

# **Standards & Measurement Criteria**

## **Agricultural Business Management-Agriscience**

### **Animal Systems - Option C**

#### **SAE and FFA Integrated Skills (Options A-G)**

**CIP No. 01.0100**

These standards are to be integrated into all courses within this program and not taught separately.

### **1.0 DEVELOP A PLAN FOR A CAREER IN AGRICULTURAL BUSINESS AND MANAGEMENT**

- 1.1 Analyze the variety of career options in: agribusiness systems; animal systems; environmental service systems; food products & processing systems; natural resource systems; plant systems; and power, structural & technical systems
- 1.2 Develop career goals based on interests, attitudes and research, and record in the long-ranged annual Supervised Agricultural Experience (SAE) program plan
- 1.3 Write, review and revise plan/goals through an annual long ranged SAE program plan
- 1.4 Manage personal and career goals through an annual long ranged SAE program plan
- 1.5 Describe factors that contribute to job satisfaction & success

### **2.0 PREPARE FOR EMPLOYMENT IN AGRICULTURAL BUSINESS AND MANAGEMENT**

- 2.1 Develop a resume and sample cover letter utilizing data from the SAE Record and Planning book and from the Job Interview CDE
- 2.2 Create a personal portfolio with industry-specific work samples
- 2.3 Complete a job application process, including electronic applications
- 2.4 Demonstrate customer service skills
- 2.5 Demonstrate interviewing skills utilized in any FFA Career Development Event (CDE)
- 2.6 Apply researched company/agency information for the purpose of preparing for the interview process

### **3.0 PARTICIPATE IN SUPERVISED AGRICULTURAL EXPERIENCES [SAE]**

- 3.1 Demonstrate understanding and use of technology appropriate for the SAE or career goals.
- 3.2 Demonstrate workplace leadership and teamwork skills and behaviors
- 3.3 Demonstrate positive attitudes in person and through communication technology
- 3.4 Demonstrate positive interpersonal behaviors
- 3.5 Demonstrate safe and healthy workplace behaviors
- 3.6 Recognize and adapt to changes in the workplace
- 3.7 Participate in a variety of SAE paid or non-paid work experiences
- 3.8 List skills and competencies for selected SAE or career
- 3.9 Complete Arizona SAE Record and Planning book

## **4.0 DEMONSTRATE ORAL COMMUNICATION SKILLS**

- 4.1 Through research, collect appropriate topical information and data as would be utilized for any FFA CDE that would require oral communication skills
- 4.2 Use questioning techniques to obtain needed information from audience
- 4.3 Interpret verbal and nonverbal communications of audience
- 4.4 Demonstrate active listening skills
- 4.5 Demonstrate use of technologies for a formal presentation
- 4.6 Deliver presentation incorporating verbal and nonverbal communication techniques
- 4.7 Communicate using effective and suitable language for a diverse audience
- 4.8 Demonstrate effective telephone techniques
- 4.9 List appropriate skills for oral customer communication
- 4.10 Participate in any FFA CDE that requires oral communication

## **5.0 DEMONSTRATE WRITTEN COMMUNICATION SKILLS**

- 5.1 Through research, collect appropriate topical information and data as would be utilized in any FFA CDE event that would require written communication skills
- 5.2 Organize information and develop an outline
- 5.3 Credit sources of information in appropriate written format
- 5.4 Prepare business communication using appropriate written format for the situation
- 5.5 Prepare draft document using established rules for grammar, spelling and sentence construction
- 5.6 List appropriate skills for written customer communication
- 5.7 Utilize electronic format for written and presentation communications
- 5.8 Participate in any FFA CDE that requires written communication

## **6.0 EVALUATE THE ROLE OF AGRICULTURAL BUSINESS AND MANAGEMENT INDUSTRIES IN THE ECONOMY**

- 6.1 Evaluate the roles of agricultural business and management industries in local, state, national and international economies
- 6.2 Compare and contrast the advantages and disadvantages of sole proprietorships, partnerships and corporations
- 6.3 Develop a business plan
- 6.4 Conduct an employee needs analysis for the organization based upon a business plan
- 6.5 Research business locations, facilities and equipment needs for the organization based upon the business plan
- 6.6 Analyze the relationship of customer service and customer satisfaction on the success of a business
- 6.7 Participate in any FFA CDE that requires knowledge or use of business plans, customer service skills and/or customer satisfaction data

## **7.0 DEMONSTRATE BUSINESS AND FINANCIAL MANAGEMENT PRACTICES NEEDED IN AGRICULTURAL BUSINESS AND MANAGEMENT INDUSTRIES**

