Survey of Agricultural Systems

Curriculum Content Frameworks

Please note: All assessment questions will be taken from the knowledge portion of these frameworks.

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Curriculum Content Frameworks

Survey of Agricultural Systems

Grade Levels: 9,10,11,12 Course Code: Units of Credit: 1 Unit	Prerequisite: None
Course Description: A foundation course for all agriculture programs of study. Topics covered include general agriculture, FFA, leadership, supervised agricultural experience, animal systems, plant systems, agribusiness systems, food products & processing, biotechnology, natural resources systems, environmental service systems, & power, structural & technical systems.	

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Unit 1: Introduction to Agriculture
Hours: 5 Hours

Terminology: Agriculture

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
1.1 Define terminology	1.1.1 Prepare a list of terms with definitions
1.2 Determine the impact of agriculture on Arkansas' economy. (rice, soybeans, broilers, forest products, and jobs)	1.2.1 Identify careers related to agriculture and research the career to determine educational requirements, working conditions and salary. (i.e. Agriculture Educator) 1.2.2 Working in groups, students develop a map showing the location of major agriculture crops in Arkansas. Access marketing and commodity information at (www.arfb.com)
1.3 List and describe the three major areas of the agricultural industry. (supplies & services, production agriculture, and marketing & processing)	1.3.1 Have students select sample agricultural jobs and determine which of the three areas the job is classified. 1.3.2 Identify local agricultural industries in each area.
1.4 Discuss changes that have come about in agriculture due to technology. (genetic engineering, GPS, and computerized equipment)	1.4.1 Describe what farming might have been like 100 years ago. 1.4.2 Identify how modern farming impacts students' daily lives.
1.5 Explain the importance of agriculture in meeting basic human needs. (food, fiber and shelter)	1.5.1 Students make a poster/collage/web showing agricultural products used in their daily lives that meet their needs.

Unit 2: FFA and Leadership
Hours: 20 Hours

Terminology: Career development event, Extemporaneous speech, FFA, Leadership, Opening/closing ceremony, Parliamentary procedure, POA, Prepared speech

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
2.1 Define terminology	2.1.1 Prepare a list of terms with definitions
2.2 Explain the three parts to agriculture education. (FFA, SAE, Classroom/Laboratory Instruction)	2.2.1 Become familiar with the chapter's consitution and by-laws. 2.2.2 Compile a list of agriculture courses offered at your school.
2.3 Identify and explain the meaning of the symbols of the official FFA emblem, the official FFA colors and the official FFA dress.	2.3.1 Label the parts of the FFA emblem. 2.3.2 Discuss the significance of national blue and corn gold. 2.3.3 Demonstrate the official FFA dress and proper use of the FFA jacket as described in the Official FFA Manual. 2.3.4 Identify the source of the FFA jacket and other official items. 2.3.5 Determine sizes and ordering costs of an FFA jacket and official items.
2.4 Discuss the significance of these dates in the history of the FFA: 1917, 1928, 1965, 1969, 1988.	2.4.1 Outline the history of the FFA on a timeline.

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
2.5 Explain the significance of the FFA Creed, Motto, Salute and Mission Statement.	2.5.1 Prepare a list of unfamiliar terms and definitions. 2.5.2 Recite the FFA Creed from memory. 2.5.3 Discuss how FFA opportunities help FFA members to achieve the FFA mission. (Career Development Events, Leadership Development Events, Camps/Conferences, Conventions, Holding Office, Committee, School/Community Service)
2.6 List and define four qualities necessary for career success in agriculture (communication, decision making, flexibility/adaptability, technical/functional skills in agriculture)	2.6.1 Research skills needed for career success in the Official FFA Student Handbook. 2.6.2 Research careers on the Career Explorer link at (www.ffa.org)
2.7 List the degrees an FFA member may earn. (Discovery, Greenhand, Chapter, State and American)	2.7.1 Discuss and describe the FFA criteria for each degree that members may earn.
2.8 Distinguish between the two types of FFA speeches. (extemporaneous and prepared)	2.8.1 Present a six minute prepared or extemporaneous speech that incorporates agriculture, FFA and/or leadership.

