

# SCHOOL OF AGRICULTURAL SCIENCES

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**Chair:** Dr. Doug Ullrich (sfkelley@shsu.edu) (936) 294-1216

**Website:** School of Agricultural Sciences (<http://www.shsu.edu/academics/agricultural-sciences-and-engineering-technology/>)

The School of Agricultural Sciences consists of 2 major programs of study:

- Agricultural Sciences
- Career and Technology Education - Bachelors of Applied Arts and Sciences Program [BAAS]

A number of specialized programs or majors, offer students the opportunity to tailor degree programs with career goals. Specific requirements for each degree are outlined under the respective program headings. For more information, please visit the School Agricultural Sciences (<https://www.shsu.edu/academics/agriculture/>), or contact Dr. Doug Ullrich (dullrich@shsu.edu).

## Highlights

The School of Agricultural Sciences has multiple educational centers and complexes

- The Fred L. Pirkle Engineering Technology Center has many specialized classrooms and laboratories that service the agriculture program: Agricultural Education, Agricultural Communications, Agribusiness Team Based Learning, Animal Science Physiology, Floral Design, and Wildlife Management.
- The Agriculture Center Complex has a greenhouse, covered arena, and meat science laboratory.
- The Plant Science Field Lab has two greenhouses and laboratory facilities for plant science and plant propagation.
- The William R. Harrell Agricultural Engineering Technology Center provides students with hands-on experience in wood and metal fabrication, electricity and electronics, hydraulics, structures, alternative energy resources, and soil and water conservation.
- The 1350-acre Gibbs Ranch Education and Research Facility, located north of campus on Highway 75, serves as a living laboratory for all aspects of agricultural and natural resource education.

## Career Opportunities

Approximately twenty percent of the U.S. population is involved in occupations directly related to agriculture. Sectors such as production, banking, marketing, teaching, processing, and service in governmental agencies rely on the productivity of modern agriculture in meeting the daily needs of society.

Additional career information is given in the introduction to each of the degree programs in agriculture.

## Suggested Minors

Numerous minors within and outside the department are available:

- Students seeking secondary teacher certification in agricultural science must select the Teacher Certification track. The most common major used for this purpose is Interdisciplinary Agriculture, but Teacher Certification may be used by Agricultural Business, Agricultural Engineering Technology, Animal Science, or Plant and Soil Science majors.
- Many Agricultural Business, Animal Science, Agricultural Engineering Technology, and Plant & Soil Sciences majors will select minors from program areas within the School of Agricultural Sciences (see Minor area), while others will select from the wide array of minors from various colleges.
- Animal Science majors frequently select a minor in Agricultural Business, Wildlife Management, Equine Science, Plant and Soil Science or Teacher Certification.
- Biology or Chemistry is frequently taken as a minor by Animal Science and Plant & Soil Sciences students considering graduate school.
- Agricultural Engineering Technology majors often select a minor in Agricultural Business, General Business Administration, Plant and Soil Science, Construction Management or Teacher Certification.
- Minors in Plant & Soil Sciences, Animal Science, Equine Science, Agricultural Engineering Technology, and Agricultural Business are available for those majoring in other specific agricultural disciplines. For instance, an Agricultural Business student may minor in Plant & Soil Sciences to better prepare for the business aspects in the field of horticulture.
- Interdisciplinary Agriculture majors must select Teacher Certification or a minor from outside of the School of Agricultural Sciences.

## Program-Specific Requirements

The **objectives** of the Agricultural Sciences Program are to:

- Provide high quality instruction in agricultural sciences, technology, and business;
- Promote research in agricultural sciences;

- Provide a program of continuing education for teachers of agricultural science and agricultural producers; and
- Provide educational and competitive activities for youth interested in the agricultural sciences.

For additional information regarding admission requirements, degree programs, description of courses, and financial assistance available, please refer to the appropriate sections of this catalog. Brochures and information concerning the department and scholarships may be obtained by calling (936) 294-1215 or writing:

Sam Houston State University  
School of Agricultural Sciences  
Huntsville, Texas 77341-2088

or by e-mailing a request to [dullrich@shsu.edu](mailto:dullrich@shsu.edu). Website: School of Agricultural Sciences (<https://www.shsu.edu/academics/agriculture/>) (<http://www.shsu.edu/academics/agricultural-sciences/>)

- Bachelor of Science, Major in Agricultural Business (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-agricultural-business/>)
- Bachelor of Science, Major in Agricultural Business with Teaching Certification (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-agricultural-business-with-teaching-certification/>)
- Bachelor of Science, Major in Agricultural Communications (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-agricultural-communications/>)
- Bachelor of Science, Major in Agricultural Engineering Technology (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-agricultural-engineering-technology/>)
- Bachelor of Science, Major in Agricultural Engineering Technology with Teaching Certification (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-agricultural-engineering-with-teaching-certification/>)
- Bachelor of Science, Major in Animal Science (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-animal-science/>)
- Bachelor of Science, Major in Animal Science with Teaching Certification (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-animal-science-with-teaching-certification/>)
- Bachelor of Science, Animal Science, Minor in Conservation Biology (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-animal-science-minor-conservation-biology/>)
- Bachelor of Science, Animal Science, Minor in Wildlife Management (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-animal-science-minor-wildlife-management/>)
- Bachelor of Science, Major in Animal Science, Pre-Veterinary Medicine (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-animal-science-pre-veterinary-medicine/>)
- Bachelor of Science, Major in Interdisciplinary Agriculture (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-interdisciplinary-agriculture/>)
- Bachelor of Science, Double Major in Education and Interdisciplinary Agriculture (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/education/school-of-teaching-and-learning/bs-education-and-interdisciplinary-agriculture/>)
- Bachelor of Science, Major in Plant and Soil Sciences (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-plant-soil-sciences/>)
- Bachelor of Science, Major in Plant and Soil Sciences with Teaching Certification (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/bs-plant-soil-sciences-with-teaching-certification/>)
- Career and Technology Program Bachelor of Applied Arts and Sciences (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/career-technology-program-baas/>)
- Minor in Agricultural Business (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/agricultural-business-minor/>)
- Minor in Agricultural Engineering Technology (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/agricultural-engineering-technology-minor/>)
- Minor in Animal Science (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/animal-science-minor/>)
- Minor in Equine Science (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/equine-science-minor/>)
- Minor in Plant and Soil Sciences (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/horticulture-crop-science-minor/>)
- Minor in Wildlife Ecology (<http://catalog.shsu.edu/archives/2021-2022/undergraduate/colleges-academic-departments/science-and-engineering-technology/agricultural-science/wildlife-ecology-minor/>)