- 7.1 Research and identify costs associated with supplying services in the Agricultural Business and Management field
- 7.2 Interpret financial information for decision making and planning
- 7.3 Monitor and adjust business operation based on financial performance
- 7.4 Demonstrate knowledge of checking and savings accounts and the ability to balance a checkbook
- 7.5 Develop a Risk Management plan for SAE or business
- 7.6 Utilize the SAE record and planning book to record the business and financial management practices for all SAEs

## **8.0 EVALUATE LEADERSHIP STYLES APPROPRIATE FOR THE WORKPLACE**

- 8.1 Describe how personal characteristics affect leadership ability
- 8.2 Investigate and evaluate leadership and management styles
- 8.3 Describe how cultural and ethnic differences affect leadership styles within a group
- 8.4 Describe how cultural and ethnic differences affect interpersonal interactions, teamwork and communications within a group
- 8.5 Describe different business etiquette practices

## **9.0 PARTICIPATE IN LEADERSHIP ACTIVITIES AS PROVIDED BY THE FFA ORGANIZATION**

- 9.1 Describe roles and responsibilities that FFA leaders and members bring to an organization
- 9.2 Evaluate characteristics and importance of an effective team player
- 9.3 Evaluate characteristics of effective teams
- 9.4 Demonstrate teamwork through participation in CDE teams
- 9.5 Practice techniques to involve each member of the team
- 9.6 Practice effective meeting management through participation at FFA meetings
- 9.7 Develop and implement a personal and professional improvement plan as shown in the SAE Record and Planning book
- 9.8 Participate in FFA Career Development Events
- 9.9 Practice decision-making process
- 9.10 Participate in leadership activities through FFA offices and committees

# Standards & Measurement Criteria

## Agricultural Business Management-Agriscience

### Applied Biological Systems (ABS) Agriculture

CIP No. 01.0100.10 (Introduction to Applied Biological Systems)

CIP No. 01.0100.12 (Applied Biological Systems)

These standards are to be taught over a two year period during grades 9 and 10.

## 10.0 DEMONSTRATE LABORATORY PROCEDURES AND SAFETY PRACTICES

- 10.1 Demonstrate safe practices in a home, classroom, laboratory and work situation
- 10.2 Identify careers that involve working with hazardous biological materials
- 10.3 Know the value of safety to employees
- 10.4 Discuss the impact of safety compliance on business
- 10.5 Identify safety precautions associated with biotechnology
- 10.6 Safely operate and maintain equipment

## 11.0 DESCRIBE ANIMAL HEALTH NEEDS

- 11.1 Explore the cells, tissues and organs in animals
- 11.2 Describe the epidermis system
- 11.3 Describe the musculoskeletal system
- 11.4 Describe the nervous system
- 11.5 Describe the circulatory system
- 11.6 Describe the respiratory system
- 11.7 Describe the digestive system
- 11.8 Describe the urinary system
- 11.9 Describe the reproductive system
- 11.10 Describe the endocrine system
- 11.11 Discuss how biotechnology has influenced animal health
- 11.12 Explain how biotechnology has influenced animal medicines
- 11.13 Compare the impact of biotechnology on the length and quality of animal life
- 11.14 Explore careers in the health care field and/or veterinary care field
- 11.15 Explore benefits to health care that have resulted from advances in technology

## 12.0 DESCRIBE BASIC PRINCIPLES OF NUTRITION

- 12.1 Define the essential nutrients
- 12.2 Explore the nutritional needs of humans
- 12.3 Explore the nutritional needs of animals
- 12.4 Explore the nutritional needs of plants
- 12.5 Explain the process of food digestion
- 12.6 Describe nutrient absorption
- 12.7 Identify common nutrient problems
- 12.8 Compare the impact of biotechnology on the production, processing, storage and preparation of food
- 12.9 Discuss how biotechnology has improved nutrition
- 12.10 Explore careers in the field of nutrition

## **13.0 EXAMINE THE INTERACTION OF BIOLOGICAL SYSTEMS WITHIN THE ENVIRONMENT**

- 13.1 Discuss the different classifications of natural resources in the environment
- 13.2 Identify fossil fuels found in the environment
- 13.3 Describe soil resources found in the environment
- 13.4 Identify the effects of pest control methods on the environment
- 13.5 Discuss environmental issues related to water resources
- 13.6 Identify air and atmospheric resources
- 13.7 Describe the effects of technology and biotechnology on the environment
- 13.8 Explore careers related to natural resources and the environment
- 13.9 Describe benefits to the environment as a result of advances in technology

