

INTRODUCTION TO AGRICULTURE, FOOD, AND NATURAL RESOURCES

Introduction to Agriculture, Food and Natural Resources is a two semester course that is highly recommended as a prerequisite to and as a foundation for all other agricultural classes. Through hands-on learning activities, students are encouraged to investigate areas of agriculture. Students are introduced to the following areas of agriculture: animal science, plant and soil science, food science, horticultural science, agricultural business management, natural resources, agriculture power, structure, and technology, careers in agriculture, leadership, and supervised agricultural experience. An activity and project based approach is used along with team building to enhance the effectiveness of the student learning activities.

Introduction to Agriculture, Food, and Natural Resources introduces students to many career opportunities in agriculture. These careers include but are not limited to:

(Agribusiness Management) Agricultural Chemical Dealer, Agricultural Commodity Broker, Agricultural Economist, Banker/Loan Officer, Farm Investment Manager, Field Service Representative, Insurance Adjuster, and Rural Appraiser

(Agricultural Power, Structure, and Technology) Agricultural Engineers, Diesel Mechanic, Equipment and Parts Managers, GPS Technicians, Heavy Equipment Maintenance Technicians, Machine Operators, Machinists, Remote Sensing Specialist, and Welders

(Animal Science) Animal Nutritionist, Animal Scientist, Embryo Technologist, Feedlot Specialist, Livestock Buyer, Livestock Geneticist, Livestock Producer, Meat Science Researcher, and USDA Inspector

(Biotechnology) Animal Scientist, Biochemist, Food Scientist, Geneticist, Lab Technician, Microbiologist, and Plant Scientist

(Food Science) Biochemist, Food Inspector, Food Scientist, Meat Grader, Meat Processor, Microbiologist, Nutritionist, and Quality Control Specialist

(Natural Resources) Aquaculturist, Forest Ranger, Hydrologist Logging Operations Inspector, Natural Resource Scientist Range Conservationist, Rangeland Scientist, Silviculturist, Timber Manager, Trapper Park Manager, Water Resources Manager, and Wildlife Manager

(Plant Science) Agronomist, Botanist, Crop Farm Managers, Floriculturist, Forest Geneticists, Greenhouse Managers, Plant Breeder, Plant Pathologist, and Soil & Water Specialist

Course Specifications

- DOE Code: 5056
- Recommended Grade Level: Grade 9-10

- Recommended Prerequisites: None
- Credits: 1 credit per semester, maximum of 2 credits
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas

Career and Technical Student Organizations (CTSO)

CTSO enhances the knowledge and skills students learn in a course by encouraging a student to participate a unique program of career and leadership development through FFA.

Content Standards

Domain – Careers

Core Standard 1 Students examine the scope of career opportunities in and the importance of agriculture to the economy.

Standards

- IAFNR-1.1** Evaluate the nature and scope of agriculture in society and the economy
- IAFNR-1.2** Evaluate and explore the career opportunities in agriculture
- IAFNR-1.3** Describe the means to achieve career opportunities in agriculture
- IAFNR-1.4** Demonstrate the qualities, attributes and skills necessary to succeed in, or further prepare for, a chosen career while effectively contributing to society

Domain – Leadership

Core Standard 2 Students validate the necessity of leadership skills development in conjunction with participation in The National FFA Organization (FFA) as a critical component to a well-rounded agricultural education.

Standards

- IAFNR-2.1** Communicate using strategies that ensure clarity, logic, critical thinking, purpose, and professionalism in formal and informal settings.
- IAFNR-2.2** Recognize and explain the role of the FFA in the development of leadership, education, employability, communications and human relations skills
- IAFNR-2.3** Examine roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment
- IAFNR-2.4** Acquire the communication skills necessary to positively influence others
- IAFNR-2.5** Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).

Domain – Supervised Agriculture Experience

Core Standard 3 Students validate the necessity of a Supervised Agricultural Experience (SAE) as a critical component to a well-rounded agricultural education.