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
2.9 Identify the three major divisions of the POA. (student development, chapter development and community development)	2.9.1 Review and revise the Chapter POA. 2.9.2 Participate on a POA committee.
2.10 List the symbol of each officer station.	2.10.1 Describe the officer duties. 2.10.2 Prepare a list of unfamiliar terms and definitions. 2.10.3 Provide a class demonstration of opening/closing ceremonies. 2.10.4 Describe desirable leadership traits of officers or any effective leader. 2.10.5 Become familiar with the FFA Code of Ethics. 2.10.6 Prepare a personal code of ethics.
2.11 List the four main objectives of Parliamentary law. (focus on one thing at a time, extend courtesy to everyone, observe the rule of the majority, and respect rights of minority)	2.11.1 Perform 10 parliamentary abilities in a 15 minute group presentation.

Unit 3: SAE
Hours: 10 Hours

Terminology: Agribusiness systems, Agriculture Education Tracker, Animal systems, Biotechnology systems, Entrepreneurship, Environmental service systems, Exploratory, Food products & processing systems, Natural resources systems, Placement, Plant systems, Power structural & technical systems, Proficiency award, Research/experimental, Resume, Supervised agricultural experience

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
3.1 Define terminology	3.1.1 Prepare a list of terms with definitions 3.1.2 Use the Learning Resources tab on the (www.theaet.com) website to define supplemental SAE terms. (balance sheet, barter, beginning inventory, capital, depreciable, efficiency, equipment, expense, experience, income, labor-exchange, market value, non-cash transaction, non-depreciable, resume, transaction, vendor)
3.2 Discuss the eight pathways of Study in agriculture. (Agribusiness systems, Animal systems, Biotechnology Systems, Environmental Service systems, Food products & processing systems, Natural resources systems, and Power structural & technical systems)	3.2.1 Complete the AET exercise "Getting Started - the First Day" on the (www.theaet.com) website.
3.3 Distinguish between the type of Supervised Agricultural Experiences and determine the FFA Proficiency Awards available. (Entrepreneurship, Placement, Exploratory and Research/Experimental)	3.3.1 Complete the AET exercise "Student SAE's and Beginning Inventory" on the (www.theaet.com) website. 3.3.2 Write an experience plan for an SAE. 3.3.3 Print a list of FFA Proficiency Awards available from the (www.ffa.org) website and match examples of experiences to the correct proficiency area.
3.4 Evaluate SAE's to determine FFA degree eligibility.	3.4.1 Generate the FFA Greenhand application from the (www.ffa.org) website. 3.4.2 Generate the Chapter degree application from the (www.ffa.org) website. 3.4.3 Generate the State and National Degree applications from their AET account.

Unit 4: Agribusiness Systems
Hours: 5 Hours

Terminology: Expense, Income, Inventory, Profit

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
4.1 Define terminology	4.1.1 Prepare a list of terms with definitions
4.2 Identify Careers in the Agribusiness systems pathway. (quality assurance specialist, quality control supervisor, research economist)	4.2.1 Research careers using the Career Explorer link at the (www.ffa.org) website.
4.3 Distinguish between the four types of Agricultural businesses. (sole proprietorship, partnership, cooperative and corporation)	4.3.1 Form a business plan for an agricultural business.
4.4 Distinguish between areas of the Agriculture Industry. (production, processing, marketing, distribution and sales)	4.4.1 Prepare a poster following an agricultural commodity from production to consumer.
4.5 Distinguish between common depreciable and non-depreciable capital items used in agriculture. (feed, seed, fertilizer, stocker cattle, feeder cattle, breeding livestock, equipment, land, land improvement)	4.5.1 Calculate depreciation of common agricultural capital items.

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
4.6 Identify types of loans. (short-term, capital loan, mortgage)	4.6.1 Calculate interest and total pay-off on agricultural loans.