## **14.0 DESCRIBE PRINCIPLES OF PLANT GROWTH PRODUCTION**

- 14.1 Identify parts of plants and their functions
- 14.2 Explore methods of classifying plants
- 14.3 Recognize the physiological needs of plants
- 14.4 Explain plant reproduction
- 14.5 Investigate plant tissue culture techniques
- 14.6 Explore careers that utilize biotechnology skills in the growth and production of plants
- 14.7 Discuss the effects of plant biotechnology in sustainable agriculture systems

## **15.0 DESCRIBE PRINCIPLES OF ANIMAL GROWTH AND PRODUCTION**

- 15.1 Recognize the physiological needs of living animals
- 15.2 Explore animal health control practices
- 15.3 Explain animal reproduction practices
- 15.4 Describe the use of biotechnology in animal growth and reproduction
- 15.5 Explore careers in animal growth and production

## **16.0 USE SCIENTIFIC PROCESSES TO ANALYZE DATA**

- 16.1 Formulate predictions, questions, or hypotheses based on observations.
- 16.2 Evaluate appropriate resources
- 16.3 Illustrate the scientific method
- 16.4 Design and conduct controlled investigations
- 16.5 Identify new and innovative food products developed as a result of advances in technology
- 16.6 Analyze data to explain results and propose further investigations
- 16.7 Design models
- 16.8 Communicate results of investigations

## **17.0 ANALYZE THE RELATIONSHIPS WITHIN LIVING SYSTEMS**

- 17.1 Explain the role of the cell and cellular processes
- 17.2 Examine the molecular basis of heredity and resulting genetic diversity
- 17.3 Analyze the relationships among various organisms and their environment
- 17.4 Portray the scientific principles and processes involved in biological evolution
- 17.5 Analyze the organization of living systems
- 17.6 Recognize the role of energy within living systems

## **18.0 DISCUSS BIOETHICAL ISSUES**

- 18.1 Explore the ethical considerations related to using biotechnology to improve human health
- 18.2 Discuss ethical considerations related to using biotechnology to produce and process human food
- 18.3 Identify ethical considerations related to using biotechnology to improve the production of animals
- 18.4 Describe the ethical considerations businesses face when deciding to sell food produced using biotechnology techniques

# Standards & Measurement Criteria

## Agricultural Business Management-Agriscience

### Laboratory-Based Integrated Science I

CIP No. 01.0100.14

These standards are to be taught during grades 11 and 12. Whichever option is chosen, will affect how these standards are taught.

#### **19.0 DESCRIBE FOOD SAFETY AND PROCESSING PRACTICES**

- 19.1 Identify food safety practices
- 19.2 Describe food-processing practices
- 19.3 Examine the effects of biotechnology on food safety and processing techniques
- 19.4 Explore careers in the food industry

#### **20.0 INVESTIGATE ETHICS IN THE AGRICULTURE INDUSTRY**

- 20.1 Assess ethics
- 20.2 Evaluate business dealings with friends, family, or competitors
- 20.3 Evaluate pricing and sales incentives
- 20.4 Evaluate potential environmental damage of agriculture practices
- 20.5 Evaluate sustainable agriculture

#### **21.0 INVESTIGATE APPROVED BIOTECHNOLOGY TECHNIQUES**

- 21.1 Specify methods and requirements by which an organism's genetic code can be altered using biotechnology techniques
- 21.2 Explain the process of embryo transfer techniques
- 21.3 Demonstrate propagation techniques using tissue culture
- 21.4 Detect biotechnology techniques that have contributed to improved health
- 21.5 Explore methods of using biotechnology to improve production
- 21.6 Justify the purposes and processes of growth regulators
- 21.7 Describe how scientists continue to investigate and critically analyze DNA cloning
- 21.8 Express the use of jumping genes
- 21.9 Examine careers in the biotechnology industry
- 21.10 Analyze how specific cultural and/or social issues promote or hinder scientific advancements
- 21.11 Report new agricultural products developed as a result of advances in technology

## **22.0 INVESTIGATE APPROVED PRACTICES OF DISEASE CONTROL**

- 22.1 Differentiate between common diseases
- 22.2 Assess symptoms of common diseases and parasites
- 22.3 Evaluate economic impact of diseases on production
- 22.4 Compare methods by which diseases are spread
- 22.5 Evaluate the most economical and environmentally safe disease control and prevention methods
- 22.6 Conduct an investigation on an infected field/organism
- 22.7 Record observations, notes, sketches, questions, and ideas during the investigation
- 22.8 Propose corrective actions needed to treat an infected field/organism