## Student Organizations

- Ag Ambassadors
- Agricultural Business Association
- Agricultural Communicators of Tomorrow
- Agricultural Engineering Technology Club
- Alpha Gamma Rho Fraternity
- Beef Cattle Show Team
- Block and Bridle
- Collegiate FFA
- Delta Tau Alpha - National Agricultural Honor Society
- Equestrian Team
- Horse Judging Team
- Horsemen's Association
- Livestock Judging Team
- Minorities in Agriculture, Natural Resources and Related Sciences [MANRRS]
- National Agri-Marketing Association
- National Collegiate Landscape Competition Team
- Plant and Soil Science Club
- Pre-Vet Society
- Ranch Horse Team
- Rodeo Club
- Sigma Alpha – Professional Agricultural Sorority
- Stock Horse Team
- Wildlife Society

## Internships

An internship in agricultural sciences is intended to provide experience-based learning opportunities for students in their respective discipline of study. Students generally seek an internship experience at the end of their sophomore or junior year. The course identified for internship credit in agriculture is AGRI 4096 (<http://catalog.shsu.edu/archives/2021-2022/search/?P=AGRI%204396>). Internships may be arranged through student contact with providers or through departmental faculty and staff announcements and postings. All internships must receive departmental approval through application prior to the initiation of the internship. Maximum credit for internship is six (6) credit hours.

## Scholarships

The department is pleased to have available approximately 90 scholarships for students majoring in agricultural sciences. Scholarships range in value from \$500 per year to \$16,000 over a 4-year period. Almost all of these scholarships are a one-time award and are awarded on an annual basis.

A student may reapply in subsequent years if eligibility requirements are met. A few of our scholarships are renewed automatically for a period of 4 years if eligibility requirements are met.

The Scholarships 4Kats (<http://www.shsu.edu/dept/financial-aid/scholarships/>) program must be used to apply for departmental scholarships. The program enables you to apply for all scholarships for which you are eligible, including those outside the School of Agricultural Sciences. The deadline for departmental scholarships and university-wide scholarships is November 1; non-departmental scholarship deadlines vary.

### CONTACT:

Dr. Kyle Stutts (kjs015@shsu.edu)  
 Department of Agricultural Sciences  
 PO Box 2088, Huntsville, TX 77341  
 (936) 294-1219

## SHSU Rodeo Scholarships

The scholarships below are available through the Sam Houston Rodeo program. The application deadline is July 1. Rodeo scholarships are one-time awards and not automatically renewable. Many rodeo scholarships are skills and performance based.

Applications are available through the University's Scholarship4Kats (<http://www.shsu.edu/dept/financial-aid/scholarships/>) program.

- Byrd Family and Friends of Rodeo Scholarship
- Judge John McAdams Scholarship

- SHSU Rodeo Team Scholarship
- Joshua Farris Memorial Endowed Scholarship
- Sonny Sikes Rodeo and the Sikes Family Endowed Scholarship
- Texas Best Rodeo Endowed Scholarship
- Tommy Castenson Memorial Scholarship
- Wes Neyland Memorial Endowed Rodeo Scholarship

**CONTACT:**

Edward "Bubba" Miller  
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PO Box 2088, Huntsville, TX 77341  
(936) 294-3867; elm014@shsu.edu.

## Agricultural Communications

**ACOM 2396. Special Topics in Agriculture Communications. 3 Hours.**

Students examine special topics/issues in Agricultural Communications at an introductory level. This course may be repeated up to three times as topics and subject matter changes. Credit 3.

**ACOM 3360. Communication Skills for Agriculturists. 3 Hours.**

Students are provided an overview of information systems, principles, and procedures used in communicating agricultural news and information in various agricultural professions. Emphasis is placed on effective written and oral communication means in professional and media environments in addition to public relations efforts in agriculture. For IAGR, AGBU, AGET, ANSC, PLSC, and ACOM majors. Sophomore standing. Only IAGR, IAGA, IAGB, IAGE, IAGH, and ACOM majors.

**Prerequisite:** ENGL 1302.

**ACOM 4369. Special Topic. 3 Hours.**

Students examine special topics/issues in Agricultural Communications at an advanced level. This course may be repeated up to three times as topics and subject matter change. Sophomore standing. Only IAGR, IAGA, IAGB, IAGE, IAGH, and ACOM majors.

**Prerequisite:** ENGL 1302.

## Agricultural Business

**AGBU 2317. Principles of Agri Economics. 3 Hours. [TCCN: AGRI 2317]**

Students are introduced to fundamental economic concepts, such as supply and demand analysis, economics of production, profit maximization, and market failure; all related to practical application in agriculture.

**Prerequisite:** College-level ready in Mathematics, Reading and Writing and completed 15 credit hours.

**AGBU 2385. Analysis of the Agr Sector. 3 Hours. [TCCN: AGRI 1325]**

Students are provided an overview of the various sectors and institutions servicing agriculture. Focus is on the marketing efforts and added value that each sector provides to farm products. The course emphasizes the structure of each area, and the trends that shape their activities. An introduction to marketing activities with emphasis on agricultural commodities is also provided.

**Prerequisite:** College-level ready in Mathematics, Reading and Writing and completed 15 credit hours.

**AGBU 2389. Agribusiness Financial Analysis. 3 Hours. [TCCN: AGRI 1325]**

Students are introduced to financial management for agricultural enterprises. Topics may include: depreciation, balance sheet, income and expense, production records, income tax principles, enterprise budgeting, partial budgeting, cash flow budgeting, and analysis and interpretation of farm records.

**Prerequisite:** College-level ready in Mathematics, Reading and Writing, and completed 15 credit hours.

**AGBU 2396. Special Topics in Ag Business. 3 Hours.**

Students examine special topics/issues in Agricultural Business at an introductory level. This course may be repeated up to three times as topics and subject matter change.

**AGBU 3350. Agribusiness for AgEd Teachers. 3 Hours.**

This course is designed to present agribusiness concepts that are included in the curriculum of post-secondary schools of Texas. Subjects include budgeting, finance, insurance, organization and management, marketing and government policies.

**Prerequisite:** CISE Minors only, Sophomore standing, and AGBU 2317.

**AGBU 3361. Agribusiness Org & Mgt. 3 Hours.**

Students study management principles relevant to agribusiness firms, marketing management, e-commerce and value-added agriculture, managerial concepts, human resource management, and business organizations.

**Prerequisite:** AGBU 2317, AGBU 2389 and completed 45 credit hours.

**AGBU 3367. Agricultural Finance. 3 Hours.**

Students study advanced agribusiness management applications of borrowed capital to operations; methods of determining loan needs for farmers; budgeting incomes to facilitate repayment of loans; cost of using borrowed capital; management of financial resources in agribusiness; and time value of money applications.

**Prerequisite:** AGBU 2389 with a grade of C or higher, and completed 45 credit hours.

**AGBU 3385. Quant Mthds for Agribusiness. 3 Hours.**

Students study quantitative tools from the fields of economics, statistics, and management as they relate to agricultural business decision making. The analytical and quantitative principles are applied to a variety of agricultural business situations. Topics may include forecasting, decision analysis, regression, and linear programming. Computer-based methods are emphasized.

