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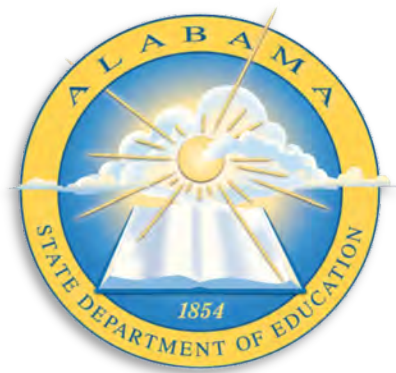
PROGRAM GUIDE FOR:

AGRICULTURE,

FOOD AND NATURAL RESOURCES CLUSTER,

AND

ARGISCIENCE MIDDLE SCHOOL



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Agriculture, Food and Natural Resources Cluster

This cluster prepares students for employment in career pathways that relate to the \$70 billion plus industry of agriculture. The mission of agriscience education is to prepare students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resource industries. There are six program areas in this cluster: General Agriscience, Animal Science, Plant Science, Environmental and Natural Resources, Industrial Agriscience and Middle School. Extended learning experiences to enrich and enhance instruction are reinforced through learner participation in the career and technical student organization related to agriscience education. The National FFA Organization (FFA) serves as the CTSO for this cluster. Additionally, project-based learning experiences, otherwise known as a Supervised Agriculture Experience (SAE) are an integral part of agriscience education.

****Courses highlighted in yellow are shared with other clusters. See "Shared Courses" table on page 5 for additional details.**

Career Pathway Program	General Agriculture Program (Must teach three courses from this program list within two years)		
	This program is designed to deliver a variety of agricultural disciplines which will provide students a general understanding of the scope of agriculture as it relates to the following areas: animal science, plant science, food science, forestry and agricultural construction and agricultural mechanics.		
Course Number	Career Program Pathway Courses	Career Readiness Indicator (CRI)	In Demand Occupations
18003G1003	Advanced Agriscience	<ul style="list-style-type: none"> • Adult Beef Quality Assurance (The following three areas required): <ol style="list-style-type: none"> 1. Cow/Calf 2. Stocker/Backgrounder 3. Feedyard • Briggs and Stratton Technician (Two of the following areas required) <ol style="list-style-type: none"> 1. Theory of Operation 2. Carburetors and Fuel Systems 3. Governors 4. Compression 5. Ignition Systems • Construction and Skilled Trade Assessment (CAST) • Ducks Unlimited Ecology Conservation and Management Certification • FAA Part 107 • Forestry Worker Certification • Home Builders Association of Alabama Residential Construction Skills Certification • Integrated Pest Management Certification • Landscape Design (LD) Permit • Landscape Design and Plant Materials Certification • Landscape Management Technician • MSSC – Certified Production Technician (CPT): Each module will count as a CRI. The CPT 4.0 program consists of five individual certificate assessments: <ol style="list-style-type: none"> 1. Safety 2. Quality Practices & Measurement 3. Manufacturing Processes & Production 4. Maintenance Awareness • NCCER Core (module 6 is an elective and not required for CRI) • Skid Steer – Skills for Success • Specialty Crops • Urban Forestry Technician 	<ul style="list-style-type: none"> • Agricultural Engineer • Agricultural Equipment Operator • Agricultural Sales • Agricultural Technician • Agriscience Teacher • Biological Technician • Construction Laborer • Construction Manager • Electrician • Farm Equipment Mechanics and Service Technicians • Farm Labor Contractors • Farmers, Ranchers, and Other Agricultural/Aquacultural Managers • First-Line Supervisors of Farming, Fishing, and Forestry Workers • Food Quality Assurance • Food Science Technicians • Forest and Conservation Technicians • Foresters • Graders and Sorters, Agricultural Products • HVAC Technician • Industrial Maintenance Technician • Maintenance Technician • Pest Control Workers • Plumber • Post-Secondary Agricultural Sciences Teacher • Refuse and Recyclable Material Collectors • USDA Inspector • Warehouse Facility Manager • Water and Wastewater Treatment Plant and System Operators • Welder
18004G1001	Agribiology		
18401G1000	Agricultural and Biosystems Engineering		
18205G1000	Agriculture Communications and Technology		
18402G1001	Agricultural Industrial Maintenance		
18204G1000	Agricultural Marketing and Management		
18003G1004	Applied Agriscience		
18997G1000	CTE Lab in AFNR		
18998G1000	Career Pathway Project in AFNR (Must successfully complete any two courses in the AFNR Cluster as a prerequisite to this course)		
19254G1000	Food Safety and Microbiology		
18502G1001	Forestry		
18003G1001	Fundamentals of Agriscience		
18002G0500	Fundamentals of Agriscience (1/2 Credit)		
18052G1001	Horticulture Science		
18052G0500	Horticulture Science (1/2 Credit)		
18003G1002	Intermediate Agriscience		
18403G1000	Introduction to Agricultural Construction		
18501G1002	Introduction to Animal and Dairy Science		

