

Agriculture, Foods, and Natural Resources (AFNR)

Middle School AFNR

Introduction to AFNR

Fundamental Ag Mechanical Technologies

Fundamental Ag Structures Technology

Ag Systems Technology

Advanced Ag Structures Technology

Fundamental Animal Science

Advanced Animal Science

Companion Animals

Fundamental Horticulture

Horticulture Operations (**currently Advanced Horticulture**)

Fundamental Plant Science

Advanced Plant Science

Agribusiness Management

Agribusiness Sales and Marketing

Ag Biotechnology

Ag Metal Fabrication

Ag Processing Technology (Food & Fiber)

Food Science

Issues in Environmental Science (**currently Environmental Science**)

Fundamental Natural Resources

Advanced Natural Resources

Wildlife and Fisheries

Ag Leadership and Communications Supervised

Supervised Agriculture Experience (**NEW**)

Middle School AFNR Current Standards
INDICATOR #MSA 1: Establish an understanding of the three main parts of the agricultural education program.
SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Define Supervised Agricultural Experience Program.
SUB-INDICATOR 1.2 (Webb Level: 1 Recall): Explore opportunities in the National FFA Organization.
SUB-INDICATOR 1.3 (Webb Level: 1 Recall): Demonstrate an understanding of Agricultural Education.
INDICATOR #MSA 2: Express the importance of agriculture in everyday life.
SUB-INDICATOR 2.1 (Webb Level: 1 Recall): Give examples of how the agriculture industry provides basic human needs (food, clothing, shelter).
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Discuss how the skills needed for agricultural work have evolved.
SUB-INDICATOR 2.3 (Webb Level: 2 Skill/Concept): Summarize the importance of agriculture to South Dakota's economy.
INDICATOR #MSA 3: Examine agriculture industries of the past, present, and future.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Appraise fundamentals of the agriculture industry and its impact on the world.
SUB-INDICATOR 3.2 (Webb Level: 1 Recall): Explore the animal science industry including large and/or small animals.
SUB-INDICATOR 3.3 (Webb Level: 1 Recall): Explore the plant science industry including agronomic and/or horticultural crops.
INDICATOR #MSA 4: Use basic principles of agricultural systems technology.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Identify and demonstrate safe use of shop equipment.
INDICATOR #MSA 5: Develop employability skills related to the AFNR Cluster.
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Middle School AFNR Proposed Standards
	MSA1: Establish an understanding of the three main parts of the agricultural education program.
Level 1: Recall	MSA1.1 Define Supervised Agricultural Experience Program.
Level 1: Recall	MSA1.2 Explore opportunities in the local chapter, State Association, and National FFA Organization.
Level 1: Recall	MSA1.3 Demonstrate an understanding of the local Agricultural Education program.
	MSA2: Express the importance of agriculture, food and natural resources in daily life.
Level 1: Recall	MSA2.1 Give examples of how the agriculture industry provides basic human needs (food, clothing, shelter).
Level 3: Strategic Thinking	MSA2.2 Discuss the evolution of the agriculture industry.
Level 2: Skill/Concept	MSA2.3 Summarize the importance of agriculture, food and natural resources to South Dakota's economy.
	MSA3: Explore different pathways in the Agriculture, Food, and Natural Resources Cluster.
Level 2: Skill/Concept	MSA3.1 Identify the different pathways in AFNR.
Level 3: Strategic Thinking	MSA3.2 Examine career opportunities in the AFNR pathways.
Level 2: Skill/Concept	MSA3.3 Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.
	MSA4: Develop employability skills related to the AFNR Cluster.
Level 2: Skill/Concept	MSA4.1 Develop soft skills to enhance employability.

Introduction to Agriculture Current Standards
INDICATOR #ITA 1: Examine the role of FFA in agricultural education programs.
SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Summarize the history and organization of FFA.
SUB-INDICATOR 1.2 (Webb Level: 1 Recall): Explore opportunities in FFA.
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Concept): Demonstrate proper use of parliamentary procedure.
INDICATOR #ITA 2: Describe the types of Supervised Agricultural Experiences.
SUB-INDICATOR 2.1 (Webb Level: 1 Recall): Evaluate the benefits and types of SAE programs.
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Develop a profile within Ag Career Network or Ag Experience Tracker.
INDICATOR #ITA 3: Discuss the concept of natural resources.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Classify different types of natural resources in order to enable protection, conservation, enhancement, and management in a particular geographical region.
INDICATOR #ITA 4: Describe the animal science industry.
SUB-INDICATOR 4.1 (Webb Level: 1 Recall): Examine the animal science industry.
SUB-INDICATOR 4.2 (Webb Level: 2 Skill/Concept): Analyze historic and current trends impacting the animal science industry.
INDICATOR #ITA 5: Describe plant structure and function.
SUB-INDICATOR 5.1 (Webb Level: 1 Recall): Examine the plant science industry.
SUB-INDICATOR 5.2 (Webb Level: 2 Skill/Concept): Analyze historic and current trends impacting the plant science industry.
INDICATOR #ITA 6: Summarize basic economic principles.
SUB-INDICATOR 6.1 (Webb Level: 2 Skill/Concept): Apply management planning principles in the AFNR business.
INDICATOR #ITA 7: Discuss basic food science technology.
SUB-INDICATOR 7.1 (Webb Level: 1 Recall): Illustrate how raw commodities become table-ready food products.
INDICATOR #ITA 8: Use basic principles of agricultural systems technology.

	Introduction to Agriculture Proposed Standards
	ITA 1: Examine the role of FFA in agricultural education programs
Level 1: Recall	ITA 1.1 Summarize the history, organization, and traditions of FFA.
Level 1: Recall	ITA 1.2 Explore opportunities in FFA.
Level 2: Skill/Concept	ITA 1.3 Demonstrate proper use of parliamentary procedure.
	ITA 2: Describe the types of Supervised Agricultural Experiences.
Level 1: Recall	ITA 2.1 Evaluate the benefits and types of SAE programs.
Level 3: Strategic Thinking	ITA 2.2 Develop a plan and maintain SAE records.
	ITA 3: Discuss the concept of natural resources.
Level 2: Skill/Concept	ITA 3.1 Classify different types of natural resources to enable protection, conservation, enhancement, and management in a particular geographical region.
Level 1: Recall	ITA 3.2 Explore South Dakota fish and wildlife species and investigate their ecological needs.
Level 2: Skill/Concept	ITA 3.3 Explain human interaction with natural resources, fish, and wildlife
	ITA 4: Describe the animal science industry.
Level 1: Recall	ITA 4.1 Examine the large and small animal science industries.
Level 2: Skill/Concept	ITA 4.2 Analyze historic and current trends impacting the animal science industry.
	ITA 5: Describe plant science industry.
Level 1: Recall	ITA 5.1 Examine the plant science and horticulture industries.
Level 2: Skill/Concept	ITA 5.2 Analyze historic and current trends impacting the plant science and horticulture industries.
	ITA 6: Summarize basic agricultural business principles.
Level 2: Skill/Concept	ITA 6.1 Investigate various principles and concepts in different AFNR businesses.
	ITA 7: Explore food products and process systems industry.
Level 1: Recall	ITA 7.1 Illustrate how raw commodities become table-ready food products.
Level 1: Recall	7.2 Explain basic food safety principles.
	ITA 8: Use basic principles of agricultural power, structural, and technical systems technology.

Introduction to Agriculture Current Standards
SUB-INDICATOR 8.1 (Webb Level: 2 Skill/Concept): Execute basic principles involved in agricultural systems technology.
INDICATOR #ITA 9: Develop employability skills related to the AFNR cluster.
SUB-INDICATOR 9.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Introduction to Agriculture Proposed Standards
Level 2: Skill/Concept	ITA 8.1 Explore basic principles involved in agricultural power, structural, and technical systems technology.
Level 2: Skill/Concept	8.2 Understand, demonstrate, and use proper safety procedures and equipment.
	ITA 9: Develop employability skills related to the AFNR cluster.
Level 2: Skill/Concept	ITA 9.1 Develop soft skills to enhance employability.

Fundamental Ag Mechanical Technologies Current Standards
INDICATOR #FAM 1: Apply safety practices in mechanical applications.
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Explain the safe operation and servicing of machinery and equipment.
SUB-INDICATOR 1.2 (Webb Level: 3 Strategic Thinking): Demonstrate safe operation of construction/fabrication tools.
INDICATOR #FAM 2: Identify maintenance procedures & schedules for mechanical equipment, power and agricultural technology.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Identify parts and explain functions of various mechanical systems.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Investigate common maintenance schedules and practices for equipment.
SUB-INDICATOR 2.3 (Webb Level: 3 Strategic Thinking): Troubleshoot problems in mechanical systems.
INDICATOR #FAM 3: Demonstrate basic skills in project planning and metal fabrication.
SUB-INDICATOR 3.1 (Webb Level: 3 Strategic Thinking): Create sketches of metal projects.
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): Demonstrate basic welding principles and techniques.
SUB-INDICATOR 3.3 (Webb Level: 3 Strategic Thinking): Employ metal fabrication principles to create a metal project.
INDICATOR #FAM 4: Apply electrical principles in agricultural applications.
SUB-INDICATOR 4.1 (Webb Level: 1 Recall): Recognize the components and functions of electrical systems.
SUB-INDICATOR 4.2 (Webb Level: 3 Strategic Thinking): Demonstrate fundamental principles of electricity.
INDICATOR #FAM 5: Investigate emerging agricultural technologies.
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Investigate new and/or existing technology in agriculture.
INDICATOR #FAM 6: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.
SUB-INDICATOR 6.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Fundamental Ag Mechanical Technologies Proposed Standards
	FAM 1: Apply safety practices in mechanical applications.
Level 2: Skill/Concept	FAM 1.1 Explain the safe operation and servicing of machinery and equipment.
Level 3: Strategic Thinking	FAM 1.2 Demonstrate safe operation and knowledge of ag mechanical tools.
Level 3: Strategic Thinking	FAM 1.3 Demonstrate workplace/worksites safety procedures and protocols
	FAM 2: Identify maintenance procedures & schedules for mechanical equipment, power and agricultural technology.
Level 2: Skill/Concept	FAM 2.1 Identify parts and explain functions of various mechanical systems.
Level 2: Skill/Concept	FAM 2.2 Investigate common maintenance schedules and practices for equipment.
Level 3: Strategic Thinking	FAM 2.3 Troubleshoot problems in mechanical systems.
	FAM 3: Demonstrate basic skills in project planning and metal fabrication.
Level 3: Strategic Thinking	FAM 3.1 Create designs of metal projects.
Level 2: Skill/Concept	FAM 3.2 Demonstrate basic welding principles and techniques.
Level 3: Strategic Thinking	FAM 3.3 Employ metal fabrication principles to create a metal project.
	FAM 4: Apply electrical principles in agricultural applications.
Level 1: Recall	FAM 4.1 Recognize the components and functions of electrical systems.
Level 3: Strategic Thinking	FAM 4.2 Demonstrate fundamental principles of electricity.
	FAM 5: Investigate emerging agricultural technologies.
Level 2: Skill/Concept	FAM 5.1 Investigate new and/or existing technology in agriculture.
	FAM 6: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.
Level 2: Skill/Concept	FAM 6.1 Develop soft skills to enhance employability.
	FAM 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	FAM 7.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	FAM 7.2 Explore opportunities within AFNR industries.