**Prerequisite:** AGBU 2317 and (MATH 1324 or MATH 1314) and (STAT 1369 or MATH 1369 or MATH 1325 or STAT 3379) and completed 45 credit hours.

**AGBU 4319. Agribusiness Ventures. 3 Hours.**

Students investigate the initiation of new food and agricultural enterprises through identification of innovative opportunities. Effective entrepreneurial behaviors, environment analysis, and risk management for start-ups are emphasized.

**Prerequisite:** AGBU 3361.

**AGBU 4340. Agribusiness Marketing. 3 Hours.**

Students study the major marketing strategies and decisions that must be made by agribusiness firms, including target market selection, marketing research, sales forecasting, product policies, distribution channels, pricing, advertising, and market control. The development of a strategic marketing plan for an agribusiness firm is required.

**Prerequisite:** AGBU 2317 and AGBU 2385, and completed 45 hours.

**AGBU 4362. Natural Resource Economics. 3 Hours.**

Students engage in a contemporary study of issues in land, natural resource, and environmental economics. Topics may include energy, forests, population, fisheries, world food production, and minerals and pollution. This course discusses market efficiency relative to allocations of natural resources and pollution.

**Prerequisite:** AGBU 2317 and Junior standing.

**AGBU 4363. Agricultural Sales & Consulting. 3 Hours.**

Students explore the principles of professional sales techniques used by food and agricultural firms. Necessary skills required in the agribusiness industry such as interpersonal skills, sales techniques, and sales forecasting skills are developed and enhanced. Emphasis is placed on the phases of preparation, learning, communication and evaluation involved in a person selling a product, service, idea, etc., to a client. The focus of the course will be on business-to-business selling and consulting.

**Prerequisite:** AGBU 2317, AGBU 2385 and completed 45 credit hours.

**AGBU 4365. Legal Issues in Agribusiness. 3 Hours.**

Students examine legal concepts and practical legal problems facing rural residents and agribusinesses. Taught from a "preventive" perspective, students acquire the legal awareness necessary to become an effective and analytical agribusiness decision maker. Legal issues include statutes, common law (cases), torts, landowner liabilities, and contract law as they relate to managing agribusinesses and owning rural land.

**Prerequisite:** AGBU 2317 and completed 45 credit hours.

**AGBU 4369. Special Topic. 3 Hours.**

Students examine special topics/issues in Agricultural Business at an advanced level. This course may be repeated up to three times as topics and subject matter change.

**Prerequisite:** Junior standing.

**AGBU 4374. Agr Mkt Analysis & Prices. 3 Hours.**

Students study principles of agricultural market analysis to include: price analysis, price forecasting, forward contracting, futures market, market structure analysis, marketing and sales management.

**Prerequisite:** AGBU 2317 and MATH 1369 or STAT 1369, and completed 45 credit hours.

**AGBU 4375. Advanced Agribusiness Mgt. 3 Hours.**

This course serves as a capstone course for agribusiness majors. The primary objective of the course is to help students integrate economic, financial, and strategic management concepts and apply them to analyzing the strategic options for agribusiness firms. Contemporary issues related to agribusiness are approached using information systems, industry representatives, field trips, and class presentations. In addition, the course emphasizes the development of important soft skills such as verbal and written communication, teamwork, and leadership.

**Prerequisite:** AGBU 3367 and AGBU 4361 or AGBU 3361, and completed 90 credit hours.

**AGBU 4377. Economics of Land Use & Planng. 3 Hours.**

Students apply economic principles and legal policy relative to the allocation and conservation of natural resources and the environment. Topics, such as land use, energy policy, forestry, fisheries, water rights, animal rights, world food production, and pollution, are discussed in an economic and legal framework.

**Prerequisite:** Junior standing.

**AGBU 4378. Farm & Ranch Management. 3 Hours.**

Students focus on planning for the most efficient resource allocation in agricultural operations. This course uses previously taught economic, financial, and quantitative concepts and applies that to farm and ranch management.

**Prerequisite:** AGBU 2317, AGBU 2389, and AGRI 1309.

**AGBU 4386. Agriculture & Food Policy. 3 Hours.**

Students examine and analyze the effects of government participation on farmers, ranchers, agribusiness firms and consumers. The main objective of this course is to establish the principles and conceptual framework encouraging productive discussions with other segments of society on agricultural policy issues. Topics may include the policy making process and the analysis of commodities, conservation, food safety, international trade, rural development programs, and the interrelationship of agriculture and agribusiness.

**Prerequisite:** AGBU 2317 and completed 75 credit hours .

## Agricultural Education

**AGED 2396. Spec Top in Ag Education. 3 Hours.**

Students examine special topics/ issues in Agricultural Education at an introductory level. This course may be repeated up to three times as a topics and subject matter changes. Credits 3.

**AGED 3310. Teaching Ag Technology. 3 Hours.**

Students study methods in delivering instruction in agricultural technology as well as the principles in managing high school agricultural mechanics laboratories in a safe and efficient manner. CISE minors only. Junior standing. Approval by Instructor.

**Prerequisite:** AGRI 2302 or ITEC 1390 or ITEC 1361.

**AGED 3320. The Secondary Agriculture Education Program. 3 Hours.**

This course is designed to develop competencies of secondary agricultural education teachers to teach essential knowledge and skills in agricultural business, agricultural mechanization, animal science, and horticulture, plant, and soil science. CISE minors only. CISE minors only.

**Prerequisite:** Completed 55 Hours.

**AGED 4096. Independent Studies. 1-3 Hours.**

Arranged professional and developmental learning experiences incorporating a practical application of agricultural education skills and practices. This course may include internships, individual research and industry studies. May be repeated for credit up to six hours.

**Prerequisite:** Sophomore standing.

**AGED 4364. Methods of Teaching Agriculture Education. 3 Hours.**

Students study the professional competencies required for the teaching of agricultural education. Included is the development of curriculum and occupational education programs as well as evaluation of teaching techniques, procedures, and resource materials. Methods of teaching students with disabilities are discussed.

**Prerequisite:** Admission to the Student Teaching program in Agricultural Sciences.

**AGED 4365. Student Teaching in Agriculture Education. 3 Hours.**

Directed observation and student teaching in an approved high school agricultural education classroom are required. Participation is essential in related agricultural education and FFA activities, such as fairs, shows, contests, and FFA alumni and young farmer programs, etc. Must be concurrently enrolled in AGED 4364, AGED 4394, and AGED 4366. Senior standing. Must be currently enrolled in AGED 4364, AGED 4380, and AGED 4366.

