

# Poultry Science (POSC)

## Courses

### POSC 10003. Introduction to Poultry Science. 3 Hours.

To introduce the student to the career opportunities in the poultry science industry. Students will be introduced to biological sciences associated with poultry. Corequisite: Lab component. (Typically offered: Fall)

### POSC 10602. Sustainable Integrated Small Animal Farming. 2 Hours.

Practical information on small scale animal production, including practical strategies for farm planning, issues of economic and environmental sustainability, best management practices, biosecurity, disease prevention, and farm safety will be presented. (Typically offered: Spring)

This course is cross-listed with ANSC 10602.

### POSC 23403. Poultry Production. 3 Hours.

To develop a basic foundation about the practices utilized to produce broilers and turkeys. Course will highlight hatchery function and management; embryo development and hatching; chick/poultry transportation, preparation and maintenance of facilities for rearing birds, bird environment, nutrition, and health. Also to be covered are the different roles associated with live production in an integrated company. Corequisite: Lab component. (Typically offered: Fall)

### POSC 23503. Poultry Breeder Management. 3 Hours.

Students will be introduced to the management practices used in production of young and adult chickens, turkeys, and other poultry with special emphasis on broiler, breeder, and market egg production. Lecture 2 hours, laboratory 3 hours per week. Corequisite: Lab component. (Typically offered: Spring)

### POSC 24101. Domestic Animal Microbiology Laboratory. 1 Hour.

This course is designed for students working on their Poultry Science, Animal Science, and/or Food Science degrees. Students enrolled in this course will learn how to collect samples aseptically from live birds and meat samples, transport samples, and culture samples on a variety of different microbiological media. In addition, students will have the opportunity to visit one of the microbiology labs in the local poultry production facilities. Students will learn how to handle samples, stain bacterial cells, and identify unknown bacteria from field samples. A lab period will be assigned to teaching students on how to use bacteria in food production by teaching students how to prepare and sample yogurt. Corequisite: POSC 24103. (Typically offered: Fall)

This course is cross-listed with ANSC 24131.

### POSC 24103. Domestic Animal Microbiology. 3 Hours.

Basic concepts of domestic animal and poultry microbiology including diversity, genetics, metabolism, growth, control of growth, pathogenesis, and immunology. Prerequisite: (BIOL 10103 and BIOL 10101) and (CHEM 12103 or CHEM 14103 or CHEM 14203). Corequisite: POSC 24101. (Typically offered: Fall)

This course is cross-listed with ANSC 24133.

### POSC 30103. Exotic Companion Birds. 3 Hours.

Topics include basic care, health, breeding, bird evolution, anatomy, and nutritional management of commonly kept exotic companion birds, including parrots, cockatoos, macaws, finches, canaries, and pigeons. Discussion will include housing and care for individual pet birds and large scale breeding and production. Lecture/discussion 3 hours per week. Prerequisite: BIOL 10103. (Typically offered: Fall Odd Years)

### POSC 30303. Animal Physiology. 3 Hours.

Fundamental aspects of central nervous, musculoskeletal, reproductive, digestive, immune, cardiovascular, respiratory and renal systems will be covered. The normal structure and function of these systems will be emphasized. Lecture 3 hours per week. Prerequisite: BIOL 10103. Pre- or corequisite: CHEM 14103 or CHEM 12103. (Typically offered: Spring)

This course is cross-listed with ANSC 30303.

### POSC 31203. Principles of Genetics. 3 Hours.

Fundamentals of heredity, with special emphasis on the improvement of farm animals. Lecture 3 hours per week. Prerequisite: BIOL 10103 and MATH 11003 or higher. (Typically offered: Fall)

This course is cross-listed with ANSC 31203.

### POSC 32203. Poultry Diseases. 3 Hours.

Common diseases affecting poultry reared under commercial conditions will be covered including diagnosis, therapy and prevention. Immunity, sanitation practices, and chemoprophylaxis will also be covered. Lecture 3 hours per week with some demonstrations, slides and videotapes. Prerequisite: ((BIOL 20003 and BIOL 20001) or (POSC 24103 and POSC 24101)), and junior standing. (Typically offered: Spring)

### POSC 33801. Poultry Judging and Selection. 1 Hour.

Practice in production judging and flock selection. Laboratory 3 hours per week. (Typically offered: Fall and Spring) May be repeated for up to 4 hours of degree credit.

