

Programs of Study: AFNR

Numbering Key	POS Title	Introduction	Intermediate	Capstone
AFNR.HS.1	Agribusiness Systems	Intro to AFNR or CASE Intro to AFNR	Agribusiness or CASE Agricultural Business Foundations	Agricultural Sales and Communications or Agricultural Economics or Agribusiness Management and Entrepreneurship
AFNR.HS.1	Agribusiness Systems Plus	Intro to AFNR or CASE Intro to AFNR	Agribusiness or CASE Agricultural Business Foundations	Agricultural Sales and Communications or Agricultural Economics or Agribusiness Management and Entrepreneurship Agricultural Leadership and Career Readiness
AFNR.HS.2	Animal Systems	Intro to AFNR or CASE Intro to AFNR	Animal Science or CASE Animal Science	Small Animal Management or Large Animal Management or Veterinary Science or Biotechnology
AFNR.HS.2	Animal Systems Plus	Intro to AFNR or CASE Intro to AFNR	Animal Science or CASE Animal Science	Small Animal Management or Large Animal Management or Veterinary Science or Biotechnology Agricultural Leadership and Career Readiness
AFNR.HS.3	Environmental and Natural Resources	Intro to AFNR or CASE Intro to AFNR	Environmental and Natural Resources or CASE Natural Resources & Ecology	Wildlife or Environmental and Natural Resources Management or CASE Environmental Science Issues or ISC Water in Society or ISC Land, Food, and People

AFNR.HS.3	Environmental and Natural Resources Plus	Intro to AFNR or CASE Intro to AFNR	Environmental and Natural Resources or CASE Natural Resources & Ecology	Wildlife or Environmental and Natural Resources Management or CASE Environmental Science Issues or ISC Water in Society or ISC Land, Food, and People
				Agricultural Leadership and Career Readiness
AFNR.HS.4	Food Products and Processing Systems	Intro to AFNR or CASE Intro to AFNR	Food Science and Safety or CASE Food Science and Safety or FNS Food Production, Nutrition and Health	Food Products and Technology or FNS Food Science or FNS Nutrition Science
AFNR.HS.4	Food Products and Processing Systems Plus	AFNR or CASE Intro to AFNR	Food Science and Safety or CASE Food Science and Safety or FNS Food Production, Nutrition and Health	Food Products and Technology or FNS Food Science or FNS Nutrition Science
				Agricultural Leadership and Career Readiness
AFNR.HS.5	Plant Systems	Intro to AFNR or CASE Intro to AFNR	Plant Science or CASE Plant Science or Agricultural Biology	Crop Management/Agronomy or Nursery and Landscape or Floriculture or Biotechnology
AFNR.HS.5	Plant Systems Plus	Intro to AFNR or CASE Intro to AFNR	Plant Science or CASE Plant Science or Agricultural Biology	Crop Management/Agronomy or Nursery and Landscape or Floriculture or Biotechnology
				Agricultural Leadership and Career Readiness
AFNR.HS.6	Power, Structural and Technical Systems	Intro to AFNR or CASE Intro to AFNR	Welding or Power, Structural, and Technical Foundations or CASE Agriculture Power and Technology	Metals and Fabrication or Precision Agriculture and Engineering or Power, Structural, and Technology Systems

AFNR.HS.6	Power, Structural and Technical Systems Plus	Intro to AFNR or CASE Intro to AFNR	Welding or Power, Structural, and Technical Foundations or CASE Agriculture Power and Technology	Metals and Fabrication or Precision Agriculture and Engineering or Power, Structural, and Technology Systems
			Agricultural Leadership and Career Readiness	

Agribusiness Systems

Courses include: Agribusiness, Agricultural Sales and Communications, Agricultural Economics, Agribusiness Management and Entrepreneurship
Content Area: AFNR
Grade Level: HS
Program of Study: 1