Fundamental Ag Mechanical Technologies Current Standards

	Fundamental Ag Mechanical Technologies Proposed Standards
Level 3: Strategic Thinking	FAM 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	FAM 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	FAM 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Fundamental Ag Structures Technology Current Standards
INDICATOR #AgS 1: Use safe practices associated with agriculture structures.
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Demonstrate safe use of tools and equipment while constructing agriculture structures.
INDICATOR #AgS 2: Develop plans for an agriculture structure project.
SUB-INDICATOR 2.1 (Webb Level: 3 Strategic Thinking): Use computer skills or drafting tools to develop sketches and plans for an ag structure.
INDICATOR #AgS 3: Examine various materials required for an agricultural structure.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Investigate the differences in materials needed to assemble an ag structure.
SUB-INDICATOR 3.2 (Webb Level: 3 Strategic Thinking): Demonstrate knowledge of structural materials by developing a supply list, along with cost estimates for a given project.
INDICATOR #AgS 4: Construct an agriculture structure.
SUB-INDICATOR 4.1 (Webb Level: 4 Extended Thinking): Assemble components of a structure.
SUB-INDICATOR 4.2 (Webb Level: 4 Extended Thinking): Create a complete agriculture structure by combining individually constructed components.
INDICATOR #AgS 5: Demonstrate electrical principles.
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Explain basic electrical terms and principles.
SUB-INDICATOR 5.2 (Webb Level: 3 Strategic Thinking): Use applicable instruments to demonstrate knowledge of basic electricity.
SUB-INDICATOR 5.3 (Webb Level: 3 Strategic Thinking): Demonstrate wiring and electrical applications.
INDICATOR #AgS 6: Analyze properties and conditions of building site prior to construction.
SUB-INDICATOR 6.1 (Webb Level: 2 Skill/Concept): Explain legal land descriptions and plat maps.
SUB-INDICATOR 6.2 (Webb Level: 3 Strategic Thinking): Examine geographical characteristics of building site.
SUB-INDICATOR 6.3 (Webb Level: 3 Strategic Thinking): Operate surveying equipment.
INDICATOR #AgS 7: Analyze various concrete and masonry concepts.
SUB-INDICATOR 7.1 (Webb Level: 1 Recall): Identify tools and materials used in concrete and masonry projects.
AgS 7.2 Accurately mix concrete
AgS 8: Explore career opportunities in agricultural structures and mechanics.

	Fundamental Ag Structures Technology Proposed Standards
	AgS 1: Use safe practices associated with agriculture structures.
Level 2: Skill/Concept	AgS 1.1 Demonstrate safe use and knowledge of tools and equipment when constructing agricultural structures.
Level 2: Skill/Concept	AgS 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	AgS 2: Develop plans for an agriculture structure project.
Level 3: Strategic Thinking	AgS 2.1 Use computer skills or drafting tools to develop sketches and plans for an ag structure.
	AgS 3: Examine various materials required for an agricultural structure.
Level 2: Skill/Concept	AgS 3.1 Investigate the differences in materials needed to assemble an ag structure.
Level 3: Strategic Thinking	AgS 3.2 Demonstrate knowledge of structural materials by developing a supply list, along with cost estimates for a given project.
	AgS 4: Construct an agriculture structure.
Level 4: Extended Thinking	AgS 4.1 Assemble components of a structure.
Level 4: Extended Thinking	AgS 4.2 Create a complete agriculture structure by combining individually constructed components.
	AgS 5: Demonstrate electrical principles.
Level 2: Skill/Concept	AgS 5.1 Explain basic electrical terms and principles.
Level 3: Strategic Thinking	AgS 5.2 Use applicable instruments to demonstrate knowledge of basic electricity.
Level 3: Strategic Thinking	AgS 5.3 Demonstrate wiring and electrical applications.
	AgS 6: Analyze properties and conditions of building site prior to construction.
Level 2: Skill/Concept	AgS 6.1 Explain legal land descriptions and plat maps.
Level 3: Strategic Thinking	AgS 6.2 Examine geographical characteristics of building site.
Level 2: Skill/Concept	AgS 6.3 Understand and operate surveying equipment and/or GIS equipment.
	AgS 7: Analyze various concrete and masonry concepts.
Level 1: Recall	AgS 7.1 Identify tools and materials used in concrete and masonry projects.
Level 2: Skill/Concept	AgS 7.2 Accurately mix concrete
	AgS 8: Explore career opportunities in agricultural structures and mechanics.

Fundamental Ag Structures Technology Current Standards
AgS 8.1 Investigate career opportunities that pertain to agricultural structures.
AgS 8.2 Develop soft skills to enhance employability.
AgS 9: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
AgS 9.1 Develop an individual project plan with goals and timeline.
AgS 9.2 Explore opportunities within AFNR industries.
AgS 9.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
AgS 9.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
AgS 9.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

	Fundamental Ag Structures Technology Proposed Standards
Level 2: Skill/Concept	AgS 8.1 Investigate career opportunities that pertain to agricultural structures.
Level 2: Skill/Concept	AgS 8.2 Develop soft skills to enhance employability.
	AgS 9: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	AgS 9.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	AgS 9.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	AgS 9.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	AgS 9.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	AgS 9.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Ag Systems Technology Current Standards
INDICATOR #AST 1: Apply engineering principles to mechanical equipment, power utilization and
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Compare power generation from various energy sources.
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Concept): Investigate various properties of lubricants needed in ag mechanics.
INDICATOR #AST 2: Apply principles of operation and maintenance to mechanical equipment, power utilization, and technology.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Explain the importance of scheduled service routines to maintain machinery and equipment.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Demonstrate suggested inspections on machinery and/or equipment.
INDICATOR #AST 3: Examine principles of service and repair to mechanical and electrical equipment, power utilizations and technology.
SUB-INDICATOR 3.1 (Webb Level: 3 Strategic Thinking): Evaluate internal combustion engines to assess needed service and repair.
SUB-INDICATOR 3.2 (Webb Level: 3 Strategic Thinking): Investigate service and repair specifications for operating systems.
SUB-INDICATOR 3.3 (Webb Level: 4 Extended Thinking): Diagnose problems associated with operating systems.
SUB-INDICATOR 3.4 (Webb Level: 2 Skill/Concept): Explore electric motor types, operation and maintenance.
INDICATOR #AST 4: Analyze emerging agriculture technologies.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Analyze how emerging agriculture technologies have affected AFNR industries.
INDICATOR #AST 5: Develop employability skills related to the Power, Structural, and Technical Systems
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Ag Systems Technology Proposed Standards
	AST 1: Understand and use safe practices.
Level 2: Skill/Concept	AST 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area
Level 2: Skill/Concept	AST 1.2 Demonstrate workplace/worksites safety procedures and protocols
	AST 2: Apply engineering principles to mechanical equipment, power utilization and technology.
Level 2: Skill/Concept	AST 2.1 Compare power generation from various energy sources.
Level 2: Skill/Concept	AST 2.2 Investigate various properties of lubricants needed in ag mechanics.
	AST 3: Apply principles of operation and maintenance to mechanical equipment, power utilization, and technology.
Level 2: Skill/Concept	AST 3.1 Explain the importance of scheduled service routines to maintain machinery and equipment.
Level 2: Skill/Concept	AST 3.2 Demonstrate suggested inspections on machinery and/or equipment
	AST 4: Examine principles of service and repair to mechanical and electrical equipment, power utilizations and technology.
Level 3: Strategic Thinking	AST 4.1 Evaluate internal and/or diesel combustion engines to assess needed service and repair.
Level 3: Strategic Thinking	AST 4.2 Investigate service and repair specifications for operating systems.
Level 4: Extended Thinking	AST 4.3 Diagnose problems associated with operating systems.
Level 2: Skill/Concept	AST 4.4 Explore electric motor types, operation and maintenance.
	AST 5: Analyze emerging agriculture technologies.
Level 2: Skill/Concept	AST 5.1 Analyze how emerging agriculture technologies have affected AFNR industries.
	AST 6: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.
Level 2: Skill/Concept	AST 6.1 Develop soft skills to enhance employability.
	AST 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	AST 7.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	AST 7.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	AST 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	AST 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.

Ag Systems Technology Current Standards	Ag Systems Technology Proposed Standards
	<div> <div>Level 4: Extended Thinking</div> <div>AST 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.</div> </div>

Advanced Ag Structures Technology Proposed Standards

INDICATOR #AdS 1: Use safe practices when planning, maintaining, and constructing agricultural structures.
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Demonstrate safe use of tools and equipment while constructing agriculture structures.
SUB-INDICATOR 1.2 (Webb Level: 3 Strategic Thinking): Demonstrate understanding of tool repair and maintenance.
INDICATOR #AdS 2: Service and repair mechanical equipment and structures.
SUB-INDICATOR 2.1 (Webb Level: 3 Strategic Thinking): Analyze schematics to service various systems in an ag structure.
INDICATOR #AdS 3: Utilize a structural plan that meets specifications and building codes.
SUB-INDICATOR 3.1 (Webb Level: 3 Strategic Thinking): Examine blueprints and local codes that identify required components of an ag structure.
SUB-INDICATOR 3.2 (Webb Level: 3 Strategic Thinking): Design a construction plan for an agricultural structure.
INDICATOR #AdS 4: Use plans to guide construction of agricultural structures.
SUB-INDICATOR 4.1 (Webb Level: 4 Extended Thinking): Use architectural and mechanical plans to construct agricultural buildings or facilities.
INDICATOR #AdS 5: Apply a variety of concrete and masonry concepts to various projects.
SUB-INDICATOR 5.1 (Webb Level: 3 Strategic Thinking): Demonstrate concrete and masonry procedures.
INDICATOR #AdS 6: Investigate a variety of plumbing tools and products.
SUB-INDICATOR 6.1 (Webb Level: 1 Recall): Identify tools and materials used for plumbing.
SUB-INDICATOR 6.2 (Webb Level: 3 Strategic Thinking): Demonstrate various plumbing techniques.
INDICATOR #AdS 7: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.
SUB-INDICATOR 7.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Advanced Ag Structures Technology Proposed Standards
	AdS 1: Use safe practices when planning, maintaining, and constructing agricultural structures.
Level 2: Skill/Concept	AdS 1.1 Demonstrate safe use and knowledge of tools and equipment while constructing agricultural structures.
Level 3: Strategic Thinking	AdS 1.2 Demonstrate understanding of tool repair and maintenance.
Level 3: Strategic Thinking	AdS 1.3 Demonstrate workplace/worksites safety procedures and protocols
	AdS 2: Service and repair mechanical equipment and structures.
Level 3: Strategic Thinking	AdS 2. 1 Analyze schematics to service various systems in an ag structure.
	AdS 3: Utilize a structural plan that meets specifications and building codes.
Level 3: Strategic Thinking	AdS 3.1 Examine blueprints and local codes that identify required components of an ag structure.
Level 3: Strategic Thinking	AdS 3.2 Design a construction plan for an agricultural structure.
	AdS 4: Use plans to guide construction of agricultural structures.
Level 4: Extended Thinking	AdS 4.1 Use architectural and mechanical plans to construct agricultural buildings or facilities.
	AdS 5: Apply a variety of concrete and masonry concepts to various projects.
Level 3: Strategic Thinking	AdS 5.1 Demonstrate concrete and masonry procedures.
	AdS 6: Investigate a variety of plumbing tools and products.
Level 1: Recall	AdS 6.1 Identify tools and materials used for plumbing.
Level 3: Strategic Thinking	AdS 6.2 Demonstrate various plumbing techniques.
	AdS 7: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.
Level 2: Skill/Concept	AdS 7.1 Develop soft skills to enhance employability.
	AdS 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	AdS 8.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	AdS 8.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	AdS 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	AdS 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.