Unit 5: Animal Systems
Hours: 10 Hours

Terminology: Animal welfare, Animal rights, Breed, Monogastric, Ruminant

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
5.1 Define terminology	5.1.1 Prepare a list of terms with definitions
5.2 Identify careers in the Animal Systems Pathway. (animal nutritionist, animal trainer, veterinarian)	5.2.1 Research careers using the Career Explorer link at the (www.ffa.org) website.
5.3 Distinguish between categories of animals (beef, sheep, dairy, swine, goats, poultry, aquaculture, equine, wildlife, specialty animal, small animal) (AS.01.01.02.a)	5.3.1 Discuss current issues including animal welfare vs. animal rights. 5.3.2 Students formulate a personal ethics statement about common agricultural practices.
5.4 Discuss gender and age classification terminology of cattle, chickens, swine, sheep, goats and horses. (adult male, adult female, young female, castrated male and newborn) (AS.02.01.02.a)	5.4.1
5.5 Classify breeds within livestock categories. Beef cattle: Angus, Brahman, Charolais, Hereford Dairy cattle: Holstein Meat sheep: Hampshire, Suffolk Wool sheep: Rambouillet Meat goat: Boer Dairy goat: Nubian Swine: Duroc, Yorkshire, Hampshire, Landrace	5.5.1 Students develop presentations on breeds of livestock.

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
5.6 List primary products obtained from animal origins. (beef, pork, lamb, veal, poultry, mutton, milk, wool, eggs, fish)	5.6.1 Discuss secondary byproducts of animal production.
5.7 Classify livestock by digestive systems. (monogastrict, ruminant)	5.7.1

Unit 6: Plant Systems
Hours: 10 Hours

Terminology: Annual, Biennial, Fertilizer, Perennial, Photosynthesis, Plant science, Respiration, Soil, Transpiration

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
6.1 Define terminology	6.1.1 Prepare a list of terms with definitions
6.2 Identify careers in the Plant Systems Pathway. (plant breeder, plant geneticist, plant pathologist)	6.2.1 Research careers using the Career Explorer link at the (www.ffa.org) website.
6.3 List uses of plants. (food, fiber, construction, pharmaceuticals, ornamentals)	6.3.1 Categorize products that are obtained from plants.
6.4 Identify the four major parts of a plant and their functions. (root, stem, leaf, flower) (PS.01.02.03.a) (PS.01.02.04.a)	6.4.1 Label the four parts of the plant on a diagram.
6.5 Distinguish between plant processes. (transpiration, photosynthesis and respiration) (PS.01.03.01.a) (PS.01.03.02.a)	6.5.1 Illustrate the six components in the process of photosynthesis. (water, carbon dioxide, glucose, oxygen, sunlight and chlorophyll)

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
6.6 Compare the life cycles of annual, biennial and perennial plants.	6.6.1
6.7 List the three major nutrients needed for plant growth. (N,P,K)	6.7.1 Observe the labels on fertilizer containers to determine its nutrient analysis. 6.7.2 Observe the affects of various fertilizer levels on plant growth.
6.8 Compare soil particles by size. (sand, silt, clay)	6.8.1 Have students use the ribbon test to feel the difference in soil texture. (fine, medium, coarse) 6.8.2 Illustrate an ideal soil structure pie chart.

Unit 7: Food Products & Processing System
Hours: 10 Hours

Terminology: Byproducts, Distribution, FDA, FSIS, Preservation, Processing, USDA

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do	
Knowledge	**Application**
7.1 Define terminology	7.1.1 Prepare a list of terms with definitions
7.2 Identify careers in the Food Products & Processing Systems Pathway. (food chemist, food inspector, food scientist)	7.2.1 Research careers using the Career Explorer link at the (www.ffa.org) website.
7.3 Identify sources of foods. (meat, eggs, dairy, fruits, vegetables, grains) (FPP.04.02.01-03)	7.3.1 Students record foods eaten over a one week period and identify the source of each item.
7.4 Define components of the food industry. (processing, distribution, byproducts) (FPP.01.01.01.a)	7.4.1 Students develop a food product from a marketing scenario. 7.4.2 Students identify different aromas used in foods. 7.4.3 Students participate in taste tests.
7.5 Identify organizations that regulate the food products and processing industry. (USDA, FDA, FSIS) (FPP.02.01.01-03.a)	7.5.1 Students research the role and function of government organizations.