Career Pathway Program	Animal Science Program (Must teach three courses from this program list within two years)		
	This program is designed to provide students with an understanding of livestock management, veterinary science, poultry science, equine science, and food processing.		
Course Number	Career Pathway Program Courses	Career Readiness Indicator (CRI)	In Demand Occupations
18003G1003	Advanced Agriscience	<ul style="list-style-type: none"> Adult Beef Quality Assurance (The following three areas required): <ol style="list-style-type: none"> Cow/Calf Stocker/Backgrounder Feedyard Aquaculture Training and Online Learning (ATOLL) Aquaculture or Aquaponics Elanco Veterinary Medical Applications Certification FAA Part 107 MSSC – Certified Production Technician (CPT): Each module will count as a CRI. The CPT 4.0 program consists of five individual certificate assessments: <ol style="list-style-type: none"> Safety Quality Practices & Measurement Manufacturing Processes & Production Maintenance Awareness NCCER Core (module 6 is an elective and not required for CRI) Skid Steer – Skills for Success 	<ul style="list-style-type: none"> Ag Field Service Representative Agricultural Equipment Operators Agricultural Sales Agricultural Technician Animal Caretakers Animal Scientist Animal Breeder Artificial Insemination Technician Biological Technician Farm Products Purchasing Agent Farm Worker Farmers, Ranchers, and Other Agricultural/Aquacultural Managers Farmworkers, Farm, Ranch, and Aquacultural Animals Food Quality Assurance Food Science Technician Graders and Sorters, Agricultural Products Laborers and Freight, Stock, and Material Movers, Hand Livestock Manager Non-Farm Animal Worker Poultry Operator USDA Inspector Veterinarian Veterinary Technician Zoologist and Wildlife Biologist
18004G1001	Agribiology		
18401G1000	Agricultural and Biosystems Engineering		
18402G1001	Agricultural Industrial Maintenance		
18306G1002	Aquaculture Science		
18306G1003	Aquatic Biology		
18997G1000	CTE Lab in AFNR		
18998G1000	Career Pathway Project in AFNR (Must successfully complete any two courses in the AFNR Cluster as a prerequisite to this course)		
18104G1000	Equine Science		
18104G0500	Equine Science (1/2 Credit)		
19254G1000	Food Safety and Microbiology		
18003G1001	Fundamentals of Agriscience		
18002G0500	Fundamentals of Agriscience (1/2 Credit)		
18501G1002	Introduction to Animal and Dairy Science		
18501G0502	Introduction to Animal and Dairy Science (1/2 Credit)		
18105G1012	Introduction to Veterinary Science		
18402G1000	Poultry Industrial Maintenance (Requires Agricultural Industrial Maintenance as a prerequisite)		
18101G1000	Poultry Science		
18101G0500	Poultry Science (1/2 Credit)		
18105G1022	Veterinary Science		

