANEQ 440

“Real life” equine industry experience and the ins and outs of managing an equine facility/business. Field trips required.

**ANEQ 445 02(1-3-0). Foaling Management. S**

Prerequisite: ANEQ 344.

Management of the foaling mare and new born foal; monitoring techniques, preventative and emergency care procedures.

**ANEQ 448/SOCR 448 03(2-2-0). Livestock Manure Management and the Environment. F**

Prerequisite: Three credits 100-level chemistry. Credit allowed for only one of the following ANEQ 448, ANEQ 548, SOCR 448, SOCR 548.

Manure management; maximizing benefits to soils and crops; minimizing air and water quality hazards; complying with regulations.

**ANEQ 460 02(2-0-0). Meat Safety. F**

Prerequisite: Three credits 100-level chemistry.

Meat safety; food borne pathogens; hazard analysis critical control points (HACCP) and total quality management (TQM) practices.

**ANEQ 470 04(2-2-0). Meat Systems. S**

Prerequisite: Senior status.

Current issues in U.S. meat production, processing, marketing, and consumption.

**ANEQ 472 03(2-2-0). Sheep Systems. S**

Prerequisite: Senior status in animal science.

Sheep production under farm and ranch conditions; products, breeds, breeding, nutrition, reproduction, and management systems.

**ANEQ 473 03(2-3-0). Dairy Systems. F**

Prerequisite: Senior status.

Integration of nutrition, genetics, physiology, and economics for management decisions of dairy farm operations and production and marketing of milk.

**ANEQ 474 03(2-2-0). Swine Systems. S**

Prerequisite: Senior status.

Production of purebred and commercial swine; breeds, breeding, feeding, marketing, and management.

**ANEQ 475 02(2-0-0). Travel Abroad-Australian Animal Agriculture. F, S, SS.**

Prerequisite: Instructor Approval.

Onsite evaluation of Australian animal agriculture systems with emphasis on production, marketing, and management.

**ANEQ 476 03(3-0-0). Feedlot Systems. S**

Prerequisite: Senior status.

Feedlot facilities; nutrition; procurement, merchandising, handling, processing cattle; health care; custom feeding; managerial duties.

**ANEQ 478 03(2-2-0). Beef Systems. F**

Prerequisite: Senior status.

Beef production as related to consumer through seedstock segments. Major emphasis on cow-calf management.

**ANEQ 486 01(0-3-0). Therapeutic Riding Instructor Practicum. F**

Prerequisite: ANEQ 365

Mentor-guided teaching hours to students preparing for the PATH International Instructor examination.

**ANEQ 487A-B Variable Internship. F, S, SS**

487A – Internship Animal

487B – Internship Equine

Prerequisite: Instructor Approval

Maximum of 6 credits allowed in course. Maximum of 12 credits allowed for any combination of the following courses:

ANEQ 352-357 & 361-364, ANEQ 384, ANEQ 487, ANEQ 495.

**ANEQ 495 Variable Independent Study. F, S, SS**

Prerequisite: Instructor Approval

Maximum of 6 credits allowed in course. Maximum of 12 credits allowed for any combination of the following courses:

ANEQ 352-357 & 361-364, ANEQ 384, ANEQ 487, ANEQ 495.

**ANEQ 496 Variable Group Study. F, S, SS**

Prerequisite: Written consent of instructor.

Maximum of 6 credits allowed in course. Maximum of 12 credits allowed for any combination of the following courses:

ANEQ 352-357 & 361-364, ANEQ 384, ANEQ 487, ANEQ 495.

**ANEQ 500 Variable. Recent Developments. F, S, SS**

Prerequisite: Graduate status.

Recent developments in animal science, avian science, and food technology.

**ANEQ 510 04(3-2-0). Bovine Reproduction Management. F**

Prerequisite: ANEQ 310.

Role of reproduction in economic efficiency of cattle production systems. Causes of delayed breeding and non-pregnancy, abortion and perinatal mortality.

**ANEQ 522 03(3-0-0). Animal Metabolism. F**

Prerequisite: CHEM 245 and CHEM 246 or CHEM 346.

Nutrient digestion, absorption, transport and metabolism in monogastric and ruminant domestic species as affected by physiological changes.

**ANEQ 548/SOCR 548 04(2-2-1). Issues in Manure Management. F**

Prerequisite: Three credits 100-level chemistry.