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
7.6 List common food-borne pathogens. (salmonella, E.coli) (FPP.02.01.01-03.a)	7.6.1 Research appropriate cooking temperatures of beef, poultry, pork and fish.
7.7 Discuss methods of food preservation. (refrigeration, freezing, curing, drying, canning)	7.7.1 Students preserve food by dehydrating meat, fruit and/or vegetables.

Unit 8: Biotechnology Systems
Hours: 8 Hours

Terminology: Biosecurity, Biotechnology, Clone, Department of Homeland Security, EPA, FDA, Genetic engineering, GMO, Transgenic, USDA

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
8.1 Define terminology	8.1.1 Prepare a list of terms with definitions
8.2 Identify careers in the Biotechnology Systems Pathway. (microbiologist, geneticist, lab technician)	8.2.1 Research careers using the Career Explorer link at the (www.ffa.org) website.
8.3 Identify current applications of biotechnology in plant science. (*Bt,* Round-up Ready, Tissue Culture) (BS.01.01.02.a)	8.3.1 Explain the benefits of current applications in plant biotechnology.
8.4 Identify current applications of biotechnology in animal science. (cloning, embryo transfer, artificial insemination, BST) (BS.01.01.02.a)	8.4.1 Explain the benefits of current applications in animal biotechnology.
8.5 List the agencies that regulate biotechnology. (USDA, EPA, FDA, Homeland Security) (BS.01.02.01.a)	8.5.1 Explore ethical, legal and social biotechnology issues.

Unit 9: Natural Resources System
Hours: 12 Hours

Terminology: Deciduous, Evergreen, Forestry, Fossil fuels, Minerals, Natural resource, Non-renewable natural resource, Ore, Renewable natural resource, USDA, Wildlife

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
9.1 Define terminology	9.1.1 Prepare a list of terms with definitions
9.2 Identify careers in the Natural Resources Systems Pathway. (wildlife manager, timber manager, park ranger)	9.2.1 Research careers using the Career Explorer link at the (www.ffa.org) website.
9.3 Identify types of natural resources. (water, soil, plants, wildlife, fossil fuels, minerals, air) (NRS.01.01.01.a)	9.3.1 Students create poster/collage giving examples of the different types of natural resources. 9.3.2 Discuss the natural resources found in your area and how they impact the local and state economy. 9.3.3 Given an Arkansas state map, students will locate different features related to natural resources. 9.3.4 List hazards associated with natural resources.
9.4 Define the classifications of trees based on leaf retention. (evergeen, deciduous) (NRS.01.02.01.a)	9.4.1 Identify products obtained from trees in each classification. 9.4.2 Walk students around campus and identify trees and products.
9.5 List major wildlife and aquatic species found in Arkansas. (white tail deer, turkey, squirrel, duck, black bear, largemouth bass, catfish, trout, striped bass, walleye)	9.5.1 Students research and develop presentation on the various species using the (www.agfc.com) website.

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
9.6 Identify minerals, ores and fossil fuels commercially extracted in Arkansas. (bauxite, bromine, natural gas, crude oil, coal)	9.6.1 Locate deposits of minerals, ores and fossil fuels in Arkansas using the (www.minerals.usgs.gov) website.
9.7 Discuss recreational uses of natural resources. (hunting, fishing, boating, hiking, camping, watchable wildlife) (NRS.03.01.08.a)	9.7.1 Students research local natural resources available for recreational purposes. 9.7.2 Llist hazards associated with recreation. In groups students create an educational safety poster for the areas.
9.8 Identify public agencies associated with natural resources. (United State Forest Service, Arkansas Game and Fish Commission, Natural Resources Conservation Service, Corps of Engineers)	9.8.1 Students research purposes of each agency.