Career Pathway Program	Plant Science Program (Must teach three courses from this program list within two years)		
	This program is designed to provide students with an understanding of the greenhouse, horticulture, nursery/landscape industries and forestry.		
Course Number	Career Pathway Program Courses	Career Readiness Indicator (CRI)	In Demand Occupations
18004G1001	Agribiology	<ul style="list-style-type: none"> FAA Part 107 Forestry Worker Certification Integrated Pest Management Certification Landscape Design (LD) Permit Landscape Design and Plant Materials Certification Landscape Management Technician Setting of Landscape Plants (SLP) Permit MSSC – Certified Production Technician (CPT): Each module will count as a CRI. The CPT 4.0 program consists of five individual certificate assessments: <ol style="list-style-type: none"> Safety Quality Practices & Measurement Manufacturing Processes & Production Maintenance Awareness NCCER Core (module 6 is an elective and not required for CRI) Skid Steer – Skills for Success Specialty Crops Tree Surgery (TS) Permit Turfgrass Management Certification Urban Forestry Technician 	<ul style="list-style-type: none"> Agricultural Equipment Operators Agricultural Technician Agronomy Sales Biological Technician Chemical Engineer Conservation Scientists Event Planner Farmworkers and Laborers, Crop, Nursery, and Greenhouse Florist Florist Worker Food Science Technicians Forest and Conservation Workers Foresters Golf Course Superintendent Lab Technician Landscape Designer Landscaping and Groundskeeping Workers Loggers Logging Equipment Operators Pest Control Worker Pesticide Handlers, Sprayers, and Applicators, Vegetation Soil Scientist Tree Trimmers and Pruners Turfgrass Producer
18401G1000	Agricultural and Biosystems Engineering		
18402G1001	Agricultural Industrial Maintenance		
18997G1000	CTE Lab in AFNR		
18998G1000	Career Pathway Project in AFNR (Must successfully complete any two courses in the AFNR Cluster as a prerequisite to this course)		
18502G1005	Dendrology		
18056G1002	Floriculture and Floral Design		
18056G0502	Floriculture and Floral Design (1/2 Credit)		
19254G1000	Food Safety and Microbiology		
18502G1001	Forestry		
18502G0500	Forestry (1/2 Credit)		
18402G1002	Forestry Industrial Maintenance		
18003G1001	Fundamentals of Agriscience		
18002G0500	Fundamentals of Agriscience (1/2 Credit)		
18052G1002	Greenhouse and Nursery Production		
18052G0502	Greenhouse and Nursery Production (1/2 Credit)		
18052G1001	Horticulture Science		
18052G0500	Horticulture Science (1/2 Credit)		
18003G1002	Intermediate Agriscience		
18056G1001	Landscape Design and Management		
18308G1002	Plant Biotechnology		
18054G1000	Turfgrass Management		
18502G1002	Urban Forestry		

Career Pathway Program	Environmental and Natural Resources Program (Must teach three courses from this program list within two years)		
	This program is designed to provide students with an understanding of the forestry and wildlife science and management of natural resources.		
Course Number	Career Pathway Program Courses	Career Readiness Indicator (CRI)	In Demand Occupations
18004G1001	Agribiology	<ul style="list-style-type: none"> • Bulldozer – Skills for Success • Ducks Unlimited Ecology Conservation and Management Certification • FAA Part 107 • Forestry Worker Certification • Integrated Pest Management Certification • MSSC – Certified Production Technician (CPT): Each module will count as a CRI. The CPT 4.0 program consists of five individual certificate assessments: <ol style="list-style-type: none"> 1. Safety 2. Quality Practices & Measurement 3. Manufacturing Processes & Production 4. Maintenance Awareness • NCCER Core (module 6 is an elective and not required for CRI) • Skid Steer – Skills for Success • Tree Surgery (TS) Permit • Urban Forestry Technician 	<ul style="list-style-type: none"> • Agricultural Equipment Operators • Agricultural Technician • Biological Technician • Environmental Engineer • Environmental Engineering Technicians • Environmental Science and Protection Technicians, Including Health • Environmental Science Teachers, Postsecondary • Fallers • Fishing and Hunting Workers • Forest and Conservation Technicians • Conservation Officer • Forester • Hazardous Materials Removal Workers • Hunters and Trappers • Geological/Hydrological Technicians • Lab Technician • Logger • Logging Equipment Operators • Natural Science Manager • Pesticide Handlers, Sprayers, and Applicators Vegetation. • Professional Fisherman • Recreation Worker • Refuse and Recyclable Material Collectors • Soil Scientist • Tree Trimmers and Pruners • Water and Wastewater Treatment Plant and System Operators • Wildlife Biologist
18401G1000	Agricultural and Biosystems Engineering		
18402G1001	Agricultural Industrial Maintenance		
18997G1000	CTE Lab in AFNR		
18998G1000	Career Pathway Project in AFNR (Must successfully complete any two courses in the AFNR Cluster as a prerequisite to this course)		
18502G1005	Dendrology		
18504G1000	Environmental Management		
18501G1001	Fish and Wildlife Management		
18501G0501	Fish and Wildlife Management (1/2 Credit)		
18502G1001	Forestry		
18502G0500	Forestry (1/2 Credit)		
18402G1002	Forestry Industrial Maintenance		
18003G1001	Fundamentals of Agriscience		
18002G0500	Fundamentals of Agriscience (1/2 Credit)		
18003G1002	Intermediate Agriscience		
18502G1002	Urban Forestry		
18502G1006	Wildland Firefighting and Controlled Fire		