**Prerequisite:** Grade of C or better in AGRI 3320 and CISE 4364.

**AGED 4366. Student Teaching in Agriculture Education. 3 Hours.**

Further directed observation and student teaching in an approved high school agricultural education classroom are required. Participation is essential in related agricultural education and FFA activities, such as fairs, shows, contests, and FFA alumni and young farmer programs, etc. Must be concurrently enrolled in AGED 4394, AGED 4364, and AGED 4365. Must be currently enrolled in AGED 4380, AGED 4365, and AGED 4366. Senior standing. Admission to the Student Teaching Program.

**Prerequisite:** Grade of C or better in AGRI 3320 and CISE 4364.

**AGED 4369. Special Topics in Agri Edu. 3 Hours.**

Students examine special topics/issues in Agricultural Education at an advanced level. This course may be repeated up to three times as topics and subject matter change.

**Prerequisite:** Junior standing.

**AGED 4380. Respsnbly of Pro Agr Sci Edu. 3 Hours.**

This course is designed to assist future agricultural science and technology teachers in understanding the structure, organization, and management of public schools at the national, state, and local levels. Course content may include a study of the needs of the special learner, school finance and funding for career and technical education programs, agricultural science curriculum and graduation requirements, and cultural issues. The course also focuses on professionalism, program planning, personnel employment and evaluation, and legal issues critical to the success of agricultural science and technology teachers. Must be currently enrolled in AGED 4364, AGED 4365, and AGED 4366. Admission to the Student Teaching Program.

**Prerequisite:** Grade of C or better in AGRI 3320 and CISE 4364.

**AGED 4388. Secondary Agriculture Education Program Management. 3 Hours.**

Students focus on developing and managing the youth leadership aspect of agricultural science and technology programs in public schools. Students learn about leadership and career development events, the agricultural education record book documentation system, program of activity development, financial management, student and chapter awards programs, and scholarships for agricultural education students.

**Prerequisite:** Completed 55 hours.

**AGED 4394. Agriculture Education Learning Environments. 3 Hours.**

Students examine classroom management and discipline approaches appropriate in secondary agricultural education (AGED) classrooms and laboratories. Proactive and preventative measures are discussed to ensure student safety and a successful learning environment. Note: Students who have taken AGED 4394 may not take AGED 5394.

**Prerequisite:** Admission to the Student Teaching program in Agricultural Sciences.

## Agricultural Engineering Technology

**AGET 2303. Intro to Ag Engineering Tech. 3 Hours. [TCCN: AGRI 2303]**

Students are introduced to current and emerging topics and industry related to agricultural engineering technology. Topics covered may include: bio-diesel, wind energy, GPS/GIS applications, nanotechnology, and theory of fusion of metals, efficiency of internal combustion engines, and other technology-related subjects.

**Prerequisite:** None.

**AGET 2396. Spec Top in Ag Engineer Tech. 3 Hours.**

Students examine special topics/issues in Agricultural Engineering Technology at an introductory level. This course may be repeated up to three times as topics and subject matter changes.

**AGET 3300. Agricultural Electrification. 3 Hours.**

Students explore principles and theory of electricity and applications in agriculture. Topics covered may include the transmission and distribution of electricity, Ohm's Law, DC/AC current, safety, NEC, converting bio-mass to electrical power, peak demand, dispatchable power, wind energy, photovoltaic cells, and net-metering. Sophomore standing.

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 3301. Agriculture Power Units and Control Systems. 3 Hours.**

Students study the selection, maintenance, and service of agricultural power units, including small engines overhaul and preventive maintenance on agricultural tractors.

**AGET 3350. Plasma Arc Cutting Technology. 3 Hours.**

Students examine the principles, technologies, and applications of plasma cutting processes with a focus on applications in the agricultural industry. Topics may include programming, operating, and controlling plasma tables; the use of plate markers; and related operations. In addition, the selection and use of new and emerging technologies, safety requirements, equipment, and workplace planning, scheduling, supervision, and management are examined.

**Prerequisite:** AGET 2303 or approval of the instructor.

**AGET 3380. Agricultural Machinery. 3 Hours.**

Students study design, construction, adjustment, operation, and testing of agricultural machinery and equipment systems. Topics may include theoretical and effective capacities, costs of operation, valuation of used equipment and queuing theory. Sophomore standing. Completed 55 hours.

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 3383. Soil & Water Conservation Engr. 3 Hours.**

Students explore principles of soil and water conservation, erosion control, storm water management, structures for floodwater routing, culvert design, design of waterways, and retention basins. Plane surveying, topographic mapping, geographical information and global positioning systems are utilized. Sophomore standing.

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 3386. Agricultural Structures and Environmental Control Systems. 3 Hours.**

Students explore functional requirements of agricultural buildings; valuation, appraisal, and estimating; structural requirements of agricultural buildings; planning and designing major service and processing buildings. Topics discussed may include thermodynamics, confined livestock housing, and environmental controls. Junior standing.

**Prerequisite:** AGRI 2303 or ETDD 1361.

**AGET 4369. Special Topic. 3 Hours.**

Students examine special topics/issues in Agricultural Engineering Technology at an advanced level. This course may be repeated up to three times as topics and subject matter change. Junior standing.

**Prerequisite:** AGRI 2303 or ETDD 1361.

**AGET 4381. Adv Agricultural Mechanics. 3 Hours.**

This course serves as a capstone course for agricultural science students with previous experience in the area of agricultural engineering technology. Teams address and solve a complex problem and as a result may design and construct a building, trailer, or other equipment in the laboratory.

**Prerequisite:** AGET 2303 or ETDD 1361 and Junior standing.

**AGET 4384. Fusing & Joining of Metals & Non-Metals. 3 Hours.**

Students engage in a comprehensive study of the theories, principles, and procedures of bonding and fusing metallic and non-metallic materials by the electric arc, oxy-fuel, and adhesive processes. Technical classroom instruction, laboratory exercises, and field trip experiences involve selection and utilization of new and emerging technologies and equipment, workplace planning, supervision, and management. Junior standing.

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 4385. Applied Electronics/Hydraulics. 3 Hours.**

Students explore cutting edge applications and integration of electronic and hydraulic principles and applications in agricultural and industrial processes and distribution systems. Topics may include Ohm's Law, Pascal's Law, and principles and theory of fluid dynamics. Junior standing.

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 4387. Agricultural Engines & Tractor. 3 Hours.**

Students study principles of the internal combustion engine, fuel injection, carburetion, and computerized engine monitoring equipment. Selection, valuation, wear analysis, and maintenance of power units for agricultural and industrial applications, including those powered by alternative fuel, are covered. Junior standing. Junior standing.

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 4390. Turf & Cropland Irr & Drainage. 3 Hours.**

Students study design and selection of surface or sub-surface irrigation and drainage systems for golf courses, greenhouses, sports fields, crops, landscape applications, and construction sites. Principles of pressurized irrigation systems including crop water requirements, soil moisture, irrigation scheduling, sprinkler irrigation, trickle irrigation, pumps, pipelines, and irrigation wells are covered.

