

Agricultural Science I

Standards, Competencies, & Evidence of Mastery

This document accompanies the Missouri Agricultural Science I Instructional Framework and lists the standards and competencies from the Agriculture, Food, and Natural Resources standards relevant to the Missouri Agricultural Science I Instructional Framework. Also included are evidence of mastery statements aligned to the instructional framework. The standards and competencies are listed and coded according to their order in the Agriculture, Food, and Natural Resources standards, published by the States' Career Clusters Initiative.

Life Knowledge and Cluster Skills

Cluster Content Standard: The student will demonstrate competence in the application of leadership, personal growth and career success skills necessary for a chosen profession while effectively contributing to society.

CS.01 Premier Leadership: Acquire the skills necessary to positively influence others.

Describe how FFA is an integral part of the complete agricultural education program and how to operate a successful FFA chapter.

Identify FFA, SAE, and classroom instruction as an intracurricular part of the agricultural education program.

Modify their personal plan of study for their Agricultural Education Program including classroom instruction, FFA and SAE.

Demonstrate knowledge of FFA history and traditions (e.g., mission, vision).

Identify FFA organization structure and activities.

Demonstrate effective public speaking and communication skills (e.g., recitation of the FFA Creed, Motto, Salute, Mission Statement).

Demonstrate skills needed for participation in meetings.

Identify styles and characteristics of effective leadership.

CS.01.01 Action: Exhibit the skills and competencies needed to achieve a desired result.

CS.01.01.01.a Work productively with a group or independently (e.g., leadership skills, learning styles, etc.).

CS.01.01.03.a Exhibit good planning skills for a specific task or situation.

CS.01.01.07.a Set personal goals using the SMART goals method (Specific, Measurable, Approved by you, Realistic, Time-stamped).

CS.01.01.07.b Use a variety of strategies to evaluate goals (e.g., observe, apply, and demonstrate).

CS.01.01.07.c Evaluate actions taken and make appropriate modifications to personal goals.

CS.02 Personal Growth: Develop a skill set to enhance the positive evolution of the whole person.

CS.02.01 Develop and implement an appropriate SAE program for the individual student.

Identify and explore different types and examples of SAE programs.

Plan and implement an SAE programs for student's personal plan of study.

CS.02.03 Professional Growth: Develop awareness and apply skills necessary for achieving career success.

CS.02.03.01.a Explore various career interests/options.

CS.02.03.01.b Make decisions to plan for a personal career.

CS.02.03.01.c Implement a plan to achieve career goals and priorities.

CS.02.03.02.a Chart the components to creating a balanced work/life plan.

CS.02.03.02.c Balance personal and work responsibilities.

Agribusiness Systems

Content Standard: The student will demonstrate competence in the application of principles and techniques for the development and management of agribusiness systems.

ABS.02 Utilize appropriate management planning principles in AFNR business enterprises.

Compose and analyze an SAE project for an enterprise.

ABS.02.01.01.a Recognize quality AFNR business plan components that have been developed using the SMART (specific, measurable, attainable, realistic and timely) format.

ABS.03 Utilize record keeping to accomplish AFNR business objectives while complying with laws and regulations.

ABS.03.01 Prepare and maintain all files needed to accomplish effective SAE record keeping using the Missouri Ag Record Book for Secondary Students.

ABS.03.01.01.a Fill out receipt and expenditure forms, cash flows, beginning inventory, financial statements, and net worth.

Fill out supplement and leadership pages.

ABS.04 Apply generally accepted accounting principles and skills to manage cash budgets, credit budgets and credit for AFNR businesses.

ABS.04.01 Use accounting fundamentals to accomplish dependable bookkeeping and fiscal management.

ABS.04.01.01.a Budget resources, as applied to the SAE Program, including capital, human, financial and time.

ABS.01.04.02.a Identify financial concepts associated with production and profit.

Animal Systems

Content Standard: The student will demonstrate competence in the application of scientific principles and practices to the production and management of animals.

AS.01 Examine the components, historical development, global implications and future trends of the animal systems industry.

AS.01.01 Evaluate the development and implications of animal origin, domestication and distribution.

AS.01.01.01.a Identify the origin, significance, distribution and domestication of animal species.

AS.01.01.01.b Evaluate and describe characteristics of animals that developed in response to the animals' environment and led to their domestication.

AS.01.01.02.a Define major components of the animal industry and their importance.

AS.01.01.02.b Outline the development of the animal industry and the resulting products, services and careers.

Describe trends and implications of future development of the animal systems industry.

AS.02 Classify, evaluate, select and manage animals based on anatomical and physiological characteristics.

AS.02.01 Classify animals according to hierarchical taxonomy and agricultural use.

AS.02.01.01.a Explain the importance of the binomial system of nomenclature.

AS.02.01.02.a Identify major animal species by common and scientific names.

AS.02.01.02.b Compare and contrast the hierarchical classification of the major agricultural animal species.

AS.02.01.02.c Appraise and evaluate the economic value of animals for various applications in the agriculture industry.

Identify major breeds for each species.

AS.02.02 Apply principles of comparative anatomy and physiology to uses within various animal systems.

Compare and contrast digestive systems.

AS.02.03 Select animals for specific purposes and maximum performance based on anatomy and physiology.

AS.02.03.01.a Identify ways an animal's health can be affected by anatomical and physiological disorders.

AS.02.03.01.b Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.

AS.02.03.01.c Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction.

AS.03 Provide for the proper health care of animals.

AS.03.01 Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders.

