



EXAM INFORMATION

Items

46

Points

78

Prerequisites

NONE

Grade Level

9-12

Course Length

YEAR

Career ClusterAGRICULTURE, FOOD AND NATURAL
RESOURCES**Performance Standards**

INCLUDED

Certificate Available

YES

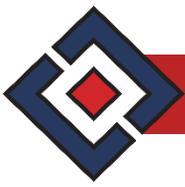
DESCRIPTION

Students will develop knowledge and skills that will provide a foundation for courses in animal science, plant science, horticulture, natural resources, agricultural systems and technology, or Agricultural Science II. Topics covered will be basic animal, plant, and soil science; natural resources; food science technology; agribusiness; personal and leadership development; and agricultural career awareness. Through this course, students will develop agricultural literacy.

EXAM BLUEPRINT

STANDARD**PERCENTAGE OF EXAM**

1- Student Organization in Agricultural Education	8%
2- Agricultural Experience in Agricultural Education	5%
3- Sciences and Scientific Method	18%
4- Basic Principles of Agricultural Science	59%
5- Basic Agribusiness Principles	10%



STANDARD 1

STUDENTS WILL EXPLAIN THE ROLE OF STUDENT ORGANIZATIONS IN AGRICULTURAL EDUCATION

- Objective 1** Discuss the history and student organizations as it relates to the complete program of agricultural education.
1. Explain the interrelationship of classroom and laboratory instruction, supervised agricultural experience, and student organizations.
 2. Describe how, when, and why student organizations were organized.
 3. Identify key student organizations historical events.
 4. Identify the mission, strategies, colors, motto, emblem, parts of the emblem, and organizational structure of student organizations.
 5. Recite and explain the meaning of a student organization's creed.
 6. Discuss the meaning and purpose of a program of activities and its committee structure.
 7. List student organizations chapter officers and discuss the role of each.
- Objective 2** Identify opportunities in student organizations.
1. Describe student organization opportunities that develop leadership skills, personal growth, and career success.
 2. Summarize major state and national activities available to student organization members.
- Objective 3** Describe student organization degrees, awards, and career development events (CDEs).
1. List and explain the student organization degree areas.
 2. Identify student organization proficiency awards.
 3. List and discuss various team and individual CDEs.
- Objective 4** Identify and explain three types of businesses.
1. List the characteristics of service, merchandising, and manufacturing businesses.

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2

STUDENTS WILL EXPLAIN THE ROLE OF SUPERVISED AGRICULTURAL EXPERIENCE PROGRAMS IN AGRICULTURAL EDUCATION

- Objective 1** Examine the responsibilities and benefits associated with an agricultural experience program.
1. Explain the meaning and benefits of supervised agricultural experience program.
 2. Explain the characteristics of an effective agricultural experience program and the responsibilities of those involved.
- Objective 2** Determine the types of agricultural experience program.
1. Compare entrepreneurship agricultural experience program and placement agricultural experience program.
 2. Describe research/experimentation agricultural experience programs.
 3. Describe exploratory agricultural experience programs.
- Objective 3** Plan an agricultural experience program.
1. Identify the steps in planning an agricultural experience program.



2. Describe the function of a business/training plan and/or agreement in an agricultural experience program.
3. Develop a short-range plan and a long-range plan for an agricultural experience program.
4. Relate classroom and laboratory instruction to an agricultural experience program.

Objective 4 Maintain and use agricultural experience program.

1. Explain the importance of keeping records on an agricultural experience program.
2. Explain how agricultural experience program records are organized.
3. Follow approved procedures to make entries in agricultural experience program.

Standard 2 Performance Evaluation included below (Optional)

STANDARD 3

STUDENTS WILL DESCRIBE THE RELATIONSHIP OF AGRICULTURAL SCIENCE TO THE SCIENCES AND THE SCIENTIFIC METHOD

Objective 1 Describe how science is integral to agriculture.

1. Describe how life science, including botany and zoology, is integral to agriculture.
2. Describe how physical science, including earth science, chemistry, and physics, is integral to agriculture.
3. Describe how mathematics, including calculation, measurement, and statistics, is integral to agriculture.
4. Describe how the social sciences, including economics, geography, sociology, and psychology, is integral to agriculture.

Objective 2 Apply the scientific method in solving agricultural problems.

1. Define the scientific method and explain why it is used.
2. List and explain the steps of the scientific method, including problem identification, information gathering, hypothesis formation, experimentation, and conclusion.
3. Maintain laboratory logs, including detailed and precise records of events and observations.
4. Use the scientific method to investigate a problem appropriate for entering a student organization awards program.
5. Explain the general guidelines for preparing a research report according to a student organization awards program.

Objective 3 Explore the role of research, development, and technology in the agricultural industry.

1. Explain the meaning and importance of research and development.
2. Identify major providers of agricultural research, such as the USDA's Agricultural Research Service, and review examples of their research.
3. Identify major areas of research in agriculture.
4. Define biotechnology and explore its impact on agriculture.
5. Describe current applications of biotechnology in agriculture.
6. Describe benefits and risks associated with biotechnology.
7. Identify career opportunities in agricultural biotechnology.
8. Determine the role of science and technology in agricultural production and processing.



- Objective 4 9. Describe the application of precision technologies in agriculture.
Apply mathematics skills used in the agricultural industry.
1. Convert standard and metric measurements.
 2. Determine length, area, and volume measurements.
 3. Calculate interest rates.
- Objective 5 Describe safety skills needed in the agricultural industry.
1. Explain where accidents occur and identify agencies associated with workplace safety.
 2. Explain why accidents occur and how to prevent them.
 3. Demonstrate personal and laboratory safety, including correct use of personal protective equipment (PPE) and proper disposal of wastes.