**Prerequisite:** AGET 2303 or ETDD 1361 and Junior standing.

**AGET 4392. Precision Technology Applications. 3 Hours.**

Global positioning and geographic information system software and equipment is applied in settings involving precision farming and construction.

**Prerequisite:** AGET 2303 or ETDD 1361 and Junior Standing.

**AGET 4393. Renewable Energy Srces for Agr. 3 Hours.**

Students study existing and potential alternative energy sources and production capacities, including wind, solar, bio-mass conversion, hydrogen, ethanol, vegetable oil, and bio-diesel. Impacts on the environment, ecological systems, world food supply, and economy are studied.

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 4396. Directed Stud in Ag Eng Tech. 3 Hours.**

Arranged professional development learning experiences incorporating a practical application of Agricultural Engineering Technology skills and practices. To include internships, individual research and industry studies. May be repeated for credit up to six hours.

**Prerequisite:** Sophomore standing.

## Agricultural Sciences

**AGRI 1131. Intro to Pro Leadership Skills. 1 Hour. [TCCN: AGRI 1131]**

Students explore career options available to professionals in agricultural sciences, education, and business. Specific requirements for the various professions are discussed by a series of guest speakers. Course is intended for beginning students.

**AGRI 1309. Computers in Agriculture. 3 Hours. [TCCN: AGRI 1309]**

This course is designed to acquaint students with software applications useful to agriculture and how various technological advances are applied in modern agricultural enterprises.

**AGRI 2396. Topics in Agriculture. 3 Hours.**

Students examine special topics/issues in agriculture at an introductory level. Topics may be offered in: Agriculture, Animal Science, Agricultural Business, Horticulture and Plant Science, Agricultural Communications, and Agricultural Engineering Technology. This course may be repeated up to three times as topics and subject matter change.

**AGRI 4096. Independent Studies. 1-3 Hours.**

Arranged professional and developmental learning experiences incorporating a practical application of agricultural skills and practices. To include internships, individual research and industry studies. Course may be repeated for credit, max 6.

**Prerequisite:** Sophomore standing.

**AGRI 4100. Applied Ag Technology. 1 Hour.**

Arranged developmental learning experiences incorporating an application of agricultural skills and practices in an emphasis area of the student's choice. Individual study plans are devised by faculty to provide the student with broad-based knowledge.

**Prerequisite:** Sophomore standing.

**AGRI 4120. Professional Career Skills. 1 Hour.**

Students engage in a review of current careers in agriculture with emphasis on professional and managerial opportunities. Topics may include preparation of resume, interview skills, and other means of professional communication.

**Prerequisite:** Junior standing.



**AGRI 4341. Brewing Technology. 3 Hours.**

Students examine the use of barley, hops, yeast, and other ingredients in craft brewing production. Biological and chemical processes in preparing, cooking, and fermenting brewed beverages are studied. Beer styles and quality influenced by ingredients, cooking, fermentation, and storage will be examined. Students improve sensory perception of craft beer.

**Prerequisite:** PLSC 1307 and CHEM 1406 or CHEM 1407 or CHEM 1411 or CHEM 1412 and Approval of instructor.

**AGRI 4350. Agricultural Biosecurity. 3 Hours.**

Students study the potential spread and prevalence of contagious organisms, reproductive diseases and contaminants in the agriculture, food, fiber, and natural resource industries. Concepts dealing with isolation, resistance, sanitation, containment, transportation, and food safety issues and potential economic impact to the agricultural industry and others are major topics.

**Prerequisite:** Junior standing.

**AGRI 4364. International Agriculture. 3 Hours.**

Students are provided an overview of international trade issues and political and economic influences on world food and fiber production and distribution systems. When offered abroad, students have the opportunity to visit agricultural production, processing, and transport facilities.

**Prerequisite:** Sophomore standing.

**AGRI 4369. Special Topics in Agriculture. 3 Hours.**

Students examine special topics/issues in Agricultural Science at an advanced level. This course may be repeated up to three times as topics and subject matter change.

**Prerequisite:** Junior standing.

**AGRI 4371. Agricultural Safety & Health. 3 Hours.**

Students examine the hazards and necessary safety precautions associated with the food, fiber, natural resources and agricultural industry. Control strategies are explored and prevention methods identified. Hazards examined include machinery, livestock, controlled spaces, pesticides, and other issues common to the food, fiber, natural resources and agricultural industry.

**Prerequisite:** AGET 2303 or ETEC 1390 or ETDD 1361 and Junior standing.

**AGRI 4388. Prin of Ag Leadership/Comm Dev. 3 Hours.**

Students study of the characteristics of leadership theory, parliamentary procedure, personal development, and organizational structure.

**Prerequisite:** Junior standing or higher.

## Animal Science

**ANSC 1119. Animal Science Laboratory. 1 Hour. [TCCN: AGRI 1119]**

Laboratory for ANSC 1319.

**Prerequisite:** Concurrent enrollment in ANSC 1319.

**ANSC 1319. Animal Science. 3 Hours. [TCCN: AGRI 1319]**

This is a basic course of study to acquaint students with the scope of animal science: origin, history and development of economically important species and breeds of livestock; concepts of selection, breeding, nutrition, management and research as applied to livestock production. Laboratory experiences (ANSC 1119) involve the practical skills needed to manage animal enterprises.

**Prerequisite:** Concurrent enrollment in ANSC 1119.

**ANSC 2321. Livestock Eval & Selection. 3 Hours. [TCCN: AGRI 2321]**

This course is designed to present the basic principles and concepts in selection and evaluation of beef cattle, sheep, swine, and horses. The ability to present accurate and concise oral reasons for selecting and placing livestock is reviewed.

**ANSC 2330. Companion Animal Science. 3 Hours.**

This course is an overview of the companion animal industry, including species and breeds, feeding and nutrition, reproduction, anatomy and physiology, care, management, training, health, behavior, and current research topics related to companion animals.

**ANSC 2360. Animals and Society. 3 Hours.**

This course acquaints the student with the broad role of animals in society from national, global, and historic perspectives. The impact of animals and domestic livestock on economic, social and political policy are discussed. Emphasis is placed on agricultural and non-agricultural uses, societal and cultural perspectives, consumer influences, animal ethics, animal research, appropriate animal care, livestock quality assurance programs, animal welfare, animal rights and the animal-human bond.

**ANSC 2396. Spec Topics in Animal Science. 3 Hours.**

Students examine special topics/issues in Animal Science at an introductory level. This course may be repeated up to three times as topics and subject matter changes. Credits 3.

**ANSC 3336. Livestock Marketing. 3 Hours.**

Students study livestock marketing techniques, cash sales, risk management, forward contracting, problem solving using real-time livestock marketing situations, and risk of ownership in hypothetical livestock operations.