Advanced Ag Structures Technology Proposed Standards

	Advanced Ag Structures Technology Proposed Standards
Level 4: Extended Thinking	AdS 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Fundamental Animal Science Current Standards
INDICATOR #AN 1: Examine animal anatomy and physiology
SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Recognize animals by species, gender, or use.
SUB-INDICATOR 1.2 (Webb Level: 1 Recall): Identify the parts of an animal's anatomy.
INDICATOR #AN 2: Examine animal health
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Evaluate a subject animal to determine the nature of its health.
SUB-INDICATOR 2.2 (Webb Level: 1 Recall): Understand proper usage and effects of animal health products.
INDICATOR #AN 3: Describe practices for safely working with animals
SUB-INDICATOR 3.1 (Webb Level: 1 Recall): Judge an animal's behavior to safely work with it.
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): Examine animal housing, equipment and handling facilities for the safety of animals and handlers.
SUB-INDICATOR 3.3 (Webb Level: 2 Skill/Concept): Select management practices to reduce the effects of animal production on the environment.
INDICATOR #AN 4: Distinguish elements of proper animal nutrition.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Compare an animal's differing nutritional needs throughout its life cycle.
SUB-INDICATOR 4.2 (Webb Level: 1 Recall): Prepare a feed ration to fulfill a given animal's nutrient requirements.
INDICATOR #AN 5: Study the reproductive system of animals.
SUB-INDICATOR 5.1 (Webb Level: 1 Recall): Examine male and female reproductive systems.
SUB-INDICATOR 5.2 (Webb Level: 1 Recall): Discuss reproductive cycles and breeding techniques.
SUB-INDICATOR 5.3 (Webb Level: 2 Skill/Concept): Evaluate an animal to determine breeding soundness and readiness.
INDICATOR #AN 6: Identify factors that affect an animal's performance.
SUB-INDICATOR 6.1 (Webb Level: 2 Skill/Concept): Predict genetic outcomes.
SUB-INDICATOR 6.2 (Webb Level: 2 Skill/Concept): Determine optimum performance levels for a given animal species.
SUB-INDICATOR 6.3 (Webb Level: 2 Skill/Concept): Assess an animal to determine if it has reached its optimum performance level.
INDICATOR #AN 7: Examine animal industry issues.
SUB-INDICATOR 7.1 (Webb Level: 2 Skill/Concept): Compare and contrast consumer concerns related to animal food products.

	Fundamental Animal Science Proposed Standards
	AN 1: Examine animal anatomy and physiology of domestic animals.
Level 2: Skill/Concept	AN 1.1 Recognize and distinguish animals by species, breed, gender, or use.
Level 3: Strategic Thinking	AN 1.2 Analyze the parts and functions of an animal's internal and external anatomy.
	AN 2: Analyze animal health indicators and responses.
Level 3: Strategic Thinking	AN 2.1 Evaluate the essential factors that determine the health status of an animal.
Level 3: Strategic Thinking	AN 2.2 Analyze and investigate proper response to poor animal health and the proper usage and effects of animal health products.
	AN 3: Demonstrate understanding of practices that promote safe human and animal interactions.
Level 4: Extended Thinking	AN 3.1 Evaluate an animal's behavior and determine a strategy to safely work with it.
Level 3: Strategic Thinking	AN 3.2 Examine and assess animal housing, equipment, and handling facilities for the safety of animals and humans.
Level 2: Skill/Concept	AN 3.3 Critique management practices that support environmentally sustainable animal production.
	AN 4: Distinguish elements of proper animal nutrition.
Level 2: Skill/Concept	AN 4.1 Compare an animal's differing nutritional needs throughout its life cycle.
	AN 4.2 Prepare a feed ration according to animal nutrient requirements.
	AN 5: Study the reproductive system of animals.
Level 2: Skill/Concept	AN 5.1 Examine and compare male and female reproductive systems.
Level 1: Recall	AN 5.2 Discuss reproductive cycles and breeding techniques.
Level 1: Recall	AN 5.3 Identify essential elements of breeding soundness and readiness in males.
Level 1: Recall	AN 5.4 Define and identify elements of estrus, gestation and parturition.
	AN 6 Identify factors that affect an animal's performance.
Level 4: Extended Thinking	AN 6.1 Predict genetic outcomes.
Level 2: Skill/Concept	AN 6.2 Assess an operation to determine if an animal has reached its optimum performance level.
Level 2: Skill/Concept	AN 6.3 Recommend management strategies for animals performing at sub optimal level.
	AN 7: Examine animal industry issues.
Level 2: Skill/Concept	AN 7.1 Compare and contrast consumer concerns related to animal food products.

SUB-INDICATOR 7.2 (Webb Level: 2 Skill/Concept): Analyze consumer concern related to animal welfare.
INDICATOR #AN 8: Develop employability skills related to the Animal Systems Pathway.
SUB-INDICATOR 8.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	AN 7.2 Define common terminology related to animal welfare.
Level 2: Skill/Concept	AN 7.3 Analyze consumer perceptions related to animal welfare.
	AN 8: Develop employability skills related to the Animal Systems Pathway.
Level 2: Skill/Concept	AN 8.1 Develop soft skills to enhance employability.

Advanced Animal Science Current Standards
INDICATOR #ADAn 1: Select proper health care practices for animals.
SUB-INDICATOR 1.1 (Webb Level: 4 Extended Thinking): Choose prevention and treatment programs for animal diseases, parasites, and disorders.
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Content): Discuss how to provide biosecurity for animals, people, and facilities.
INDICATOR #ADAn 2: Develop proper nutrition management practices to optimize animal performance.
SUB-INDICATOR 2.1 (Webb Level: 3 Strategic Thinking): Assess nutritional elements as they affect animal performances.
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Assemble feed rations to provide for animals' nutritional needs.
INDICATOR #ADAn 3: Select reproductive practices to optimize animal production.
SUB-INDICATOR 3.1 (Webb Level: 4 Extended Thinking): Identify management practices in breeding that account for high quality animals.
INDICATOR #ADAn 4: Articulate medical terminology as it relates to animals.
SUB-INDICATOR 4.1 (Webb Level: 1 Recall): Recognize relevant medical terminology related to animals.
SUB-INDICATOR 4.2 (Webb Level: 2 Skill/Concept): Apply medical terminology in the correct context.
INDICATOR #ADAn 5: Classify, evaluate, and select animals based on anatomical and physiological characteristics.
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Apply principles of anatomy and physiology to uses within various animal systems.
SUB-INDICATOR 5.2 (Webb Level: 1 Recall): Identify and explain the relationships among the various systems of the body.
INDICATOR #ADAn 6: Utilize principles of surgical techniques.
SUB-INDICATOR 6.1 (Webb Level: 1 Recall): Identify surgical tools and supplies.
SUB-INDICATOR 6.2 (Webb Level: 4 Extended Thinking): Apply proper surgical techniques to medical situations.
INDICATOR #ADAn 7: Develop employability skills related to the Animal Systems Pathway.
SUB-INDICATOR 7.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Advanced Animal Science Proposed Standards
	ADAn 1: Understand and use safe practices.
Level 2: Skill/Concept	ADAn 1.1 Demonstrate safe use and knowledge of tools and equipment used in animal science
Level 2: Skill/Concept	ADAn 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	ADAn 2: Select proper health care practices for animals.
Level 4: Extended Thinking	ADAn 2.1 Choose prevention and treatment programs for animal diseases, parasites, and disorders.
Level 2: Skill/Concept	ADAn 2.2 Discuss how to provide biosecurity for animals, people, and facilities.
	ADAn 3: Develop proper nutrition management practices to optimize animal performance.
Level 3: Strategic Thinking	ADAn 3.1 Assess nutritional elements as they affect animal performances.
Level 3: Strategic Thinking	ADAn 3.2 Develop feed rations to provide for animals' nutritional needs.
	ADAn 4: Select reproductive practices to optimize animal production.
Level 4: Extended Thinking	ADAn 4.1 Identify management practices in breeding that account for high quality animals.
	ADAn 5: Articulate medical terminology as it relates to animals.
Level 1: Recall	ADAn 5.1 Recognize relevant medical terminology related to animals.
Level 2: Skill/Concept	ADAn 5.2 Apply medical terminology in the correct context.
	ADAn 6: Classify, evaluate, and select animals based on anatomical and physiological characteristics.
Level 2: Skill/Concept	ADAn 6.1 Apply principles of anatomy and physiology to uses within various animal systems.
Level 4: Extended Thinking	ADAn 6.2 Analyze information and make connections pertaining to the interrelatedness of various body systems.
	ADAn 7: Utilize principles of veterinary tools and techniques.
Level 1: Recall	ADAn 7.1 Identify veterinary tools and practices.
Level 4: Extended Thinking	ADAn 7.2 Apply proper veterinary techniques to medical situations.
	ADAn 8: Develop employability skills related to the Animal Systems Pathway.
Level 2: Skill/Concept	ADAn 8.1 Develop soft skills to enhance employability.

	ADAn 9: Develop employability skills related to the Animal Systems Pathway.
Level 2: Skill/Concept	ADAn 9.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	ADAn 9.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	ADAn 9.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	ADAn 9.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	ADAn 9.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Companion Animals Current Standards
INDICATOR #CA 1: Examine the anatomy and physiology of small animals.
SUB-INDICATOR 1.1 (Webb Level: 3 Strategic Thinking): Use classification systems to explain the anatomy and physiology of companion animals.teCC
SUB-INDICATOR 1.2 (Webb Level: 3 Strategic Thinking): Differentiate between species' reproductive cycles.
SUB-INDICATOR 1.3 (Webb Level: 3 Strategic Thinking): Analyze elements between male and female reproductive systems.
INDICATOR #CA 2: Evaluate an animal's diet to provide proper nutrition and optimal performance.
SUB-INDICATOR 2.1 (Webb Level: 3 Strategic Thinking): Evaluate an animal's developmental stage to comprehend differences in nutrient requirements throughout the animal's life cycle.
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Analyze a feed label/ration to determine whether it fulfills a given animal's nutrient requirements.
INDICATOR #CA 3: Demonstrate techniques for optimal care of an animal.
SUB-INDICATOR 3.1 (Webb Level: 3 Strategic Thinking): Recognize optimum performance for a given animal species.
SUB-INDICATOR 3.2 (Webb Level: 3 Strategic Thinking): Evaluate an animal's behavior to safely work with it.
SUB-INDICATOR 3.3 (Webb Level: 3 Strategic Thinking): Design a program to develop an animal to its highest potential.
INDICATOR #CA 4: Develop employability skills related to the Animal Systems Pathway.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Companion Animals Proposed Standards
	CA 1: Examine companion and specialty animal industries.
Level 1: Recall	CA 1.1 Investigate uses of companion and specialty animals.
Level 2: Skill/Concept	CA 1.2 Define ethical standards of care for companion and specialty animals.
Level 2: Skill/Concept	CA 1.3 Compare and contrast consumer concerns related to companion and specialty animals.
	CA 2: Examine the anatomy and physiology of common companion/specialty animals.
Level 3: Strategic Thinking	CA 2.1 Explain the functional differences in anatomy and physiology of companion animals and specialty animals.
Level 1: Recall	CA 2.2 Identify scientific names and common species-specific terminology relevant to entry level conversations of common companion and specialty animals.
Level 3: Strategic Thinking	CA 2.3 Differentiate between species' reproductive cycles.
	CA 3: Evaluate an animal's diet to provide proper nutrition and optimal performance.
Level 3: Strategic Thinking	CA 3.1 Evaluate an animal's developmental stage and use it to comprehend differences in nutrient requirements throughout the animal's life cycle.
Level 3: Strategic Thinking	CA 3.2 Analyze a feed label/ration to determine whether it fulfills a given animal's nutrient requirements.
	CA 4: Demonstrate techniques for optimal care of an animal.
Level 3: Strategic Thinking	CA 4.1 Recognize optimum performance for a given animal species according to their use.
Level 3: Strategic Thinking	CA 4.2 Evaluate an animal's behavior and determine a strategy to safely work with it.
Level 3: Strategic Thinking	CA 4.3 Examine animal housing, equipment, transport systems, and handling facilities for the safety of animals and handlers.
	CA 5: Explore Opportunities in veterinary services and animal care and maintenance.
Level 2: Skill/Concept	CA 5.1 Explore career opportunities in veterinary and animal health services.
	CA 6: Develop employability skills related to the Animal Systems Pathway.
Level 2: Skill/Concept	CA 6.1 Develop soft skills to enhance employability.