AFNR.HS.1.1	
Apply AFNR business planning, management, and development principles.	
AFNR.HS.1.1.a	Apply and analyze different types of risk management strategies and structures in AFNR businesses.
AFNR.HS.1.1.b	Plan and manage different input-output relationships.
AFNR.HS.1.1.c	Differentiate between and explain different business structures
AFNR.HS.1.1.d	Demonstrate an understanding of government policies.
AFNR.HS.1.2	
Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.	
AFNR.HS.1.2.a	Apply accounting principles, systems, tools, laws, and regulations to record, track, and audit AFNR business transactions.
AFNR.HS.1.2.b	Create and analyze financial information and reports to monitor AFNR business performance and support decision making.
AFNR.HS.1.3	
Manage cash budgets, credit budgets and credit for an AFNR business using generally accepted accounting principles.	
AFNR.HS.1.3.a	Develop, assess and manage cash budgets to achieve AFNR business goals.
AFNR.HS.1.3.b	Develop production plans.
AFNR.HS.1.4	
Develop a business plan for an AFNR business.	
AFNR.HS.1.4.a	Create production and operation plans for an AFNR business.
AFNR.HS.1.4.b	Differentiate between management and leadership.
AFNR.HS.1.5	

Use sales and marketing principles to accomplish AFNR business objectives.	
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AFNR.HS.1.5.a	Analyze the role of markets, trade, competition and price in AFNR business sales and marketing.
AFNR.HS.1.5.b	Analyze marketing principles and develop marketing plans to accomplish AFNR business objectives.
AFNR.HS.1.5.c	Analyze and apply sales principles and skills to accomplish AFNR business objectives.

Animal Systems

Courses include: Animal Science, Small Animal Management, Large Animal Management, Veterinary Science, and Biotechnology
Content Area: AFNR
Grade Level: HS
Program of Study: 2

AFNR.HS.2.1	
Analyze historic and current trends impacting the animal systems industry.	
AFNR.HS.2.1.a	Research the domestication of livestock and how the industries have changed and evolved over the years.
AFNR.HS.2.1.b	Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.
AFNR.HS.2.1.c	Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.
AFNR.HS.2.2	
Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.	
AFNR.HS.2.2.a	Demonstrate management techniques that ensure animal welfare.
AFNR.HS.2.2.b	Analyze procedures to ensure that animal products are safe for consumption.
AFNR.HS.2.3	
Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.	
AFNR.HS.2.3.a	Analyze nutritional needs of animals.
AFNR.HS.2.3.b	Analyze feed rations to examine if they meet the nutritional requirements of animals.
AFNR.HS.2.3.c	Utilize industry tools to make animal nutrition decisions.
AFNR.HS.2.4	
Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.	
AFNR.HS.2.4.a	Evaluate animals for breeding soundness and readiness.
AFNR.HS.2.4.b	Apply scientific principles to select and care for breeding animals.

AFNR.HS.2.4.c	Apply scientific principles to breed animals.
AFNR.HS.2.5	
Evaluate environmental factors affecting performance and implement procedures for enhancing performance and animal health.	
AFNR.HS.2.5.a	Design animal housing, equipment, and handling facilities for the major systems of animal production.
AFNR.HS.2.5.b	Interpret government regulations and safety standards for facilities used in animal production.
AFNR.HS.2.6	
Classify, evaluate and select animals based on anatomical and physiological characteristics.	
AFNR.HS.2.6.a	Classify animals according to taxonomic classification systems and use.
AFNR.HS.2.6.b	Apply principles of comparative anatomy and physiology to uses within animal systems.
AFNR.HS.2.6.c	Select and train animals for specific purposes and maximize performance based on anatomy and physiology.
AFNR.HS.2.7	
Apply principles of effective animal health care.	
AFNR.HS.2.7.a	Design programs to prevent animal diseases, parasites, and other disorders and ensure animal welfare.
AFNR.HS.2.7.b	Develop a biosecurity plan and procedures to prevent the spread of disease.
AFNR.HS.2.8	
Analyze environmental factors associated with animal production.	
AFNR.HS.2.8.a	Design and implement methods to reduce the effects of animal production on the environment.
AFNR.HS.2.8.b	Evaluate the effects of environmental conditions on animals and create plans ensure favorable environments for animals.