Unit 10: Environmental Service System
Hours: 12 Hours

Terminology: Alternative energy, Compost, Composting, Conservation, Land capability classes, Non-point source pollution, Point source pollution, Weathering

CAREER and TECHNICAL SKILLS	
What the Student Should Know	What the Student Should be Able to Demonstrate
Knowledge	**Application**
10.1 Define terminology	10.1.1 Prepare a list of terms with definitions
10.2 Identify careers in the Environmental Service Systems Pathway. (environmental conservationist, waste management specialist, water quality specialist)	10.2.1 Research careers using the Career Explorer link at the (www.ffa.org) website.
10.3 Identify the uses of land. (crop, pasture/rangeland, forestland, wetland, urban) (ESS.03.02.04.a)	10.3.1 Students will explore the FFA Land judging CDE
10.4 Discuss the many uses of water. (domestic, recreational, irrigation, wildlife habitat, processing, energy) (ESS.03.03.01.a)	10.4.1 Have students keep a log of all the ways they use water in a week.
10.5 Identify types of pollution and distinguish between point source and non-point source pollution. (ESS.04.01.01.a)	10.5.1 Describe ways in which pollution can be prevented and managed.

CAREER and TECHNICAL SKILLS			
What the Student Should Know		What the Student Should be Able to Demonstrate	
Knowledge		**Application**	
10.6	Discuss the meaning of compost and composting. (ESS.04.02.04.a)	10.6.1	Create a class composting bin using cafeteria waste.
10.7	Identify conventional and alternative energy sources. (conventional: oil, coal, natural gas) (alternative: solar, nuclear, hydro, wind) (ESS.05.01.01.a) (ESS.05.01.01.b)	10.7.1	List conservation measures to reduce energy consumption.
		10.7.2	List energy sources in your area.

Unit 11: Power, Structural & Technical System
Hours: 18 Hours

Terminology: Agriculture power, Agriculture structures, Bill of materials, Concrete, Electricity, Fabrication, Finishing, Geospatial technology, Hydraulics, Internal combustion engine, Masonry, Plumbing, Painting, Pneumatics, Welding

CAREER and TECHNICAL SKILLS			
What the Student Should Know		What the Student Should be Able to Demonstrate	
Knowledge		**Application**	
11.1	Define terminology	11.1.1	Prepare a list of terms with definitions
11.2	Identify careers in the Power, Structural & Technical Systems Pathway. (agricultural electician, agricultural equipment dealer, welder)	11.2.1	Research careers using the Career Explorer link at the (www.ffa.org) website.
11.3	Identify common skill areas of power, structural & technical systems. (electricity, fabrication, geospatial technology, hydraulics/pneumatics, masonry, painting/finishing, plumbing, small engines, welding, woodworking)		
11.4	Identify safety colors and symbols. (slow moving vehicle, red-fire equipment, yellow-stationary hazard, blue-information, green-safety)	11.4.1	Students make an informative poster identifying safety color and symbols.
11.5	Identify and use measurement and layout tools. (steel tape measure, framing square, speed square, level) (PST.01.03.01.a)	11.5.1	Build or lay out a project using these measurement and layout tools.
		11.5.2	Develop a bill of materials for this project.
		11.5.3	Have students use the (www.rickyspears.com/rulergame) or (www.funbrain.com/measure) websites for online measurement activities.

CAREER and TECHNICAL SKILLS			
What the Student Should Know		What the Student Should be Able to Demonstrate	
Knowledge		**Application**	
11.6	Discuss fire safety. (Class A,B,C,D and the fire triangle) (fire safety equipment: fire blanket, fire extinguisher)		
11.7	Identify common agricultural hazards.	11.7.1	Use the (www.aragriculture.org) website to identify common hazards in agriculture.
		11.7.2	List the top five causes of agricultural related fatalities in Arkansas according to the UofA division of agriculture.
11.8	Identify proper personal protective equipment (ppe) in the Power, Structural & Technical Systems pathway. (eye protection, hair restraint, coveralls, apron, shop coat, gloves, hard hat, mask, respirator, ear protection, welding helmet)	11.8.1	Students identify proper PPE for each area.
		11.8.2	Demonstrate how to wear PPE by having students choose a shop area or career and come dressed in the PPE for that area or career.
11.9	Identify hand tools and fasteners. (hammer, screwdriver, need-nose pliers, slip-joint pliers, handsaw, common nail, finishing nail, metal screw, wood screw, bolt, nut, washer, masonry bit, spade bit, circular saw, power drill, hacksaw, ball peen hammer, twist drill)	11.9.1	Students develop a pamplet identifying all hand tools.