Companion Animals Current Standards
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	Companion Animals Proposed Standards
	CA 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	CA 7.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	CA 7.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	CA 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	CA 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	CA 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Fundamental Horticulture Current Standards
INDICATOR #HORT 1: Explain horticultural plant classifications.
SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Classify and identify horticultural plants.
INDICATOR #HORT 2: Define basic principles of plant physiology and propagation.
SUB-INDICATOR 2.1 (Webb Level: 1 Recall): Explain basic principles of plant physiology and growth.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Demonstrate the propagation of plants by sexual and asexual methods.
INDICATOR #HORT 3: Describe pest management in the horticultural industry.
SUB-INDICATOR 3.1 (Webb Level: 1 Recall): Identify principles of pest management.
INDICATOR #HORT 4: Analyze soil, environment, and fertility properties as they affect plant growth.
SUB-INDICATOR 4.1 (Webb Level: 3 Strategic Thinking): Examine soil and planting media management.
SUB-INDICATOR 4.2 (Webb Level: 4 Extended Thinking): Examine the growing environment and its effect on plant growth.
SUB-INDICATOR 4.3 (Webb Level: 3 Strategic Thinking): Identify plant nutrition practices for horticulture plants as they relate to plant growth and health.
INDICATOR #HORT 5: Examine horticulture industry sectors.
SUB-INDICATOR 5.1 (Webb Level: 1 Recall): Investigate the care and maintenance of vegetable/fruit crops.
SUB-INDICATOR 5.2 (Webb Level: 2 Skills and Concepts): Investigate the floriculture industry.
SUB-INDICATOR 5.3 (Webb Level: 2 Skills and Concepts): Investigate the nursery/landscape industry.
SUB-INDICATOR 5.4 (Webb Level: 2 Skills and Concepts): Investigate the care and management of turf grass.
INDICATOR #HORT 6: Develop employability skills related to the Plant Systems Pathway.
SUB-INDICATOR 6.1 (Webb Level: 2 Skills and Concepts): Develop soft skills to enhance employability.

	Fundamental Horticulture Proposed Standards
	HORT 1: Understand and use safe practices.
Level 2: Skill/Concept	HORT 1.1 Demonstrate safe use and knowledge of tools and equipment used in horticulture.
Level 2: Skill/Concept	HORT 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	HORT 2: Explain horticultural plant classifications.
Level 1: Recall	HORT 2.1 Classify and identify horticultural plants.
	HORT 3: Define basic principles of plant physiology and propagation.
Level 2: Skill/Concept	HORT 3.1 Explain basic principles of plant physiology and growth.
Level 2: Skill/Concept	HORT 3.2 Demonstrate the propagation of plants by sexual and asexual methods.
	HORT 4: Describe pest management in the horticultural industry.
Level 1: Recall	HORT 4.1 Identify principles of pest management.
	HORT 5: Analyze soil, environment, and fertility properties as they affect plant growth.
Level 2: Skill/Concept	HORT 5.1 Examine soil and planting media management.
Level 3: Strategic Thinking	HORT 5.2 Analyze information about the growing environment and its effect on plant growth.
Level 1: Recall	HORT 5.3 Identify plant nutrition practices for horticulture plants as they relate to plant growth and health.
	HORT 6: Examine horticulture industry sectors.
Level 2: Skill/Concept	HORT 6.1 Explain the care and maintenance of vegetable/fruit crops.
Level 2: Skill/Concept	HORT 6.2 Investigate the floriculture industry.
Level 2: Skill/Concept	HORT 6.3 Investigate the nursery/landscape industry.
Level 2: Skill/Concept	HORT 6.4 Investigate the care and management of turf grass.
	HORT 7: Develop employability skills related to the Plant Systems Pathway.
Level 2: Skill/Concept	HORT 7.1 Develop soft skills to enhance employability.
	HORT 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	HORT 8.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	HORT 8.2 Explore opportunities within AFNR industries.

Fundamental Horticulture Current Standards

	Fundamental Horticulture Proposed Standards
Level 3: Strategic Thinking	HORT 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	HORT 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	HORT 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Advanced Horticulture Current Standards
INDICATOR #ADVH 1: Identify plants, equipment and materials utilized in the horticulture industry.
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Identify and categorize plants by their purpose.
SUB-INDICATOR 1.2 (Webb Level: 1 Recall): Identify tools and equipment used in horticultural industries.
SUB-INDICATOR 1.3 (Webb Level: 1 Recall): Identify supplies and materials used in horticulture.
INDICATOR #ADVH 2: Develop and implement a crop management plan.
SUB-INDICATOR 2.1 (Webb Level: 4 Extended Thinking): Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Determine the influence of environmental factors on plants.
SUB-INDICATOR 2.3 (Webb Level: 3 Strategic Thinking): Develop and implement a plan for meeting plant nutrient needs.
SUB-INDICATOR 2.4 (Webb Level: 4 Extended Thinking): Apply plant management practices.
SUB-INDICATOR 2.5 (Webb Level: 2 Skill/Concept): Explain principles of specialized growing techniques.
INDICATOR #ADVH 3: Apply principles of design in plant systems to enhance an environment.
SUB-INDICATOR 3.1 (Webb Level: 3 Strategic Thinking): Select plants based on quality and function.
SUB-INDICATOR 3.2 (Webb Level: 4 Extended Thinking): Create designs using plants.
SUB-INDICATOR 3.3 (Webb Level: 4 Extended Thinking): Demonstrate proper use of plants in their environment.
SUB-INDICATOR 3.4 (Webb Level: 2 Skill/Concept): Evaluate a design and provide feedback and suggestions for improvement.
INDICATOR #ADVH 4: Develop employability skills related to the Plant Systems Pathway.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

Change course title to:	Horticulture Operations Proposed Standards
	ADVH 1: Understand and use safe practices
Level 2: Skill/Concept	ADVH 1.1 Demonstrate safe use and knowledge of tools and equipment used in horticulture operations.
Level 2: Skill/Concept	ADVH 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	ADVH 2: Identify plants, equipment and materials utilized in the horticulture industry.
Level 2: Skill/Concept	ADVH 2.1 Identify and categorize plants by their purpose.
Level 2: Skill/Concept	ADVH 2.2 Identify and demonstrate proper use of tools and equipment used in horticultural industries.
Level 1: Recall	ADVH 2.3 Identify supplies and materials used in horticulture.
Level 4: Extended Thinking	ADVH 2.4 Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.
	ADVH 3: Develop and implement a horticulture management plan.
Level 3: Strategic Thinking	ADVH 3.1 Determine the influence of environmental and nutritional factors on plants.
Level 4: Extended Thinking	ADVH 3.2 Apply plant management and care practices.
Level 2: Skill/Concept	ADVH 3.3 Demonstrate and communicate understanding of specialized growing techniques.
	ADVH 4: Apply principles of design in plant systems to enhance an environment.
Level 3: Strategic Thinking	ADVH 4.1 Compare plants based on quality and function.
Level 4: Extended Thinking	ADVH 4.2 Create designs using plants.
Level 4: Extended Thinking	ADVH 4.3 Apply concepts of proper use of plants in their environment
Level 2: Skill/Concept	ADVH 4.4 Evaluate a design and provide feedback and suggestions for improvement.
	ADVH 5: Develop a business plan for owning and/or operating a horticulture business.
Level 4: Extended Thinking	ADVH 5.1 Apply concepts of business management to a horticulture business
	ADVH 6: Develop employability skills related to the Plant Systems Pathway.
Level 2: Skill/Concept	ADVH 6.1 Develop soft skills to enhance employability.
	ADVH 7 Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

Advanced Horticulture Current Standards
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Change course title to:	Horticulture Operations Proposed Standards
Level 2: Skill/Concept	ADVH 7.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	ADVH 7.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	ADVH 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	ADVH 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	ADVH 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Fundamental Plant Science Current Standards
INDICATOR #PS 1: Explain principles of anatomy and physiology in plants.
SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Describe functional differences in plant structures including roots, stems, flowers, leaves, and fruits.
SUB-INDICATOR 1.2 (Webb Level: 1 Recall): Classify and identify plants.
INDICATOR #PS 2: Manipulate the environment to promote optimal growth in plants.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Determine nutritional requirements for optimal plant
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Examine data to evaluate and manage soil/media and
INDICATOR #PS 3: Evaluate fundamentals of production and harvesting of plants.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Analyze a production plan for optimal plant production.
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): Compare the basic methods for reproducing and
SUB-INDICATOR 3.3 (Webb Level: 2 Skill/Concept): Examine fundamentals to harvest, handle, store, and market crops
INDICATOR #PS 4: Explore employability skills within the plant science industry.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Fundamental Plant Science Proposed Standards
	PS 1: Understand and use safe practices.
Level 2: Skill/Concept	PS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Level 2: Skill/Concept	PS 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	PS 2: Explain principles of anatomy and physiology in plants.
Level 1: Recall	PS 2.1 Describe functional differences in plant structures including roots, stems, flowers, leaves, and fruits.
Level 1: Recall	PS 2.2 Classify and identify plants.
	PS 3: Manipulate the environment to promote optimal growth in plants.
Level 2: Skill/Concept	PS 3.1 Determine nutritional requirements for optimal plant growth.
Level 2: Skill/Concept	PS 3.2 Examine data to evaluate and manage soil/media and nutrients.
	PS 4: Evaluate fundamentals of production and harvesting of plants.
Level 2: Skill/Concept	PS 4.1 Analyze a production plan for optimal plant production.
Level 3: Strategic Thinking	PS 4.2 Examine the basic methods for reproducing and propagating plants.
Level 3: Strategic Thinking	PS 4.3 Examine fundamentals to harvest, handle, store, and market crops.
	PS 5: Explore employability skills within the plant science industry.
Level 2: Skill/Concept	PS 5.1 Develop soft skills to enhance employability.

Advanced Plant Science Current Standards
INDICATOR #ADPS 1: Recognize principles of plant anatomy, classification, and physiology for the production and management of agronomic plants.
SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Classify plants according to taxonomy, life cycles, and plant use.
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Concept): Compare the benefits and risks of genetically modified plants (GMO).
SUB-INDICATOR 1.3 (Webb Level: 2 Skill/Concept): Apply knowledge of seed, fruit, and vegetative parts optimal for plant reproduction.
INDICATOR #ADPS 2: Employ the principles and practices of sustainable agriculture in a plant-based operation.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Incorporate the fundamentals of plant management and sustainable agriculture.
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Evaluate a fertilizer plan for specific plants or crops.
SUB-INDICATOR 2.3 (Webb Level: 3 Strategic Thinking): Evaluate data to manage range and pastures.
SUB-INDICATOR 2.4 (Webb Level: 3 Strategic Thinking): Examine growth of a plant to determine when and how a crop should be harvested and stored.
SUB-INDICATOR 2.5 (Webb Level: 3 Strategic Thinking): Evaluate crop and harvest success for future planning.
INDICATOR #ADPS 3: Analyze a pest management system.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Identify pest chemicals by formulation and use.
SUB-INDICATOR 3.2 (Webb Level: 3 Strategic Thinking): Develop integrated pest management strategies to manage pest populations.
SUB-INDICATOR 3.3 (Webb Level: 2 Skill/Concept): Understand the safe handling, mixing and application of chemicals.
INDICATOR #ADPS 4: Develop employability skills related to the Plant Systems Pathway.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Advanced Plant Science Proposed Standards
<i>webb levels</i>	ADPS 1: Understand and use safe practices.
Two Skill/Concept	ADPS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this field
Two Skill/Concept	ADPS 1.2 Demonstrate workplace/worksites safety procedures and protocols
	ADPS 2: Recognize principles of plant anatomy, classification, and physiology for the production and management of agronomic plants.
One Recall	ADPS 2.1 Classify plants according to taxonomy, life cycles, and plant use.
Three Strategic Thinking	ADPS 2.2 Investigate various genetically modified plants (GMOs) and their relationship and/or impact on the industry.
Two Skill/Concept	ADPS 2.3 Apply knowledge of seed, fruit, and vegetative parts optimal for plant reproduction.
	ADPS 3: Employ the principles and practices of sustainable agriculture in a plant-based operation.
Two Skill/Concept	ADPS 3.1 Incorporate the fundamentals of plant management and sustainable agriculture.
Three Strategic Thinking	ADPS 3.2 Develop an integrated fertilizer plan for specific plants or crops.
Three Strategic Thinking	ADPS 3.3 Evaluate data to manage range and pastures.
Three Strategic Thinking	ADPS 3.4 Examine growth of a plant to determine when and how a crop should be harvested and stored.
Three Strategic Thinking	ADPS 3.5 Evaluate crop and harvest success for future planning.
	ADPS 4: Analyze a pest management system.
One Recall	ADPS 4.1 Identify primary pests of plants and crops
One Recall	ADPS 4.2 Identify pesticides by formulation and use.
Three Strategic Thinking	ADPS 4.3 Develop integrated pest management strategies to manage pest populations.
One Recall	ADPS 4.4 Understand the safe handling, mixing and application of chemicals.
	ADPS 5: Develop employability skills related to the Plant Systems Pathway.
Two Skill/Concept	ADPS 5.1 Develop soft skills to enhance employability.
	ADPS 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Two Skill/Concept	ADPS 6.1 Develop an individual project plan with goals and timeline.

