2026 – 2027

AGRICULTURAL EDUCATION COURSES

KENTUCKY CTE
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AGRICULTURAL EDUCATION COURSES
2026 – 2027

Table of Contents

010101 Advanced Agricultural Economics and Agribusiness Management

Describes the theories and principles of sound business and economics practices, including marketing, finance, record keeping, inventories, personal management, tax laws, labor management, and future trading.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Complete tasks as developed by the instructor related to the theories and principles of advanced agricultural economics and agribusiness management.

010110 Agriculture Communications

This course develops an understanding of the fundamental skills necessary to be successful in the agricultural communications industry. Provides guided practice and applied experience utilizing various communication styles, including oral, written, and electronic communications. Communication techniques will include traditional print media, brochure development, photography, videography, computer program applications, and internet usage, including e-mail. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Develop skills in public, extemporaneous and impromptu speaking.
2. Communicate to resolve conflict and promote team building.
3. Perform computer skills in word processing, publishing, presentations and computer graphics.
4. Develop skills related to proper telephone usage.
5. Develop skills to produce print-quality newspaper and magazine articles.
6. Develop skills in producing brochures and sales ads.
7. Develop skills for photography and videography used in communications.
8. Utilize skills developed to produce radio and television ads and promotions.
9. Develop skills needed to produce multimedia presentations.
10. Utilize the Internet for research, e-mail, and basic communication processes.
11. Understand how non-verbal communication plays a part in interpersonal development.
12. Conduct meetings by using parliamentary procedures.
13. Learn to develop and complete professional quality resumes.
14. Learn techniques to assist in applying and interviewing for a job.
15. Demonstrate employability and soft skills relative to the career cluster.
16. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
17. Utilize activities of FFA as an integral component of course content and leadership development.
18. Apply science, math and communication skills to the technical content.

010111 Agriculture Sales and Marketing

This course provides an introduction to agricultural sales and marketing. Course material will include competition in the agriculture marketplace, marketing decisions, types of markets, contracting, government programs and regulations, personal development, employee and employer responsibilities, communications, promotion strategies, records, files, purchasing materials, stocking, selling, and business account procedures. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Relate interpersonal skills to success in agricultural sales and marketing.
2. Demonstrate effective verbal and written communication skills in agricultural sales and marketing.
3. Dramatize effective salesmanship techniques in agricultural sales and marketing.
4. Advertise and promote agricultural products.
5. Explore marketing options for agricultural products.
6. Utilize agricultural business procedures and record keeping.
7. Formulate a marketing plan for agricultural products.
8. Utilize technology in agricultural sales and marketing.
9. Demonstrate employability and social skills relative to the career cluster.
10. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
11. Utilize activities of FFA as an integral component of course content and leadership development.
12. Apply science, math and communication skills within the technical content.

010121 Agriculture Employability Skills

Agriculture Employability Skills provides opportunities to develop skills in job searching, preparing resumes, writing application letters, job interviews, attitude, communicating effectively, human relations and accepting responsibilities. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Recommend entrepreneurship and business training opportunities for agriculture to the community.
2. Compare agricultural business organizations and regulations.
3. Practice interpersonal relationships and communications.
4. Improve individual and group management skills.
5. Manage records and information systems for agriculture.
6. Manage capital resources for agriculture.
7. Investigate employer and employee responsibility of employment.
8. Apply technology in the agricultural employment industry.
9. Demonstrate employability and social skills relative to the career cluster.
10. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
11. Utilize activities of FFA as an integral component of course content and leadership development.
12. Apply science, math and communication skills within the technical content.

010131 Agribusiness and Farm Management

This course introduces the free enterprise system, the study of economic principles, risk management, business law, budgets, finance, recordkeeping, and careers in agribusiness. Basic skills will be developed to manage a farm or agribusiness. Content will include managing production, inventory, equipment, credit and taxes, market analysis, and business plan development. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Relate economic principles to agribusiness and farm management.
2. Evaluate recordkeeping systems and procedures in agribusiness or farming.
3. Investigate sources of capital for agriculture.
4. Relate government policies and business law to agriculture.
5. Identify agribusiness functions critical to success with minimizing risk.
6. Prepare budgets determining financial needs, costs, and loan repayments.
7. Analyze inventories to asset values, net worth, efficiency and production.
8. Explore marketing options available for agricultural products.
9. Plan marketing strategies for agriculture products.
10. Manage human resources in agriculture.
11. Discuss GPS (global positioning systems) and their influence on agriculture.
12. Demonstrate employability and soft skills relative to the career cluster.
13. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
14. Utilize activities of FFA as an integral component of course content and leadership development.
15. Apply science, math and communication skills within the technical content.

020210 Agribiotechnology

Biotechnology in agriculture is designed to emphasize the interrelationship of science and technology and the impact of this technology on agriculture and agricultural products. The curriculum includes career opportunities in the agricultural biotechnology industry; basic concepts about biotechnology; how genetic information is transferred and changed by engineering; opportunities, impacts, and public issues concerning biotechnology; the processes and applications of biotechnology in plant and animal science; and the applications of microbial biotechnology in agriculture. Content will be enhanced with appropriate applied science laboratory activities and computer applications. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Investigate basic concepts about biotechnology in agriculture.
2. Analyze how genetic information is transferred and changed.
3. Debate opportunities, impacts, and public issues concerning biotechnology.
4. Investigate the processes and applications of biotechnology in plant science.
5. Investigate the processes and applications of biotechnology in animal science.
6. Investigate the applications of microbial biotechnology in agriculture.
7. Demonstrate employability and soft skills relative to the career cluster.
8. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
9. Utilize activities of FFA as an integral component of course content and leadership development.
10. Apply science, math and communication skills within the technical content.