Career Pathway Program	Industrial Agriculture Program (Must teach three courses from this program list within two years)		
	This program is designed to provide students with a general understanding of industrial maintenance, power equipment and modern construction building practices along with a basic understanding of metal fabrication and welding.		
Course Number	Career Pathway Program Courses	Career Readiness Indicator (CRI)	In Demand Occupations
18401G1000	Agricultural and Biosystems Engineering	<ul style="list-style-type: none"> • Asphalt Roller – Skills for Success • Bulldozer – Skills for Success • Briggs and Stratton Technician (Two of the following areas required) <ol style="list-style-type: none"> 1. Theory of Operation 2. Carburetors and Fuel Systems 3. Governors 4. Compression 5. Ignition Systems • Construction and Skilled Trade Assessment (CAST) • FAA Part 107 • Home Builders Association of Alabama Residential Construction Skills Certification • Meat Cutter – Skills for Success • MSSC – Certified Production Technician (CPT): Each module will count as a CRI. The CPT 4.0 program consists of five individual certificate assessments: <ol style="list-style-type: none"> 1. Safety 2. Quality Practices & Measurement 3. Manufacturing Processes & Production 4. Maintenance Awareness • NCCER Carpentry Level 1 • NCCER Core (module 6 is an elective and not required for CRI) • NCCER Welding Level 1 • Skid Steer – Skills for Success 	<ul style="list-style-type: none"> • Agricultural Equipment Operators • Agricultural Contractor • Agricultural Engineer • Agricultural Technician • Automotive Service Technicians and Mechanics • Biological Technician • Construction Laborer • Construction Manager • Electrician • Farm Labor Contractors • Farm Equipment Mechanics and Service Technicians • First-Line Supervisors of Mechanics, Installers, and Repairers • HVAC Technician • Industrial Maintenance Technician • Mechanical Drafter • Mobile Heavy Equipment Mechanics, Except Engines • Pipe Layer • Plumber • Tire Repairers and Changers • Welder
18449G1003	Agricultural Engines		
18449G0500	Agricultural Engines (1/2 Credit)		
18402G1001	Agricultural Industrial Maintenance		
18404G1001	Agricultural Welding 1		
18404G0500	Agricultural Welding 1 (1/2 Credit)		
18404G1002	Agricultural Welding 2		
18003G1004	Applied Agriscience		
18997G1000	CTE Lab in AFNR		
18998G1000	Career Pathway Project in AFNR (Must successfully complete any two courses in the AFNR Cluster as a prerequisite to this course)		
18011G1000	Construction Finishing and Interior Systems		
18004G1000	Construction Framing		
18014G1000	Construction Site Preparations and Foundations		
18402G1002	Forestry Industrial Maintenance		
18003G1001	Fundamentals of Agriscience		
18002G0500	Fundamentals of Agriscience (1/2 Credit)		
18403G1000	Introduction to Agricultural Construction		
18010G1001	Introduction to Agricultural Wiring		
18402G1000	Poultry Industrial Maintenance		
20110G1003	Residential and Commercial Power Equipment		

