

Agriculture and Natural Resources Programs of Study

Agriculture Programs of Study

- Agriculture, Engineering, Industrial, and Mechanical Systems
- Horticulture Science
- Veterinary & Animal Science
- Elective Courses

Agriculture Engineering, Industrial, and Mechanical Systems Courses and Sequencing

- **Level 1-C18H19 Agriscience or C18H19H Honors Agriscience**
 - **1 credit, Open to grades 9 & 10**
 - **Satisfies third-year lab science graduation credit**
 - **EPSO: OSHA 10 Industry Certification, Ducks Unlimited Ecology Conservation & Management Certification**
 - Agriscience & Honors Agriscience is an introductory laboratory science course that prepares students for biology, subsequent science and agriculture courses, and postsecondary study. It serves as the first course for all programs of study in the Agriculture, Food, and Natural Resources Cluster. The content area covers ecology, biological processes, sexual and asexual reproduction, and the study of the chemical and physical laws that govern life. This course helps students understand the important role science serves as the agricultural industry advances to meet the challenges of the 21st century.
- **Level 2-C18H12 Principles of Agricultural Mechanics**
 - **1 credit, prerequisite(s): Agriscience or Honors Agriscience**
 - **EPSO: OSHA 10 Industry Certification/ Briggs & Stratton Small Engine Basic Certification**
 - This course introduces students to basic skills and knowledge in construction and land management for both rural and urban environments. This course covers topics including project management, basic engine, and motor mechanics, land surveying, irrigation and drainage, agricultural structures, and basic metalworking techniques.
- **Level 3-C18H13 Agriculture Power and Equipment**
 - **1 credit, prerequisite(s): Agriscience, Principles of Agricultural Mechanics**
 - **EPSO: Briggs & Stratton Master Service Technician**
 - The course includes basic information and laboratory activities on small engines, tractors, and agricultural equipment maintenance, repair, and overhaul. Standards address competencies for electrical motors, hydraulic systems, and fuel-powered engines.
- **Level 4-C18H42 Agricultural Fabrication and Biosystems Engineering**
 - **1 credit, prerequisite(s): Agriscience, Principles of Agricultural Mechanics**
 - **Satisfies the fourth year math graduation credit**
 - **EPSO: OSHA 30 Industry Certification**

- This is an applied course that prepares students for further study or careers in engineering, environmental science, agricultural design and research, and agricultural mechanics. Special emphasis is given to many modern applications or geographical information systems (GIS) and global positioning systems (GPS) to achieve various agricultural goals.

Horticulture Science Courses and Sequencing

- **Level 1-C18H19 Agriscience or C18H19H Honors Agriscience**
 - **1 credit, Open to grades 9 & 10**
 - **Satisfies third-year lab science credit**
 - **EPSO: OSHA 10 Industry Certification, Ducks Unlimited Ecology Conservation & Management Certification**
 - Agriscience & Honors Agriscience is an introductory laboratory science course that prepares students for biology, subsequent science and agriculture courses, and postsecondary study. It serves as the first course for all programs of study in the Agriculture, Food, and Natural Resources Cluster. The content area covers ecology, biological processes, sexual and asexual reproduction, and the study of the chemical and physical laws that govern life. This course helps students understand the important role science serves as the agricultural industry advances to meet the challenges of the 21st century.
- **Level 2-C18H30 Principles of Plant Science & Hydroculture**
 - **1 credit, prerequisite(s): Agriscience or Honors Agriscience**
 - This course focuses on standards that challenge students to plan for future food needs using advanced technologies and less space. This course covers principles of plant health, growth, reproduction, and biotechnology, as well as fundamental principles of hydroponics and aquaponics
- **Level 3 -C18H09 Introduction to Plant Science State-Wide Dual Credit (AGRI1030) or (C18H17 Greenhouse management course)**
 - **1 credit, prerequisite(s) Agriscience, Principles of Plant Science & Hydroculture, Biology 1**
 - **This class is also a Dual Credit class. A student must pass a challenge exam to receive Post-Secondary credit.**
 - **Satisfies third-year lab science graduation credit**
 - **EPSO: Statewide Plant Science Dual Credit (Introduction to Plant Science AGRI1030), EPSO: Intro to Ornamental Horticulture Dual Credit Exam (MTSU) Challenge Exam**
 - This course covers topics to prepare students to be successful in all plant science-based careers. Topics covered include plant anatomy, reproduction,

classifications, nutrition, and pest management. Greenhouse structures and production techniques are also covered.

