

Agricultural Science I

Instructional Framework

An instructional framework provides educators with a list of benchmark statements aligned to Common Core and national content area standards for a given course or program. The Missouri Agricultural Science I Instructional Framework lists a sequence of content for multimedia, organized into distinct units of instruction with component evidence of mastery statements.

Agricultural Science I Instructional Framework

	Common Core Standards	National Academic Content Standards	National Standards (AFNR)
A. Acquire the skills necessary to positively influence others.			CS.01
1. Identify FFA, SAE, and classroom instruction as an intracurricular part of the Agricultural Education Program.			
2. Modify their personal plan of study for their Agricultural Education Program including classroom instruction, FFA, and SAE.	WHST 9-10.5	SS 4d	
3. Demonstrate a knowledge of FFA history and traditions (e.g., mission, vision, etc.).			
4. Identify FFA organization structure and activities.			
5. Demonstrate effective public speaking and communication skills (e.g., recitation of the FFA Creed, Motto, Salute, and/or Mission Statement).	SL 9-10.1	ELA 4, ELA 12	
6. Demonstrate skills needed for participation in meetings.		SS 4h	
7. Identify styles and characteristics of effective leadership.			
8. Work productively with a group or independently (e.g., leadership skills, learning styles, etc.).	SL 9-10.1	SS 4h	
9. Exhibit good planning skills for a specific task or situation.			CS.01.01.03.a
10. Set personal goals using the SMART goals method (Specific, Measurable, Approved by you, Realistic, Time-stamped).			CS.01.01.07.a
11. Use a variety of strategies to evaluate goals (e.g., observe, apply, and demonstrate).			CS.01.01.07.b
12. Evaluate actions taken and make appropriate modifications to personal goals.			CS.01.01.07.c

	Common Core Standards	National Academic Content Standards	National Standards (AFNR)
B. Develop a skill set to enhance the positive evolution of the whole person.			CS.02
1. Identify and explore different types and examples of SAE programs.			
2. Plan and implement an SAE program for student's personal plan of study.	WHST 9-10.5		
3. Explore various career interests/options.		ELA 12, SS 4a	CS.02.03.01.a
4. Make decisions to plan for a personal career.		ELA 12, SS 4a	CS.02.03.01.b
5. Implement a plan to achieve career goals and priorities.		ELA 12, SS 4a	CS.02.03.01.c
6. Chart the components to creating a balanced work/life plan.	RST 9-10.7	ELA 12, SS 4a	CS.02.03.02.a
7. Balance personal and work responsibilities.		ELA 12, SS 4a	CS.02.03.02.c
C. Utilize appropriate management planning principles in SAE business enterprises.			ABS.02
1. Recognize quality SAE business plan components that have been developed using the SMART (specific, measurable, attainable, realistic, and timely) format.	RST 9-10.2	ELA 3, SS 7h	ABS.02.01.01.a.
D. Utilize recordkeeping to accomplish SAE business objectives while complying with laws and regulations.			ABS.03
1. Fill out receipt and expenditure forms, cash flows, beginning inventory, financial statements, and net worth.	N-Q2	M 5a, ELA 8	ABS.03.01.01.a
2. Fill out supplement and leadership pages.	N-Q2	M 5a, ELA 8	ABS.03.01.01.a
E. Apply generally accepted accounting principles and skills to manage cash budgets, credit budgets and credit for SAE businesses.			ABS.04
1. Budget resources, as applied to the SAE Program, including capital, human, financial, and time.	N-Q1	M 1c, SS 7h	ABS.04.01.01.a
2. Identify financial concepts associated with production and profit.	N-Q1 WHST 9-10.9	M 1c, M 5a, M 5c, SS 7h	ABS.04.01.02.a

	Common Core Standards	National Academic Content Standards	National Standards (AFNR)
F. Examine the components, historical development, global implications, and future trends of the animal systems industry.			AS.01
1. Identify the origin, significance, distribution and domestication of animal species.		S C3, SS 7h	AS.01.01.01.a
2. Evaluate and describe characteristics of animals that developed in response to the animals' environment and led to their domestication.	RST 9-10.5	S C3, SS 7h	AS.01.01.01.b
3. Define major components of the animal industry and their importance.		SS 7h	AS.01.01.02.a
4. Outline the development of the animal industry and the resulting products, services, and careers.		SS 7h	AS.01.01.02.b
5. Describe trends and implications of future development of the animal systems industry.	N-Q1	S C3, SS 7h	AS.01.01.02.c
G. Classify, evaluate, select, and manage animals based on anatomical and physiological characteristics.			AS.02
1. Explain the importance of the binomial system of nomenclature.		S C3	AS.02.01.01.a
2. Identify major animal species by common and scientific names.		S C3	AS.02.01.02.a
3. Compare and contrast the hierarchical classification of the major agricultural animal species.	RST9-10.9	S C3	AS.02.01.02.b
4. Appraise and evaluate the economic value of animals for various applications in the agriculture industry.	N-Q1	S C3	AS.02.01.02.c
5. Identify major breeds for each species.		S C3	
6. Compare and contrast digestive systems.	RST9-10.9	S C3	
7. Identify ways an animal's health can be affected by anatomical and physiological disorders.		S C5	AS.02.03.01.a
8. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.	RST9-10.9	S C5	AS.02.03.01.b
9. Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth, and reproduction.	N-Q1	S C5	AS.02.03.01.c

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H. Provide for the proper health care of animals.			AS.03
1. Explain methods of determining animal health and disorders.		S C4, S F1, S F5	AS.03.01.01.a
2. Perform simple health-check evaluations on animals.		S F1, S F5	AS.03.01.01.b
3. Identify causes, effects, symptoms, and treatments of common diseases, parasites, and physiological disorders that affect animals.		S F1, S F5	AS.02.01.02.a
4. Explain the importance of biosecurity to the animal industry.	RI 9-10.8	S F5, S F6, SS 9b	AS.03.02.01.a
I. Apply principles of animal nutrition to ensure the proper growth, development, reproduction and economic production of animals.			AS.04
1. Compare and contrast common types of feedstuffs and the roles they play in the diets of animals.	RST 9-10.9	S A4, S C5, M 1C, M 6B	AS.04.01.01.a
2. Explain the importance of a balanced ration for animals.		S A4, S C5, M 1C, M 6B	AS.04.01.02.a
3. Demonstrate the procedure for balancing a ration for crude protein.	N-Q1		
4. Explain the purpose and benefits of feed additives and growth promotants in animal production.		S A4, S C5, M 1C, M 6B	AS.04.02.01.a
5. Discuss how feed additives and growth promotants are administered and the precautions that should be taken.		S C5	AS.04.02.01.b
J. Evaluate and select animals based on scientific principles of animal production.			AS.05
1. Explain the male and female reproductive organs of the major animal species.		S C1, S C3	AS.05.01.01.a
2. Describe the functions of major organs in the male and female reproductive systems.		S C1, S C3	AS.05.01.01.b
3. Identify concepts pertaining to conception, gestation, and parturition for different species.			
4. Select breeding animals based on characteristics of the reproductive organs.		S C1, S C3	AS.05.01.01.c
5. Explain how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female animals.		S C6	AS.05.02.01.a
6. Summarize factors that lead to reproductive maturity.	RI 9-10.6	S C6	AS.05.02.01.b
7. Evaluate and select animals for reproductive readiness.	N-Q1	S C6	AS.05.02.01.c
8. Discuss the importance of efficient and economic reproduction in animals.		S C6	AS.05.02.02.a