2023-2024 Subject and Personnel Codes
Agriculture, Food and Natural Resources and Agriscience Middle School Program

Agriculture, Food and Natural Resources Cluster Courses (Grades 9-12)			
Course Number	Course Name	Course Number	Course Name
18003G1003	Advanced Agriscience	19254G1000	Food Safety and Microbiology - Science credit eligible
18004G1001	Agribiology - Science credit eligible	18502G1001	Forestry
18449G1003	Agricultural Engines	18502G0500	Forestry (1/2 Credit)
18449G0500	Agricultural Engines (1/2 Credit)	18402G1002	Forestry Industrial Maintenance
18402G1001	Agricultural Industrial Maintenance	18003G1001	Fundamentals of Agriscience
18404G1001	Agricultural Welding 1	18002G0500	Fundamentals of Agriscience (1/2 Credit)
18404G0500	Agricultural Welding 1 (1/2 Credit)	18052G1002	Greenhouse and Nursery Production
18404G1002	Agricultural Welding 2	18052G0502	Greenhouse and Nursery Production (1/2 Credit)
18401G1000	Agricultural and Biosystems Engineering	18052G1001	Horticulture Science
18205G1000	Agriculture Communications and Technology	18052G0500	Horticulture Science (1/2 Credit)
18204G1000	Agriculture Marketing and Management	18003G1002	Intermediate Agriscience
18003G1004	Applied Agriscience	18403G1000	Introduction to Agricultural Construction
18306G1002	Aquaculture Science - Science credit eligible	18010G1001	Introduction to Agricultural Wiring
18306G1003	Aquatic Biology	18501G1002	Introduction to Animal and Dairy Science
18998G1000	Career Pathway Project in Agriculture, Food, and Natural Resources	18501G0502	Introduction to Animal and Dairy Science (1/2 Credit)
18011G1000	Construction Finishing and Interior Systems	18105G1012	Introduction to Veterinary Science
18004G1000	Construction Framing	18056G1001	Landscape Design and Management
18014G1000	Construction Site Preparations and Foundations	18308G1002	Plant Biotechnology - Science credit eligible
18997G1000	CTE Lab in Agriculture, Food and Natural Resources (AFNR)	18402G1000	Poultry Industrial Maintenance
18502G1005	Dendrology	18101G1000	Poultry Science
18504G1000	Environmental Management - Science credit eligible	18101G0500	Poultry Science (1/2 Credit)
18104G1000	Equine Science	20110G1003	Residential and Commercial Power Equipment
18104G0500	Equine Science (1/2 Credit)	18054G1000	Turfgrass Management
18501G1001	Fish and Wildlife Management	18502G1002	Urban Forestry
18501G0501	Fish and Wildlife Management (1/2 Credit)	18105G1022	Veterinary Science
18056G1002	Floriculture and Floral Design	18502G1006	Wildland Firefighting and Controlled Fire
18056G0502	Floriculture and Floral Design (1/2 Credit)		

Middle School Program Courses			
18001G0735	Agriscience Exploration (7th Grade) (35 Instructional Hour Course)	18001G0610	Orientation to Agriscience (6 th Grade) (140 Instructional Hour Course)
18001G0770	Agriscience Exploration (7th Grade) (70 Instructional Hour Course)	18001G0835	Pre-Agriscience (8th Grade) (35 Instructional Hour Course)
18001G0710	Agriscience Exploration (7th Grade) (140 Instructional Hour Course)	18001G0870	Pre-Agriscience (8th Grade) (70 Instructional Hour Course)
18001G0635	Orientation to Agriscience (6th Grade) (35 Instructional Hour Course)	18001G0810	Pre-Agriscience (8th Grade) (140 Instructional Hour Course)
18001G0670	Orientation to Agriscience (6th Grade) (70 Instructional Hour Course)		