Advanced Plant Science Current Standards

	Advanced Plant Science Proposed Standards
Two Skill/Concept	ADPS 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ADPS 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ADPS 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ADPS 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Agribusiness Management Current Standards
INDICATOR #AM 1: Introduce the components of agribusiness management.
SUB-INDICATOR 1.1 (Webb Level: 3 Strategic Thinking): Explain key business types and management principles and issues for the agribusiness enterprise.
SUB-INDICATOR 1.2 (Webb Level: 1 Recall): Present an overview of the knowledge and skills needed to work effectively within the agribusiness enterprises.
SUB-INDICATOR 1.3 (Webb Level: 2 Skill/Concept): Demonstrate leadership skills to accomplish goals and objectives in an agribusiness environment.
INDICATOR #AM 2: Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Distinguish key accounting fundamentals to accomplish dependable bookkeeping and associated files.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Analyze and interpret agricultural policies in relation to their effects on the agribusiness management and agribusiness enterprises.
INDICATOR #AM 3: Plan a marketing program utilizing various methods for sales of agricultural products.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Explore strategies for optimum marketing of agricultural commodities.
SUB-INDICATOR 3.2 (Webb Level: 4 Extended Thinking): Analyze budget and forecast models to determine optimal business marketing, strategies, and performances.
INDICATOR #CE 4: Manage cash budgets, credit budgets, and credit for an AFNR business using generally accepted accounting principles (GAAP).
SUB-INDICATOR 4.1 (Webb Level: 3 Strategic Thinking): Develop, assess and manage cash budgets to achieve AFNR business goals.
SUB-INDICATOR 4.2 (Webb Level: 3 Strategic Thinking): Analyze credit needs and manage credit budgets to achieve AFNR business goals.

	Agribusiness Management Proposed Standards
	AM 1: Introduce the components of agribusiness management.
Level 3: Strategic Thinking	AM 1.1 Explain key business types and management principles and issues for the agribusiness enterprise.
Level 1: Recall	AM 1.2 Explain an overview of the knowledge and skills needed to work effectively within the agribusiness enterprises.
Level 2: Skill/Concept	AM 1.3 Demonstrate leadership skills to accomplish goals and objectives in an agribusiness environment.
	AM 2: Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.
Level 2: Skill/Concept	AM 2.1 Demonstrate key accounting fundamentals
Level 2: Skill/Concept	AM 2.2 Analyze and interpret agricultural policies in relation to their effects on the agribusiness management and agribusiness enterprises.
	AM 3: Plan a marketing program utilizing various methods for sale of agricultural commodities and products.
Level 2: Skill/Concept	AM 3.1 Explore strategies for the sale of agricultural commodities and products.
Level 4: Extended Thinking	AM 3.2 Analyze budget and forecast models to determine optimal business marketing, strategies, and performances.
	AM 4: Manage cash budgets, credit budgets, and credit for an AFNR business using generally accepted accounting principles (GAAP).
Level 3: Strategic Thinking	AM 4.1 Develop, assess, and manage cash budgets to achieve AFNR business goals.
Level 3: Strategic Thinking	AM 4.2 Analyze credit needs and manage credit budgets to achieve AFNR business goals.
	AM 5: Develop employability skills related to the Agribusiness Pathway.
Level 2: Skill/Concept	AM 5.1 Develop soft skills to enhance employability.
Level 3: Strategic Thinking	AM 5.2 Model integrity, ethical leadership, and effective management.
	AM 6 Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	AM 6.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	AM 6.2 Explore opportunities within AFNR industries.

Agribusiness Management Current Standards
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	Agribusiness Management Proposed Standards
Level 3: Strategic Thinking	AM 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	AM 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	AM 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Agribusiness Sales and Marketing Current Standards
INDICATOR #ASM 1: Demonstrate the skills necessary to obtain and keep gainful employment in agribusiness
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Use written and oral skills to seek and obtain an agricultural
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Concept): Use marketable skills such as reliability and communications to improve self and to develop steps for systematic problem
INDICATOR #ASM 2: Evaluate sales and marketing principles used to accomplish marketing objectives.
SUB-INDICATOR 2.1 (Webb Level: 4 Extended Thinking): Write a marketing plan for a product based on marketing
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Merchandise products and services to meet the needs of a customer.
INDICATOR #ASM 3: Use technology and documents to manage agribusiness inventory.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Apply reading comprehension, writing and math skills in
SUB-INDICATOR 3.2 (Webb Level: 4 Extended Thinking): Analyze inventory data to determine acceptable business inventory stocking levels to manage business efficiency.
INDICATOR #ASM 4: Evaluate opportunities for marketing of agricultural products throughout the world.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Locate areas of agricultural importance and determine the competitive advantage for production of agricultural products.
SUB-INDICATOR 4.2 (Webb Level: 3 Strategic Thinking): Develop an awareness of food production and global needs to determine how those needs can be met.
SUB-INDICATOR 4.3 (Webb Level: 3 Strategic Thinking): Investigate the process in developing international trading partners.
INDICATOR #ASM 5: Use sales and marketing principles to accomplish AFNR business objectives
SUB-INDICATOR 5.1 (Webb Level: 3 Strategic Thinking): Analyze the roles of markets, trade, competition and price in relation to an AFNR business sales and marketing plan.
SUB-INDICATOR 5.2 (Webb Level: 4 Extended Thinking): Assess and apply sales principles and skills to accomplish AFNR business objectives.
SUB-INDICATOR 5.3 (Webb Level: 3 Strategic Thinking): Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.

	Agribusiness Sales and Marketing Proposed Standards
	ASM 1: Demonstrate the skills necessary to obtain and keep gainful employment in agribusiness occupations.
Level 2: Skill/Concept	ASM 1.1 Use written and oral skills to seek and obtain an agricultural job.
Level 2: Skill/Concept	ASM 1.2 Demonstrate Understanding of marketable skills to show personal growth.
	ASM 2: Evaluate sales and marketing principles used to accomplish marketing objectives.
Level 4: Extended Thinking	ASM 2.1 Write a marketing plan for a product based on marketing objectives.
Level 3: Strategic Thinking	ASM 2.2 Merchandise products and services to meet the needs of a customer.
	ASM 3: Use technology and documents to manage agribusiness inventory.
Level 2: Skill/Concept	ASM 3.1 Apply reading comprehension, writing and math skills in inventory management.
Level 2: Skill/Concept	ASM 3.2 Compare inventory management methods for various agribusinesses.
	ASM 4: Evaluate opportunities for marketing of agricultural products throughout the world.
Level 2: Skill/Concept	ASM 4.1 Locate areas of agricultural importance and determine the competitive advantage for production of agricultural products.
Level 3: Strategic Thinking	ASM 4.2 Explore issues related to global food production and access.
Level 3: Strategic Thinking	ASM 4.3 Investigate the process in developing international trading partners.
	ASM 5: Use sales and marketing principles to accomplish AFNR business objectives
Level 2: Skill/Concept	ASM 5.1 Develop soft skills to enhance employability.
Level 3: Strategic Thinking	ASM 5.2 Model integrity, ethical leadership, and effective management.
	ASM 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	ASM 6.1 Develop an individual project plan with goals and timeline
Level 2: Skill/Concept	ASM 6.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	ASM 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.

Agribusiness Sales and Marketing Current Standards

	Agribusiness Sales and Marketing Proposed Standards
Level 3: Strategic Thinking	ASM 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	ASM 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Ag Biotechnology Current Standards
INDICATOR #AB 1: Assess factors that have influenced the evolution of biotechnology in agriculture.
SUB-INDICATOR 1.1 (Webb Level: 3 Strategic Thinking): Investigate and explain the relationships among past, current and emerging applications of biotechnology in agriculture.
SUB-INDICATOR 1.2 (Webb Level: 3 Strategic Thinking): Evaluate the scope and implications of regulatory agencies on applications of biotechnology in agriculture and protection of public interests.
SUB-INDICATOR 1.3 (Webb Level: 4 Extended Thinking): Analyze the relationships and implications of bioethics, laws and public perceptions on applications of biotechnology in agriculture.
INDICATOR #AB 2: Illustrate the functions and importance of biotechnology at the cellular level.
SUB-INDICATOR 2.1 (Webb Level: 1 Recall): Recognize components of cells and their application to genetic improvement.
SUB-INDICATOR 2.2 (Webb Level: 1 Recall): Illustrate the role of cell structures in genetic theory.
INDICATOR #AB 3: Safely apply appropriate skills to complete tasks in a biotechnology research and development environment.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Read, document, evaluate and secure accurate laboratory records of experimental protocols, observations and results.
SUB-INDICATOR 3.2 (Webb Level: 3 Strategic Thinking): Implement standard operating procedures (SOP) for the biotechnology sector.
INDICATOR #CE 4: Analyze the application of biotechnology to solve problems in Agriculture, Food and Natural Resources (AFNR) systems.
SUB-INDICATOR 4.1 (Webb Level: 3 Strategic Thinking): Investigate biotechnology principles, techniques and processes to enhance plant systems.
SUB-INDICATOR 4.2 (Webb Level: 3 Strategic Thinking): Investigate biotechnology principles, techniques and processes to enhance animal systems.
SUB-INDICATOR 4.3 (Webb Level: 3 Strategic Thinking): Investigate biotechnology principles, techniques and processes to enhance food products and processing systems.

	Ag Biotechnology Proposed Standards
	AB 1: Understand and use safe practices.
Level 2: Skill/Concept	AB 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Level 2: Skill/Concept	AB 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	AB 2: Assess factors that have influenced the evolution of biotechnology in agriculture.
Level 3: Strategic Thinking	AB 2.1 Investigate and explain the relationships among past, current and emerging applications of biotechnology in agriculture.
Level 3: Strategic Thinking	AB 2.2 Evaluate the scope and implications of regulatory agencies on applications of biotechnology in agriculture and protection of public interests.
Level 4: Extended Thinking	AB 2.3 Analyze the relationships and implications of bioethics, laws, and public perceptions on applications of biotechnology in agriculture.
	AB 3: Illustrate the functions and importance of biotechnology at the cellular level.
Level 1: Recall	AB 3.1 Recognize components of cells and their application to genetic improvement.
Level 1: Recall	AB 3.2 Recognize components of genetic transfer
Level 1: Recall	AB 3.3 Illustrate the role of cell structures in genetic theory.
Level 2: Skill/Concept	AB 3.4 Explain the role of genetics and cell structures in gene expression
	AB 4: Safely apply appropriate skills to complete tasks in a biotechnology research and development environment.
Level 2: Skill/Concept	AB 4.1 Read, document, evaluate and secure accurate laboratory records of experimental protocols, observations, and results.
Level 3: Strategic Thinking	AB 4.2 Implement standard operating procedures (SOP) for the biotechnology sector.
	AB 5: Analyze the application of biotechnology to solve problems in Agriculture, Food and Natural Resources (AFNR) systems.
Level 3: Strategic Thinking	AB 5.1 Investigate biotechnology principles, techniques, and processes to enhance plant systems.
Level 3: Strategic Thinking	AB 5.2 Investigate biotechnology principles, techniques, and processes to enhance animal systems.
Level 3: Strategic Thinking	AB 5.3 Investigate biotechnology principles, techniques, and processes to enhance food products and processing systems.