**Prerequisite:** ANSC 1319 with a grade of C or better and Sophomore standing.

**ANSC 3363. Anatomy & Physiology of the Domestic Animal. 3 Hours.**

Students are introduced to anatomy and physiology of domestic animals. Aspects of the nervous, skeletal, muscular, circulatory, urinary, and endocrine systems are covered.

**Prerequisite:** ANSC 1319 with a grade of C or better and Sophomore standing.

**ANSC 3373. Animal Nutrition. 3 Hours.**

This course consists of a scientific study of the processes of digestion, absorption, metabolism, physiology, and circulation of water, proteins, carbohydrates, lipids, vitamins, and minerals. Each nutrient is studied from the standpoint of chemistry, sources, function, and metabolism.

**Prerequisite:** ANSC 1319 with a grade of C or better, 4 Credits in CHEM, and Sophomore standing.

**ANSC 3376. Meat Science. 3 Hours.**

Lecture topics may include muscle and skeletal biology, conversion of muscle to meat, food-borne illnesses and HACCP. Labs focus on the methods of harvesting, preparation, preserving, and storing meat.

**Prerequisite:** ANSC 1319 with a grade of C or better and Junior standing.

**ANSC 3377. Meat and Muscle Biology. 3 Hours.**

Students examine fundamental principles of muscle structure, function, fiber type, and repair, as well as the physiological transformation of muscle to an edible product. Additionally, students investigate how each of the characteristics of muscle affect the ultimate quality of a product through its conversion into meat.

**Prerequisite:** ANSC 1319 with a grade of C or better.

**ANSC 4310. Animal Growth & Performance. 3 Hours.**

Students study the physiological and endocrine system factors affecting growth and performance of domestic animals. The course may include the study of meat animal growth and developmental processes and factors that affect body/carcass composition, carcass quality and value.

**Prerequisite:** ANSC 3373 and Junior standing.

**ANSC 4336. Stocker & Feedlot Management. 3 Hours.**

Students evaluate the basic principles involved in feeding, management, marketing, and disease control of stocker and feedlot cattle for economical production of beef. A review of scientific knowledge and research advances is applied to modern stocker and feedlot cattle operations.

**Prerequisite:** ANSC 1319 with a grade of C or better and Junior standing.

**ANSC 4337. Behavior and Management of Domestic Animals. 3 Hours.**

Students study behavior associated with domesticated animals. The effects of selective breeding, physical and social environments, and the developmental stage on social organization are studied. Additionally, aggressive behavior, sexual behavior, productivity, and the training of domestic animals are examined.

**Prerequisite:** ANSC 1319 with a grade of C or better and Junior standing.

**ANSC 4339. Advanced Livestock and Horse Evaluation. 3 Hours.**

Students engage in an advanced study of the visual appraisal, grading, and evaluation techniques affiliated with livestock and horses. The evaluation of conformation is studied along with the influence of heredity and environmental factors, industry trends and standards, and performance and production factors. Junior standing.

**Prerequisite:** ANSC 2321 or ANSC 2390.

**ANSC 4360. Livestock Mgt Techniques. 3 Hours.**

Students explore skills and knowledge pertaining to the production of beef cattle, swine, goats, sheep, and horses. Laboratory exercises involve various management practices and selection of livestock based on visual evaluation and genetic performance. This course is not intended for animal science majors. CISE minors only. CISE minors only.

**Prerequisite:** ANSC 1319 with a grade of C or better and must have completed 55 hours of coursework.

**ANSC 4369. Animal Science Special Topics. 3 Hours.**

Students examine special topics/issues in Animal Science at an advanced level. This course may be repeated up to three times as topics and subject matter change.

**Prerequisite:** Junior standing.

**ANSC 4376. Sheep & Goat Production & Mgt. 3 Hours.**

Student study the application of basic genetic principles, physiology, and nutrition to practical sheep, meat goat, and Angora goat production systems; management; health care; and marketing of animals and fiber.

**Prerequisite:** ANSC 1319 with a grade of C or better Junior standing.

**ANSC 4380. Beef Cattle Production & Mgmt. 3 Hours.**

Students study basic principles and methods of breeding, nutrition, reproduction, management, marketing, and disease control relating to various segments of the beef industry. Application of the latest bovine research is reviewed. Laboratory exercises involve practical skills relating to performance records and management of beef cattle.

**Prerequisite:** ANSC 1319 with a grade of C or better and Junior standing.

**ANSC 4389. Animal Reproduction. 3 Hours.**

Students explore the physiology of the male and female reproductive tract; hormones governing reproduction; the estrous cycle; mating; gestation; parturition; lactation; artificial insemination; embryo transfer technology; and factors affecting reproductive efficiency of common animal species used for agricultural purposes. Junior standing.

**Prerequisite:** ANSC 1319 with a grade of C or better.

**ANSC 4393. Animal Legal Issues. 3 Hours.**

Students examine legal issues and laws that affect animal ownership, handling, transport, and other prominent interactions between humans, animals, and society. Differences between criminal, civil, and tort law are discussed, as well as the differences between written and case law, and the penalties and ramifications of violating these laws.

**ANSC 4394. Animal Feeds And Feeding. 3 Hours.**

Students study the characteristics of feedstuffs; a review of the essential nutrients and digestion; ration and mixture formulation; feeding methods; and nutritional management of beef, swine, sheep, goats, poultry, and horses. Exercises consist of practical applications in formulating rations for livestock using conventional techniques and computers.

**Prerequisite:** ANSC 3373 and Junior standing.

**ANSC 4395. Animal Breeding & Genetics. 3 Hours.**

Student explore the application of genetic principles to livestock improvement. Student study the genetic basis of selection and systems of mating, and the development of breeding programs based on the principles of population genetics.

**Prerequisite:** ANSC 1319 with a grade of C or better and Junior standing.

**ANSC 4397. Disaster/Emergency Mgmt in Ag. 3 Hours.**

Students learn key information and tactical strategies to prepare evacuation plans and protocols for animal agriculture business ventures while understanding the management and implementation of plans from a community perspective. Topics may include risk and hazard assessment; processes to identify critical control points, resources, and agencies necessary to build effective plans of action and mitigation agreements for disaster preparedness; and implementation of tactical plans involving animal and agricultural enterprises.

**Prerequisite:** Junior standing.

**ANSC 4398. Animal Diseases & Public Hlth. 3 Hours.**

Student study diseases shared in nature between animals and man. Emphasis is placed on how these diseases exist in natural environments, modes of transmission, and methods of control and prevention. Students explore infectious agents and the clinical signs that they cause in both humans and animals.

**Prerequisite:** ANSC 1319 and junior standing.

## Equine Science

**EQSC 2364. Equine Science. 3 Hours.**

Students engage in a survey of the working and pleasure horse industry; breed selection, breeding, feeding, diseases, unsoundness and management. Laboratory work involves evaluation, care and grooming, tack and equipment, and basic management.