## **23.0 INVESTIGATE APPROVED NUTRITIONAL PRACTICES**

- 23.1 Determine the essential nutrients for organisms and describe their importance
- 23.2 Research common nutrient deficiency symptoms and treatment options
- 23.3 Recommend nutrient and quantity requirements
- 23.4 Evaluate diagnosis, treatment, and prevention of nutrient deficiency
- 23.5 Inspect supplemental and additive ration/fertilizer composition
- 23.6 Prepare tissue samples for testing and diagnosis
- 23.7 Test methods of fertilizer/nutrient application
- 23.8 Compare the relationship between nutrient practices and yield amounts

## **24.0 ANALYZE THE INTERACTION AMONG ENVIRONMENTAL AND NATURAL RESOURCES SCIENCES**

- 24.1 Evaluate environmental and natural resource sciences
- 24.2 Demonstrate how dynamic processes such as weathering, erosion, and sedimentation relate to redistribution of materials in the earth system
- 24.3 Investigate soil morphology
- 24.4 Illustrate land-use and water-use planning
- 24.5 Explain factors that impact current and future water quantity and quality including surface, ground, and local water issues
- 24.6 Define bio-fuels and how they are affecting the environment
- 24.7 Describe how human activities and natural causes can lead to pollution
- 24.8 Evaluate the effectiveness of conservation practices on environmental quality and biodiversity
- 24.9 Research careers in environmental sciences

## **25.0 INVESTIGATE ENVIRONMENTAL AND ECONOMICAL IMPACTS OF INTEGRATED PEST MANAGEMENT OPTIONS**

- 25.1 Classify common pests, including insects and noxious weeds
- 25.2 Evaluate economic impact of pests on plant production
- 25.3 Predict methods by which pests spread
- 25.4 Recognize signs of pest damage
- 25.5 Identify thresholds created for specific pests
- 25.6 Select and propose the most economical and environmentally safe pest control method
- 25.7 Identify GMO crops and their role in the agriculture industry
- 25.8 Read and interpret pesticide labels
- 25.9 Select and wear protective clothing for applying pesticides
- 25.10 Apply pesticide effectively

## **26.0 DEMONSTRATE AGRISCIENCE MECHANIC APPLICATIONS**

- 26.1 Demonstrate personal and group safety
- 26.2 Develop a bill of materials for a specific task
- 26.3 Develop a structural plan for a specific task
- 26.4 Demonstrate appropriate wood fabrication techniques
- 26.5 Demonstrate appropriate metal fabrication techniques
- 26.6 Demonstrate appropriate oxy-fuel cutting techniques used in agriculture
- 26.7 Demonstrate appropriate plasma cutting techniques used in agriculture
- 26.8 Demonstrate appropriate plumbing fabrication techniques used in agriculture
- 26.9 Demonstrate appropriate safe connection of electrical components including motors, timers, and valves in both high and low voltage circuits used in agriculture
- 26.10 Demonstrate appropriate concrete and masonry practices commonly used in agriculture.
- 26.11 Demonstrate operation and maintenance of appropriate mechanical systems used in agriculture
- 26.12 Demonstrate service and repair of appropriate mechanical systems
- 26.13 Demonstrate appropriate land measurement and construction techniques commonly used in agriculture which are to include optical, laser, and global positioning satellite systems
- 26.14 Demonstrate principles and applications of various engines and machinery used in agriculture

# Standards & Measurement Criteria

## Agricultural Business Management-Agriscience

### Laboratory-Based Integrated Science II

#### Animal Systems - Option C

CIP No. 01.0100.40

These standards should be taught throughout the Agriscience program and will affect how the other standards are taught.

### **27.C APPLY KNOWLEDGE OF ANATOMY AND PHYSIOLOGY TO PRODUCE AND/OR MANAGE ANIMALS IN A DOMESTICATED OR NATURAL ENVIRONMENT**

#### **27.1c Use classification systems to explain basic functions of animal anatomy and physiology**

- 27.1.1c Describe functional differences in animal structures and body systems
- 27.1.2c Classify animals according to anatomy and physiology

#### **27.2c Recognize the anatomy of animal species to understand how the body structures interact and affect animal health**

- 27.2.1c Identify selected animal parts from a diagram or on a real animal
- 27.2.2c Identify ways that an animal's health can be affected by anatomy/physiology problems

#### **27.3c Analyze a subject animal to determine the nature of its health status**

- 27.3.1c Perform simple procedures in evaluating an animal's health status
- 27.3.2c Identify symptoms of diseases, illnesses, parasites, and other health-related problems
- 27.3.3c Diagnose animal ailments
- 27.3.4c Implement disease prevention and health improvement program.
- 27.3.5c Identify and implement (i.e., treat) treatment options