### POSC 35103. Current Approaches in Agricultural Laboratory Research. 3 Hours.

A laboratory course to introduce students to current laboratory research techniques used in agricultural and life sciences. Hands-on laboratory exercises will emphasize current cellular and molecular research techniques, laboratory notebook keeping, data interpretation, and presentation of results. Prerequisite: BIOL 10103. (Typically offered: Spring Even Years)

### POSC 351H3. Honors Current Approaches in Agricultural Laboratory Research. 3 Hours.

A laboratory course to introduce students to current laboratory research techniques used in agricultural and life sciences. Hands-on laboratory exercises will emphasize current cellular and molecular research techniques, laboratory notebook keeping, data interpretation, and presentation of results. Prerequisite: BIOL 10103. (Typically offered: Spring Even Years)

This course is equivalent to POSC 35103.

### POSC 35504. Avian Anatomy. 4 Hours.

Detailed coverage of the external and internal anatomy of poultry, including formation and development of the egg and embryo. Lecture 3 hours, laboratory 2 hours per week. Corequisite: Lab component. Prerequisite: BIOL 10103. (Typically offered: Fall)

### POSC 4000V. Special Problems. 1-9 Hour.

Special problems in the poultry sciences for advanced students. (Typically offered: Fall, Spring and Summer) May be repeated for up to 9 hours of degree credit.

### POSC 4010V. Internship in Poultry Science. 1-6 Hour.

Supervised work experience with private or government organizations to introduce students to professional areas of work in poultry science. Prerequisite: Junior standing. (Typically offered: Fall, Spring and Summer) May be repeated for up to 8 hours of degree credit.

### POSC 4020V. Research Experience. 1-6 Hour.

An undergraduate research experience should familiarize students with the research process and expand their knowledge in areas of poultry science through scientific literature searches and hands-on experiential learning. (Typically offered: Fall, Spring and Summer) May be repeated for up to 6 hours of degree credit.

### POSC 40303. Statistical Process Control in the Food Industry. 3 Hours.

Analysis of processing data related to compliance with regulatory limits, quality & safety limits and internal & external customer specifications. Emphasizes statistical process control chart development, including understanding data and chart selection, calculating statistical limits, and interpreting process performance. Prerequisite: Instructor consent. (Typically offered: Irregular)

### POSC 4100V. Special Topics in Poultry Science. 1-4 Hour.

Topics not covered in other courses or for a more intensive study of specific topics in poultry science. (Typically offered: Irregular) May be repeated for degree credit.

**POSC 41203. Legal Issues in Animal Agriculture. 3 Hours.**

An issues-oriented course focusing on the legal issues involved in the production of poultry, swine and livestock. Emphasis will center on the laws, regulations and policy arguments involved in animal confinement, antibiotic use, humane slaughter and veterinary medicine, along with other related issues. The wide range of regulation from local to state to federal, depending on the issue will be studied and discussed. (Typically offered: Spring Odd Years)

This course is cross-listed with AGECE 41203, ANSC 41203.

**POSC 41603. Companion Animal Nutrition. 3 Hours.**

This course is designed to focus on the digestive anatomy, physiology, and nutrient metabolism of non-herbivorous companion animals, primarily dogs and cats. Topics discussed will also include an overview of the pet food industry, its regulations and commonly utilized ingredients. Students will gain a deeper understanding of nutrition as it relates to life stages and various disease states that can affect both dogs and cats. This course will require a Saturday trip to one or two off campus facilities.

Prerequisite: ANSC 31433 or POSC 43403. (Typically offered: Spring)

This course is cross-listed with ANSC 41603.