Standard 3 Performance Evaluation included below (Optional)

STANDARD 4

STUDENTS WILL EXPLAIN BASIC PRINCIPLES OF AGRICULTURAL SCIENCE

- Objective 1 Examine basic soil science principles.
1. Explain the components of soil.
 2. Investigate soil texture and structure.
 3. Explain soil profile.
 4. Explain what soil color indicates.
 5. Examine moisture-holding capacity and the characteristics of soil water.
 6. Explain soil pH.
 7. Describe the meaning and importance of soil fertility.
 8. Investigate soil degradation.
 9. Describe soil erosion and management practices.
 10. Identify careers in soil science and determine educational requirements, working conditions, and earning potential for those careers.
- Objective 2 Investigate basic principles of the plant science industry.
1. Explain plant classification and nomenclature.
 2. Examine plant structures and functions.
 3. Classify plants according to plant use; status as annual, biennial, and perennial; and status as monocotyledons or dicotyledons.
 4. Explain the basic process of photosynthesis and its importance to life on Earth.
 5. Explain cellular respiration and its importance to plant life.
 6. Identify careers in plant science and determine educational requirements, working conditions, and earning potential for those careers.
- Objective 3 Investigate basic principles of the animal science industry.
1. Compare differences between plants and animals.
 2. Identify basic characteristics of animal cells, tissues, organs, and organ systems.



3. Describe the skeletal, muscular, nervous, respiratory, digestive, circulatory, excretory, and reproductive systems of animals.
4. Describe the basic physiological functions of animal bodily systems.
5. Compare and contrast ruminant and non-ruminant digestive systems.
6. Compare and contrast cattle, sheep, and swine breed, uses, and products.
7. Compare and contrast nutritional needs of cattle, sheep, and swine.
8. Identify careers in animal science and determine educational requirements, working conditions, and earning potential for those careers.

Objective 4 Explain the role of genetics in agricultural science.

1. Define genetics and discuss its importance.
2. Identify and discuss the contents of a genome.
3. Distinguish heredity type, including genotype and phenotype.
4. Describe genetic trait expression and prediction.

Objective 5 Explore means of conserving natural resources.

1. Identify types of natural resources.
2. Describe components and processes in ecosystems.
3. Determine sources of environmental pollution and describe methods for reducing pollution.
4. Compare methods of waste disposal.
5. Determine how to reduce agricultural pollution.
6. Determine the importance and methods of natural resource conservation.
7. Identify careers in natural resources and determine educational requirements, working conditions, and earning potential for those careers.

Objective 6 Describe food science technology.

1. Research the scope of the food science industry and the world food supply.
2. Explain food preservation methods.
3. Describe food spoilage prevention.
4. Describe food safety and sanitation.
5. Identify careers in food science and determine educational requirements, working conditions, and earning potential for those careers.

Standard 4 Performance Evaluation included below (Optional)

STANDARD 5

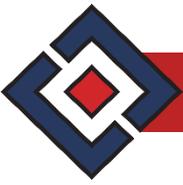
STUDENTS WILL EXPLAIN BASIC AGRIBUSINESS PRINCIPLES AND DEMONSTRATE EMPLOYABILITY SKILLS

Objective 1 Explore personal finance management.

1. Investigate personal finances and goal making.
2. Distinguish the pros and cons of borrowing money.
3. Determine sources of credit.

Objective 2 Examine business structures and management.

1. Describe basic principles of business management.



2. Explain different types of business structures.
3. Define and explain ethics in agribusiness.

Objective 3

Explain keeping and using records in agricultural occupations.

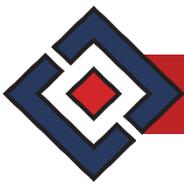
1. Explain the purpose of record keeping.
2. Describe net worth, cash flow, income statements, and computerized record keeping.
3. Develop a budget for an agricultural enterprise.

Objective 4

Demonstrate communication skills needed for successful employment.

1. Define communication and its components and processes.
2. Describe effective communication techniques.
3. Identify effective speaking techniques.
4. Develop listening techniques.
5. Organize and present a persuasive message.
6. Demonstrate communication skills in appropriate situations.

Standard 5 Performance Evaluation included below (Optional)



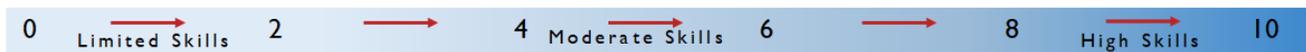
Agricultural Science I Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name _____

Class _____

PERFORMANCE RATING SCALE



STANDARD 1 Student Organization in Agricultural Education

Score:

- Attend a student organization activity (optional)

STANDARD 2 Agricultural Experience in Agricultural Education

Score:

- Implement an annual Agricultural Experience Program and record system (optional)

STANDARD 3 Sciences and Scientific Method

Score:

- Identify natural resource conservation methods and practices by investigation
- Read and present a persuasive message
- Research and debate an agricultural topic

STANDARD 4 Basic Principles of Agricultural Science

Score:

- Label and/or model the anatomy and physiology of animals
- Label and/or model plant structures and functions
- Identify soil texture and structure by investigation

STANDARD 5 Basic Agribusiness Principles

Score:

- Develop a budget

PERFORMANCE STANDARD AVERAGE SCORE: