

Introduction to Ag Food & Natural Resources Syllabus

RCAS Policies/Procedures

Students will be required to follow all RCAS policies and procedures. To view the RCAS High School Student Handbook, click [handbook](#).

Course Description

Introduction to Agriculture, Food, and Natural Resources (AFNR) introduces students to agricultural opportunities and the pathways of study in agriculture. Science, mathematics, reading, and writing components are woven in the context of agriculture and students will use the introductory skills and knowledge developed in this course throughout the CASE curriculum. Throughout the course are activities to develop and improve employability skills of students through practical applications. Students explore career and post-secondary opportunities in each area of the course.

Students participating in the Introduction to Agriculture, Food, and Natural Resources course experience hands-on activities, projects, and problems. Student experiences involve the study of communication, the science of agriculture, plants, animals, natural resources, and agricultural mechanics. While surveying the opportunities available in agriculture and natural resources, students learn to solve problems, conduct research, analyze data, work in teams, and take responsibility for their work, actions, and learning. For example, students work in groups to determine the efficiency and environmental impacts of fuel sources in a practical learning exercise.

The Introduction to Agriculture, Food, and Natural Resources course serves as the introductory course within the CASE Program of Study. The course is structured to enable all students to experience an overview of the fields of agricultural science and natural resources so that students may continue through a sequence of courses through high school. The knowledge and skills students develop will be used in future courses within the CASE program.

In addition, students will understand specific connections between their lessons and Supervised Agricultural Experience and FFA components that are important for the development of an informed agricultural education student. Students investigate, experiment, and learn about documenting a project, solving problems, and communicating their solutions to their peers and members of the professional community.

Grading

Grading: All grades are based on a 10 point grading scale.

Grading Scale: (100% - 90% A) (89% - 80% B) (79% - 70% C) (69% - 60% D) (59% - 0% F)

Grades will be based on student learning evaluation using performance objectives, rubrics, check for understanding, labs & student notebooks with daily work.

Textbook

Reading

Optional Reading

Instructional Resources

Canvas

CASE (Curriculum for Agricultural Science Education) Introduction to Agriculture, Food & Natural Resources

Essential Questions

- Agriculture and natural resource systems provide the three basic human needs of food, clothing, and shelter.
- Organization and record keeping are important to the success of an agricultural business.
- Agriculture is a broad field of study that includes agriculture systems, natural resource management, science, business, communication, and leadership.
- Production of agricultural commodities occurs within specific regions of the United States.
- Employability skills, such as work ethic, timeliness, communication, and self-direction, are essential attributes for a successful career.
- Agriculture is a broad field that encompasses many employment areas and offers a wide array of career opportunities.
- Supervised Agricultural Experiences (SAE) programs provide opportunities to explore potential career choices and develop professional career goals.
- The National FFA Organization offers members many opportunities to build necessary employment and life skills, such as leadership, personal character, and career options.
- Career Development Events (CDE) expose students to numerous opportunities for academic application in agriculture.
- People utilize multiple forms of verbal and nonverbal communication.
- Voice, presence, and expression are used in communicating effectively.
- Speeches may be informative, persuasive, or special occasion.
- People utilize multiple forms of communication in their daily lives.
- Parliamentary procedures are used to conduct orderly meetings.
- Teamwork is essential when solving many problems and completing group tasks.
- Laboratory equipment has specific uses in scientific experiments.
- Emergency equipment is available and has specific uses.
- Understanding and following procedures and rules are essential to maintaining a safe work environment.
- Reading and understanding laboratory procedures are essential to conducting a laboratory experiment safely.
- Mass, volume, temperature, and density are common laboratory measurements.
- Classification of people, places, and things is a basic skill used in daily life, scientific research, and the agricultural industry.
- Proper and accurate data measurement and analysis is important for laboratory investigation.
- The pH scale is 0-14 where 0 is extremely acidic, 7 is neutral, and 14 is extremely basic.