Ag Biotechnology Current Standards
SUB-INDICATOR 4.4 (Webb Level: 3 Strategic Thinking): Investigate biotechnology principles, techniques and processes to enhance natural resources and environmental service systems.
INDICATOR #AB 5: Develop employability skills related to the Animal, Food Product and Processing, Plant, and Natural Resources and Environmental Science Systems.
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Ag Biotechnology Proposed Standards
Level 3: Strategic Thinking	AB 5.4 Investigate biotechnology principles, techniques, and processes to enhance natural resources and environmental service systems.
Level 3: Strategic Thinking	AB 5.5 Investigate the impact agriculture biotechnology has had on modern medicine
	AB 6: Develop employability skills related to the Animal, Food Product and Processing, Plant, and Natural Resources and Environmental Science Systems.
Level 3: Strategic Thinking	AB 5.5 Investigate the impact agriculture biotechnology has had on modern medicine
	AB 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	AB 7.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	AB 7.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	AB 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	AB 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	AB 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Ag Metal Fabrication Current Standards
INDICATOR #AMF 1: Demonstrate the basics of metal fabrication.
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Demonstrate knowledge of metal fabrication techniques and related technologies.
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Concept): Prepare various metals for welding.
SUB-INDICATOR 1.3 (Webb Level: 3 Strategic Thinking): Create plans for metal project construction.
INDICATOR #AMF 2: Demonstrate the principles of Shielded Metal Arc Welding (SMAW) and the correct operation of SMAW equipment.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Perform Shielded Metal Arc Welding (SMAW) techniques.
INDICATOR #AMF 3: Demonstrate the principles of Metal Inert Gas (MIG) welding, also known as Gas Metal Arc Welding (GMAW), and the correct operation of MIG equipment.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Perform metal inert gas (MIG) welding techniques.
INDICATOR #AMF 4: Understand the correct operation of oxyacetylene equipment.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Explore oxyacetylene welding, cutting, and brazing.
INDICATOR #AMF 5: Explore advanced welding
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Investigate and explain principles of advanced welding processes (e.g. Tungsten Inert Gas (TIG) welding, plasma cutting)
INDICATOR #AMF 6: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.
SUB-INDICATOR 6.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.
SUB-INDICATOR 6.2 (Webb Level: 2 Skill/Concept): Investigate careers related to metal fabrication.

	Ag Metal Fabrication Proposed Standards
	AMF 1: Apply safety practices in metal fabrication.
Level 3: Strategic Thinking	AMF 1.1 – Demonstrate safe operation and knowledge of metal fabrication tools and equipment.
Level 3: Strategic Thinking	AMF 1.2 - Demonstrate workplace/worksites safety procedures and protocols
	AMF 2: Demonstrate the basics of metal fabrication.
Level 2: Skill/Concept	AMF 2.1 Demonstrate knowledge of metal fabrication techniques and related technologies.
Level 2: Skill/Concept	AMF 2.2 Prepare various metals for welding.
Level 3: Strategic Thinking	AMF 2.3 Create plans for a metal project.
Level 4: Extended Thinking	AMF 2.4 Create a metal fabrication project.
	AMF 3: Demonstrate the principles of Shielded Metal Arc Welding (SMAW) and the correct operation of SMAW equipment.
Level 2: Skill/Concept	AMF 3.1 Perform Shielded Metal Arc Welding (SMAW) techniques.
	AMF 4: Demonstrate the principles of Metal Inert Gas (MIG) welding, also known as Gas Metal Arc Welding (GMAW), and the correct operation of MIG equipment.
Level 2: Skill/Concept	AMF 4.1 Perform metal inert gas (MIG) welding techniques.
	AMF 5: Understand the correct operation of oxyacetylene equipment.
Level 2: Skill/Concept	AMF 5.1 Explore oxyacetylene welding, cutting, and brazing.
	AMF 6: Explore advanced welding processes.
Level 2: Skill/Concept	AMF 6.1 Investigate and explain principles of advanced welding processes (e.g. Tungsten Inert Gas (TIG) welding, plasma cutting (hand or table))
	AMF 7: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.
Level 2: Skill/Concept	AMF 7.1– Develop soft skills to enhance employability.
Level 2: Skill/Concept	AMF 7.2 - Investigate careers related to metal fabrication.
	AMF 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	AMF 8.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	AMF 8.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	AMF 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	AMF 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.

Level 4: Extended Thinking	AMF 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.
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Ag Processing Technology Current Standards
INDICATOR #AgP 1: Examine the makeup of the food processing industry.
SUB-INDICATOR 1.1 (Webb Level: 3 Strategic Thinking): Investigate the evolution of the food processing industry.
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Concept): Discuss how food safety is addressed in the food processing industry.
SUB-INDICATOR 1.3 (Webb Level: 1 Recall): Explain how regulatory agencies in the food industry work to protect consumers.
INDICATOR #AgP 2: Demonstrate operational procedures used in the food industry.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Translate regulatory procedures as they apply to food processing.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Demonstrate worker safety procedures for food processing equipment.
INDICATOR #AgP 3: Process foods for storage, distribution and consumption.
SUB-INDICATOR 3.1 (Webb Level: 1 Recall): Classify processed food products.
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): Utilize industry harvesting, selection and inspection techniques.
SUB-INDICATOR 3.3 (Webb Level: 1 Recall): Describe the steps involved with producing various food products.
SUB-INDICATOR 3.4 (Webb Level: 4 Extended Thinking): Process food safely.
INDICATOR #AgP 4: Develop employability skills related to the Food Product and Processing Systems.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Ag Processing Technology (Food & Fiber)
	AgP 1: Understand and use safe practices
Level 2: Skill/Concept	ADPS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Level 2: Skill/Concept	ADPS 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	AgP 2: Examine the makeup of the AFNR processing industries.
Level 3: Strategic Thinking	AgP 2.1 Investigate the evolution of the food and/or non food processing industry.
Level 2: Skill/Concept	AgP 2.2 Discuss how safety is addressed in the AFNR processing industry.
Level 1: Recall	AgP 2.3 Explain how regulatory agencies in AFNR processing industries work to protect consumers.
	AgP 3: Demonstrate operational procedures used in AFNR Processing industries.
Level 2: Skill/Concept	AgP 3.1 Explain regulatory procedures as they apply to AFNR processing.
Level 2: Skill/Concept	AgP 3.2 Demonstrate worker safety procedures for AFNR processing equipment.
Level 2: Skill/Concept	AgP 3.3 Explore advances in technology associated with AFNR processing
	AgP 4: Processes for AFNR product storage, distribution and consumption/use.
Level 1: Recall	AgP 4.1 Classify processed AFNR products.
Level 2: Skill/Concept	AgP 4.2 Characterize industry harvesting, selection and inspection techniques.
Level 2: Skill/Concept	AgP 4.3 Explain the steps involved with producing various AFNR products.
Level 4: Extended Thinking	AgP 4.4 Process AFNR product safely.
	AgP 5: Develop employability skills related to the Food Product and Processing Systems.
Level 2: Skill/Concept	AgP 5.1 Develop soft skills to enhance employability.
	AgP 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	AgP 6.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	AgP 6.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	AgP 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	AgP 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.

Ag Processing Technology Current Standards

Ag Processing Technology (Food & Fiber)
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Level 4: Extended Thinking	AgP 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.
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Food Science Current Standards
INDICATOR #FS 1: Examine the makeup of the food industry.
SUB-INDICATOR 1.1 (Webb Level: 3 Strategic Thinking): Investigate advancements in food science techniques.
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Concept): Identify organizations and their impact on the food industry.
INDICATOR #FS 2: Apply safety and sanitation procedures for food production.
SUB-INDICATOR 2.1 (Webb Level: 1 Recall): Describe proper safety and sanitation practices when working with food products.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Apply safety and sanitation practices used in the food industry.
SUB-INDICATOR 2.3 (Webb Level: 1 Recall): Identify origins of food borne pathogens and effective prevention and control methods.
INDICATOR #FS 3: Apply principles of science to producing safe, wholesome and nutritious food products.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Apply fundamental chemistry to food science.
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): Differentiate the makeup of food products.
SUB-INDICATOR 3.3 (Webb Level: 3 Strategic Thinking): Develop a food product that meets the standards of regulatory agencies.
INDICATOR #FS 4: Develop employability skills related to the Food Product and Processing Systems.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

	Food Science Proposed Standards
	FS 1: Understand and use safe practices.
Level 2: Skill/Concept	FS 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Level 2: Skill/Concept	FS 1.2 Demonstrate workplace/worksites safety procedures and protocols.
	FS 2: Examine the makeup of the food industry.
Level 2: Skill/Concept	FS 2.1 Investigate the local, national, and global food supply chain and market. advancements in food science techniques.
Level 2: Skill/Concept	FS 2.2 Identify government organizations, producer organizations, companies, and other stakeholders and their impact on the food industry.
	FS 3: Apply safety and sanitation procedures for food production.
Level 1: Recall	FS 3.1 Identify origins of food borne pathogens and contaminants and effective prevention and control methods.
Level 1: Recall	FS 3.2 Describe proper safety and sanitation practices when working with food products.
Level 2: Skill/Concept	FS 3.3 Demonstrate safe use and knowledge of tools, equipment, and associated PPE.
Level 2: Skill/Concept	FS 3.4 Apply safety and sanitation practices used in the food industry.
	FS 4: Apply principles of science for producing safe, wholesome, and nutritious food products.
Level 2: Skill/Concept	FS 4.1 Apply fundamental chemistry to food science.
Level 2: Skill/Concept	FS 4.2 Differentiate the makeup of food products.
Level 3: Strategic Thinking	FS 4.3 Develop a food product that meets the standards of regulatory agencies.
	FS 5: Develop employability skills related to the Food Product and Processing Systems.
Level 2: Skill/Concept	FS 5.1 Develop soft skills to enhance employability.
	FS 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	FS 6.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	FS 6.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	FS 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	FS 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	FS 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Environmental Science Current Standards
ES 1: Examine ecological principles and functions.
ES 1.1: Examine the structure and function of ecosystems.
ES 1.2: Analyze the major biomes of the earth and the biodiversity associated with these biomes
ES1.3: Analyze population dynamics.
ES 2: Evaluate human population dynamics on the environment.
ES 2.1: Evaluate factors affecting the human population.
ES 2.2: Evaluate the consequences of human population growth.
ES 2.3: Evaluate approaches that address over-population.
ES 3: Appraise our natural resources, their conservation and management.
ES 3.1: Explain the types, uses and history of renewable and nonrenewable resources.
ES 3.2: Assess methods of conservation of common non-energy natural resources.
ES 3.3: Examine the impact of waste production and management on the environment.
ES 4: Examine energy sources and their conservation.
ES 4.1: Compare and contrast conventional and alternative energy sources.
ES 4.2: Examine the types of energy-related pollution.
ES 4.3: Compare various methods of energy conservation.
ES 5: Examine consequences of human interaction with the environment.
ES 5.1: Examine the causes, environmental effects and methods for controlling pollution.
ES 5.2: Examine environmental impact on human health.
ES 5.3: Appraise the sustainability of human practices as they relate to water quality, agriculture/forestry/fishing, mining, energy and land use.
ES 6: Appraise personal and civic responsibility with regard to the environment.
ES 6.1: Evaluate personal views concerning the environment.
ES 6.2: Evaluate the rights and responsibilities of citizens in maintaining a healthy environment.