010211 Agriculture Structures and Designs

This course prepares students to evaluate, design, and construct agricultural structures. Students learn to design, evaluate, and interpret construction plans and calculate a bill of materials. Leadership development will be provided through the National FFA Organization. Each student will be expected to have an agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Demonstrate safe practices specific to agriculture power, structural, and technical systems, e.g., PPE, materials handling, and shop/laboratory operation.
2. Identify and utilize tools, techniques, and formulas most appropriate for specific tasks or projects.
3. Discuss renewable and non-renewable energy types, including solar, wind, water, and fossil fuels.
4. Demonstrate proper use of measurement and layout tools.
5. Develop plans using scale and legends.
6. Prepare bills of materials to accompany plans and sketches for tasks or projects such as wood structures, painting, fencing, and concrete.
7. Develop criteria for selecting materials based on cost, quantities, and characteristics for a specific project plan, such as wood structures, painting, fencing, and concrete.
8. Apply basic principles of design, fabrication, and installation of agricultural structures.
9. Discuss the steps in constructing a project out of wood, such as measuring, cutting, fastening, and finishing.
10. Calculate areas and volumes for coatings (paints, stains, varnishes) and determine the proper coating material method for various tasks.
11. Determine proper insulation material for AFNR structures.
12. Describe options available to make AFNR structures more energy efficient.
13. Interpret basic electrical components, symbols, and diagrams, including wiring, switches, receptacles, and duplexes.
14. Relate the influence of the agricultural mechanics industry to globalized production.
15. Demonstrate employability and social skills relative to the career cluster.
16. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
17. Utilize activities of FFA as an integral component of course content and leadership development.

010212 Agriculture Power and Machinery Operation

This course provides instruction and hands-on experience in basic principles of agricultural machinery assembly, operation, maintenance, service repair and safety. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Demonstrate safe practices specific to agriculture power, structural, and technical systems, e.g., PPE, materials handling, and shop/laboratory operation.
2. Identify the influence of the agricultural mechanics industry on globalized production.
3. Identify the importance and use of computer-based systems in agriculture, food, and natural resources (web-based service information, software diagnostics).
4. Differentiate between the operation of gasoline and diesel engines, including using alternative fuels.
5. Explain how electric motors are utilized in the agriculture industry.
6. Relate basic engine parts, as they pertain to carburation, compression, and ignition, to principles and operations of an engine.
7. Evaluate the importance of adjusting equipment, including belts, drives, chains, and sprockets and maintain fluid conveyance components, including hoses, lines, and nozzles.
8. Maintain hydraulic and pneumatic systems.
9. Outline power unit and equipment controls, startup and shutdown procedures, and pre-operation inspections using service manuals.
10. Select lubricants based on viscosity, source, and equipment compatibility.
11. Establish a preventative maintenance schedule for power units and equipment such as lubricants, fluids, and filters.
12. Assess an internal combustion engine to determine service and repair of basic ignition, fuel, and compression.
13. Discuss the importance and function of safety systems on tools and equipment.
14. Describe how Geographic Information System (GIS), Remote Sensing (RS), and Global Positioning System (GPS) are utilized in the agriculture industry.
15. Demonstrate employability and social skills relative to the career cluster.
16. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
17. Utilize activities of FFA as an integral component of course content and leadership development.

010231 Small Power and Equipment

This course is designed to develop skills in equipment maintenance, repair, and operation, small combustion-type engines and electric motors. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Demonstrate safe practices specific to agriculture power, structural, and technical systems, e.g., PPE, materials handling, and shop/laboratory operation.
2. Compare the energy efficiency of various fuel sources such as gas, diesel, natural gas, and biofuels.
3. Differentiate between the operation of gasoline and diesel engines.
4. Describe how electric motors operate and are utilized in the agriculture industry.
5. Identify principles of hydraulic and pneumatic system operation.
6. Identify basic small engine parts and principles of operations and their applications in agriculture.
7. Perform maintenance schedules and procedures for agricultural small engines.
8. Outline power unit and equipment controls, startup and shutdown procedures, and pre-operation inspections using service manuals.
9. Use technical manuals and computer-based diagnostics in engine systems analysis and repair.
10. Assess an internal combustion engine to determine service and repair of basic ignition, fuel, and compression.
11. Assess malfunctioning electrical system components such as battery and lighting.
12. Determine small engine specifications using precision measuring equipment.
13. Service power transmissions.
14. Evaluate the importance of adjusting equipment, including belts, drives, chains, and sprockets.
15. Apply science, math, and communication skills within the technical content.
16. Maintain fluid conveyance components such as hoses, lines, and nozzles.
17. Demonstrate employability and social skills relative to the career cluster.
18. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
19. Utilize activities of FFA as an integral component of course content and leadership development.

010241 Agriculture Construction Skills

This course prepares students to construct and maintain agricultural structures and equipment. Develops basic skills such as tool identification, interpreting plans, calculating a bill of materials, electrification, carpentry, welding, metal fabrication, plumbing, and masonry. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Demonstrate safe practices specific to agriculture power, structural, and technical systems, e.g., PPE, materials handling, and shop/laboratory operation.
2. Demonstrate proper use of measurement and layout tools.
3. Select, maintain, and use hand/power tools in service, construction, and fabrication.
4. Employ safe usage of electric arc welding techniques and machines.
5. Describe the steps in basic repair of a metal object, such as welding, brazing, and riveting.
6. Identify the kinds and characteristics of metal materials.
7. Distinguish welding processes, positions, materials preparation, and equipment workpiece setup (beveling and grinding).
8. Calculate materials for concrete, brick, stone, or masonry units in agricultural construction.
9. Demonstrate the basic principles of electricity.
10. Demonstrate basic plumbing skills related to the agriculture industry.
11. Select and utilize proper painting materials and tools.
12. Develop plans using scales and legends.
13. Develop criteria for selecting materials based on a specific project plan's cost, quantities, and characteristics.
14. Apply basic principles of design, fabrication, and installation of agricultural structures.
15. Discuss the steps in constructing a project out of wood, such as measuring, cutting, fastening, and finishing.
16. Determine proper insulation material and method for various tasks.
17. Relate the influence of the agricultural mechanics industry on globalized production.
18. Demonstrate employability and social skills relative to the career cluster.
19. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
20. Utilize activities of FFA as an integral component of course content and leadership development.

010610 Crop Technology

Crop Technology instruction concentrates on the production practices and current biotechnological applications of one or more agricultural crops. Hands-on experiences will be emphasized. Instruction will include variety selection, seedbed preparation, fertilization, pest, weed and disease control, harvesting, and marketing crops. Current biotechnological applications may be included. Leadership development will be provided through the National FFA Organization. Each student will be expected to have an agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Specify the benefit of crop production in local, national, and world agriculture.
2. Relate the economic factors of crop production in local, national, and world agriculture.
3. Evaluate environmental factors of crop production in local, national, and world agriculture.
4. Determine the impact of soil and water resources on crop production.
5. Demonstrate ability to read and utilize seed tags.
6. Utilize management practices in row crops.
7. Utilize management practices in small grains.
8. Utilize management practices in forages and pastures.
9. Relate biotechnology to land production.
10. Identify common agronomic plants, weeds, grains, feeds and seeds.
11. Demonstrate an understanding of agricultural law.
12. Demonstrate employability and social skills relative to the career cluster.
13. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
14. Utilize activities of FFA as an integral component of course content and leadership development.
15. Apply science, math, and communication skills within the technical content.

010611 Introduction to Greenhouse and Crop Production

Introduction to Greenhouse and Crop Production develops basic scientific knowledge and skills pertaining to managing soil and its effects on human and animal food and fiber production, the environment, and meeting basic life needs. The relationship of soil to plant growth and horticulture will be emphasized. Plant anatomy, reproduction, growth, health, and current biotechnological advances will be included. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Assess the benefit of plants and soils to human and animal life in Kentucky, national, and world agriculture.
2. Analyze the physical properties of soil involved in plant and land use, including site analysis, soil sampling, soil structure, and soil texture.
3. Critique the principles of good land management, including land capability, conservation measures, and limitations.
4. Connect the chemical properties of soil and water to plant and land use, including pH and soil fertility.
5. Identify essential nutrients for plant growth and select appropriate plant nutrition practices and management.
6. Examine the processes for plant development, growth, health, and reproduction.
7. Relate biotechnology to plant production.
8. Identify factors related to Integrated Pest Management (IPM) and develop solutions to disease and pest problems.
9. Illustrate and compare components of plant anatomy and explain the function of those parts, including seeds and fruits.
10. Demonstrate employability and interpersonal skills relative to the career cluster.
11. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
12. Utilize activities of FFA as an integral component of course content and leadership development.
13. Apply science, math, and communication skills within the technical content.

010621 Floriculture and Floral Design

Floriculture and Floral Design provides instruction to develop floral design techniques using silk, dried, and fresh flowers. Students will learn the operation and management techniques of a floral business as well as the identification, production, and cultural maintenance practices of plants used in floral design and interior landscaping. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: .5 – 1

Students will:

1. Relate floriculture practices to environmental impact.
2. Determine principles of design and elements of art in flower arranging.
3. Implement design skills in real-world connections.
4. Incorporate special techniques, such as bows, cards, wiring, and tinting, into floral design.
5. Demonstrate techniques in conditioning and maintaining flowers and floral design materials.
6. Maintain industry-related equipment and materials.
7. Apply safety regulations and practices.
8. Identify common plant species, diseases, and floral tools.
9. Incorporate the color wheel and color schemes into floral designs.
10. Formulate a marketing plan.
11. Apply principles of interior landscaping.
12. Demonstrate employability and social skills relative to the career cluster.
13. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
14. Utilize activities of FFA as an integral component of course content and leadership development.
15. Apply science, math, and communication skills within the technical content.