**Prerequisite:** ANSC 1319 with a grade of C or better.

**EQSC 2390. Selection & Eval of Horses. 3 Hours.**

This course allows the student to become familiar with the basic concepts necessary to select and evaluate horses from a judge's perspective. Evaluation of conformation, balance, symmetry, cadence, suppleness, and impulsion is used to understand these concepts. The ability to prepare and present oral and written reasons to support critical thinking and decision making skills is reviewed.

**EQSC 2396. Special Topic. 3 Hours.**

Students examine special topics/issues in Equine Science at an introductory level. This course may be repeated up to three times as topics and subject matter changes. Credits 3.

**EQSC 3340. Equine Behavior & Training I. 3 Hours.**

This course will aid in developing skills to increase horsemanship ability and knowledge so that the student can more effectively communicate with the young horse. The fundamentals of equine behavior are studied. Ground training methods are applied to teach the young horse discipline while increasing the training and value of the horse. Stable management, equipment, and pedigrees will also be discussed. Sophomore standing.

**Prerequisite:** EQSC 2364 or concurrent enrollment.

**EQSC 3355. Foaling Practicum. 3 Hours.**

Students engage in practical, hands-on experiences of foaling mares. Endocrinology of parturition, nutritional management of mares and foals, and rebreeding management of post-partum mares are examined.

**Prerequisite:** EQSC 2364.

**EQSC 4096. Directed Study. 1-6 Hours.**

Arranged professional and developmental learning experiences incorporating a practical application of equine skills and practices. Topics may include internships, individual research, and industry studies. Variable Credit (1-6).

**Prerequisite:** Sophomore standing.

**EQSC 4367. Stock Horse Equitation. 3 Hours.**

The course will be an in-depth study of equitation including simple and advanced maneuvers that are essential to various types of equine performance events. Students will be expected to strengthen communication skills between horse and rider through various exercises. The university equestrian team will be developed from this course. Junior standing.

**Prerequisite:** EQSC 3340.

**EQSC 4369. Special Topic. 3 Hours.**

Students examine special topics/issues in Equine Science at an advanced level. This course may be repeated up to three times as topics and subject matter change.

**Prerequisite:** Junior standing.

**EQSC 4373. Equine Reproduction. 3 Hours.**

Students explore the general principles and applications of equine reproduction is presented. Course material may include reproductive anatomy of the mare and the stallion and endocrinology as related to reproduction.

**Prerequisite:** EQSC 2364 and Junior standing.

**EQSC 4379. Equine Nutrition. 3 Hours.**

Students engage in an overall evaluation of the equine digestive system in regards to anatomy, physiology, digestive processes, nutrient requirements, feedstuffs, management, and health care. Current topics in equine nutrition research are also discussed. Junior standing.

**Prerequisite:** EQSC 2364.

**EQSC 4387. Equine Exercise Physiology. 3 Hours.**

Students examine current concepts and research regarding physiological changes occurring during the training and conditioning of horses for athletic endeavors. Topics may include the industries of horse sales, training, physical rehabilitation, veterinary medicine, types of tack, and equipment used in training, among others.

**Prerequisite:** EQSC 2364 and EQSC 4379.

**EQSC 4391. Equine Behavior & Training II. 3 Hours.**

Students study equine behavior, safety, and training techniques. Laboratory work involves planning record keeping systems, feeding schedules, tack and equipment, training young stock for work and pleasure, and specialized management practices.

**Prerequisite:** EQSC 3340 and Sophomore standing.

## Plant and Soil Science

**PLSC 1107. Plant Science Laboratory. 1 Hour. [TCCN: AGRI 1107]**

Laboratory for PLSC 1307.

**Prerequisite:** Concurrent enrollment in AGRI 1307.

**PLSC 1307. Plant Science. 3 Hours. [TCCN: AGRI 1307]**

Students study basic plant morphology, classification, propagation, and crop improvement along with growth and development of crop plants.

Students are introduced to soils, climate, and plant protection follow with a final overview of the major groups of cultivated plants.

**PLSC 2375. Turfgrass Science. 3 Hours.**

Students study the major turfgrass species grown in the U.S. and throughout much of the world. Students explore differences in management, culture, and varietal selection for athletic, ornamental, and utility turfs. Credit 3

**Prerequisite:** None.

**PLSC 2395. Ornamental Plant Identification. 3 Hours.**

Students explore identification, growth characteristics, culture, and use of common landscape and greenhouse plants. Materials include trees, shrubs, vines, groundcovers, turf grasses, and floriculture crops. Emphasis is placed on temperate region plants.

**Prerequisite:** PLSC 1307.

**PLSC 2396. Spec Top in Plant&Soil Science. 3 Hours.**

Students examine special topics/issues in Plant and Soil Science at an introductory level. This course may be repeated up to three times as topics and subject matter change.

**PLSC 2399. Floral Design. 3 Hours.**

Students explore principles and elements of design illustrated with the use of floral materials; techniques involved in design and construction of floral arrangements; and history of and utilization of floral art in society.

**PLSC 3320. Landscape Plant Materials. 3 Hours.**

Students identify common annual and perennial herbaceous landscape plants and examine their climatic adaptation and use. Emphasis is placed on tropical and subtropical landscaping plants, including various trees, shrubs, groundcovers, and vines.

**Prerequisite:** PLSC 1307.

**PLSC 3374. Production & Mgt Ornamentals. 3 Hours.**

This course is designed to cover the principles and techniques involved in the production and management of nurseries and greenhouse crops including ornamental trees, shrubs, annuals, and perennials.

**Prerequisite:** PLSC 1307 and Sophomore standing.

**PLSC 3379. Turfgrass Culture. 3 Hours.**

Students explore the principles of sexual and asexual propagation of major turf species, soils and rooting media, nutrient management, irrigation, pest control, and selection of appropriate cultivars are covered in this course.

**Prerequisite:** PLSC 1307 and Sophomore standing.

**PLSC 3395. Plant Propagation Techniques. 3 Hours.**

Students explore in detail the principles and practices involved in propagation of plants. Emphasis is placed on sexual and asexual methods of propagation and the biochemical/hormonal factors involved. Propagation techniques of several horticultural crops are covered and practiced.

**Prerequisite:** PLSC 1307/1107 and Sophomore standing.

**PLSC 3398. Landscape Design I. 3 Hours.**

Students explore the principles, elements, and factors to be considered in preparation, planning, and design of a residential landscape. Emphasis is placed on the incorporation of plant materials into basic landscape design.

**Prerequisite:** PLSC 1307 and Sophomore standing.

**PLSC 3440. Soil Science. 4 Hours.**

Students are introduced to the physical, biological, and chemical properties of soils and their relationships to soil formation, soil fertility, soil temperature, soil-plant-water relations, pH and liming, and conservation of soils. Environmental issues are also discussed. Sophomore standing.

