

AGRISCIENCE II

Agriscience II provides students with basic knowledge of agriculture and science applications in agriculture. This course includes units in animal science, soil science, plant science, agricultural mechanics, and agricultural leadership. Mathematics, science, English, biology, and human relations skills will be reinforced in this course. Work-based learning strategies appropriate for this course are school-based enterprises, field trips, and internships. Supervised agricultural experience (SAE) programs and the FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Agriscience I

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Content Guideline
(The student will be able to...)

Unit 1

Personal Career Development

1. Agricultural Careers

- a. Investigate career opportunities in agriscience industries.
- b. Describe training requirements for entry and advancement in agriscience career.
- c. Identify significant career patterns/shifts in the history of the agricultural industry.

2. Personal, Social, and Technical Competencies for Employment

- a. Identify and explain personal assets and interests related to making a career choice.
- b. Match personal traits with career choices.

3. Employment

- a. Enhance written communication by developing resumes and business letters. 11.04.
 - b. Organize a job search for a selected agricultural position.
 - c. Discuss and explain personal characteristics that affect job performance and maintenance.
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Unit 2

Developing the Supervised Agricultural Experience (SAE) Program

1. Improving SAE to Fit Individual Career Goals

- a. Review and update the individual SAE plan to match career goals.
- b. Review and amend student career path plan for education and training to match student career goals.

2. Record Keeping and the Agricultural Portfolio

- a. Review and update personnel SAE portfolio.
- b. Develop a planning budget for the SAE program.
- c. Utilize a record keeping system to collect, interpret, and analyze data.

Unit 3

Agricultural Leadership

1. Leadership Training

- a. Develop and present a six-minute speech on an agricultural topic.
- b. Conduct formal and informal meetings using correct parliamentary procedure skills.
- c. Develop team to work on chapter program of activities.

2. Personal Participation in Agricultural Activities

- a. Identify opportunities to apply acquired leadership skills.
 - b. Select FFA and FFA-related activities to incorporate into student SAE plan to match student career goals.
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Unit 4

Animal Science

1. Animal Reproduction

- a. Explain the reproductive cycles of commercially important animals.
- b. Compare and contrast mitosis and meiosis.
- c. Investigate DNA and genetics applications in agriscience including the theory of probability.
- d. Describe the anatomical and physiological processes involved in reproduction of animals and poultry.
- e. Compare and select appropriate breeding methods for different agricultural enterprises.
- f. Identify signs of animal pregnancy, parturition and infertility.

2. Animal Nutrition

- a. Discuss the function of each nutrient group in animal and poultry nutrition.
- b. Identify signs of animal pregnancy, parturition and infertility.
- c. Compare and contrast the digestive systems of ruminants, non-ruminants, and poultry and describe nutritional requirements of animals.
- d. Formulate and compute least-cost feed rations.
- e. Select and apply growth stimulators and implants.
- f. Determine feeding rates and methods of feeding animals.

3. Disease and Parasites

- a. Demonstrate scientific practices in the management, health, safety, and technology of the animal agriculture.
 - b. Demonstrate proper methods to clean and disinfect animal equipment and facilities.
 - c. Explain proper disposal of animal waste with regards to sanitation, economics, and environmental implications.
 - d. Recognize, describe and demonstrate prevention and treatment of common animal diseases, disorders, and pests.
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Unit 5

Soil Science

1. Soil Fertility

- a. Identify the nutrients required for plant growth from the periodic table and explain their functions.
- b. Analyze and interpret information from a fertilizer label.
- c. Compare sources and forms of nutrients.
- d. Determine methods of applying fertilizer materials.
- e. Develop a fertilization plan for a specified crop.

2. Soil Water

- a. Explain the relationships between soil properties and water retention.
- b. Explain the relationships between soil water and plant growth.
- c. Develop a plan for controlling soil water.

3. Soil Classification and Land Judging

- a. Explain the soil classification system.
- b. Use soil surveys and land use maps to evaluate land for agricultural use.
- c. Participate in the Louisiana FFA Soil Judging Contest.

4. Soil Conservation

- a. Explain how the major types of soil erosion affect the environment and agricultural production.
 - b. Describe factors that influence soil erosion.
 - c. Identify conservation practices related to natural resources.
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Unit 6

Agricultural and Environmental Science

1. Point and Nonpoint Pollution

- a. Differentiate between point and nonpoint pollution.
- b. Identify and explain major agricultural sources of nonpoint pollution.
- c. Evaluate the effectiveness of methods used to decrease agricultural nonpoint pollution.

2. Environmental Protection

- a. Research how different climactic and geological activity influences agriculture.
 - b. Describe various ecosystems as they relate to the agriculture industry.
 - c. Describe how chemicals move through the environment.
 - d. Apply best management practices that enhance the natural environment.
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Unit 7

Entomology

1. Differentiate between harmful and beneficial insects.
 2. Describe insect life cycles.
 3. Classify insects by traits and structures.
 4. Investigate the impacts of various pests and propose solutions for their control
 5. Read, interpret, and demonstrate correct uses of pesticides, medication, and other additives according to their labels.
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Unit 8

Plant Science

1. **Plant Classification**
 - a. Differentiate between the scientific kingdoms used to classify organisms.
 - b. Describe the levels of classification within the plant kingdom.
 - c. Explain the need for scientific nomenclature in agriculture.
2. **Plant Reproduction**
 - a. Explain factors that contribute to the production of quality plants.
 - b. Apply genetic principles to plant breeding practices.
 - c. Propagate and grow plants through sexual and/or asexual reproduction.
3. **Plant Diseases**
 - a. Differentiate between bacteria, fungi and viruses.
 - b. Explain how each of the pathogen causes diseases in plants.
 - c. Recognize symptoms of major plant diseases.
 - d. Identify common nutrient-deficiency symptoms in plants.
 - e. Use the diseases triangle to develop a disease prevention plan.
4. **Explore career opportunities in plant science.**

Unit 9

Agricultural Mechanics

1. Construction Processes

- a. Select and demonstrate proper use of agriscience tools, equipment and instruments.
- b. Examine various physical science principles as applied in selected mechanical applications (e.g. levers, pulleys, hydraulics, and internal combustion).
- c. Use and maintain hand tools and power equipment (e.g., power saws, welders).
- d. Complete a bill of materials for a project.
- e. Plan and construct a project.
- f. Extract and utilize pertinent information from a container label and/or Material Safety Data Sheet (MSDS) following Environmental Protection Agency (EPA), Worker Protection Standard, and Occupational Safety and Health Agency (OSHA) regulations.

2. Small Gasoline Engines

- a. Describe the principles of operation for the small engines.
- b. Select appropriate engines for identified applications.
- c. Describe forces that cause engine wear.
- d. Contrast and compare a 4-stroke and a 2-stroke engine.
- e. Service and maintain agricultural equipment, small gasoline engines, instruments, facilities, and supplies.

3. Metal Technology

- a. Properly set up and use an oxy-acetylene torch for cutting mild steel.
 - b. Explain the process of arc welding.
 - c. Demonstrate the ability to complete common welds using the arc welder.
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Unit 10

Local Options

Set up by instructor and advisor committee.