010631 Landscape and Turf Management

This course includes identifying landscape plants and their characteristics, site evaluation, site design, calculation of materials needed, costs for bidding, and installing landscape plans. Landscape plant maintenance will also be presented. Selection, culture, and management of turf species used for lawns, golf courses, athletic fields and erosion control may also be included. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Determine principles of design and elements of art in landscape design.
2. Select appropriate plants for design.
3. Calculate costs of landscape plans for installation.
4. Develop a plan for fertilizing landscape and turf areas.
5. Recommend site preparation and landscape plan installation.
6. Establish and maintain residential and commercial turf grass areas.
7. Formulate landscape and turf grass maintenance schedule.
8. Calculate landscape maintenance costs.
9. Understand how to maintain golf courses.
10. Demonstrate how to propagate and produce landscape plants.
11. Develop a plan for controlling pests and diseases.
12. Identify landscape plants and turf grass species.
13. Maintain, operate, and repair facilities and equipment.
14. Apply safety practices and regulations.
15. Demonstrate employability and social skills relative to the career cluster.
16. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
17. Utilize activities of FFA as an integral component of course content and leadership development.
18. Apply science, math, and communication skills within the technical content.

010641 Greenhouse Technology

Greenhouse Technology provides instruction in greenhouse structures and greenhouse environment regulations. Plant growth, development, and propagation are included, as well as production and maintenance of bedding and container-produced plants. Fundamental principles of vegetable production and commercial production of vegetable crops, as well as the marketing of horticulture products, may be included. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Propose greenhouse structural designs and equipment.
2. Manipulate greenhouse environmental conditions.
3. Prepare soils and planting media.
4. Investigate plant processes and development.
5. Select plant propagation methods.
6. Implement bedding and vegetable crop production and management strategies.
7. Formulate a marketing plan for greenhouse plants and vegetable crops.
8. Demonstrate business and marketing procedures.
9. Maintain, operate, and repair facilities and equipment.
10. Develop and implement an integrated pest management plan.
11. Apply safety regulations and practices.
12. Demonstrate employability and social skills relative to the career cluster.
13. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
14. Utilize activities of FFA as an integral component of course content and leadership development.
15. Apply science, math, and communication skills within the technical content.

010651 Nursery and Orchard Technology

Nursery and Orchard Technology will provide instruction in production practices for container and field-grown nursery stock; identification, function, growing requirements, hardiness, problems and methods of different landscape plant materials; propagating and growing evergreens and deciduous plants; and the operation of garden centers and nurseries. Principles of home and commercial fruit production may also be included. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Investigate plant processes and plant development.
2. Demonstrate methods of plant propagation.
3. Prepare soils and planting media for nursery and orchard crops.
4. Implement production management strategies for nursery and orchard crops.
5. Relate nursery technology practices to environmental impact.
6. Demonstrate harvesting and merchandising of nursery and orchard crops.
7. Formulate marketing plan for nursery and orchard crops.
8. Design and construct growing structures.
9. Maintain, operate, and repair facilities and equipment.
10. Apply safety regulations and practices.
11. Demonstrate employability and social skills relative to the career cluster.
12. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
13. Utilize activities of FFA as an integral component of course content and leadership development.
14. Apply science, math, and communication skills within the technical content.

010701 Food Processing, Distribution, and Marketing

Food Processing, Distribution, and Marketing involves knowledge of producing food products from the farm to the consumer, emphasizing distribution and marketing to a global society. Potential marketing avenues, advertising of processed products, and current world food production issues will be examined. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: .5 – 1

Students will:

1. Determine trends in world and U.S. food production.
2. Explore preservation methods such as curing, canning, and pasteurization of foods.
3. Investigate methods of reducing food pathogens and improving food quality during processing.
4. Examine food chemistry and physics related to the formation of food products and the relationship of nutrients in food development.
5. Demonstrate the ability to produce a nutrition fact label for a processed product.
6. Recognize the relationship between biotechnology and science in food production.
7. Identify global distribution trends of food consumption patterns in various regions of the world.
8. Advertise and promote processed food products.
9. Explore marketing options for food products on an international spectrum.
10. Formulate a marketing plan for processed products.
11. Demonstrate employability and social skills relative to the career cluster.
12. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
13. Utilize activities of FFA as an integral component of course content and leadership development.
14. Apply science, math, and communication skills within the technical content.

010702 Food Science and Technology

Food Science and Technology introduces the issues of food production, nutrition, food chemistry and the development of food products in a global society. The government regulations regarding food and the exploration of career opportunities will also be covered. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Determine trends in world and U.S. food production.
2. Relate the food industry to the consumer, including food labeling and economics.
3. Investigate food safety issues from farm to retail, including microbial problems, risk assessment, food handling, and HAACP (Hazard Analysis and Critical Control Points) concepts.
4. Compare nutrient components of different food products and their effects on consumer's health and digestion.
5. Investigate food physics as related to the production of products in the industry.
6. Explore inspection, slaughter, fabrication, preservation, and distribution aspects of the red meat industry.
7. Investigate the poultry industry from meat to egg and how it impacts current food trends.
8. Investigate production methods for marketing dairy food products.
9. Explore the small grain products, fruits, and vegetables that currently play a role in food production.
10. Demonstrate employability and social skills relative to the career cluster.
11. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
12. Utilize activities of FFA as an integral component of course content and leadership development.
13. Apply science, math, and communication skills within the technical content.