Glossary
Unit 1: Introduction to Agriculture

1. Agriculture -- activities concerned with the production of plants and animals and the related supplies, services, mechanics, products, processing and marketing

Unit 2: FFA and Leadership

1. Career development event (CDE) -- a hands-on team competition designed for FFA members to develop career-related skills
2. Extemporaneous speech -- a type of speech in which the speaker prepares ideas but does not memorize exact words
3. FFA -- a national organization for students enrolled in agriculture education that promotes leadership, growth and career success
4. Leadership -- the ability to move and influence others toward achieving individual or group goals
5. Opening/closing ceremony -- a traditional contest designed to emphasize the purpose of meetings and duties of officers
6. Parliamentary procedure -- uses parliamentary law to conduct all types of orderly meetings
7. POA -- a roadmap for planning FFA activities and accomplishing goals at the local level
8. Prepared speech -- a type of speech in which the speaker prepared the speech completely beforehand

Unit 3: SAE

1. Agribusiness systems -- industries including sales, services, farm & ranch management, entrepreneurship and economics
2. Agriculture Experience Tracker (AET) -- online record keeping system for agricultural experiences
3. Animal systems -- industries including production animals, small animals, wildlife and research animals
4. Biotechnology systems -- the management of biological systems for the benefit of humans, including cloning, gene transfer and other technologies
5. Entrepreneurship -- plan and operate an agriculture related business
6. Environmental service systems -- industries including pollution prevention, water and air quality, hazardous materials, solid waste management, health and safety sanitation
7. Exploratory -- learn about something in agriculture and its many related careers
8. Food products & processing systems -- industries including food processing, preserving, packaging, distribution, government monitoring and regulation
9. Natural resources systems -- industries including habitat conservation, forest products, parks and recreation, mining, environmental services, fisheries and soil conservation
10. Placement -- work for a business or individual, either for pay or for the experience
11. Plant systems -- industries including agronomics, horticulture, forestry, turf, viticulture and soils
12. Power structural & technical systems -- industries including power, structure, controls, geospatial technology, computer systems, electronics, hydraulics and pneumatics
13. Proficiency award -- FFA award that recognizes members that have developed specialized skills that they can apply to their future careers.
5. Research/Experimental -- conduct research and analyze information to discover new knowledge
6. Resume -- a brief written account of personal, educational and professional qualifications and experience
7. Supervised agriculture experinece (SAE) -- a project done by students with help from their agricultura instructor in which they learn by doing

Unit 4: Agribusiness Systems

1. Expense -- any costs associated with producing a product

2. Income -- the amount of money received from selling a product or prpoviding a service

3. Inventory -- a physical count of all assets in a business

4. Profit -- the excess of receipts over payments for all factors of production

Unit 5: Animal Systems

1. Animal welfare -- line of thinking that proposed that animals should be treated well and that their comfort and well-being should be considered in their production
2. Animal rights -- line of thinking that proposed that animals have the same rights as people
3. Breed -- group of animals having similar characteristics that are passed on to their offspring
4. Monogastric -- literally means "one stomach"; a simple stomached animal
5. Ruminant -- any animal having a multiple compartment stomach and being capable of digesting roughages

Unit 6: Plant Systems

1. Annual -- a plant that completes its life cycle in one year or less
2. Biennial -- a plant that needs two years to complete its life cycle
3. Fertilizer -- a material that supplies nutrients to plants
4. Perennial -- a plant that needs more than two years to complete its life cycle
5. Photosynthesis -- the food-making process of plants
6. Plant science -- the science of plant growth, care and management
7. Respiration -- the process by which plants break down stored food for plant use
8. Soil -- the outer layer of the earth's crust that supports plant growth and includes sand, silt and clay
9. Transpiration -- the process by which a pant loses water vapor

Unit 7: Food Products & Processing System

1. Byproducts -- a secondary or incidental product
2. Distribution -- marketing, transporting, merchandising and selling of any item
3. FDA -- Food & Drug Administration; a federal agency responsible for safety of national food supply, veterinary drugs and biological products
4. FSIS -- Food Safety & Inspection Service; health agency of the federal government responsible for ensuring that the nations' commercial supply of meat, poultry and egg products are safe
5. Preservation -- the process of treating and handling food to stop or slow down spoilage and thus allow for longer storage
6. Processing -- turning raw agricultural products into consumable food
7. USDA -- United States Department of Agriculture; main agency of the federal government that oversees agriculture