Shared Courses			
Course Number	Course Name	Cluster(s)	Required Year to Implement COS
19254G1000	Food Safety and Microbiology	Hospitality & Tourism Human Services	2021-2022
18105G1012	Introduction to Veterinary Sciences	Health Science	2021-2022
20110G1003	Residential and Commercial Power Equipment	Transportation, Distribution and Logistics	2021-2022
18105G1022	Veterinary Science	Health Science	2021-2022

General Note: Course descriptions and content standards for most courses are located on the Alabama Department of Education website at: [CTE Courses of Study](#).

College and Career Readiness Indicator Course Matrix

Program Name	General Agriculture	Animal Science	Plant Science
Foundation Course(s)	Fundamentals of Agriscience	Fundamentals of Agriscience	Fundamentals of Agriscience
Concentrator Course(s)	Advanced Agriscience Agribiology Agricultural and Biosystems Engineering Agriculture Communications and Technology Agricultural Industrial Maintenance Agriculture Marketing and Management Agricultural and Biosystems Engineering Applied Agriscience Food Safety and Microbiology Forestry Horticulture Science Intermediate Agriscience Introduction to Agricultural Construction Introduction to Animal and Dairy Science	Advanced Agriscience Agribiology Agricultural and Biosystems Engineering Agricultural Industrial Maintenance Aquaculture Science Aquatic Biology Equine Science Food Safety and Microbiology Fundamentals of Agriscience Introduction to Animal and Dairy Science Introduction to Veterinary Science Poultry Industrial Maintenance Poultry Science Veterinary Science	Agricultural and Biosystems Engineering Agribiology Agricultural Industrial Maintenance Dendrology Floriculture and Floral Design Food Safety and Microbiology Forestry Forestry Industrial Maintenance Fundamentals of Agriscience Greenhouse and Nursery Production Horticulture Science Intermediate Agriscience Landscape Design and Management Plant Biotechnology Turfgrass Management Urban Forestry
Capstone Course(s)	Career Pathway Project in Agriculture, Food, and Natural Resources CTE Lab in AFNR	Career Pathway Project in Agriculture, Food, and Natural Resources CTE Lab in AFNR	Career Pathway Project in Agriculture, Food, and Natural Resources CTE Lab in AFNR

Program Name	Environmental and Natural Resources	Industrial Agriculture
Foundation Course(s)	Fundamentals of Agriscience	Fundamentals of Agriscience
Concentrator Course(s)	Agribiology Agricultural and Biosystems Engineering Agricultural Industrial Maintenance Dendrology Environmental Management Fish and Wildlife Management Forestry Forestry Industrial Maintenance Fundamentals of Agriscience Intermediate Agriscience Urban Forestry Wildland Firefighting and Controlled Fire	Agricultural and Biosystems Engineering Agricultural Engines Agricultural Industrial Maintenance Agricultural Welding 1 Agricultural Welding 2 Applied Agriscience Construction Finishing and Interior Systems Construction Framing Construction Site Prep and Foundations Forestry Industrial Maintenance Fundamentals of Agriscience Introduction to Agricultural Construction Introduction to Agricultural Wiring Poultry Industrial Maintenance Residential and Commercial Power Equipment
Capstone Course(s)	Career Pathway Project in Agriculture, Food, and Natural Resources CTE Lab in AFNR	Career Pathway Project in Agriculture, Food, and Natural Resources CTE Lab in AFNR

To meet the CCR Indicator as a CTE completer, a student must earn three (3.0) credits with the grade of a “C” or higher in CTE courses that are part of an approved CTE program of study. Additional requirements are outlined in [Memorandum FY22-2065](#).

This matrix is intended for general guidance on the CCR completer status and is subject to change. For all CTE programming information, please refer to the CTE Cluster specific Program Guide. It contains a list of approved CTE programs, valid course numbers, required prerequisite courses, approved Career Readiness Indicators (CRIs) and in demand occupations.

***Courses are listed in alphabetical order, not in sequential order.**