020501 Animal Science

Animal Science develops basic knowledge and skills pertaining to animal identification, selection, nutrition, reproduction and genetics, health management, and marketing of farm and companion animals commonly produced in Kentucky. The latest production technologies, as well as biotechnological applications, will be included. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Connect the benefits of animal agriculture to humankind, locally, nationally, and globally.
2. Interpret proper animal science terminology for livestock and companion animals.
3. Interpret proper terminology for the food animal industry.
4. Differentiate the common food animal species and their specific breeds.
5. Select and evaluate food animal livestock species according to current industry standards.
6. Apply principles of reproduction to food animal production.
7. Apply principles of digestion to food animal production.
8. Formulate livestock feeding programs that meet nutritional requirements.
9. Identify common animal health problems.
10. Synthesize their prevention/solution.
11. Investigate biotechnology principles in relation to the livestock industry.
12. Analyze the effect of animal agriculture and the environment.
13. Demonstrate employability and social skills relative to a career in animal sciences.
14. Maintain records on a supervised agricultural experience program and be able to summarize/analyze results for making financial decisions.
15. Utilize activities of FFA as an integral component of course content and leadership development.

020502 Animal Technology

Animal Technology instruction concentrates on the advanced production practices and current biotechnological applications of one or more species of farm animals based on the local community needs. Laboratory experience will be used to emphasize concepts. Content may be enhanced by utilizing current industry-accepted technology. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Design animal breeding programs that employ the latest reproductive system manipulation techniques.
2. Design animal feeding programs that employ the latest nutrition principles and trends.
3. Construct a herd health program for common food animal species.
4. Demonstrate industry-accepted techniques for common herd health practices.
5. Demonstrate common veterinary best management practices for food animals.
6. Assess the end product of livestock production (meat and milk).
7. Analyze common animal husbandry practices to discern the scientific merit behind them.
8. Formulate an environmentally responsible waste management program for specific livestock production.
9. Demonstrate employability and social skills relative to a career in animal sciences.
10. Maintain records on a supervised agricultural experience program and be able to analyze results for making financial decisions.
11. Utilize activities of FFA as an integral component of course content and leadership development.

020503 Small Animal Technology

This course develops scientific knowledge, management practices, and marketing strategies in small and specialty animal technology. The curriculum includes identification, anatomy, physiology, nutrition, health, selection, and care of small animals. Typically, species include dogs, cats, rabbits, companion birds, ostriches, emus, tropical fish, and furbearers. Content will be enhanced with appropriate applied scientific laboratory activities. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: .5 – 1

Students will:

1. Relate small animal technology to current world trends.
2. Interpret proper specialty and small animal terminology and terminology of the industry.
3. Describe the distinguishing characteristics of the different breeds of small and specialty animal species.
4. Describe and compare the physiology and anatomy of small animal species.
5. Describe and compare the process of reproduction of small and specialty animal species.
6. Relate the anatomy and physiology of the digestive systems of small and specialty animals to proper nutritional practices.
7. Describe the care, handling, sheltering, and grooming of small and specialty animals.
8. Investigate diseases and parasites and plan a health maintenance schedule for small and specialty animals.
9. Evaluate the management and marketing of small and specialty animal services and products.
10. Select and evaluate various breeds of small and specialty animals.
11. Relate small and specialty animal agriculture to the environment.
12. Investigate biotechnology principles in the small and specialty animal industry.
13. Demonstrate employability and social skills relative to the career cluster.
14. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
15. Utilize activities of FFA as an integral component of course content and leadership development.

020510 Equine Science

Equine Science develops knowledge and skills pertaining to breed identification and selection, anatomy, physiology, nutrition, genetics and reproductive management, training principles, grooming, health disease, parasite control, and sanitation practices. Leadership development will be provided through the National FFA Organization. Each student will be expected to have an agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: .5 – 1

Students will:

1. Relate the benefits of the equine industry to humankind in local, national, and world agriculture.
2. Interpret proper equine science terminology and terminology of the equine science industry.
3. Contrast equine anatomy, physiology, and purposes of different breeds.
4. Relate the anatomy and physiology of the equine digestive system to proper nutritional practices.
5. Apply principles of health management and sanitation practices to the equine industry.
6. Demonstrate proper grooming and handling techniques in the equine industry.
7. Evaluate the role of equine domestication and the various types of equine in the world today.
8. Identify and utilize proper equine tack and equipment.
9. Identify the anatomy and physiology of the equine reproduction system and utilize proper breeding techniques.
10. Contrast horsemanship, showmanship, and training practices in the equine industry.
11. Compare and contrast various types of equine facilities and materials.
12. Relate equine agriculture to the environment.
13. Select and evaluate various types of equine.
14. Demonstrate employability and social skills relative to the career cluster.
15. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
16. Investigate biotechnological principles in the equine industry.
17. Utilize activities of FFA as an integral component of course content and leadership development.