Change course title to:	Issues In Environmental Science Proposed Standards
	IES 1: Examine ecological principles and functions.
Level 2: Skill/Concept	IES 1.1 Examine the structure and function of ecosystems.
Level 4: Extended Thinking	IES 1.2 Analyze the major biomes of the earth and the biodiversity associated with these biomes.
Level 4: Extended Thinking	IES 1.3 Analyze population dynamics.
	IES 2: Evaluate human population dynamics on the environment.
Level 4: Extended Thinking	IES 2.1 Evaluate factors affecting the human population.
Level 4: Extended Thinking	IES 2.2 Evaluate the consequences of human population growth.
Level 4: Extended Thinking	IES 2.3 Evaluate approaches that address overpopulation.
	IES 3: Appraise our natural resources, their conservation and management.
Level 1: Recall	IES 3.1 Explain the types, uses and history of renewable and nonrenewable resources.
Level 3: Strategic Thinking	IES 3.2 Assess methods of conservation of common non-energy natural resources.
Level 2: Skill/Concept	IES 3.3 Examine the impact of waste production and management on the environment.
	IES 4: Examine energy sources and their conservation.
Level 2: Skill/Concept	IES 4.1 Compare and contrast conventional and alternative energy sources.
Level 2: Skill/Concept	IES 4.2 Examine the types of energy-related pollution.
Level 2: Skill/Concept	IES 4.3 Compare various methods of energy conservation.
	IES 5: Examine consequences of human interaction with the environment.
Level 2: Skill/Concept	IES 5.1 Examine the causes, environmental effects and methods for controlling pollution.
Level 2: Skill/Concept	IES 5.2 Examine environmental impact on human health.
Level 4: Extended Thinking	IES 5.3 Appraise the sustainability of human practices as they relate to water quality, agriculture/forestry/fishing, mining, energy, and land use.
	IES 6: Appraise personal and civic responsibility with regard to the environment.
Level 4: Extended Thinking	IES 6.1 Evaluate personal views concerning the environment.
Level 4: Extended Thinking	IES 6.2 Evaluate the rights and responsibilities of citizens in maintaining a healthy environment.
	IES 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	IES 7.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	IES 7.2 Explore opportunities within AFNR industries.

Environmental Science Current Standards
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Change course title to:	Issues In Environmental Science Proposed Standards
Level 3: Strategic Thinking	IES 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	IES 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	IES 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Fundamental Natural Resources Current Standards
INDICATOR #FNR 1: Examine the importance of resource and human interrelations to conduct management activities in natural habitats.
SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Explain resource management components to establish or enhance relationships in natural resource systems.
SUB-INDICATOR 1.2 (Webb Level: 3 Strategic Thinking): Apply Geographic Information Systems (GIS) skills to natural resource activities.
SUB-INDICATOR 1.3 (Webb Level: 2 Skill/Content): Examine planning data to determine natural resource
SUB-INDICATOR 1.4 (Webb Level: 3 Strategic Thinking): Discuss weather and other criteria to recognize dangers related to work in an outdoor environment.
INDICATOR #FNR 2: Interpret scientific principles of natural resource management activities.
SUB-INDICATOR 2.1 (Webb Level: 1 Recall): Identify and classify plant- and animal-based natural resources.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Identify natural cycles and related phenomena to describe ecological concepts and principles.
SUB-INDICATOR 2.3 (Webb Level: 1 Recall): Describe soil compositions and properties.
SUB-INDICATOR 2.4 (Webb Level: 1 Recall): Examine wetland, watershed and groundwater properties, classifications and functions.
SUB-INDICATOR 2.5 (Webb Level: 2 Skill/Concept): Discuss forestry management techniques.
INDICATOR #FNR 3: Describe production practices and processing procedures for natural resources
SUB-INDICATOR 3.1 (Webb Level: 1 Recall): Describe how natural resource products are produced, harvested, processed and used.
INDICATOR #FNR 4: Explain responsible practices to protect natural resources
SUB-INDICATOR 4.1 (Webb Level: 1 Recall): Describe techniques and equipment needed to manage and conserve natural resources.
SUB-INDICATOR 4.2 (Webb Level: 2 Skill/Concept): Discuss animal and plant disease symptoms and prevention.
SUB-INDICATOR 4.3 (Webb Level: 1 Recall): Recognize insect types and available controls to prevent insect infestation.

	Fundamental Natural Resources Proposed Standards
	FNR 1: Examine the importance of resource and human interrelations to conduct management activities in natural habitats.
Level 1: Recall	FNR 1.1 Explain resource management components to establish or enhance relationships in natural resource systems.
Level 2: Skill/Concept	FNR 1.2 Explain GPS and GIS and how they impact natural resource management activities.
Level 2: Skill/Concept	FNR 1.3 Examine planning data to determine natural resource status.
Level 1: Recall	FNR 1.4 Discuss safety related to weather and other criteria in an outdoor environment.
Level 2: Skill/Concept	FNR 1.5 Investigate forestry management techniques.
Level 2: Skill/Concept	FNR 1.6 Define and Investigate the role of ecosystem services and their impact on human society.
	FNR 2: Interpret scientific principles of natural resource management activities.
Level 1: Recall	FNR 2.1 Identify and classify plant- and animal-based natural resources.
Level 2: Skill/Concept	FNR 2.2 Identify natural cycles and related phenomena to describe ecological concepts and principles.
Level 2: Skill/Concept	FNR 2.3 Examine soil compositions, properties, and health.
Level 2: Skill/Concept	FNR 2.4 Demonstrate techniques used to classify soils.
Level 2: Skill/Concept	FNR 2.5 Explain the importance of soil conservation.
Level 3: Strategic Thinking	FNR 2.6 Analyze wetland, watershed, and groundwater properties, classifications, and functions.
	FNR 3: Describe production practices and processing procedures for natural resources.
Level 1: Recall	FNR 3.1 Describe how natural resource products are produced, harvested, processed, and used.
	FNR 4: Develop employability skills related to the AFNR Cluster.
Level 2: Skill/Concept	FNR 4.1: Develop soft skills to enhance employability.
	FNR 5: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	FNR 5.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	FNR 5.2 Explore opportunities within AFNR industries.

Fundamental Natural Resources Current Standards
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	Fundamental Natural Resources Proposed Standards
Level 3: Strategic Thinking	FNR 5.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	FNR 5.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	FNR 5.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.
	FNR 6: Explain responsible practices to protect natural resources
Level 1: Recall	FNR 6.1 Describe techniques and equipment needed to manage and conserve natural resources.
Level 2: Skill/Concept	FNR 6.2 Discuss animal and plant disease symptoms and prevention.
Level 1: Recall	FNR 6.3 Recognize insect types and available controls to prevent insect infestation.

Advanced Natural Resources Current Standards
INDICATOR #ANR 1: Explore soil composition and soil management.
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Demonstrate techniques used to classify soils.
SUB-INDICATOR 1.2 (Webb Level: Skill/Concept): Explain the importance of soil conservation.
SUB-INDICATOR 1.3 (Webb Level: 4 Extended Thinking): Analyze soils for agricultural and homesite uses.
SUB-INDICATOR 1.4 (Webb Level: 4 Extended Thinking): Analyze existing soil surveys to develop effective management plans.
INDICATOR #ANR 2: Apply ecological concepts and principles to rangeland conservation.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Summarize the interrelationships of rangeland management, the environment, wildlife management, and the livestock industry.
SUB-INDICATOR 2.2 (Webb Level: 1 Recall): Discuss practices used to improve rangeland quality.
SUB-INDICATOR 2.3 (Webb Level: 4 Extended Thinking): Analyze the carrying capacity in various rangelands for both wildlife species and domestic livestock.
SUB-INDICATOR 2.4 (Webb Level: 1 Recall): Identify plants important to quality rangeland and determine rangeland condition.
INDICATOR #ANR 3: Understand forest management practices.
SUB-INDICATOR 3.1 (Webb Level: 1 Recall): Identify trees and classify to species.
SUB-INDICATOR 3.2 (Webb Level: 4 Extended Thinking): Discuss forestry management techniques.
INDICATOR #ANR 4: Apply ecological concepts and principles to fisheries and wildlife in natural resources.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Identify similarities and differences among wildlife and fish species.
SUB-INDICATOR 4.2 (Webb Level: 3 Strategic Thinking): Investigate wildlife management and habitat.
SUB-INDICATOR 4.3 (Webb Level: 3 Strategic Thinking): Differentiate among a variety of management practices used to manage wildlife populations.
SUB-INDICATOR 4.4 (Webb Level: 4 Extended Thinking): Enhance fish/wildlife habitat.
INDICATOR #ANR 5: Understand air and water use, examine management practices, and develop conservation strategies.
SUB-INDICATOR 5.1 (Webb Level: 3 Strategic Thinking): Explain the government's role in regulating air and water quality.
SUB-INDICATOR 5.2 (Webb Level: 1 Recall): Define appropriate water conservation measures.
SUB-INDICATOR 5.3 (Webb Level: 4 Extended Thinking): Analyze the way in which water and air management affect the environment and human needs.

	Advanced Natural Resources Proposed Standards
	ANR 1: Explore soil composition and soil management.
Level 2: Skill/Concept	ANR 1.1 Investigate soil formations and 12 soil orders classification systems. .
Level 3: Strategic Thinking	ANR 1.2 Evaluate the role of soil management strategies and their impact on conservation.
Level 4: Extended Thinking	ANR 1.3 Analyze soils for agricultural and homesite uses.
Level 4: Extended Thinking	ANR 1.4 Analyze existing soil surveys to develop effective management plans.
	ANR 2: Apply ecological concepts and principles to rangeland conservation.
Level 2: Skill/Concept	ANR 2.1 Summarize the interrelationships of rangeland management, the environment, wildlife management, and the livestock industry.
Level 1: Recall	ANR 2.2 Discuss practices used to improve rangeland quality.
Level 4: Extended Thinking	ANR 2.3 Analyze the carrying capacity in various rangelands for both wildlife species and domestic livestock.
Level 1: Recall	ANR 2.4 Identify plants important to quality rangeland and determine rangeland condition.
	ANR 3: Understand forest management practices.
Level 1: Recall	ANR 3.1 Identify trees and classify species.
Level 4: Extended Thinking	ANR 3.2 Discuss forestry management techniques.
	ANR 4: Apply ecological concepts and principles to fisheries and wildlife in natural resources.
Level 2: Skill/Concept	ANR 4.1 Compare and contrast wildlife and wild fish management.
Level 3: Strategic Thinking	ANR 4.2 Differentiate among a variety of management practices used to manage wildlife populations.
Level 4: Extended Thinking	ANR 4.3 Propose and/or execute a plan to enhance fish/wildlife habitats in South Dakota.
	ANR 5: Understand air and water use, examine management practices, and develop conservation strategies.
Level 3: Strategic Thinking	ANR 5.1 Compare and contrast between two governmental roles in regulating air and water quality.
Level 1: Recall	ANR 5.2 Define appropriate water conservation measures.
Level 4: Extended Thinking	ANR 5.3 Analyze the way in which water and air management affect the environment and human needs.

Advanced Natural Resources Current Standards
SUB-INDICATOR 5.4 (Webb Level: 3 Strategic Thinking): Measure and assess water and air quality parameters using federal, tribal, state and/or local standards.
INDICATOR #ANR 6: Develop plans to ensure sustainable production and processing of natural resources.
SUB-INDICATOR 6.1 (Webb Level: 3 Strategic Thinking): Explain methods used to sustainably produce, harvest, process and use natural resource products (e.g., forest products, wildlife, minerals, fossil fuels, shale oil, alternative energy, recreation, aquatic species, etc.)
SUB-INDICATOR 6.2 (Webb Level: Skill/Concept): Compare the various production methods of alternative energy sources, both renewable and non-renewable, and their relations to economic, environmental and social sustainability.
SUB-INDICATOR 6.3 (Webb Level: 4 Extended Thinking): Evaluate methods used to extract and process minerals for economic, environmental, and social sustainability.