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9. Evaluate reproductive problems that occur in animals.		S C6	AS.05.02.02.b
10. Create a program designed to identify and treat or cull animals with reproductive problems.		S C6	AS.05.02.02.c
11. Explain genetic inheritance in agricultural animals.	RST 9-10.5	S A4, S C2, M 6C	AS.05.03.01.a
12. Explain the advantages of using genetically superior animals in the production of animals and animal products.	RST9-10.9	S A4, S C2, M 6C	AS.05.03.01.b
13. Select a breeding system based on the principles of genetics.		S A4, S C2 M 6C	AS.05.03.01.c
14. Explain the processes of natural and artificial breeding methods (e.g., estrous synchronization, superovulation, flushing and embryo transfer).	WHST 9-10.2	S A4, S C2, M 6C	AS.05.03.02.b
15. Explain the use of quantitative breeding values (e.g., EPDs) in the selection of genetically superior breeding stock.	N-Q1 WHST 9-10.2	S A4, S C2, M 6C	AS.05.03.03.a
16. Select animals based on quantitative breeding values for specific characteristics.		S A4, S C2, M 6C	AS.05.03.03.c
K. Prepare and implement animal handling procedures for the safety of animals, producers, and consumers of animal products.			AS.06
1. Discuss the dangers involved in working with animals.	RST 9-10.8	S C6	AS.06.01.01.a
2. Outline safety procedures for working with animals by species.		S C6	AS.06.01.01.b
3. Explain the implications of animal welfare and animal rights for animal agriculture.	RST 9-10.5	S C6	AS.06.01.02.a
4. Identify animal production practices that could pose health risks or are considered to pose risks by some.		S F1, S F5	AS.06.02.01.a
5. Discuss consumer concerns with animal production practices relative to human health.	WHST 9-10.7	S F1, S F5	AS.06.02.01.b
L. Select animal facilities and equipment that provide for the safe and efficient production, housing and handling of animals.			AS.07
1. Identify facilities needed to house and produce an animal species safely and efficiently.		S C6, S F6	AS.07.01.01.a
2. Identify equipment and handling facilities used in modern animal production.		S C6, S F6	AS.07.01.02.a

	Common Core Standards	National Academic Content Standards	National Standards (AFNR)
M. Examine components of the food industry and historical development of food products and processing.			FPP.01
1. Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry.	RST 9-10.5	S F1, SS 1g, SS 8c, ELA 7, ELA 8	FPP.01.01.01.a
N. Select and process food products for storage, distribution and consumption.			FPP.04
1. Identify quality and yield grades of food products.	A-CED1	S F1	FPP.04.01.01.a
2. Discuss factors that affect quality and yield grades of food products.	RST 9-10.5	S F1, ELA 12	FPP.04.01.01.b
3. Identify and describe accepted animal treatment and harvesting techniques.	WHST 9-10.2	S F1, ELA 12	FPP.04.01.03.a
4. Identify and evaluate foods derived from animal products.		S F1, ELA 12	FPP.04.02.01.a
O. Plan, build, and maintain agricultural structures.			PST.04
1. Identify major parts of a construction drawing.		M 1C, M 4A, M 4B, S E2	PST.04.02.01.a
2. Identify and interpret different views of a construction drawing.	G-MG3 RST 9-10.4	M 1C, M 4A, M 4B, S E2	PST.04.02.01.b
3. Develop skills for working with wood and/or metal.	G-MG3 RST 9-10.3		
4. Paint or protect with coatings.		M 1C, M 4A, M 4B, S E2	PST.04.04.03.b
5. Identify kinds and characteristics of wood and/or metal materials.			
6. Distinguish welding processes, positions, and materials preparation.	RST 9-10.5		
7. Identify common woodworking and/or metal working tools.			

Examples Aligned to Common Core Standards

The following instructional examples follow the expectations of the Agricultural Science II Instructional Framework and align to the Common Core standards.

Common Core English Language Arts and Literacy

Research a topic of interest that has a relation to agriculture and present a ten minute demonstration to classmates and answer up to five minutes of questions.

SL 9-10.1

Codes for Common Core English Language Arts and Literacy are:

RI = Reading for Informational Text
RST = Reading for Literacy in Science and
Technical Subjects

SL = Speaking and Listening
WHST = Writing for Literacy in History/Social
Studies, Science, and Technical Subjects

Codes for Common Core Mathematics are:

A-CED = Algebra: Creating Equations
G-MG = Geometry: Modeling
with Geometry

N-Q = Number and Quantity: Quantities

Codes for National Academic Content Standards are:

ELA = Standards for the English Language
Arts from the International Reading
Association and the National Council of
Teachers of English
M = Principles and Standards for School
Mathematics from the National Council
of Teachers of Mathematics

S = National Science Education Standards
from the National Academy of Sciences
SS = Expectations of Excellence: Curriculum
Standards for Social Studies from the
National Council for the Social Studies

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

ABS = Agribusiness Systems
AS = Animal Systems
CS = Life Knowledge and Cluster Skills

FPP = Food Products and Processing Skills
PST = Power, Structural, and Technical Systems