Veterinary & Animal Science Courses and Sequencing

- **Level 1-C18H19 Agriscience or C18H19H Honors Agriscience**
 - **1 credit, Open to grades 9 & 10**
 - **Satisfies third-year lab science credit**
 - **EPSO: OSHA 10 Industry Certification, Ducks Unlimited Ecology Conservation & Management Certification**
 - Agriscience & Honors Agriscience is an introductory laboratory science course that prepares students for biology, subsequent science and agriculture courses, and postsecondary study. It serves as the first course for all programs of study in the Agriculture, Food, and Natural Resources Cluster. The content area covers ecology, biological processes, sexual and asexual reproduction, and the study of the chemical and physical laws that govern life. This course helps students understand the important role science serves as the agricultural industry advances to meet the challenges of the 21st century.

- **Level 2-C18H20 Small Animal Science Technologies**
 - **1 credit, prerequisite(s): Agriscience or Honors Agriscience**
 - This course contains objectives for preparing students for careers in managing and caring for specialty and pet animals. This class will focus on such areas as parasite control, safe animal restraint, safety in chemical application, calculating medicine dosages, analyzing the benefit of neutering and spaying, and animal rights vs. animal welfare. This course covers the anatomy and physiological systems of different groups of small animals, as well as related small animal science careers.

- **Level 3-C18H27 Large Animal Science Technologies**
 - **1 credit, prerequisite(s): Agriscience or Honors Agriscience**
 - **EPSO: Introduction to Animal and Veterinary Science Dual Credit Challenge Exam through MTSU, Elanco Fundamentals of Animal Science Industry Certification Exam**
 - This course is an applied course that prepares students for a career in animal management or veterinary sciences. It includes basic knowledge of animal anatomy, nutrition, health, genetics, and animal facilities. Students will explore ways to operate a successful livestock operation.

- **Level 4-C18H21H Honors Veterinary Science**
 - **1 credit, prerequisite(s): Agriscience, Small Animal Science, and Large Animal Science**
 - **This is a capstone course and all prerequisites must be met in order for students to qualify from the Tennessee Specific Industry**

Certification-Animal Science certification test. This test if successfully passed will earn both an Industry Certification and Dual Credit in the Introduction Animal Science course.

- **This course satisfies one laboratory science credit for graduation.**
- **EPSO: TSIC Dual Credit and Industry Certification Challenge Exam**
- Veterinary Science is an advanced course in animal science and care for students interested in learning more about becoming a veterinarian, vet tech, vet assistant, or pursuing a variety of scientific, health, or agriculture professions. This course covers principles of health and disease, basic animal care and nursing, clinical and laboratory procedures, and additional industry-related career and leadership knowledge and skills.

Optional Agriculture, Food, and Natural Resources Management courses

- **C18H23 Supervised Agricultural Experience (SAE)**
 - **1/2 credit per year, max of 2 total credits Prerequisite(s): all 4 animal science courses**
 - A Supervised Agricultural Experience (SAE) is a structured experiential and work-based learning opportunity in school-based agriculture, food, and natural resources programs to extend beyond the classroom that takes place in a setting outside of regular school hours in order to develop an individual student's industry and career-based competencies. SAEs allow students to experience the diversity of agriculture and natural resources industries and to gain exposure to agricultural-related career pathways. SAEs require a documented formal project scope, accurate recordkeeping, and student advisor supervision.