**POSC 42103. Integrated Poultry Management Systems. 3 Hours.**

Major managerial systems in the integrated commercial poultry industry. Development of an understanding of the basic decision making processes of poultry companies and the factors influencing those decisions. Prerequisite: POSC 23503 and AGECE 11003 and AGECE 23003. (Typically offered: Spring)

**POSC 42303. Value Added Muscle Foods. 3 Hours.**

An intense study of muscle structure and how it relates to the development of further processed meat products. Muscle ultrastructure, protein functionality, product development, and quality analysis will be covered. In class hands on activities will also be included to allow students to obtain experience of producing processed meat products. Prerequisite: POSC 43104. (Typically offered: Spring Odd Years)

**POSC 43104. Egg and Meat Technology. 4 Hours.**

Study of the science and practice of processing poultry meat and egg products; examination of the physical, chemical, functional and microbiological characteristics of value added poultry products; factors affecting consumer acceptance and marketing of poultry products and the efficiency of production. Corequisite: Lab component. Prerequisite: (CHEM 14203 and CHEM 14201) or (CHEM 12103 and CHEM 12101) and BIOL 10103 and BIOL 10101. (Typically offered: Fall)

**POSC 43203. Applied Poultry Parasitology. 3 Hours.**

This course introduces students to the principles, diseases, and diagnostic tools related to parasitology with an emphasis on animal agriculture, specifically poultry. Corequisite: Lab component. Prerequisite: Junior standing, BIOL 10103 and (BIOL 20003 or POSC 24103). (Typically offered: Spring)

**POSC 43403. Poultry Nutrition. 3 Hours.**

Principles of nutrition as applied to the formulation of practical chicken and turkey rations. Lecture 3 hours per week. Prerequisite: CHEM 26103 or CHEM 36053 and junior standing. (Typically offered: Spring)

**POSC 44103. Animal Welfare. 3 Hours.**

This multi-disciplinary course introduces students to the principles and application of animal welfare and will emphasize farm animal welfare and production issues.

(Typically offered: Spring)

This course is cross-listed with ANSC 44103.

**POSC 44203. Applied Poultry Food Safety. 3 Hours.**

This course is a three-hour lecture emphasizing on food safety, microbiology, and sanitation during poultry/meat production and processing, including government regulations influencing meat and poultry processing in the United States.

Prerequisite: BIOL 20003 or POSC 24103. Pre- or corequisite: POSC 43104.

(Typically offered: Fall)

**POSC 46103. Muscle Growth and Development. 3 Hours.**

This is an undergraduate level course offering detailed insights into skeletal muscle morphological, physiological, cellular, and molecular factors affecting muscle structure and function, with special emphasis on cellular and molecular regulation of muscle growth and development, such as myo-, fibro-, and adipogenesis. And the relationship between the properties of skeletal muscle and meat quality. ANSC 30303 and(or) CHEM 38103 are recommended as a prerequisite(s).

(Typically offered: Fall)

This course is cross-listed with ANSC 46103.

**POSC 48001. Seminar: Research Topics. 1 Hour.**

Required by all poultry science majors. Prerequisite: Junior or Senior standing and SPCH 10003. (Typically offered: Spring Odd Years)

**POSC 48101. Seminar: Professionalism. 1 Hour.**

Addressing issues associated with preparation for finding and retaining your first job in the poultry industry. Lecture 1 hour per week. Prerequisite: Junior or Senior standing. (Typically offered: Fall Odd Years)

**POSC 48201. Seminar: Problem Solving. 1 Hour.**

Real world problem solving of poultry production systems. Lecture 1 hour per week. Prerequisite: Junior/ senior standing. (Typically offered: Spring Even Years)

**POSC 48301. Seminar: Processing Regulations. 1 Hour.**

Processing plant procedures and regulations with an emphasis on problem solving. Lecture 1 hour per week. Prerequisite: Junior or senior standing. (Typically offered: Fall Even Years)

**POSC 49203. Brain and Behavior. 3 Hours.**

Covers cellular through neural systems, major brain functions and comparative neuroanatomy. Topics include ion channels, membrane and action potentials, synaptic integration, neurotransmitters, major brain regions of mammals and birds, sensory and autonomic nervous systems, neuroendocrine system, and control by the brain of critical functions and behavior. Lecture 3 hours per week. Prerequisite: (ANSC 30303 or POSC 30303) or PSYC 20003, or BIOL 24103, or BIOL 24003, or BIOL 25473. (Typically offered: Fall)

This course is cross-listed with ANSC 49203.