Environmental and Natural Resources Systems

Courses include: Environmental and Natural Resources, Wildlife, and Environmental and Natural Resources Management
Content Area: AFNR
Grade Level: HS
Program of Study: 3

AFNR.HS.3.1	
Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions to natural resource issues and goals.	
AFNR.HS.3.1.a	Identify today's common resources management practices and explain the importance of them for sustainability.
AFNR.HS.3.1.b	Explain population levels and carrying capacity.
AFNR.HS.3.1.c	Identify proper use of tools utilized in measuring soil health.
AFNR.HS.3.1.d	Apply cartographic skills to natural resources.
AFNR.HS.3.1.e	Distinguish between various GPS systems and their operations.
AFNR.HS.3.1.f	Identify and classify common species of wildlife and fauna found in Nebraska.
AFNR.HS.3.1.g	Identify and classify common grasses, forbes, shrubs and trees found in Nebraska ecosystems.
AFNR.HS.3.1.h	Choose and employ lab equipment (microscope, colorimeter, balance, hot plate, incubator, etc.) to conduct natural resources research.
AFNR.HS.3.2	
Analyze the interrelationships between natural resources and humans.	
AFNR.HS.3.2.a	Summarize the impacts that modern agriculture has had on our natural resources.
AFNR.HS.3.2.b	Examine and summarize how social views and movements (carbon footprints, recycling, etc.) have affected the need for environmental regulations.
AFNR.HS.3.2.c	Describe current programs in place to help with the conservation and sustainability of natural resources and explain their importance.
AFNR.HS.3.2.d	Recognize the role of local, state, and national agencies/organizations in the management of our local resources.
AFNR.HS.3.2.e	Associate farming methods with different environmental conditions.

AFNR.HS.3.2.f	Define conservation in production agriculture and provide examples of conservation practices affecting natural resources within agriculture.
AFNR.HS.3.2.g	Explain how technology has affected the use of our natural resources.
AFNR.HS.3.2.h	Examine natural resources and environmental careers.
AFNR.HS.3.2.i	Communicate thoughts and feelings with others regarding environmental and natural resources using verbal and nonverbal communication.
AFNR.HS.3.3	
Develop plans to ensure sustainable production and processing of natural resources.	
AFNR.HS.3.3.a	Identify the components that comprise ecosystems.
AFNR.HS.3.3.b	Explain the stages of water movement through the hydrologic cycle and how the parts of the system are managed.
AFNR.HS.3.3.c	Summarize the roles of watersheds.
AFNR.HS.3.3.d	Distinguish between chemical and physical properties of drinking water.
AFNR.HS.3.3.e	Examine the major causes of water pollution.
AFNR.HS.3.3.f	Outline the methods used to determine water quality.
AFNR.HS.3.3.g	Discover the economic value of the forestry industry.
AFNR.HS.3.3.h	Describe the soil formation process.
AFNR.HS.3.3.i	Explain the processes in the nitrogen cycle.
AFNR.HS.3.3.j	Discuss the role of food chains in maintaining balanced ecosystems.
AFNR.HS.3.3.k	Demonstrate how to determine soil types and how it affects land use.
AFNR.HS.3.4	
Demonstrate responsible management procedures and techniques to protect, maintain, enhance, and improve natural resources.	
AFNR.HS.3.4.a	Compare and contrast alternative energy sources.
AFNR.HS.3.4.b	Identify the efforts being made to keep non-native species out of a local area.
AFNR.HS.3.4.c	Identify non-native and invasive species to Nebraska.
AFNR.HS.3.4.d	Calculate the financial cost of non-native species.
AFNR.HS.3.4.e	List the benefits to programs that add to wildlife health and add income to property.
AFNR.HS.3.5	
Understand management techniques for Nebraska's natural resources.	

AFNR.HS.3.5.a	Develop an understanding of the impact and importance of Natural Resources to the people of Nebraska.
AFNR.HS.3.5.b	Distinguish between the different ecosystems found in Nebraska.
AFNR.HS.3.6	
Analyze how natural resources impact the economy.	
AFNR.HS.3.6.a	Associate the importance of environments and wildlife to local economy and recreational activities.