020511 Veterinary Science

Veterinary science topics include safety, sanitation, anatomy and physiology, clinical exams, hospital procedures, parasitology, posology, laboratory techniques, nutrition, disease, office management, and animal management. Careers are also explored. Leadership development will be provided through the National FFA Organization. Each student will be expected to have an agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Examine proper safety and sanitation techniques when handling various animal species.
2. Discuss and explain multiple veterinary concepts and terminology.
3. Use proper veterinary terminology to compare, examine, and identify the anatomy and physiology of various animal species.
4. Take part in clinical exams of an assortment of animal species.
5. Examine appropriate hospital procedures and discover ways to apply them to veterinary science practices.
6. Define and differentiate among the various parasites, their causes, symptoms, treatments, and the animal species that can be affected.
7. Discover how to utilize mathematical skills in the field of veterinary science.
8. Develop laboratory techniques and participate in activities and procedures to further assist with the various veterinary science concepts.
9. Define nutrients, list the nutrient groups, explain their functions, and how feed is balanced to meet animal nutrient requirements.
10. Explain and discuss the principles of disease and evaluate how they affect numerous animal species.
11. Discuss appropriate animal management practices and how they relate to veterinary science.
12. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
13. Utilize activities of FFA as an integral component of course content and leadership development.
14. Apply science, math, and communication skills within the technical content.

020520 Aquaculture

Instruction provides the fundamentals of aquatic plant and animal biology, anatomy, morphology and physiology in aquaculture, and the unique properties of water for aquaculture. Fish and aquatic crop production principles, management, and marketing are also included. Applications of biotechnology in aquaculture and aquaculture as sustainable agriculture are also included. Content will be enhanced with appropriate applied scientific laboratory activities. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: .5 – 1

Students will:

1. Relate the fundamentals of aquatic plants and animal biology to production.
2. Analyze the unique chemical properties of water for aquaculture.
3. Demonstrate principles of aquaculture crop production from species selection to seed production to harvesting to processing.
4. Describe the components of managing the aquaculture facility and the marketing of crops produced.
5. Demonstrate applications of biotechnology in aquaculture.
6. Evaluate aquaculture as sustainable agriculture.
7. Demonstrate employability and social skills relative to the career cluster.
8. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
9. Utilize activities of FFA as an integral component of course content and leadership development.
10. Apply science, math, and communication skills within the technical content.

030609 Environmental Science and Technology

This course is an intermediate scientific study of environmental technology. It is designed to develop an awareness of environmental concerns related to air, water, soil, land use management, waste management, and their interrelationship with the biological ecosystem. Soil formation, conservation, and evaluation material will also be included. Content will be enhanced with appropriate scientific laboratory activities, field experimentation, community development projects, and occupational development. Leadership development will be provided through the National FFA Organization. Each student will be expected to have an agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Distinguish the importance of conserving and managing our natural resources to maintain a high standard of living.
2. Investigate the various types of ecosystems and management skills for a productive life cycle.
3. Relate the physical properties of soil and its effect on the different aspects of the environment.
4. Relate environmental issues to the management of waste products.
5. Investigate the effects of land use and environmental legislation in multiple-use planning.
6. Relate the proper handling, application, and disposal of chemicals to protection of the environmental balance.
7. Analyze the importance of air and water quality on society to ensure and improve sustainable standards.
8. Demonstrate employability and social skills relative to the career cluster.
9. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
10. Utilize activities of FFA as an integral component of course content and leadership development.
11. Apply science, math, and communication skills within the technical content.

030610 Forestry

This course introduces the science of silviculture. The course includes career opportunities, tree identification, tree production, forestry management, timber harvesting, wood utilization, and forestry's environmental and ecological aspects. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: .5 – 1

Students will:

1. Utilize forestry tools and equipment.
2. Survey land and cruise timber.
3. Investigate the physical characteristics of trees, plant processes, growth, and taxonomy.
4. Recommend management practices, including genetic potential, reforestation, timber stand improvement, and harvesting.
5. Investigate the environmental, social, and economic value of the forest.
6. Investigate the influence and importance of forestry from local to global levels.
7. Distinguish wood characteristics, properties, products, identification, and physiology.
8. Evaluate methods for forest protection from insects, disease, and other destructive agents.
9. Demonstrate employability and social skills relative to the career cluster.
10. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
11. Utilize activities of FFA as an integral component of course content and leadership development.
12. Apply science, math, and communication skills within the technical content.

030611 Wildlife Resources

Students develop an awareness of wildlife industry resources. This course includes a study of ecology and ecosystems, wildlife habitat, population dynamics, management techniques that deal with wildlife in all areas, and the regulations that affect the wildlife industry. Content may be enhanced with appropriate applied scientific laboratory activities. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: .5 – 1

Students will:

1. Analyze the dynamics of an ecosystem.
2. Examine the diverse components of habitat and its relation to wildlife.
3. Calculate the population dynamics that relate to wildlife.
4. Identify the human role in wildlife and habitat management as it applies to historic, social, political, and economic concerns.
5. Examine the human impact on wildlife resources.
6. Examine the federal and state laws and regulations that pertain to the conservation and preservation of wildlife.
7. Demonstrate employability and social skills relative to the career cluster.
8. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
9. Utilize activities of FFA as an integral component of course content and leadership development.
10. Apply science, math, and communication skills within the technical content.

030702 Leadership Dynamics - Agriculture

This course is designed to assist students with developing skills needed to be successful leaders and responsible members of society. The student will develop personal attributes and social skills. Emphasis will be placed on interpersonal skills, team building, communication, personal development, and leadership. This course will include opportunities for students to apply their knowledge.

