

AGRISCIENCE I

Agriscience I provides students with basic knowledge of agriculture and its history and the science applications in agriculture. This course includes units in animal science, soil science, plant science, agricultural mechanics, basic carpentry, food science technology, and agricultural leadership. Mathematics, science, English, biology, and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises, field trips, Supervised Agricultural Experience (SAE) programs, and internships. SAE programs and the FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies. Students will be required to fulfill requirements for earning the Greenhand Degree as stated in Section C of Article VI of the FFA Constitution and Bylaws. To be eligible to receive this degree, students must: be enrolled in Agricultural Education and have plans for an SAE; learn and recite the FFA creed, motto, salute, and Mission Statement; describe and explain the meaning of the FFA emblem and colors; demonstrate a knowledge of the history of the FFA organization; personally own or have access to an official FFA Manual.

Prerequisite: None

Credits: 1

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Content Guideline

(The student will be able to...)

Unit 1

Introduction to Agriculture

1. Orientation to the Agriscience Program

- a. Recognize the relationship among the classroom, Supervised Agricultural Experience (SAE), and FFA as parts of the agriculture program. (12.07)
- b. Describe the principal duties of the student, the parents, and the teacher for completion of each part.
- c. Outline a course of study for Agriscience I.
- d. Outline the requirements for the Greenhand Degree.
- e. Investigate career opportunities in agriscience industries.

2. Career Opportunities in the Agriculture Industry

- a. Investigate the origin and history of agriculture and its relationship to science and technology.
- b. Analyze the impact of agriculture on the local, state, national and global economy.
- c. Assess the agricultural impact upon the US gross national product and the total global economy.
- d. Explain the economic importance of animals and the products obtained from animals.
- e. Recognize the value of the food and agribusiness industry.
- f. Evaluate and explore the agribusiness career opportunities in agriculture.
- g. Relate personal interests to career choices.

3. The Supervised Agricultural Experience (SAE) Program

- a. Define the purpose and benefit of the SAE.
- b. Identify career areas of personal interest.
- c. Develop personalized SAE plans.
- d. Develop, implement, and maintain work based learning through Supervised Agricultural Experiences .

4. Introduction to the Agricultural Portfolio Development

- a. Determine the components of a complete portfolio.
- b. Develop a simplified record keeping system.
- c. Initiate and maintain records for the personal SAE.

5. Classroom/Lab Safety and Management

- a. Develop classroom safety rules.
- b. Develop lab safety rules.
- c. Describe and follow safe (emergency) procedures in laboratory investigations
- d. Identify proper disposal of hazardous waste materials and biohazards

6. Problem-Solving

- a. Relate the problem-solving process to the science practices
- b. Describe the science practices
- c. Differentiate between problem-solving and science practices

Unit 2

Agricultural Leadership/FFA

1. Introduction to the National FFA Organization

- a. Demonstrate and develop an understanding of the FFA
- b. Recognize organizational structure of the FFA
- c. Wear the FFA jacket appropriately at appropriate times
- d. Describe official FFA dress for males and females
- e. Identify Local, State, and National FFA Officials and Officers

2. Individual and Team Development Through FFA Opportunities

- a. Develop a personal plan of the activities for participation in the FFA
- b. Write and present a three-minute speech
- c. Fulfill requirements of the Greenhand degree including reciting from memory the FFA Creed
- d. Participate in a minimum of one Career Development Event (CDE) at the local level
- e. Identify and describe leadership characteristics
- f. Identify and demonstrate ways to be an active citizen
- g. Participate in community based learning activities
- h. Identify the opportunities for leadership development available through the National FFA Organization and/or professional organizations

3. Development of Interpersonal Skills

- a. Enhance oral communications through telephone, interview and presentation skills
- b. Enhance written communication by developing resumes and business letters
- c. Demonstrate interpersonal (nonverbal) communication skills
- d. Demonstrate good listening skills

4. Parliamentary Procedure

- a. Define parliamentary procedure
- b. Demonstrate a minimum of twelve motions following Robert's Rules of Order
- c. Identify roles of the chairman and members of an organization

Unit 3

Animal Science

1. Animal Anatomy and Physiology

- a. Diagram and identify and state the functions of the major parts of the animal cell.
- b. Describe the process of cell division.
- c. Explain the functions of major organ systems and explain how they interact to maintain animal health.
- d. Identify the primary external parts of Livestock and Poultry.

2. Animal Selection Based on Physiology and Genetics

- a. Distinguish among the major breeds or production types of primary livestock species.
- b. Categorize animals according to use, type, breed, and scientific classification.
- c. Determine the market classes and market grades used for the primary meat yielding animals.
- d. Explore the influence of pedigrees, blood tests, and DNA profiles on livestock selection.
- e. Evaluate wholesale cuts of beef, pork, lamb, and poultry.
- f. Investigate DNA and genetics applications in agriscience including the theory of probability.
- g. Compare and contrast appropriate evaluation criteria for Market and Breeding animals.
- h. Orally develop reasons for the placement and selection of market, breeding and performance animals.

3. Animal Nutrition

- a. Recognize the nutritional needs of animals relative to their use in the agriculture industry.
- b. Identify nutritional needs of animals based on age.
- c. Discuss the importance of growing forage crops for the major livestock breeds.