**Prerequisite:** PLSC 1307 and CHEM 1406, CHEM 1407, CHEM 1411, or CHEM 1412.

**PLSC 4320. Fruit & Vegetable Production. 3 Hours.**

Students engage in a comprehensive study of the fruit and vegetable industry in the United States. Topics of study may include climatic requirements, growth characteristics, cultural practices, and pest control strategies.

**Prerequisite:** PLSC 1307.

**PLSC 4330. Soil Fertility Mgt Fertilizers. 3 Hours.**

Students study the principles of soil fertility, water, nutritional, and climatic relationships. Emphasis is placed on sources of soil nutrients, including commercial fertilizers and biological resources.

**Prerequisite:** PLSC 3440 and Junior standing.

**PLSC 4358. Landscape Operations. 3 Hours.**

Students examine the principles and techniques of constructing and managing amenity landscapes. Emphasis is placed on contract documents, specifications of work, plant establishment, management plans, pruning, soil modification, and building materials.

**Prerequisite:** PLSC 1307.

**PLSC 4368. Landscape Design II. 3 Hours.**

This course is a continuation of PLSC 3398. Design skills will be refined as students experience more variety in design opportunities. Both small residential and larger public spaces are the subjects of student designs. Effective graphic presentations is stressed. In addition, installation, maintenance, and management of residential landscapes are discussed.

**Prerequisite:** PLSC 1307 and Junior standing.

**PLSC 4369. Special Topic. 3 Hours.**

Students examine special topics/issues in Plant Soil Science at an advanced level. This course may be repeated up to three times as topics and subject matter change.

**Prerequisite:** PLSC 1307 and Junior standing.

**PLSC 4370. Forage Crops & Pasture Mgmt. 3 Hours.**

Students study quality evaluation, adaptation, selection, culture, and management of the more important plants used for pasture, hay, and silage. Particular attention is given to those species grown commonly throughout the southeastern US.

**Prerequisite:** Junior standing.

**PLSC 4372. Sports Turf Management. 3 Hours.**

Facility design and construction, water management, soil modification, and unique management practices commonly applied to golf courses and other sports turfs are covered. Management of budgets, personnel, equipment maintenance and irrigation scheduling are also covered. Junior standing.

**Prerequisite:** PLSC 1307 and PLSC 3440.

**PLSC 4383. Range Management. 3 Hours.**

With rangelands comprising the majority of lands in the western US, students explore forage-animal management topics common to the semi-arid and arid regions of the US. Students address the unique management requirements of rangelands, the use of government-owned lands, and the competing uses of rangelands for livestock production, wildlife habitat, and recreational areas for humans. Junior standing.

**Prerequisite:** PLSC 1307 or BIOL 1411.

**PLSC 4397. Integrated Pest Management. 3 Hours.**

Students engage in a comprehensive review of current cultural, biological, mechanical, and chemical techniques used in managing or controlling agricultural and residential pests. Attention is given to environmental hazards, application methods, and safety precautions in handling and storage of pesticides.

**Prerequisite:** AGRI 1307 and Sophomore standing.

## Wildlife Management

### **WMGT 2301. Principles of Wildlife Mgmt. 3 Hours. [TCCN: AGRI 2330]**

Students engage in a survey of sustainable and profitable wildlife management techniques, habitats, and resources. Topics may include alternative wildlife practices, animal and plant identification, ethical and economic considerations of wildlife and fisheries management, conservation, habitat alteration and renewal, and economic impact of the wildlife industry.

### **WMGT 2396. Special Topic. 3 Hours.**

Students examine special topics/issues in Wildlife Management at an introductory level. This course may be repeated up to three times as topics and subject matter changes. Credits 3.

### **WMGT 3301. Wildlife Ranch Management. 3 Hours.**

Students evaluate establishing, managing, and maintaining wildlife enterprises. The focus of this course is designing a profitable and sustainable ranch using both scientific and economic perspectives regarding livestock, as well as native and non-native wildlife species.

**Prerequisite:** WMGT 2301.

### **WMGT 3350. Cervid Fawn Care. 3 Hours.**

Students examine the care of young cervid species from parturition to weaning with a main focus on white-tailed deer. Topics may include diagnosing and treating sick fawns, active and passive antibody transfer, fawn handling, immobilization, health, and birthing and weaning protocols.

**Prerequisite:** WMGT 2301.

### **WMGT 3381. Game Animal Production. 3 Hours.**

Students study the principles and practices of game animal production. Game animals commonly used for economic diversification of agricultural enterprises are the central focus of the course. Topics may include animal identification, population dynamics, nutrition, habitat preservation and modification, reproduction, game laws, and economic integration in traditional agricultural enterprises.

**Prerequisite:** ANSC 1319 with a grade of C or better and Sophomore or higher classification.

### **WMGT 3382. Habitat & Pond Management. 3 Hours.**

Students study wildlife habitat and riparian zone management, food plots for upland game birds and white-tailed deer, and pond management for largemouth bass, sunfish, and catfish production.

**Prerequisite:** WMGT 2301.

### **WMGT 4096. Directed Study. 1-6 Hours.**

Arranged professional and developmental learning experiences incorporating a practical application of wildlife management skills and practices. This course may include internships, individual research, and industry studies.

**Prerequisite:** Sophomore standing.

### **WMGT 4301. Cervid Breeding and Production. 3 Hours.**

Students examine production of the cervid species with a focus on white-tailed deer. Reproductive management practices pertaining to preferred, selective genetics and breeding cycles are emphasized, with production based on an effective confinement management system. The primary topics may include general industry cycles, reproductive techniques and cycles, weaning of offspring and vaccination protocols, immobilization, and interstate/intrastate movement of cervid species.

**Prerequisite:** WMGT 2301 and ANSC 4395.

### **WMGT 4302. Cervid Management. 3 Hours.**

Students examine the cervid industry from breeding to parturition. Cervid management is based on a confinement setting and focuses on anatomy and physiology, cervid nutrition during this stage of production, and feed types and feeding programs, cost of production, state and federal regulations, diseases and treatments, and fawn care.

**Prerequisite:** WMGT 2301 and ANSC 3373.

### **WMGT 4340. Exotic Animal Production. 3 Hours.**

Students examine the multi-faceted exotic species industry in the state of Texas. Topics may include identification of species, habitat and nutritional needs, holding facility design, regulation and transportation requirements, marketing, cost of production, genetics, and determining market value.

**Prerequisite:** WMGT 2301.

### **WMGT 4341. Upland Game Bird Management. 3 Hours.**

Students conduct an in-depth investigation of upland game birds common in Texas. Topics may include identification, life cycles, plant and habitat identification, plant community succession, and the tools used to manage succession for successful upland game bird management.

**Prerequisite:** WMGT 2301.

### **WMGT 4369. Special Topic. 3 Hours.**

Individual study in specialized areas of Wildlife Management. To be directed and approved by the Animal Science advisor. This course is designed to be a multi-topic course. The student can take the course under various special topics being offered.

**Prerequisite:** Junior standing.

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