This course does not count toward concentrator status.

Recommended Grade Level: 9 – 12

Recommended Credit: .5 – 1

Students will:

1. Develop personal and group goals.
2. Compare the types of leadership styles.
3. Assess the importance of qualified leaders to the success of organizations.
4. Appraise the personal characteristics of successful leaders.
5. Develop verbal and non-verbal communication skills to enhance success in school and transition to the world of work.
6. Demonstrate appropriate business and professional etiquette.
7. Demonstrate shared decision-making.
8. Develop techniques to resolve conflicts in school, home, community, and workplace (interpersonal team skills).
9. Demonstrate the use of parliamentary procedure skills in presiding over a meeting.
10. Describe how ethical and social behaviors affect our lives.
11. Identify self-management techniques.
12. Identify stress management techniques.
13. Analyze organizational structures and their components, including bylaws, officers, committees, and work programs.
14. Demonstrate awareness of cultural diversity and equity issues.
15. Analyze leadership opportunities available in the school and community.

030707 Agriculture Math (CTE Credit)

This course provides an introduction to agriculture math. Course material will include number properties and operations, measurement, geometry, data analysis and probability, algebraic thinking, personal development, employee and employer responsibilities, records, files, purchasing materials, stocking, selling and business account procedures. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
2. Relate mathematical number properties and operations to agricultural practices.
3. Utilize measurements in an agricultural setting.
4. Demonstrate geometric principles through using agricultural contexts and examples.
5. Develop mathematical formulations on agricultural cash flows, budgeting, and farm management.
6. Formulate and apply statistical analyses to agricultural practices.
7. Investigate how algebraic thinking and formulations are beneficial to agriculture production.
8. Demonstrate employability and social skills relative to the career cluster.
9. Utilize activities of FFA as an integral component of course content and leadership development.
10. Apply science, math and communication skills within the technical content.

030708 Agriculture Math (Math Credit)

This course is designed for students who have completed courses containing all the required high school Kentucky Academic Standards (KAS) for Mathematics. If students have not completed courses containing all the required KAS, an Agricultural Math (Math Credit) course should attend to the standards students still need. This course is designed to emphasize high school math content by utilizing agricultural education as the content for delivering math concepts beyond what was addressed in the student's foundational courses. An Agricultural Math course may include, but is not limited to, topics found in the (+) standards of the KAS for Mathematics. Leadership development will be provided through the FFA student organization.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
2. Relate mathematical number properties and operations to agricultural practices.
3. Utilize measurements in an agricultural setting.
4. Demonstrate geometric principles through using agricultural contexts and examples.
5. Develop mathematical formulations on agricultural cash flows, budgeting, and farm management.
6. Formulate and apply statistical analyses to agricultural practices.
7. Investigate how algebraic thinking and formulations are beneficial to agriculture production.
8. Demonstrate employability and social skills relative to the career cluster.
9. Utilize activities of FFA as an integral component of course content and leadership development.
10. Apply science, math and communication skills within the technical content.

030711 Agriscience (CTE Credit)

Agriscience introduces the scientific agricultural approach to animal science and selection and plant and land science. Agricultural career opportunities will be emphasized in each class. The program will include laboratory experiences relating to basic and current technology. Content may be enhanced by utilizing appropriate computer applications. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program and keep appropriate records.

Recommended Grade Level: 9 – 12

Recommended Credit: 1

Students will:

1. Apply basic chemical and biological concepts to food production, including the interrelationships between soil and plants and the natural cycles that sustain all ecosystems.
2. Apply basic physiological and genetic principles to animal production systems.
3. Investigate the impact of human activities on the environment and resource conservation and stewardship and interpret the impact of globalization on agriculture.
4. Examine the application of technology and genetic engineering in modern agriculture systems.
5. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
6. Utilize activities of FFA as an integral component of course content and leadership development.
7. Apply science, math, and communication skills to the technical content.
8. Demonstrate employability and social skills relative to the career cluster.

030712 Agriscience (Science Credit)

Agriscience introduces the scientific agricultural approach to animal science and selection and plant and land science. Agricultural career opportunities will be emphasized in each class. The program will include laboratory experiences relating to basic and current technology. Content may be enhanced by utilizing appropriate computer applications. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program and keep appropriate records. This course may count as a Science credit if the course aligns with the student ILP and covers the Kentucky Academic Standards (KAS) for Science.

Recommended Grade Level: 9 – 12

Recommended Credit: 1

Students will:

1. Apply basic chemical and biological concepts to food production, including the interrelationships between soil and plants and the natural cycles that sustain all ecosystems.
2. Apply basic physiological and genetic principles to animal production systems.
3. Investigate the impact of human activities on the environment and resource conservation and stewardship and interpret the impact of globalization on agriculture.
4. Examine the application of technology and genetic engineering in modern agriculture systems.
5. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
6. Utilize activities of FFA as an integral component of course content and leadership development.
7. Apply science, math, and communication skills to the technical content.
8. Demonstrate employability and social skills relative to the career cluster.