4. Career Options in Animal Science

- a. Determine non-professional careers in animal science.
- b. Determine professional careers in animal science.
- c. Identify requirements to gain a career in the field of animal science.

Unit 4

Soil Science

1. Soil Formation

- a. Define soil, physical properties, soil texture, clay, sand, silt, loamy, soil structure, and drainage.
- b. Distinguish among the major horizons of a soil profile.
- c. Discuss the factor and conditions that influence soil formation and condition.
- d. Identify the major components of a soil.
- e. Determine the effects of each soil component on plant growth.

2. Soil Properties

- a. Describe soil by physical properties.
 - b. Distinguish among physical, chemical, and biological properties of the soil.
 - c. Distinguish between homogenous and heterogeneous mixtures in soil.
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Unit 5

Plant Science

1. Plant Growth

- a. Describe the functions of external plant parts.
- b. Classify plants by botanical classification.
- c. Identify 10 Ornamental and Forestry Plants commercially important in Louisiana.
- d. Describe the life cycle and common uses of crop plant.
- e. Describe the life cycle and common uses of ornamental plants.
- f. Describe the functions of the parts of the plant cell.
- g. Examine the processes of plant growth including photosynthesis and respiration.

2. Plant Environment

- a. Identify the nutrients required for plant growth from the periodic table and explain their functions.
- b. Describe the effects of external factors (gravity, water, light, and temperature) on plant adaptation and development.
- c. Explain the limiting factor concept.
- d. Identify optimum soil and water pH for ornamental and forage crops.
- e. Identify the hardiness charts to determine temperature zones for areas within the state.

3. Pest Control, Weeds, Insects and Diseases

- a. Define weed and herbicide.
- b. Analyze the effects of weeds on ornamental and forage crops.
- c. Identify major categories of weeds.
- d. Develop a weed control system for crop production.
- e. Describe insects' primary features and define insecticide.
- f. Identify common insects affecting greenhouse and garden plants.
- g. Analyze pesticide labels and determine application requirements.
- h. Identify basic plant diseases and causes of these diseases.
- i. Recognize characteristics of insect and disease damage to plants.
- j. Determine plant disease treatments.
- k. Recognize the laws governing application of pesticides on ornamental and forage crops.
- l. Diagram lifecycles of insects, pests, and diseases.

Unit 6

Food Science Technology

1. History and Trends of Food Processing

- a. Define food preservation.
- b. Describe current technologies for food preservation.
- c. Evaluate the food safety responsibilities that occur along the food supply chain.

2. Food Processing Methods

- a. Describe the primary types of food processing (animal and plant processing).
- b. Grade, treat, pack, and/or store harvested products.

Unit 7

Agricultural Mechanics Options for Agriscience I

1. Introduction

- a. Describe the role of agricultural mechanics in food and fiber production.
- b. Describe the role of agricultural mechanics in the non-food agriculture industry.
- c. Identify careers associated with Safety, Woodworking/ Construction, Electricity, Cold metal/light metal, Small Engines and Arc Welding.

2. Safety

- a. Identify why safety is important.
- b. Identify proper shop/lab behavior.
- c. Demonstrate safety behavior for mechanical shop usage.
- d. Demonstrate proper safety precautions and use of personal protective equipment.
- e. Demonstrate safety awareness

3. Woodworking/Construction

- a. Demonstrate usage of common measuring devices used in agricultural mechanical work.
- b. Apply geometric principles to agricultural mechanics.
- c. Use basic mathematical calculations in agricultural mechanics.
- d. Identify common tools in the agricultural mechanics laboratory.
- e. Demonstrate proper usage of common hand and power tools.
- f. Describe common fasteners.
- g. Select appropriate fasteners for various applications.
- h. Develop a working plan and drawing for completing a minimum of two projects.
- i. Follow the working plan to complete the projects.
- j. Identify careers associated with woodworking/construction.
- k. Design a bill of materials for completion of projects.

4. Electricity

- a. Distinguish between AC and DC currents.
- b. Diagram and/or identify parallel and series circuits.
- c. Measure and calculate electrical power and energy.
- d. Describe the applications of a variety of switches for agriculture.
- e. Design a safe circuit to fulfill an agricultural application.
- f. Wire an electrical circuit for an agricultural application.
- g. Identify careers associated with electricity.

5. Cold Metals/Light Welding

- a. Recognize the temperature differences between welding and soldering.
- b. Identify tools and materials used for cold metals/light welding.
- c. Identify heat sources for soldering.
- d. Demonstrate methods for cutting metals including sheet metal, copper pipe, and wire.
- e. Describe applications for soldering copper pipe, sheet metal, and wire.
- f. Identify career opportunities associated with soldering and working with sheet metal.

6. Small Engine Technology

- a. Explain the theories of the operation of an internal combustion engine.
- b. Identify parts of a 2 stroke and 4 stroke engine.
- c. Describe the difference between a 2 stroke and 4 stroke engine.
- d. Identify tools used with engines and demonstrate proper tool usage.
- e. Demonstrate disassembly of small engines.
- f. Demonstrate reassembly of small engines.
- g. Identify careers associated with small engine technology.

7. Arc Welding

- a. Successfully strike an arc.
- b. Demonstrate procedure for cutting metal with oxy-acetylene.
- c. Successfully run a stringer bead.
- d. Identify careers associated with welding.