Food Products and Processing Systems

Courses include: Food Science and Safety, Food Products and Technology
Content Area: AFNR
Grade Level: HS
Program of Study: 4

AFNR.HS.4.1	
Develop and implement procedures to ensure safety, sanitation and quality in food product and processing facilities.	
AFNR.HS.4.1.a	Define the safety programs found in food products and processing facilities - HACCP, PCHF, SSOPs and GMPs.
AFNR.HS.4.1.b	Explain safe food handling and sanitation procedures in food production.
AFNR.HS.4.1.c	Examine the steps taken in food production and the food service industry to ensure quality of food products.
AFNR.HS.4.2	
Identify the dangers associated with pathogenic foodborne illnesses, examine prevention and control methods and analyze procedures to manage outbreaks.	
AFNR.HS.4.2.a	Define major foodborne illnesses and the steps of adequate prevention and/or control.
AFNR.HS.4.2.b	Summarize the proper implementation of a nationwide food product recall.
AFNR.HS.4.2.c	Critique successful and unsuccessful food product recalls.
AFNR.HS.4.3	
Apply principles of nutrition, biology, microbiology, and chemistry to the development of food products.	
AFNR.HS.4.3.a	Research the nutritional needs of humans at various life stages/activity levels.
AFNR.HS.4.3.b	Explain how the chemistry of a food product ingredient affects the nutrition, processing and characteristics of a final food product.
AFNR.HS.4.3.c	Interpret how the physics of a food product ingredient affects the nutrition, processing and characteristics of a final food product.
AFNR.HS.4.3.d	Describe how the microbiology of a food product ingredient affects the nutrition, processing and characteristics of a final food product.
AFNR.HS.4.3.e	Design a new food product.

AFNR.HS.4.4**Select and process food products for storage, distribution and consumption.**

AFNR.HS.4.4.a	Analyze the fruit industry from harvest to table.
AFNR.HS.4.4.b	Analyze the vegetable industry from harvest to table.
AFNR.HS.4.4.c	Analyze the food grain industry from harvest to table.
AFNR.HS.4.4.d	Analyze the protein industry from harvest to table.
AFNR.HS.4.4.e	Analyze the dairy industry from the farm to the table.

AFNR.HS.4.5**Explain the scope of today's food product and food processing industry.**

AFNR.HS.4.5.a	Explore career options available in the food science and food processing industry in the US and worldwide.
AFNR.HS.4.5.b	Discuss current events in food science and the food processing industry in the US and worldwide.

Plant Systems

Courses include: Plant Science, Agricultural Biology, Crop Management/Agronomy, Nursery and Landscape, Floriculture, and Biotechnology
Content Area: AFNR
Grade Level: HS
Program of Study: 5

AFNR.HS.5.1	
Develop and implement a crop management plan for a given production goal that accounts for environmental factors.	
AFNR.HS.5.1.a	Select crops based on geography and climate.
AFNR.HS.5.1.b	Conduct an experiment testing the effect different environmental factors have on plant growth.
AFNR.HS.5.1.c	Develop and implement a fertilization plan for specific plants or crops.
AFNR.HS.5.1.d	Interpret laboratory analyses of plant tissue samples.
AFNR.HS.5.2	
Utilize resources efficiently and sustainably for crop production.	
AFNR.HS.5.2.a	Evaluate the impact of using cover crops.
AFNR.HS.5.2.b	Differentiate between various erosion control methods.
AFNR.HS.5.2.c	Evaluate water requirements for plant production and select irrigation and crop management strategies to efficiently utilize water.
AFNR.HS.5.2.d	Analyze soil properties and chemistry.
AFNR.HS.5.3	
Create a plan for integrated pest management for plant production.	
AFNR.HS.5.3.a	Describe pest control strategies associated with integrated pest management.
AFNR.HS.5.3.b	Report on common plant pests and diseases.
AFNR.HS.5.3.c	Explain integrated pest management practices.
AFNR.HS.5.3.d	Discuss the advantages of integrated pest management.
AFNR.HS.5.4	
Apply principles of classification, plant anatomy, and plant physiology to plant production and management.	