030713 Agri-biology Interdisciplinary

This course may count as one of the credits in science for high school graduation. Agri-biology uses agricultural contexts to present the required life science content for assessment as outlined in the program of studies. As students study practical agricultural concepts, they apply scientific ways of thinking and working to real-life problems. The agriculture and science teachers work together to plan and evaluate the course. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Investigate how cell structure, function and processes affect living things.
2. Examine the molecular basis of heredity.
3. Explore how DNA (deoxyribonucleic acid) affects organisms' morphology and physiology.
4. Analyze how behavioral patterns ensure reproductive success.
5. Recognize how agriculturalists manipulate reproductive success.
6. Examine the processes of biological change.
7. Investigate how agricultural crops and animals reflect diversity in nature.
8. Explore the interdependence of organisms within ecosystems.
9. Analyze the alteration of ecosystems by agricultural processes.
10. Differentiate between croplands and natural ecosystems.
11. Recognize how organ systems work together to keep animals healthy.
12. Demonstrate employability and soft skills relative to the career cluster.
13. Maintain records on a supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.
14. Utilize activities of FFA as an integral component of course content and leadership development.

030715 Principles of Agricultural Science and Technology

This course provides instruction in the foundations of various segments of the agricultural industry. Agricultural career opportunities will be emphasized. The curriculum will focus on animal, plant, and land science and agricultural mechanics skills. The selection and planning of a supervised agricultural experience program and related recordkeeping will be presented. Leadership development will be provided through the National FFA Organization. Students will receive personal guidance and counseling with preparatory instructional program selection.

Recommended Grade Level: 9

Recommended Credit: 1

Students will:

1. Develop a supervised agricultural experience program, including use of record keeping.
2. Explore basic agricultural skills needed, including math, communication, and employability skills.
3. Identify and examine general soil and plant sciences.
4. Identify and examine general animal sciences.
5. Demonstrate basic agricultural mechanics and construction skills.
6. Investigate basic environmental, food, and fiber interrelationships.
7. Demonstrate employability and social skills relative to the career cluster.
8. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
9. Participate in FFA leadership activities that are integrated into the course.

030718 Emerging Agricultural Technology

This course focuses on automation and advancement in agriculture. Students will learn about precision agriculture, artificial intelligence, robotics, energy sources and efficiency, and other current practices. Leadership development will be provided through the National FFA Organization. Each student will be expected to have a supervised agricultural experience program.

Recommended Grade Level: 10 – 12

Recommended Credit: 1

Students will:

1. Demonstrate safe practices specific to agriculture power, structural, and technical systems, e.g., PPE, materials handling, and shop/laboratory operation.
2. Discuss the advantages and disadvantages of renewable and non-renewable energy types, e.g., solar, wind, hydro, and fossil fuels.
3. Compare the efficiency of various energy sources, e.g., gas, diesel, natural gas, and biofuels.
4. Discuss using computer-based systems in agriculture, food, and natural resources.
5. Describe how Geographic Information System (GIS), Remote Sensing (RS), and Global Positioning System (GPS) are utilized in the agriculture industry.
6. Describe equipment and processes, e.g., auto guidance, variable-rate technology, yield maps, and sensor technology used in precision agriculture.
7. Explain how triangulation is utilized in geospatial technology.
8. Describe robotic and drone applications utilized in agriculture.
9. Differentiate between alternating and direct current.
10. Describe types of electrical measurements and how to calculate them, e.g., amperage, voltage, wattage, Ohm's Law.
11. Differentiate between the function of parallel and series electrical circuits.
12. Diagnose malfunctioning electrical systems.
13. Describe the basic operation of electric motors and select the proper motor for specific operations in AFNR.
14. Describe options available to make AFNR structures more energy efficient.
15. Determine proper insulation material for AFNR structures.
16. Demonstrate employability and social skills relative to the career cluster.
17. Maintain records on supervised agricultural experience programs and be able to summarize and analyze results in making financial decisions.
18. Utilize activities of FFA as an integral component of course content and leadership development.

030790 Agricultural Education Co-op*

Cooperative Education for CTE (Career and Technical Education) courses provide supervised work site experience related to the student's identified career pathway. A student must be enrolled in an approved pathway course during the same school year that the co-op experience is completed or have already completed the pathway the previous year. Students who participate receive a salary for these experiences in accordance with local, state and federal minimum wage requirements according to the Work-Based Learning Manual.

Recommended Grade Level: 11 – 12

Recommended Credit: 1 – 3

Students will:

1. Demonstrate and practice safe work habits at all times.
2. Gain career awareness and the opportunity to test career choices.
3. Receive work experience related to career interests.
4. Integrate classroom studies with work experience.
5. Receive exposure to facilities and equipment unavailable in a classroom setting.
6. Increase employability potential.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

030791 Agricultural Education Internship

Internship for CTE (Career and Technical Education) courses provides supervised work-site experience for high school students enrolled in a pathway course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience participates in an experience that lasts a semester or longer and has an established employee-employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information referenced to the Work-Based Learning Manual.

Recommended Grade Level: 11 – 12

Recommended Credit: 1 – 3

Students will:

1. Demonstrate and practice safe work habits at all times.
2. Gain career awareness and the opportunity to test career choices.
3. Receive work experience related to career interests.
4. Integrate classroom studies with work experience.
5. Receive exposure to facilities and equipment unavailable in a classroom setting.
6. Increase employability potential.