Credit allowed for only one of the following courses: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548.

Manure management practices maximizing benefits to soils and crops while minimizing hazards to air and water quality and complying with regulations.

**ANEQ 550A 02(1-2-0). Basic Research Surgery – Farm Animal. F**

Prerequisite ANEQ 230 or BMS 230 or BMS 300 or BMS 305 or VS 333; graduate status.

Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.

**ANEQ 550B 02(1-2-0). Basic Research Surgery - Rodent. S**

Prerequisite ANEQ 230 or BMS 230 or BMS 300 or BMS 305 or VS 333; graduate status.

Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.

**ANEQ 551 02(1-2-0) Field Necropsy. F, S**

Prerequisite: ANEQ 230 or BMS 300; ANEQ 346 or MIP 315 A-B or VS300; junior or senior status

Field necropsy techniques for collection of animal tissues for submission to a diagnostic laboratory.

**ANEQ 565 03(3-0-0). Interpreting Animal Science Research. S**

Prerequisite: ANEQ 101 or ANEQ 102; three credits of statistics.

Designing, conducting, analyzing, and reporting of animal science research.

**ANEQ 567 02(2-0-0). HACCP Meat Safety. S**

Prerequisite: ANEQ 460.

Control of health problems in meat products through hazard analysis critical control point (HACCP) and total quality management (TQM) practices.

**ANEQ 575 03(2-2-0). Computational Biology in Animal Breeding. F**

Prerequisite: Graduate standing.

Numerical analysis and use of computers to solve problems in animal improvement.

**ANEQ 587 Variable Internship. F, S, SS**

Prerequisite: Instructor approval.

**ANEQ 610 02(2-0-0). Hormonal Regulation of Growth. S**

Prerequisite: BMS 501

Cellular and molecular regulation of animal growth by hormones and growth factors.

**ANEQ 621 03(3-0-0). Vitamins and Mineral Metabolism. S**

Prerequisite: Graduate status.

Vitamin and mineral metabolism in domestic animals.

**ANEQ 631 03(2-0-1). Selection Index Theory. S.**

Prerequisite: Graduate status.

Quantitative methods for genetic evaluation: selection index theory and introduction to best linear unbiased prediction.

**ANEQ 660 01(1-0-0). Topics in Meat Safety. F, S.**

Prerequisite: ANEQ 567.

Topics of current concern in meat safety.

**ANEQ 676 03(1-4-0). Molecular Approaches to Food Safety. F**

Prerequisite: MIP 300 and MIP 301 or MIP 334 and MIP 335.

Molecular subtyping, tracking and control; molecular ecology and evolution of food-borne pathogens; molecular pathogenesis of food-borne diseases. .

**ANEQ 699 Var [1-9] Thesis. F, S, SS**

Prerequisite: Instructor approval.

**ANEQ 720 03(3-0-0). Nutritional Energetics. F**

Prerequisite: Graduate status.

Dietary energy use to meet animal requirements for maintenance, growth, pregnancy, and lactation; environmental, nutritional, and physiological effects.

**ANEQ 725 03(3-0-0). Rumen Metabolism. S**

Prerequisite: Graduate status.

Microbial degradation, transformation, and synthesis of ingested nutrients, feed particle passage kinetics in the rumen.

**ANEQ 730 03(3-0-0). Advances in Cattle Breeding. S**

Prerequisite: Graduate status.

Literature and research methods in beef cattle breeding.

**ANEQ 731 03(2-0-1). Advanced Genetic Prediction. F**

Prerequisite: ANEQ 575.

Models used in analysis of livestock data and restricted maximum likelihood procedures for mixed models.

**ANEQ 784 Variable [1-18] Supervised College Teaching. F, S, SS**

Prerequisite: Graduate status; instructor approval.

**ANEQ 792A-F 01(0-0-1). Seminar. F, S, SS**

A) General. B) Breeding/Genetics. C) Physiology. D) Meat sciences. E) Nutrition. F) Livestock Management Systems.

**ANEQ 795 Variable [1-18] Independent Study. F, S, SS**

Prerequisite: Graduate status; instructor approval.

**ANEQ 799 Variable [1-18] Dissertation. F, S, SS**

Prerequisite: Graduate status; instructor approval.

+ Field trips