AS.03.01.01.a Explain methods of determining animal health and disorders.

AS.03.01.01.b Perform simple health-check evaluations on animals.

Identify causes, effects, symptoms, and treatments of common diseases, parasites and physiological disorders that affect animals.

AS.03.02 Provide for the biosecurity of agricultural animals and production facilities.

AS.03.02.01.a Explain the importance of biosecurity to the animal industry.

AS.04 Apply principles of animal nutrition to ensure the proper growth, development, reproduction and economic production of animals.

AS.04.01 Formulate feed rations to provide for the nutritional needs of animals.

AS.04.01.01.a Compare and contrast common types of feedstuffs and the roles they play in the diets of animals.

AS.04.01.02.a Explain the importance of a balanced ration for animals.

Demonstrate the procedure for balancing a ration for crude protein.

AS.04.02 Prescribe and administer animal feed additives and growth promotants in animal production.

AS.04.02.01.a Explain the purpose and benefits of feed additives and growth promotants in animal production.

AS.04.02.01.b Discuss how feed additives and growth promotants are administered and the precautions that should be taken.

AS.05 Evaluate and select animals based on scientific principles of animal production.

AS.05.01 Evaluate the male and female reproductive systems in selecting animals.

AS.05.01.01.a Explain the male and female reproductive organs of the major animal species.

AS.05.01.01.b Describe the functions of major organs in the male and female reproductive systems.

Identify concepts pertaining to conception, gestation, and parturition for different species.

Select breeding animals based on characteristics of the reproductive organs.

AS.05.02 Evaluate animals for breeding readiness and soundness.

AS.05.02.01.a Explain how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female animals.

AS.05.02.01.b Summarize factors that lead to reproductive maturity.

AS.05.02.01.c Evaluate and select animals for reproductive readiness.

AS.05.02.02.a Discuss the importance of efficient and economic reproduction in animals.

AS.05.02.02.b Evaluate reproductive problems that occur in animals.

Create a program designed to identify and treat or cull animals with reproductive problems.

AS.05.03 Apply scientific principles in the selection and breeding of animals.

AS.05.03.01.a Explain genetic inheritance in agricultural animals.

AS.05.03.01.b Explain the advantages of using genetically superior animals in the production of animals and animal products.

AS.05.03.01.c Select a breeding system based on the principles of genetics.

AS.05.03.02.b Explain the processes of natural and artificial breeding methods (e.g., estrous synchronization, superovulation, flushing and embryo transfer)..

AS.05.03.03.a Explain the use of quantitative breeding values (e.g., EPDs) in the selection of genetically superior breeding stock.

AS.05.03.03.c Select animals based on quantitative breeding values for specific characteristics.

AS.06 Prepare and implement animal handling procedures for the safety of animals, producers and consumers of animal products.

AS.06.01 Demonstrate safe animal handling and management techniques.

AS.06.01.01.a Discuss the dangers involved in working with animals.

AS.06.01.01.b Outline safety procedures for working with animals by species.

AS.06.01.02.a Explain the implications of animal welfare and animal rights for animal agriculture.

AS.06.02 Implement procedures to ensure that animal products are safe.

AS.06.02.01.a Identify animal production practices that could pose health risks or are considered to pose risks by some.

AS.06.02.01.b Discuss consumer concerns with animal production practices relative to human health.

AS.07 Select animal facilities and equipment that provide for the safe and efficient production, housing and handling of animals.

AS.07.01 Design animal housing, equipment and handling facilities for the major systems of animal production.

AS.07.01.01.a Identify facilities needed to house and produce an animal species safely and efficiently.

AS.07.01.02.a Identify equipment and handling facilities used in modern animal production.

Food Products and Processing Systems

Content Standard: The student will demonstrate competence in the application of scientific principles, practices and techniques in the processing, storage, and development of food products.

FPP.01 Examine components of the food industry and historical development of food products and processing.

Evaluate the significance and implications of changes and trends in the food products and processing industry.

Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry.

FPP.04 Select and process food products for storage, distribution and consumption.

FPP.04.01 Utilize harvesting, selection and inspection techniques to obtain quality food products for processing.

FPP.04.01.01.a Identify quality and yield grades of food products.

FPP.04.01.01.b Discuss factors that affect quality and yield grades of food products.

FPP.04.01.03.a Identify and describe accepted animal treatment and harvesting techniques.

FPP.04.02 Evaluate, grade and classify processed food products.

Identify and evaluate foods derived from animal products.

Power, Structural and Technical Systems

Content Standard: The student will demonstrate competence in the application of principles and techniques for the development and management of power, structural and technical systems.

PST.04 Plan, build and maintain agricultural structures.

PST.04.02 Apply structural plans and specifications.

PST.04.02.01.a Identify major parts of a construction drawing.

PST.04.02.01.b Identify and interpret different views of a construction drawing.

PST.04.04 Follow architectural and mechanical plans to construct and/or repair equipment, buildings and facilities in compliance with safety rules.

PST.04.04.01.a Develop skills for working with wood and/or metal.

PST.04.04.03.b Paint or protect with coatings.

PST.04.04.07.a Identify kinds and characteristics of wood and/or metal materials.

PST.04.04.07.b Distinguish welding processes, positions, and materials preparation.

Identify common woodworking and/or metal working tools.

Codes for the Agriculture, Food, and Natural Resources standards are as follows:

ABS = Agribusiness Systems

AS = Animal Systems

CS = Life Knowledge and Cluster Skills

FPP = Food Products and
Processing Systems

PST = Power, Structural, and
Technical Systems