

Agricultural Science II

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 II Instructional Framework lists a sequence of content for multimedia, organized into distinct units of instruction with component evidence of mastery statements.

Agricultural Science II Instructional Framework

	Common Core Standards	National Academic Content Standards	National Standards (AFNR)
A. Premier Leadership: Acquire the skills necessary to positively influence others.			CS.01
1. Demonstrate FFA, SAE, and classroom instruction as an intracurricular part of the Agricultural Education Program.			
2. Revise their personal plan of study for their Agricultural Education Program including classroom instruction, FFA and SAE.		SS 4d	
3. Demonstrate proper parliamentary procedure.	SL 9-10.1, SL 9-10.4		
4. Demonstrate effective public speaking and communication skills by leading a group discussion.	SL 9-10.1, SL 9-10.4, WHST 9-10.2, WHST 9-10.4, WHST 9-10.5, WHST 9-10.7	ELA 4, ELA 12	
5. Demonstrate the ability to complete a task without assistance.		SS 4h	CS.01.01.01b
6. Work independently and in group settings to accomplish a task.			CS.01.01.01c
7. Create measurable objectives for a given situation.			CS.01.01.02b
8. Assess outcomes to determine success for a task.			CS.01.01.02c
9. Assess individual strengths and weaknesses in planning.		SS 4d	CS.01.01.03b
10. Implement an effective project plan.		SS 4h	CS.01.01.03c
11. Use appropriate and reliable resources to complete an action or project.		SS 4h	CS.01.01.04b
12. Identify the strengths/talents of team members needed to achieve a desired task.		SS 4h	CS.01.01.06a
13. Identify techniques used to work with and manage team members with varying strengths and weaknesses.		SS 4d	CS.01.02.01a

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14. Explain human relation skills such as compassion, empathy, unselfishness, trustworthiness, reliability and being friendly.		SS 4d	CS.01.02.01a
15. Engage in a conversation with others to identify their interests and aspirations.		SS 4d	CS.01.02.02a
16. Identify the steps/strategies to successfully coach/mentor others.		SS 4d	CS.01.02.03a
17. Describe personal values.		SS 4d	CS.01.04.02a
18. Identify the consequences of personal actions.		SS 4d	CS.01.04.03a
19. Explain the benefits of mutual respect.		SS 4d	CS.01.04.04a
20. Describe the benefits of serving others.		SS 4d	CS.01.04.06a
21. Explain the reasons for having a leadership/personal growth plan.		SS 4d	CS.01.06.01a
22. Develop a plan that includes specific goals for leadership and personal growth.		SS 4d	CS.01.06.01b
23. Describe the value of being a life-long learner and the need for continuous development.		SS 4d	CS.01.06.05a
B. Career Success: Demonstrate those qualities, attributes and skills necessary to succeed in, or further prepare for, a chosen career while effectively contributing to society.			CS.03
1. Use basic technical and business writing skills.	W 9-10.4	ELA 4, ELA 5	CS.03.01.01a
2. Select the appropriate form of technical and business writing or communication for a specific situation.		ELA 4, ELA 5	CS.03.01.01b
3. Describe the various types of uses of resumes.			CS.03.01.02a
4. Prepare a resume.	W 9-10.4	ELA 4, ELA 5, ELA 12	CS.03.01.02b
C. Examine the importance of health, safety and environmental management systems in organizations and their importance to performance and regulatory compliance.			CS.06
1. Use proper safety practices/personal protective equipment.		S F1	CS.06.02.01a
2. Demonstrate the importance of safety, health and environmental practices in the workplace.		S F1	CS.06.03.01a

	Common Core Standards	National Academic Content Standards	National Standards (AFNR)
D. Technical Skills: Use tools, equipment, machinery and technology appropriate to work within areas related to AFNR.			CS.08
1. Identify standard tools, equipment and safety procedures related to a specific task.			CS.08.01.01a
2. Set up/adjust tools and equipment related to complete a specific task.			CS.08.01.01b
3. Use tools and equipment appropriately to complete a specific task.			CS.08.01.01c
4. Follow operating instructions related to specific tools and equipment needed to complete a task.			CS.08.01.02a
5. Use the appropriate procedures for the use and operation of specific tools and equipment.			CS.08.02.01a
6. Demonstrate safety precautions when using tools for a specific task around bystanders.		S F5	CS.08.02.01b
E. Utilize recordkeeping to accomplish AFNR business objectives while complying with laws and regulations.			ABS.03
1. Complete receipt and expenditure forms, cash flows, beginning and ending inventory, financial and net worth statements.		M 5A, M 6B	
2. Fill out supplemental and leadership pages.			
3. Evaluate SAE Programs through FFA Awards and Degree Programs.		ELA 8, M 5A	
F. Assess accomplishment of goals and objectives by an AFNR business.			
1. Maintain accounting information utilizing the Missouri Ag. Record Book for Secondary Students to prepare an income statement, balance sheet and cash-flow analysis.		M 1C, M 5A	ABS.05.01.01b
2. Interpret financial information for an SAE Project to determine profitability, net worth position, financial ratios, performance measures and ability to meet cash-flow requirements.		M 1C, M 5A, M 5C	ABS.05.01.01c

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G. Apply scientific principles to environmental service systems.			
1. Explain the process of soil formation.		S D2	ESS.03.02.01a
2. Describe the biodiversity found in soil and the contribution of biodiversity to the physical and chemical characteristics of soil.		S C4	ESS.03.02.02a
3. Relate the activities of microorganisms in soil to environmental service systems.		S C4	ESS.03.02.02b
4. Explain how the physical qualities of the soil influence the infiltration and percolation of water.		S B2	ESS.03.02.03a
5. Identify the physical qualities of the soil that determine its use for environmental service systems.		SS 3K	ESS.03.02.03b
H. Demonstrate techniques used to protect natural resources.			NRS.04
1. Identify common insects and their characteristics.		S F3	
I. Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants.			PS.01
1. Explain systems used to classify plants.		S C3	PS.01.01.01a
2. Compare and contrast the hierarchical classification of agricultural plants.		S C3	PS.01.01.01b
3. Classify agricultural plants according to the hierarchical classification system, life cycles, plant use and as monocotyledons or dicotyledons.		S C3	PS.01.01.01c
4. Describe the morphological characteristics used to identify agricultural plants.			PS.01.01.02a
5. Identify agriculturally important plants by common names.			PS.01.01.02b
6. Identify plant cell organelles and their functions.		S C1	
7. Identify the components, the types and the functions of plant roots.		S C5	PS.01.02.02b
8. Identify root tissues and explain the pathways of water and nutrients into and through the root tissues.		S C5	PS.01.02.03a
9. Identify the components and the functions of plant stems.		S C5	PS.01.02.03a
10. Describe the processes of translocation.		S B6	PS.01.02.03b
11. Discuss leaf morphology and the functions of leaves.		S B6	PS.01.02.04a
12. Explain how leaves capture light energy and allow for the exchange of gases.		S B6, S C5	PS.01.02.04b

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13. Identify the components of a flower, the functions of a flower and the functions of flower components.		S C5	PS.01.02.05a
14. Identify the different types of flowers and flower forms.			PS.01.02.05b
15. Explain the functions and components of seeds and fruit.			PS.01.02.06a
16. Explain requirements necessary for photosynthesis to occur and identify the products and byproducts of photosynthesis.		S B6, S C5	PS.01.03.01b
17. Explain cellular respiration and its importance to plant life.		S B6, S C5	PS.01.03.02a
18. Explain factors that affect cellular respiration and identify the products and byproducts of cellular respiration.		S B6, S C5	PS.01.03.02b
19. Define primary growth and the role of the apical meristem.		S C6	PS.01.03.03a
20. Explain the process of secondary plant growth.		S C6	PS.01.03.03b
J. Prepare and implement a plant management plan that addresses the influence of environmental factors, nutrients and soil on plant growth.			PS.02
1. Describe the qualities of light that affect plant growth.		S C6	PS.02.01.01a
2. Describe the effects of air, temperature and water have on plant metabolism and growth.		S C6	PS.02.01.02a
K. Propagate, culture, and harvest plants.			PS.03
1. Explain pollination, cross-pollination and self-pollination of flowering plants.		S C2	PS.03.01.01a
2. Diagram the process of plant fertilization.		S C2	PS.03.01.01.b
3. Demonstrate sowing techniques and provide favorable conditions for seed germination.		S C2	PS.03.02.02a
4. Explain the importance of starting with pest- and disease-free propagation material.		S C6	PS.03.02.01a
5. Identify the difference between monocot and dictos.			
6. Describe why planting techniques are different for monocots and dicots.			
7. Identify types of plant pests and disorders.			PS.03.03.01a
8. Identify major local weeds, insect pests and infectious and noninfectious plant diseases.		S C4	PS.03.03.01b
9. Describe life cycles and damage caused by plant pests and diseases.		S C6	

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L. Plan, Build and Maintain Agricultural Structures.			PST.04
1. Identify criteria in selecting materials in agricultural construction/fabrication.			PST.04.03.01a
2. Demonstrate skills for working with wood and/or metal.			

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

SL 9-10.4

WHST 9-10.2

WHST 9-10.4

WHST 9-10.5

WHST 9-10.7

Participate in a demonstration meeting following Parliamentary Procedures and present a logical, realistic, and convincing discussion based on a topic determined by the instructor.

SL 9-10.1

SL 9-10.4

As a team, deliver a product sales presentation, conducted as a one-on-one interactive sale to a prospective consumer. This presentation should include a brochure developed by the team, a sample, or a demonstrated use of the actual product for the sales presentation.

W 9-10.4

Complete a job description form, resume, and job interview practicum for an entry-level retail sales position related to agricultural sales.

W 9-10.4

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

Codes for Common Core English Language Arts and Literacy are:

SL = Speaking and Listening

W = Writing

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

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