**POSC 5000V. Special Problems. 1-6 Hour.**

Work in special problems of poultry industry. Prerequisite: Graduate standing. (Typically offered: Fall, Spring and Summer)

**POSC 50303. Statistical Process Control in the Food Industry. 3 Hours.**

Analysis of processing data related to compliance with regulatory limits, quality and safety limits and internal and external customer specifications. Emphasizes statistical process control chart development, including understanding data and chart selection, calculating statistical limits, and interpreting process performance. Graduate degree credit will not be given for both POSC 40303 and POSC 50303. Prerequisite: Instructor consent. (Typically offered: Irregular)

**POSC 5100V. Special Topics in Poultry Sciences. 1-4 Hour.**

Topics not covered in other courses or a more intensive study of specific topics in poultry science. Prerequisite: Graduate standing. (Typically offered: Irregular) May be repeated for degree credit.

**POSC 51103. Food Toxicology and Contaminants. 3 Hours.**

During this course, the student will learn basic concepts of food toxicology, study the different physiological processes involved in food borne intoxications, and learn about potential health problems associated with exposure to these compounds. Prerequisite: Graduate study. (Typically offered: Spring Odd Years)

**POSC 51203. Advanced Animal Genetics. 3 Hours.**

Specialized study of animal genetics. Lecture 3 hours per week. Prerequisite: POSC 31203 or ANSC 31203. (Typically offered: Fall Even Years)

This course is cross-listed with ANSC 51203.

**POSC 51403. Biochemical Nutrition. 3 Hours.**

Interrelationship of nutrition and physiological chemistry; structure and metabolism of physiological significant carbohydrates, lipids, and proteins; integration of metabolism with provision of tissue fuels; specie differences in regulatory control of tissue and whole body metabolism of nutrients. Prerequisite: CHEM 38103.

(Typically offered: Fall Even Years)

This course is cross-listed with ANSC 51403.

**POSC 51502. Protein and Amino Acid Nutrition. 2 Hours.**

Students will be introduced to the basic processes of protein digestion, amino acid absorption, transport, metabolism, and utilization along with how biochemical function of proteins and their dynamic state affect nutritional status for animals and man. Prerequisite: CHEM 38103. (Typically offered: Spring Even Years)

This course is cross-listed with ANSC 51502.

**POSC 51603. Companion Animal Nutrition. 3 Hours.**

This course is designed to focus on the digestive anatomy, physiology, and nutrient metabolism of non-herbivorous companion animals, primarily dogs and cats. Topics discussed will also include an overview of the pet food industry, its regulations and commonly utilized ingredients. Students will gain a deeper understanding of nutrition as it relates to life stages and various disease states that can affect both dogs and cats. This course will require a Saturday trip to one or two off campus facilities.

Prerequisite: ANSC 31433 or POSC 43403. (Typically offered: Spring)

This course is cross-listed with ANSC 51603.

**POSC 52103. Integrated Poultry Management Systems. 3 Hours.**

Major managerial systems in the integrated commercial poultry industry. Development of an understanding of the basic decision making processes of poultry companies and the factors influencing those decisions. Graduate degree credit will not be given for both POSC 42103 and POSC 52103. Prerequisite: POSC 23503 and AGEC 11003 and AGEC 23003. (Typically offered: Fall)

**POSC 52203. Poultry Diseases. 3 Hours.**

This graduate-level course will explore the mechanisms of pathogenesis associated with poultry diseases affecting poultry reared under commercial conditions. This will include anatomical gross diagnosis and testing associated with disease diagnosis. Therapy, prevention, immunity, sanitation/biosecurity practices and chemoprophylaxis will be covered. There will be three formal lectures each week at scheduled times, and an additional hour of instruction per week with the instructor.