Unit 8: Biotechnology Systems

1. Biosecurity -- analyzing and manging risk in the areas of food safety, animal life & health, and plant life & health
2. Biotechnology -- the management of biological systems for the benefit of humans, including cloning, gene transfer and other technologies
3. Clone -- exact duplicate, producing an organism through asexual means with the exact genetic make-up as another organism
4. Department of Homeland Security -- departmetn of the federal government with the primary responsibility of protecting the U.S. from terrorist attacks and responding to natural disasters
5. EPA -- Environmental Protection Agency; an agency of the federal government focused on environmental quality
6. FDA -- Food & Drug Administration; a federal agency responsible for safety of national food supply, veterinary drugs and biological products
7. Genetic engineering -- movement of genes from one cell to another
8. GMO -- genetically modified organism; organism whose genetic material has been altered using genetic engineering techniques
9. Transgenic -- organisms that are a result of crossing genes fro mone organism to another
10. USDA -- United States Department of Agriculture; main agency of the federal government that oversees agriculture

Unit 9: Natural Resources System

1. Deciduous -- plants that lose their leaves every year
2. Evergreen -- plants that do not lose their leaves on a yearly basis
3. Forestry -- the science of planting and managing forest for specific purposes such as timber production or conservation
4. Fossil fuels -- any combustible organic material, as oil, coal, or natural gas derived from the remains of former life
5. Minerals -- inorganic compounds occurring naturally in the earth and having a distinctive structure
6. Natural resource -- a naturally occuring material or organism that supports life, provides fuels or is used in other ways by humans
7. Non-renewable natural resource -- a resource provided by nature that cannot replace itself
8. Ore -- a metal bearing mineral or rock or native metal that can be mined at a profit
9. Renewable natural resource -- a resource provided by nature that can replace itself
10. USDA -- United States Department of Agriculture; main agency of the federal government that oversees agriculture
11. Wildlife -- animals that have not been domesticated and live and survive in a natural environment

Unit 10: Environmental Service System

1. Alternative energy -- energy as solar, wind, or nuclear energy that can replace or supplement traditional fossil fuel sources such as coal, oil, or natural gas
2. Compost -- a soil additive derived from organic matter to promote plant growth
3. Composting -- a technique of placing organic matter in a favorable environment for its partial decomposition
4. Conservation -- the wise use of natural resources
5. Land capability classes -- a system of classifying land based on its highest potential use
6. Non-point source pollution -- pollution from sources that cannot be directly traced to any single point of discharge
7. Point source pollution -- a specific place where pollution originated
8. Weathering -- the process of breaking down rocks and minerals through the actions of weather, ice, roots and grinding

Unit 11: Power, Structural & Technical System

1. Agriculture power -- the use of engines, motors and other sources of power to do work in the agriculture industry
2. Agriculture structures -- facilities used in the agriculture industry including barns, poultry houses, grain elevators, and earthen structures such as ponds
3. Bill of materials -- listing of materials with specifications that are needed in a project
4. Concrete -- a mixture of stone aggregates, sand, cement and water that hardens as it dries
5. Electricity -- a form of energy that can produce light, heat, magnetic force and chemical changes
6. Fabrication -- to construct by combining or assembling diverse and standardized parts
7. Finishing -- applying a chemical layer that protects the surface of a material
8. Geospatial technology -- three technologies of global positioning systems, geographical information systems and remote sensing that are all related to mapping features on earth
9. Hydraulics -- use of liquids to transfer force
10. Internal combustion engine -- device that burns fuel inside a cylinder to create force that drives a piston
11. Masonry -- anything made of brick, stone, tile or concrete units held in place by masonry cement
12. Plumbing -- installing and repairing water pipes and fixtures
13. Painting -- process of coating a surface in order to improve aesthetics and protect from environmental factors
14. Pneumatics -- use of air to transfer force
15. Welding -- joining two pieces of metal using heat