### **28.C RECOGNIZE ANIMAL BEHAVIORS TO FACILITATE WORKING WITH ANIMALS SAFELY**

#### **28.1c Develop a safety plan for working with a specific animal**

- 28.1.1c Explain factors which serve to stimulate or discourage given types of animal behavior
- 28.1.2c Recognize the normality curve of animal behavior
- 28.1.3c Perform safe handling procedures when working with animals
- 28.1.4c Identify strengths and weaknesses of an animal safety handling plan
- 28.1.5c Operate animal facilities to insure safety of animals

## **29.C PROVIDE PROPER NUTRITION TO MAINTAIN ANIMAL PERFORMANCE**

### **29.1c Examine animal developmental stages to comprehend why nutrient requirements are different throughout an animal's life cycle**

29.1.1c Recognize the different phases of an animal's life cycle

29.1.2c Select diets that provide the appropriate quantity of nutrients for each animal developmental stage

### **29.2c Analyze a feed ration to determine whether or not it fulfills a given animal's nutrient requirements**

29.2.1c Identify the differences between good and poor quality feedstuffs

29.2.2c Create a balanced ration for a given animal

### **29.3c Record and compare feed variations to assess whether the nutritional requirements of a given animal are being met**

29.3.1c Use different types of feedstuffs (e.g., roughage, concentrates) to create a feed ration containing the appropriate amounts of required nutrients

29.3.2c Use different forms of feedstuffs (e.g., pellets, cracked, rolled, ground) to create a diet that meets the needs of a specific animal

### **29.4c Determine the most economical and efficient feeding program**

29.4.1c Investigate prices of different feedstuffs

29.4.2c Compare the costs of feeding various rations

29.4.3c Develop a feeding plan that is cost effective

29.4.4c Identify risks involved with specific investments (i.e. feed trucks, silos, mills, etc.)

## **30.C KNOW THE FACTORS THAT INFLUENCE AN ANIMAL'S REPRODUCTIVE CYCLE TO EXPLAIN SPECIES RESPONSE**

### **30.1c Analyze elements in the reproductive cycle to explain differences between male and female reproductive systems**

30.1.1c Identify the parts of male and female reproductive tracts on example animals

30.1.2c Analyze the reproductive cycle of a given animal

30.1.3c Evaluate animal readiness for breeding

### **30.2c Discuss reproductive cycles to show how they differ from species to species**

30.2.1c Discuss the pros and cons of breeding through natural cover and artificial insemination

30.2.2c Discuss the implications of genetic variation

30.2.3c Describe techniques of artificial insemination

30.2.4c Identify reproduction management practices (e.g., male to female ratios, age and weight for breeding, fertility and soundness for breeding, heat synchronization, flushing)

**30.3c Evaluate an animal to determine its breeding soundness**

- 30.3.1c Describe the procedure for determining an animal's breeding readiness
- 30.3.2c Identify and prevent problems associated with reproduction
- 30.3.3c Select animals based on breeding soundness

**30.4c Investigate economic decisions relating to a breeding program**

- 30.4.1c Analyze costs of various reproduction programs
- 30.4.2c Compare the economical value of each breeding program
- 30.4.3c Create a breeding program that is economically efficient

**31.C IDENTIFY ENVIRONMENTAL FACTORS THAT AFFECT AN ANIMAL'S PERFORMANCE**

**31.1c Recognize optimum performance for a given animal species**

- 31.1.1c Identify good performance for a given animal species
- 31.1.2c Identify reasons why some animals perform better than others

**31.2c Create a program to develop an animal to its highest potential performance**

- 31.2.1c Identify factors that can be manipulated to control a given animal's performance
- 31.2.2c Generate ways to increase an animal's performance

**31.3c Assess an animal to determine if it has reached its optimum performance level**

- 31.3.1c Make appropriate changes in an animal's environment in order to achieve optimum performance
- 31.3.2c Use appropriate tools in manipulating animal performance

**31.4c Develop efficient procedures to produce consistently high-quality animals, well-suited for their intended purpose**

- 31.4.1c Identify a given species' desirable production numbers (e.g., birth weight, rate of gain, age of maturity, age of sexual maturity)
- 31.4.2c Evaluate desired traits (e.g., production) of animals
- 31.4.3c Evaluate the role that economics plays in animal production
- 31.4.4c Design facilities appropriate for the production of a given species of animal
- 31.4.5c Make decisions on using new techniques and methods in the production facility so that both profit and animal safety are maximized