Standards

- IAFNR-3.1** Set expectations and goals related to an SAE program and explore the options
- IAFNR-3.2** Distinguish opportunities to apply academic learning to solve problems in the workplace and community (e.g., identify how to: increase productivity, reduce costs, lower inputs, etc.).
- IAFNR-3.3** Assess workplace/community problems and identify the most appropriate academic knowledge and skills to apply.
- IAFNR-3.4** Apply academic knowledge and skills to solve problems in the workplace/community and reflect upon the results achieved.
- IAFNR-3.5** Develop an individual SEA program and implement record keeping skills.

Domain – Plant & Soil Science: Core Standard 4 Students connect the necessity of plant and soil science to modern agriculture.

Standards

- IAFNR-4.1** Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants
- IAFNR-4.2** Prepare and implement plant management strategies that address environmental factors, essential nutrients, and soil management practices for productive plant growth
- IAFNR-4.3** Identify the physical qualities of the soil that determine its use

Domain – Natural Resource:

Core Standard 5 Students confirm the importance of preserving and replenishing our natural resources through natural resource management (e.g. water, soil, air, timber, wildlife, etc.).

Standards

- IAFNR-5.1** Explain interrelationships between natural resources and humans necessary to conduct conservation practices in natural environments
- IAFNR-5.2** Summarize the relationship between natural resources, ecosystems and human activity
- IAFNR-5.3** Identify natural resources and their importance to the local community.

Domain – Animal Science:

Core Standard 6 Students explore concepts related to the modern animal science industry.

Standards

- IAFNR-6.1** Examine the components, historical development, global implications and future trends of the animal systems industry
- IAFNR-6.2** Classify, evaluate, select, and manage animals based on anatomical and physiological characteristics
- IAFNR-6.3** Examine the components of the meat industry
- IAFNR-6.4** Identify and categorize terms and methods related to animal production (e.g., sustainable, conventional, humanely raised, natural, organic, etc.).
- IAFNR-6.5** Examine biosecurity measures utilized to protect the welfare of animals on a local, state, national, and global level.

Domain – Agribusiness:

Core Standard 7 Students explore the basic economic principles which are used in agricultural business management and industry and how they impact the daily lives consumers.

Standards

- IAFNR-7.1** Define and provide examples of management skills used to organize an AFNR business (e.g., management types, organizational structures, time management techniques, conducting business agreements, etc.).
- IAFNR-7.2** Describe the meaning, importance, and economic impact of entrepreneurship
- IAFNR-7.3** Execute supply-and-demand principles in AFNR businesses
- IAFNR-7.4** Recognize quality AFNR business plan components that have been developed using the SMART (specific, measurable, attainable, realistic and timely) goals
- IAFNR-7.5** Apply agribusiness management principles in real or simulated agribusiness systems

Domain – Food Science:

Core Standard 8 Students apply concepts of agriculture to the various aspects of the food science and processing industry.

Standards

- IAFNR-8.1** Examine components of the food industry

- IAFNR-8.2** Apply principles of nutrition, biology, microbiology, chemistry and human behavior to the development of food products and processing industry
- IAFNR-8.3** Select and process food products for storage, distribution and consumption
- IAFNR-8.4** Develop and implement procedures to ensure safety, sanitation and quality in food product and processing facilities

Domain- Biotechnology:

Core Standard 9 Students explore the use of data and scientific techniques concerning living organisms in the context of AFNR.

Standards

- IAFNR-9.1** Examine and categorize current applications and gains achieved in applying biotechnology to agriculture.
- IAFNR-9.2** Analyze the relationship and implications of bioethics, laws and public perceptions on applications of biotechnology in agriculture (e.g., ethical, legal, social, cultural issues).
- IAFNR-9.3** Research and summarize the evolution of biotechnology in agriculture

Domain – Power, Structure, and Technology:

Core Standard 10 Students establish a basic knowledge of agricultural power, structure, and technology and physical science.

Standards

- IAFNR-10.1** Apply physical science and engineering principles to design, implement and improve safe and efficient mechanical systems in AFNR situations.
- IAFNR-10.2** Apply technology principles in the use of agricultural technical systems
- IAFNR-10.3** Investigate power, structure, and technological systems as they relate to the modern agriculture industry