	Advanced Natural Resources Proposed Standards
	ANR 6: Develop plans to ensure sustainable production and processing of natural resources.
Level 3: Strategic Thinking	ANR 6.1 Explain methods used to sustainably produce, harvest, process and use natural resource products (e.g., forest products, wildlife, minerals, fossil fuels, shale oil, alternative energy, recreation, aquatic species, etc.)
Level 2: Skill/Concept	ANR 6.2 Compare the various production methods of alternative energy sources, both renewable and non-renewable, and their relations to economic, environmental, and social sustainability.
Level 3: Strategic Thinking	ANR 6.3 Evaluate methods used to extract and process minerals for economic, environmental, and social sustainability.
	ANR 7: Develop employability skills related to the AFNR Cluster.
Level 2: Skill/Concept	ANR 7.1: Develop soft skills to enhance employability.
	ANR 8: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	ANR 8.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	ANR 8.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	ANR 8.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	ANR 8.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	ANR 8.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

Wildlife and Fisheries Current Standards
INDICATOR #WF 1: Demonstrate the importance of fish and wildlife management, including their respective habitats.
SUB-INDICATOR 1.1 (Webb Level: 2 Skill/Concept): Apply knowledge of natural resource components to the management of wildlife and fish.
SUB-INDICATOR 1.2 (Webb Level: 1 Recall): Identify fish and wildlife species.
SUB-INDICATOR 1.3 (Webb Level: 2 Skill/Concept): Identify healthy habitat for wildlife and fish.
INDICATOR #WF 2: Identify economic and social issues related to fish and wildlife.
SUB-INDICATOR 2.1 (Webb Level: 2 Skill/Concept): Discuss hunting/harvesting fish and wildlife species as a management technique.
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Demonstrate processing techniques to use game and fish as food sources.
SUB-INDICATOR 2.3 (Webb Level: 2 Skill/Concept): Distinguish safety practices related to hunting and fishing activities.
INDICATOR #WF 3: Compare life patterns of fish and wildlife.
SUB-INDICATOR 3.1 (Webb Level: 3 Strategic Thinking): Differentiate fish and wildlife function and form in their daily lives.
SUB-INDICATOR 3.2 (Webb Level: 1 Recall): Identify seasonal rituals of fish and wildlife species.
SUB-INDICATOR 3.3 (Webb Level: 4 Extended Thinking): Diagnose wildlife and fish diseases.
INDICATOR #WF 4: Investigate careers in wildlife and fisheries conservation.
SUB-INDICATOR 4.1 (Webb Level: 2 Skill/Concept): Locate, identify, research and interpret career information.
SUB-INDICATOR 4.2 (Webb Level: 2 Skill/Concept): Compare and contrast characteristics of various careers.

<i>Webb Level</i>	Wildlife and Fisheries Proposed Standards
	WF 1 Demonstrate the importance of fish and wildlife management, including their respective habitats.
Two Skill/Concept	WF 1.1 Demonstrate understanding of natural resource components to the management of wildlife and fish.
One Recall	WF 1.2 Identify fish and wildlife species.
Two Skill/Concept	WF 1.3 Identify healthy habitat for wildlife and fish.
	WF 2 Identify economic and social issues related to fish and wildlife.
Two Skill/Concept	WF 2.1 Discuss hunting/harvesting fish and wildlife species as a management technique.
Two Skill/Concept	WF 2.2 Investigate processing techniques to use game and fish as food sources.
Three Strategic Thinking	WF 2.3 Demonstrate safety practices related to hunting and fishing activities.
Two Skill/Concept	WF 2.4 Investigate impact of invasive species on wildlife and fisheries.
	WF 3 Compare life patterns of fish and wildlife.
One Recall	WF 3.1 Identify seasonal rituals of fish and wildlife species.
Three Strategic Thinking	WF 3.2 Diagnose wildlife and fish diseases.
Four Extended Thinking	WF 3.3 Create a plan to mitigate wildlife and fish diseases.
	WF 4 Investigate careers in wildlife and fisheries conservation.
Two Skill/Concept	WF 4.1 Locate, identify, research, and interpret career information.
Two Skill/Concept	WF 4.2 Compare and contrast characteristics of various careers.
	WF 5 Develop employability skills related to the Animal Systems Pathway.
Two Skill/Concept	WF 5.1 Develop soft skills to enhance employability.

Ag Leadership & Communications Current Standards
INDICATOR #ALC 1: Act as a responsible and contributing citizen and employee in the AFNR sector.
SUB-INDICATOR 1.1 (Webb Level: 4 Extended Thinking): Model personal responsibility in the workplace and community.
SUB-INDICATOR 1.2 (Webb Level: 4 Extended Thinking): Demonstrate soft skills for career success.
SUB-INDICATOR 1.3 (Webb Level: 2 Skill/Concept): Apply appropriate academic and technical skills.
INDICATOR #ALC 2: Apply and model teamwork and leadership skills in work groups.
SUB-INDICATOR 2.1 (Webb Level: 4 Extended Thinking): Employ leadership skills to accomplish a team goal.
SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Model proper use of basic parliamentary procedure.
SUB-INDICATOR 2.3 (Webb Level: 2 Skill/Concept): Exhibit a cooperative spirit when working in a group situation.
SUB-INDICATOR 2.4 (Webb Level: 2 Skill/Concept): Contribute to team-oriented projects and build consensus to accomplish results using cultural global competence in the workplace and community.
INDICATOR #ALC 3: Model integrity, ethical leadership and effective management.
SUB-INDICATOR 3.1 (Webb Level: 2 Skill/Concept): Model characteristics of ethical and effective leaders in the workplace and community.
SUB-INDICATOR 3.2 (Webb Level: 3 Strategic Thinking): Implement personal management skills to function effectively and efficiently in the workplace.
SUB-INDICATOR 3.3 (Webb Level: 2 Skill/Concept): Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community.
INDICATOR #ALC 4: Communicate information relevant to agriculture clearly, effectively, and with reason.
SUB-INDICATOR 4.1 (Webb Level: 1 Recall): Demonstrate basic information research skills and techniques.
SUB-INDICATOR 4.2 (Webb Level: 4 Extended Thinking): Produce clear, reasoned, and coherent written, verbal, or visual communication for formal or informal settings.
SUB-INDICATOR 4.3 (Webb Level: 3 Strategic Thinking): Communicate using strategies that ensure clarity, logic, purpose, and professionalism in formal or informal settings.
INDICATOR #ALC 5: Use technology to enhance productivity.

	Ag Leadership & Communications Current Standards
	ALC 1: Act as a responsible and contributing citizen and employee in the AFNR sector.
Level 4: Extended Thinking	ALC 1.1 Model personal responsibility in the workplace and community.
Level 4: Extended Thinking	ALC 1.2 Demonstrate soft skills for career success.
Level 2: Skill/Concept	ALC 1.3 Apply appropriate academic and technical skills.
	ALC 2: Apply and model teamwork and leadership skills in work groups.
Level 4: Extended Thinking	ALC 2.1 Employ leadership skills to accomplish a team goal.
Level 3: Strategic Thinking	ALC 2.2 Model proper use of parliamentary procedure.
Level 2: Skill/Concept	ALC 2.3 Exhibit a cooperative spirit when working in a group situation.
Level 3: Strategic Thinking	ALC 2.4 Build consensus to accomplish results while considering inclusion and diversity in the workplace and community.
	ALC 3: Model integrity, ethical leadership, and effective management.
Level 2: Skill/Concept	ALC 3.1 Model characteristics of ethical and effective leaders in the workplace and community.
Level 3: Strategic Thinking	ALC 3.2 Implement personal management skills to function effectively and efficiently in the workplace.
Level 3: Strategic Thinking	ALC 3.3 Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community.
	ALC 4: Communicate information relevant to agriculture clearly, effectively, and with reason.
Level 1: Recall	ALC 4.1 Demonstrate basic information research skills and techniques.
Level 3: Strategic Thinking	ALC 4.2 Evaluate communication strategies that ensure clarity, logic, purpose, and professionalism in formal or informal settings.
Level 4: Extended Thinking	ALC 4.3 Produce clear, reasoned, and coherent written, verbal, or visual communication for formal or informal settings.
	ALC 5 Use technology to enhance productivity.

Ag Leadership & Communications Current Standards
SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Research, select, and use new technologies, tools, and applications to maximize productivity in the workplace and community.
SUB-INDICATOR 5.2 (Webb Level: 3 Strategic Thinking): Utilize technology to advocate for agriculture and the FFA.
SUB-INDICATOR 5.3 (Webb Level: 4 Extended Thinking): Evaluate personal and organizational risks of technology use and take actions to prevent or minimize risks in the workplace and community.

	Ag Leadership & Communications Current Standards
Level 2: Skill/Concept	ALC 5.1 Research, select, and use new technologies, tools, and applications to maximize productivity in the workplace and community.
Level 3: Strategic Thinking	ALC 5.2 Utilize technology to advocate for AFNR and/or the FFA.
Level 4: Extended Thinking	ALC 5.3 Evaluate personal and organizational risks of technology use and take actions to prevent or minimize risks in the workplace and community.
	ALC 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.
Level 2: Skill/Concept	ALC 6.1 Develop an individual project plan with goals and timeline.
Level 2: Skill/Concept	ALC 6.2 Explore opportunities within AFNR industries.
Level 3: Strategic Thinking	ALC 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Level 3: Strategic Thinking	ALC 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Level 4: Extended Thinking	ALC 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.

New Course - No Current Standards

	Independent Supervised Agriculture Experience (SAE)
	Proposed Standards
	SAE 1: Examine the general philosophy and objectives of SAE programs.
Level 1: Recall	SAE 1.1 Identify and describe the types of SAEs.
Level 2: Skill/Concept	SAE 1.2 Compare and contrast the applications and benefits of different types of SAEs.
Level 3: Strategic Thinking	SAE 1.3 Communicate understanding by selecting a specific project to build knowledge and skills in a particular agriculture area.
	SAE 2 Utilize project management and recordkeeping skills.
Level 3: Strategic Thinking	SAE 2.1 Formulate annual SMART goals for the SAE project or placement and apply the concepts of project planning to monitor and evaluate SAE progress.
Level 2: Skill/Concept	SAE 2.2 Accurately maintain a prescribed recordkeeping system and apply proper financial record keeping skills as required by the specific project.
Level 3: Strategic Thinking	SAE 2.3 Utilize records to direct students' future project plans.
Level 4: Extended Thinking	SAE 2.4 Conduct at least 90 hours of research, work, or activities related to the chosen SAE project.
Level 4: Extended Thinking	SAE 2.5 Complete an FFA award application.
	SAE 3: Demonstrate personal growth and exhibit characteristics important to career success.
Level 3: Strategic Thinking	SAE 3.1 Develop personal SMART goals and conduct activities to work toward individual and career development.
Level 2: Skill/Concept	SAE 3.2 Explore and compare regional career opportunities from multiple sources.
Level 4: Extended Thinking	SAE 3.3 Identify and develop knowledge and technical skills necessary for selected careers.
Level 4: Extended Thinking	SAE 3.4 Develop soft skills.
	SAE 4: Develop and demonstrate leadership skills.
Level 2: Skill/Concept	SAE 4.1 Exhibit leadership skills needed for careers in the AFNR industry.
Level 3: Strategic Thinking	SAE 4.2 Engage in youth leadership opportunities to practice and develop effective leadership skills.
	SAE 5: Understand and demonstrate occupational safety and ethics.
Level 2: Skill/Concept	SAE 5.1 Demonstrate appropriate health and safety procedures for activities aligned with SAE project.
Level 1: Recall	SAE 5.2 Identify and discuss occupational ethics, legal responsibilities, and regulatory compliance issues in relation to specific activities and/or careers aligned with SAE projects.