(Typically offered: Spring)

**POSC 52303. Value Added Muscle Foods. 3 Hours.**

An intense study of muscle structure and how it relates to the development of further processed meat products. Muscle ultrastructure, protein functionality, product development, and quality analysis will be covered. In class hands on activities will also be included to allow students to obtain experience of producing processed meat products. (Typically offered: Spring Even Years)

**POSC 52403. Legal Issues in Animal Agriculture. 3 Hours.**

An issues-oriented course focusing on the legal issues involved in the production of poultry, swine and livestock. Emphasis will center on the laws, regulations and policy arguments involved in animal confinement, antibiotic use, humane slaughter and veterinary medicine, along with other related issues. The wide range of regulation from local to state to federal, depending on the issue will be studied and discussed. Graduate degree credit will not be given for both POSC 41203 and POSC 52403.

(Typically offered: Spring Odd Years)

**POSC 52504. Egg and Meat Technology. 4 Hours.**

Study of the science and practice of processing poultry meat and egg products; examination of the physical, chemical, functional and microbiological characteristics of value added poultry products; factors affecting consumer acceptance and marketing of poultry products and the efficiency of production. Graduate degree credit will not be given for both POSC 43104 and POSC 52504. Corequisite: Lab component. Prerequisite: (CHEM 14203 and CHEM 14201) or (CHEM 12103 and CHEM 12101) and BIOL 10103 and BIOL 10101. (Typically offered: Fall)

**POSC 53103. Domestic Animal Bacteriology. 3 Hours.**

A study of bacteria pathogenic for domestic animals. Lecture 3 hours per week.

(Typically offered: Fall)

**POSC 53203. Applied Poultry Parasitology. 3 Hours.**

This course introduces students to the principles, diseases, and diagnostic tools related to parasitology with an emphasis on animal agriculture, specifically poultry.

Corequisite: Lab component. (Typically offered: Spring)

**POSC 53403. Advanced Immunology. 3 Hours.**

Aspects of innate, cell-mediated, and humoral immunity in mammalian and avian species. Molecular mechanisms underlying the function of the immune system are emphasized. A course in Basic Immunology prior to enrollment in Advanced Immunology is recommended but not required. Lecture 3 hours per week. (Typically offered: Spring)

This course is cross-listed with BIOL 53473.

**POSC 53502. Immunology in the Laboratory. 2 Hours.**

Laboratory course on immune-diagnostic laboratory techniques and uses of antibodies as a research tool. Included are cell isolation and characterization procedures, immunochemistry, flow cytometry, ELISA and cell culture assay systems. Laboratory 6 hours per week. Prerequisite: POSC 53403 or BIOL 53473 or BIOL 47183. (Typically offered: Spring)

This course is cross-listed with BIOL 53572.

**POSC 54103. Animal Welfare. 3 Hours.**

This multi-disciplinary course introduces students to the principles and application of animal welfare and will emphasize farm animal welfare and production issues.

(Typically offered: Spring)

This course is cross-listed with ANSC 54103.

**POSC 54203. Applied Poultry Food Safety. 3 Hours.**

This course is a three-hour lecture emphasizing on food safety, microbiology, and sanitation during poultry/meat production and processing, including government regulations influencing meat and poultry processing in the United States. (Typically offered: Fall)

**POSC 54403. Poultry Nutrition. 3 Hours.**

Principles of nutrition as applied to the formulation of practical chicken and turkey rations. Lecture 3 hours per week. Graduate degree credit will not be given for both POSC 43403 and POSC 54403. Prerequisite: CHEM 26103 or CHEM 36053. (Typically offered: Spring)

**POSC 56103. Muscle Growth and Development. 3 Hours.**

This is a graduate level course offering detailed insights into skeletal muscle morphological, physiological, cellular and molecular factors affecting muscle structure and function, with special emphasis on cellular and molecular regulation of muscle growth and development, such as myo-, fibro-, and adipo-genesis. And the relationship between the properties of skeletal muscle and meat quality. Graduate students will focus on the scientific reading, problem solving, and generating research ideas. ANSC 30303, CHEM 38103 or ANSC 51403 or an equivalent course are recommended as a prerequisite. (Typically offered: Fall)

This course is cross-listed with ANSC 56103.

**POSC 57433. Advanced Analytical Methods in Animal Sciences Laboratory. 3 Hours.**

Introduction into theory and application of current advanced analytical techniques used in animal research. Two 3-hour laboratory periods per week. (Typically offered: Fall)

This course is cross-listed with ANSC 57403.