AFNR.HS.5.4.a	Choose plants for a specific landscape and cropping situations.
AFNR.HS.5.4.b	Describe plant parts with regards to basic plant physiological processes.
AFNR.HS.5.4.c	Apply the knowledge of cell differentiation and functions of the major types of cells.
AFNR.HS.5.4.d	Explain the process and stages of germination in monocots and dicots.
AFNR.HS.5.5	
Propagate, culture, and harvest plants and plant products based on current industry standards.	
AFNR.HS.5.5.a	Choose equipment for use in various crop production systems.
AFNR.HS.5.5.b	Communicate about common machinery and equipment used in plant production today.
AFNR.HS.5.5.c	Utilize technology and equipment for crop production.
AFNR.HS.5.5.d	Describe the process of genetic engineering.
AFNR.HS.5.5.e	Recognize key differences between GMO and Non-GMO crop production methods.
AFNR.HS.5.5.f	Evaluate common traits seed producers breed into new hybrids.
AFNR.HS.5.5.g	Choose appropriate plant propagation methods for various plant species.
AFNR.HS.5.6	
Apply principles of design in plant systems to enhance an environment (e.g. floral, forest landscape, and farm).	
AFNR.HS.5.6.a	Evaluate, identify and prepare plants to enhance an environment.
AFNR.HS.5.6.b	Interpret and evaluate design plans.
AFNR.HS.5.7	
Develop awareness of factors influencing and affected by global plant production.	
AFNR.HS.5.7.a	Describe global production practices.
AFNR.HS.5.7.b	Explain imports and exports and their impact on practices and the economy.
AFNR.HS.5.7.c	Identify the major challenges of feeding the world.
AFNR.HS.5.7.d	Create a plan to combat hunger in a given area.
AFNR.HS.5.8	
Apply economic principles related to plant production.	
AFNR.HS.5.8.a	Evaluate the economic return of different agronomic and horticultural crops in a particular environment.
AFNR.HS.5.8.b	Describe current government regulations affecting crop production and marketing.

Power, Structural & Technical Systems

Courses include: Power, Structural, and Technical Foundations, Power, Structural, and Technical Systems, Welding, Metals and Fabrication, Precision Agriculture and Engineering

Content Area: AFNR

Grade Level: HS

Program of Study: 6

AFNR.HS.6.1	
Apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural and technical systems.	
AFNR.HS.6.1.a	Apply physical science principles to metal fabrication using a variety of welding and cutting processes.
AFNR.HS.6.1.b	Apply physical science and engineering principles to design, implement, and improve safe and efficient mechanical systems in AFNR situations.
AFNR.HS.6.2	
Operate and maintain AFNR mechanical equipment and power systems.	
AFNR.HS.6.2.a	Perform preventative maintenance and scheduled service to maintain equipment, machinery and power units used in AFNR settings.
AFNR.HS.6.2.b	Demonstrate proper safety while operating machinery and power equipment.
AFNR.HS.6.3	
Service and repair AFNR mechanical equipment and power systems.	
AFNR.HS.6.3.a	Service electrical systems and components of mechanical equipment and power systems using a variety of troubleshooting and /or diagnostic methods.
AFNR.HS.6.3.b	Troubleshoot, service and repair components of internal combustion engines using manufacturer's guidelines.
AFNR.HS.6.3.c	Utilize manufacturers' guidelines to diagnose and troubleshoot malfunctions in machinery, equipment and power source systems.

AFNR.HS.6.4**Plan, build and maintain AFNR structures.**

AFNR.HS.6.4.a	Create sketches and plans for AFNR structures.
AFNR.HS.6.4.b	Determine structural requirements, specifications and estimate costs of structures
AFNR.HS.6.4.c	Follow plans to construct, maintain, or repair AFNR structures.

AFNR.HS.6.5**Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.**

AFNR.HS.6.5.a	Apply geospatial technologies to solve problems and increase the efficiency of AFNR systems.
AFNR.HS.6.5.b	Evaluate the use of precision agriculture technologies within AFNR sectors.
AFNR.HS.6.5.c	Design a solution to address a specifically identified need within an AFNR pathway.