DEPARTMENT OF POULTRY SCIENCE

Head: D. J. Caldwell

Graduate Advisors: C. Alvarado, L. Berghman

Continual growth in the poultry industry increases the need for technical knowledge in the various fields of science needed for a successful poultry business. In no field of agriculture is an understanding of the fundamental and applied sciences more marketable or more rewarding than in the modern intensive production of poultry meat and eggs. Because the bird is the basis for the department’s graduate program, additional areas of interest include exotic and wildlife species as well as cellular and molecular studies using avian models. A major objective of the department is to offer training for work in research, teaching, extension or industrial operations. We also strive to bridge the gap in both directions between courses in fundamental biochemistry, genetics, physiology and economics and their practical application to the production of poultry and the care of all avian species.

The department offers graduate studies leading to the Master of Agriculture (traditional and online), Master of Science and Doctor of Philosophy degrees. In addition to a major in poultry science, students may pursue majors through many intercollegiate faculties including nutrition, food science and technology, and genetics. Faculty expertise exists for study in genetics, reproduction, nutrition, biochemistry, physiology, environment, management, microbiology, processing and marketing for all commercially-important species. The faculty are also actively involved in many of these disciplines for other avian species and in the pursuit of basic cellular and molecular knowledge.

Faculty

Alvarado, Christine Z, Professor
Poultry Science
PHD, Texas A&M University, 2001

Athrey, Giridhar N, Assistant Professor
Poultry Science
PHD, University of Louisiana at Lafayette, 2009

Bailey, Christopher A, Professor
Poultry Science
PHD, Texas A&M University, 1982

Berghman, Luc R, Associate Professor
Poultry Science
PHD, University of Leuven, Belgium, 1987

Caldwell, David J, Professor
Poultry Science
PHD, Texas A&M University, 1997

Carey, John B, Professor
Poultry Science
PHD, Kansas State University, 1982

Duong, Tri, Associate Professor
Poultry Science
PHD, North Carolina State University, 2008

Farnell, Morgan B, Associate Professor
Poultry Science
PHD, Texas A&M University, 2003

Farnell, Yuhua Z, Instructional Assistant Professor
Poultry Science
PHD, Texas A&M University, 2002

Lee, Jason T, Associate Professor
Poultry Science
PHD, Texas A&M University, 2006

Pillai, Suresh D, Professor
Poultry Science
PHD, University of Arizona, 1989

Sams, Alan R, Professor
Poultry Science
PHD, University of Florida, 1987

Walzem, Rosemary L, Professor
Poultry Science
PHD, University of California, Davis, 1987

Masters

• Master of Agriculture in Poultry Science (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/agriculture-life-sciences/poultry-science/magr)

• Master of Science in Poultry Science (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/agriculture-life-sciences/poultry-science/ms)

Doctoral

• Doctor of Philosophy in Poultry Science (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/agriculture-life-sciences/poultry-science/phd)

Courses

POSC 609 Avian Physiology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Basic physiological principles pertaining specifically to avian species; cardiovascular, neural, respiratory, digestive, endocrine and reproductive systems; physiological experiments use various avian species as laboratory animals.
Prerequisite: Approval of instructor.

POSC 611/FSTC 611 Advanced Egg & Poultry Meat Processing
Credits 3. 3 Lecture Hours.
Advanced Egg & Poultry Meat Processing. Focuses on egg markets, egg processing, grading, packaging, safety, quality and consumer acceptance of shell eggs; poultry meat processing (specifically turkeys and broilers), meat quality, markets, consumer acceptance of poultry meat and safety.
Prerequisite: Graduate classification.
Cross Listing: FSTC 611/POSC 611.
POSC 614 Fermentation and Gastrointestinal Microbiology  
Credits 3. 3 Lecture Hours.  
Fermentation and gastrointestinal ecosystems in terms of microorganisms present, their activities and requirements and their interactions in a dynamic system.  
**Prerequisite:** Beginning microbiology and/or biochemistry or approval of instructor.  
**Cross Listing:** NUTR 614 and VTMI 619.

POSC 615 Avian Nutrition  
Credits 3. 3 Lecture Hours.  
Metabolism and nutritional requirements of domestic fowl including proteins, carbohydrates, fats, minerals, vitamins and related feed additives.  
**Prerequisites:** POSC 411 and CHEM 228 or approval of instructor.

POSC 619 Molecular Methods for Microbial Characterization  
Credits 3. 2 Lecture Hours. 2 Lab Hours.  
Underlying principles of molecular methods for microbial detection and characterization in natural and man-made ecosystems; emphasis on method application and data interpretation; emphasis on microbial pathogens and indicator organisms in foods and environment; laboratory covers select protocols.  
**Prerequisites:** POSC 429; SCSC 405; FSTC 326/DASC 326; approval of instructor.  
**Cross Listing:** SCSC 619, FSTC 619 and VTMI 619.