**POSC 58703. Molecular Analysis of Foodborne Pathogens. 3 Hours.**

Course topics will include molecular detection and identification of foodborne pathogens, the molecular response of foodborne pathogens to their environments, functional genomic approaches, and analysis of complex microbial communities. Lecture/discussion 3 hours per week. (Typically offered: Fall)

**POSC 59001. Graduate Seminar. 1 Hour.**

Critical review of the current scientific literature pertaining to the field of poultry science. Oral reports. Recitation 1 hour per week. (Typically offered: Fall and Spring) May be repeated for up to 4 hours of degree credit.

**POSC 59203. Brain and Behavior. 3 Hours.**

Covers cellular through neural systems, major brain functions and comparative neuroanatomy. Topics include ion channels, membrane and action potentials, synaptic integration, neurotransmitters, major brain regions of mammals and birds, sensory and autonomic nervous systems, neuroendocrine system, and control by the brain of critical functions and behavior. Lecture 3 hours per week. Prerequisite: (ANSC 30303 or POSC 30303) or PSYC 20003 or BIOL 24103 or BIOL 24003 or BIOL 25473. (Typically offered: Fall)

This course is cross-listed with ANSC 59203.

**POSC 59302. Cardiovascular Physiology of Domestic Animals. 2 Hours.**

Cardiovascular physiology, including mechanisms of heart function and excitation, and blood vessel mechanisms associated with the circulatory system in domestic animals and poultry. Lecture 3 hours; drill 1 hour per week (for second 8 weeks of semester). Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: ANSC 30303 or POSC 30303. (Typically offered: Fall)

This course is cross-listed with ANSC 59302.

**POSC 59403. Endocrine Physiology of Domestic Animals. 3 Hours.**

Endocrine physiology, including mechanisms of hormone secretion, function, and regulation. Mechanisms associated with the endocrine system will be discussed for domestic animals and poultry. Prerequisite: ANSC 30303 or POSC 30303. Pre- or Corequisite: CHEM 38103. (Typically offered: Spring Even Years)

This course is cross-listed with ANSC 59403.

**POSC 59502. Respiratory Physiology of Domestic Animals. 2 Hours.**

Respiratory physiology, including mechanisms of lung function and gas exchange. Mechanisms associated with the interaction of the respiratory system with other bodily systems in domestic animals and poultry will be discussed. Lecture 3 hours; drill 1 hour per week for first 8 weeks of semester. Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: ANSC 30303 or POSC 30303. (Typically offered: Spring)

This course is cross-listed with ANSC 59502.

**POSC 59602. Gastrointestinal/Digestive Physiology of Domestic Animals. 2 Hours.**

Gastrointestinal and hepatic physiology, including mechanisms of digestion, absorption of nutrients with emphasis on cellular control mechanisms in domestic animals and poultry. Lecture 3 hours; drill 1 hour per week (for second 8 weeks of semester). Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: ANSC 30303 or POSC 30303. (Typically offered: Fall)

This course is cross-listed with ANSC 59602.

**POSC 59702. Renal Physiology of Domestic Animals. 2 Hours.**

Renal physiology, including mechanisms of renal clearance with emphasis on cellular control mechanisms in domestic animals and poultry. Lecture 3 hours; drill 1 hour per week (for second 8 weeks of semester). Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: ANSC 30303 or POSC 30303. (Typically offered: Spring)

**POSC 6000V. Thesis. 1-6 Hour.**

Thesis. Prerequisite: Graduate standing. (Typically offered: Fall, Spring and Summer) May be repeated for degree credit.

**POSC 63403. Vitamin Nutrition and Metabolism. 3 Hours.**

The vitamins required for humans and domestic animals for a healthy life with emphasis on absorption, transport, metabolism, biopotency, mechanism of action, tissue retention and turnover. Lecture 3 hours per week. Prerequisite: CHEM 38103. (Typically offered: Fall Odd Years)

This course is cross-listed with ANSC 63403, FDSC 63403.

**POSC 7000V. Doctoral Dissertation. 1-18 Hour.**

Doctoral Dissertation. Prerequisite: Graduate standing. (Typically offered: Fall, Spring and Summer) May be repeated for degree credit.