- Scientific method is a systematic process used to solve a problem.
- Mineral matter, air, water, and organic matter are found in different proportions within a soil and define soil quality.
- Geographical features and environmental factors influence the formation process of soils and impact soil quality.
- Soil erosion results in the loss of quality top soil and is a concern in the study of mineral soils.
- Sand, silt, and clay are three sizes of mineral particles that comprise soil texture.
- Soil structure and soil texture are elements that affect soil function.
- The pH of a soil is affected by its buffering capacity.
- The texture, structure, and color of each layer of soil within a profile are used to identify specific horizons.
- Soils form in layers that have distinguishing characteristics from other layers in a soil profile.
- The water cycle is an example of a naturally occurring system in which the substance can change form and location.
- Land topography influences the distribution of water and pollutants.
- Water pollution is caused by point and non-point sources.
- The quality of water sources, such as streams and drinking water, can be determined by measuring factors such as temperature, pH, turbidity, dissolved oxygen, and total dissolved solids.
- Energy flows from producers (plants) to consumers (animals).
- Plants and animals depend on each other for survival.
- Ecosystems are an interaction between organisms and the environment in which the organisms live.
- Animal and plant cells have many similarities, especially in regards to cell function; however, there are important structural differences between the two cell types.
- The nucleus of an animal and a plant cell is important for several life sustaining processes, such as cell division and protein synthesis.
- Microscopes are used to examine cells and cellular features.
- DNA is genetic material that combined with protein comprises the chromosomes found inside animal and plant cell nuclei.
- Genes are a combination of DNA segments that define animal and plant physical appearance.
- Offspring of animals and plants derive their genetic traits from both parents.
- Plants have roots, stems, leaves, and flowers, which are all vital to survival.
- Flowers, consisting of four main parts, produce seeds for reproduction.
- Seeds require moisture and warmth for germination.
- Plants convert raw materials using the energy of the sun into sugar and oxygen.
- Plant cells use water, oxygen, and glucose to produce energy and metabolic by-products of carbon dioxide and water.
- Plants require adequate amounts of water for survival, growth, and development.
- Production and management of plants are based upon environmental conditions, such as temperature.
- The three primary nutrients, nitrogen, phosphorus, and potassium, are necessary for the healthy growth of plants.
- The level of pH affects the health and well-being of plants.
- Animals are classified by species, gender, age, and purpose.
- Animals have a complex set of systems that must work together.
- Body parts of animals vary among different species.

- Animals are selected based upon the quality and correctness of anatomical structure and productive potential.
- Animals require food, shelter, and water for survival.
- The nutrients needed by animals include protein, carbohydrates, fats, vitamins, minerals, and water and are found in many feed sources.
- Shelter helps animals control body temperature.
- Animals perceive potential dangers differently than humans.
- Production and management of animals are based on anatomical and physiological characteristics.
- The production of food, fiber, and fuel sometimes creates ethical dilemmas for producers and consumers.
- Food is derived from animal and plant products.
- Food must be produced, transported, processed, and stored in a safe way.
- Food may be contaminated at many points while in route to the consumer.
- Renewable and non-renewable energy sources, such as wind, solar, and biofuels, are currently being used in the United States.
- Agricultural commodities can be converted to alternative energy sources.
- People depend on consumable forms of energy, such as fuel and electricity, which are used in everyday life.
- The efficiency of energy and the amount of energy produced varies among sources.
- All property is legally defined and recorded based on a standardized regulatory system.
- Global Positioning System (GPS) is a method used to determine an exact location of a point on the earth using a coordinate system based on longitude and latitude readings.
- Applications of Global Positioning Systems and Geographic Information Systems are used in all disciplines of agriculture and natural resource systems to improve agricultural production efficiencies and environmental quality.
- Federal, state, county, and local laws govern how land can be used.
- English and metric linear measurement systems are two useful forms of measurement used every day.
- The proper use of scale is important when drafting and designing project plans.
- Mechanical shop tools and materials have specific purposes.
- Agricultural projects involve planning, design, construction, implementation, and evaluation.
- Agriculture plays an essential role in society and feeding the world.
- People develop goals in order to achieve their dreams.
- Accurate record keeping is important to the success of an agricultural enterprise.

Essential Learning Intentions

1. Agriculture, food, and natural resources systems produce the food, fiber, and fuel that are essential to daily life as well as contribute to the nation's economic wealth.
2. Individuals who pursue a program of study in agricultural education will benefit from leadership development, personal growth, and career exploration.
3. Agriculture is a science that contributes to the development, improvement, and sustainability of living things.

4. Agricultural education establishes a relevant setting for the application of mathematical practices and principles.
5. Effective interpersonal communication skills facilitate group processes and aid in solving complex problems and the achievement of common goals.
6. Reading and writing interpretation skills are necessary for educational and professional development.
7. Safety is an attitude of personal responsibility that must be practiced in the agricultural classroom, laboratory, shop, greenhouse, and facilities.
8. Inquiry activities are important in the practice of scientific processes and in the world of research.
9. The use of technology and computer applications is critical to modern agricultural practices.
10. Consideration of the ethical, environmental, social, and economic impacts of agricultural practices is essential to being a responsible, involved citizen.
11. Individuals involved with the processes of agricultural production must perform specific technical skills proficiently.
12. Critical thinking involves using a variety of problem-solving techniques in real-life contexts.