POSC 625/ANSC 623 Precision Diet Formula  
Credits 3. 2 Lecture Hours. 2 Lab Hours.  
Theoretical and applied principles associated with precision feeding and diet formulation to optimize nutrient requirements; optimization using least-cost formulation, ingredient inventory, farm and feed mill management, and nutrient management of non-ruminants (poultry, swine, horse, and fish) and ruminant animals (beef and dairy).  
**Prerequisite:** POSC 411 or ANSC 318.  
**Cross Listing:** ANSC 623/POSC 625.

POSC 628 Advanced Poultry Meat Further Processing  
Credits 3. 3 Lecture Hours.  
The science and practice of value added products; physical, chemical, microbiological and functional characteristics of value-added poultry products as they affect consumer acceptance, efficiency of production and regulatory approval.  
**Prerequisite:** Graduate classification.

POSC 629/FSTC 629 Microbiology of Food Irradiation  
Credits 3. 2 Lecture Hours. 2 Lab Hours.  
Lecture plus laboratory overview of electron beam and x-ray based food irradiation principles; provides a working knowledge of using electronic pasteurization as a means of destroying microbial pathogens or retarding microbial spoilage in foods.  
**Cross Listing:** FSTC 629/POSC 629.

POSC 630 Applied Animal Genomics  
Credits 3. 3 Lecture Hours.  
Theory and application of genomics by livestock industries; consideration of genetic markers, gene mapping methods, genome analysis and emerging technologies such as microarrays, transgenesis, cloning and marker assisted selection; exposure to bioinformatic tools for genomics.  
**Prerequisite:** GENE 603 or approval of instructor.  
**Cross Listing:** ANSC 629 and GENE 629.

POSC 634 Diseases of Poultry  
Credits 3. 3 Lecture Hours.  
Introduction to Poultry Biosecurity and Diseases. Basic understanding of infectious diseases of poultry; control and prevention of infectious diseases.  
**Prerequisites:** BIOL 113/ BIOL 123.  
**Cross Listing:** NUTR 645/VTMI 649.

POSC 645/NUTR 645 Nutrition and Metabolism of Vitamins  
Credits 3. 3 Lecture Hours.  
Chemistry and metabolism of the fat soluble and water soluble vitamins and their roles in animals; integrates cellular biochemistry and metabolism of the vitamins in the vertebrate animals.  
**Prerequisites:** POSC 411 or ANSC 303/NUTR 303; BICH 410 or BICH 603.  
**Cross Listing:** NUTR 645/POSC 645.

POSC 649/VTMI 649 Immunology  
Credits 3. 3 Lecture Hours.  
Cellular basis of the immune response; relationships between inflammation and acquired immunity, MHC and cell activation; the role of cytokines in immunoregulation and hypersensitivity, vaccines, and the mechanism of immunity to viruses, bacteria and parasites.  
**Prerequisite:** VTPB 409 or equivalent.  
**Cross Listing:** VTMI 649/POSC 649.

POSC 650/NUTR 650 Nutrition and Metabolism of Minerals  
Credits 3. 3 Lecture Hours.  
Nutritional significance of minerals in animal metabolism; chemical, biochemical and physiological role of minerals and homeostatic control in animal metabolism.  
**Prerequisites:** POSC 411 or ANSC 303/NUTR 303; BICH 410 or BICH 603.  
**Cross Listing:** NUTR 650/POSC 650.

POSC 660/VTMI 660 Experimental Immunology  
Credits 4. 3 Lecture Hours. 3 Lab Hours.  
Familiarization, development and integration of techniques into experimental design of immunologic investigation; antibody production, protein purification, immunofluorescence, agar-gel diffusion, immunoelectrophoresis and specialized serologic tests.  
**Prerequisites:** BICH 410 or equivalent; 8 hours of microbiology.  
**Cross Listing:** VTMI 660/POSC 660.

POSC 679/NUTR 679 Lipoproteins in Health and Disease  
Credits 3. 3 Lecture Hours.  
Understanding of lipoprotein biology as it relates to nutrient delivery and disease development; emphasis on understanding how structure influences the function of different lipoprotein particles in human and avian systems; opportunity to study individual lipoprotein profiles or those of animals by modern imaging techniques; background in basic lipid biochemistry helpful.  
**Cross Listing:** NUTR 679/POSC 679.

POSC 681 Seminar  
Credit 1. 1 Lecture Hour.  
Intensive review of literature on feeding, breeding, incubation, marketing, and management; development of familiarity with journals, organizations, agencies and personnel working on poultry problems. May be repeated as many semesters as desired.  
**Prerequisite:** Graduate classification.

POSC 685 Directed Studies  
Credits 1 to 6. 1 to 6 Other Hours.  
Individual problems involving application of theory and practice in the various disciplines of poultry science.  
**Prerequisite:** Approval of department head.
POSC 689 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Selected topics in an identified area of poultry science. May be repeated for credit.
Prerequisite: Approval of instructor.

POSC 691 Research
Credits 1 to 23. 1 to 23 Other Hours.
Research methods and techniques in breeding, nutrition, physiology, marketing, management and products technology. Students must conduct experiments in one of these fields. Design of experiments, collection, analysis and presentation of experimental data. Designed for thesis or dissertation credit.