
2025-2026

PROGRAM GUIDE

ARCHITECTURE AND CONSTRUCTION CLUSTER



ALABAMA STATE DEPARTMENT OF EDUCATION
CAREER AND TECHNICAL EDUCATION
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Architecture and Construction Cluster Program Guide

In the Architecture and Construction cluster, course work leads to careers in construction technology, electrical, heating, ventilation, air- conditioning, (HVAC), masonry, plumbing, technical design, utility line work and welding. Course content includes significant technical depth and incorporates engineering concepts and terminology. The Architecture and Construction cluster provides students with basic knowledge and skills within a safe and appropriate setting for student exploration and achievement. The active, structured, and stimulating environment simulates the workplace setting and enhances student ability to adapt to an ever-changing job market.

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

| Career Pathway Program | Construction Technology Program (Must teach three courses from this program list within two years) Courses in the construction technology program will ground the trainee in the basic knowledge and principles of carpentry and cabinetmaking. Students will become skilled in different phases of a project from start to finish. Once completing this course, the student will be able to interpret construction drawings, and frame walls, ceilings, and floors of a structure. Emphasis is placed on job safety, use of hand tools and stationary power tools, materials and hardware, various types of joinery, and component assembly and installation. This program covers content such as Building Materials, Cabinet Fabrication, and Advanced Wall Systems. This program aligns with NCCER standards. | | |
|------------------------|--|---|---|
| | Course Number | Career Pathway Program Courses | Career Readiness Indicator (CRI) In Demand Occupations |
| | 17002G1002 | Architecture and Construction Foundations | <ul style="list-style-type: none"> Alabama Certified Employee (ACE) Asphalt Roller – Skills for Success Bulldozer – Skills for Success Carpentry Helper – Skills for Success Construction and Skilled Trade Assessment (CAST) Electrical Helper – Skills for Success Excavator – Skills for Success Flooring Installer – Skills for Success Home Builders Association of Alabama Residential Construction Skills Certification NCCER Cabinetmaking Level 1 NCCER Carpentry Level 1 NCCER Construction Technology Level 1 NCCER Core (Module 6 is an elective and not required for CRI) OSHA 30 Plumbing Helper – Skills for Success Ready for Industry - Construction Skid Steer – Skills for Success <ul style="list-style-type: none"> Carpenters Construction Laborers Construction Managers Cost Estimators Crane & Tower Operators Fence Erectors First-Line Supervisors of Construction Trades & Extraction Workers Glaziers Helper – Installation, Maintenance, & Repair Workers Operating Engineers & Other Construction Equipment Operators Painters, Construction & Maintenance Roofers Sheet Metal Workers |
| | 17007G1002 | Cabinetmaking Finishing | |
| | 17007G1001 | Cabinetmaking Joinery | |
| | 17047G1001 | Career Pathway Project in Architecture and Construction | |
| | 17013G1001 | Carpentry: Commercial Framing and Layout | |
| | 17002G1003 | Construction Building Systems | |
| | 17011G1001 | Construction Finishing | |
| | 17002G1011 | Construction Foundation Layout | |
| | 17017G1000 | CTE Lab in Architecture and Construction | |
| | 17013G1002 | Industrial Carpentry | |
| | 17013G1003 | Industrial Site Layout, Formwork, and Concrete | |
| | 12002G1003 | Project Management | |
| | 17002G1010 | Residential Building | |
| | 17049G1000 | Safety and Health Regulations | |
| | 17006G1001 | Wood Technology: 2D Design | |
| | 17006G1002 | Wood Technology: 3D Design | |

| Career Pathway Program | Electrical Program (Must teach three courses from this program list within two years) Electricians install electrical systems in structures; they install wiring and other electrical components, such as circuit breaker panels, switches, and light fixtures, and they follow blueprints, the <i>National Electrical Code®</i> and state and local codes. To prepare trainees for a career in the electrical field, this program utilizes NCCER's comprehensive, 4-level Electrical curriculum that complies with DOL time-based standards for apprenticeship. | | |
|------------------------|--|---|--|
| | Course Number | Career Pathway Program Courses | Career Readiness Indicator (CRI) In Demand Occupations |
| | 17002G1002 | Architecture and Construction Foundations | <ul style="list-style-type: none"> Alabama Certified Employee (ACE) Asphalt Roller – Skills for Success Bulldozer – Skills for Success Carpentry Helper – Skills for Success Construction and Skilled Trade Assessment (CAST) Electrical Helper – Skills for Success Excavator – Skills for Success NCCER Core (Module 6 is an elective and not required for CRI) NCCER Electrical Level 1 OSHA 30 Ready for Industry - Construction Skid Steer – Skills for Success <ul style="list-style-type: none"> Construction Laborers Cost Estimators Electrical Power-Line Installers and Repairers Electricians Helpers, Electricians Helpers, Installation, Maintenance, & Repair Workers |
| | 17047G1001 | Career Pathway Project in Architecture and Construction | |
| | 17017G1000 | CTE Lab in Architecture and Construction | |
| | 17102G1000 | Electrical Fundamentals | |
| | 17103G1001 | Electrical Installation | |
| | 17102G1001 | Electrical Technology | |
| | 17104G1010 | Motor Controls | |
| | 12002G1003 | Project Management | |
| | 17049G1000 | Safety and Health Regulations | |
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| Career Pathway Program | Heating, Ventilation, and Air Conditioning Program (Must teach three courses from this program list within two years) The increasing development of HVAC (heating and air-conditioning systems) technology causes employers to recognize the importance of continuous education and keeping up to speed with the latest equipment and skills. This program aligns with NCCER's standards that have been designed by highly qualified subject matter experts with this in mind. This curriculum is recognized by North American Technician Excellence (NATE) and presents theoretical and practical skills essential to your success as an HVAC installer or technician. | | |
|------------------------|---|--|--|
| | Career Pathway Program Courses | Career Readiness Indicator (CRI) | In Demand Occupations |
| 17002G1002 | Architecture and Construction Foundations | <ul style="list-style-type: none"> Air Conditioning, Heating, and Refrigeration Institute (AHRI) ICE - Residential Core Alabama Certified Employee (ACE) Asphalt Roller – Skills for Success Bulldozer – Skills for Success Carpentry Helper – Skills for Success Construction and Skilled Trade Assessment (CAST) Electrical Helper – Skills for Success EPA Card Excavator – Skills for Success NCCER Core (Module 6 is an elective and not required for CRI) NCCER HVAC Level 1 OSHA 30 Ready for Industry - Construction Skid Steer – Skills for Success | <ul style="list-style-type: none"> Construction Laborers Cost Estimators Heating, Air Conditioning, & Refrigeration Mechanics & Installers Helpers, Installation, Maintenance, & Repair Workers Sheet Metal Workers |
| 17047G1001 | Career Pathway Project in Architecture and Construction | | |
| 17017G1000 | CTE Lab in Architecture and Construction | | |
| 17056G1001 | HVAC Fundamentals | | |
| 17055G1001 | HVAC Installation and Operation | | |
| 17052G1001 | HVAC Refrigeration Systems | | |
| 12002G1003 | Project Management | | |
| 17049G1000 | Safety and Health Regulations | | |
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| Career Pathway Program | Masonry Program (Must teach three courses from this program list within two years) The study of masonry is one of the world's oldest and most respected crafts. Masonry construction existed for thousands of years. This program encompasses modules such as Mortar, Metalwork in Masonry, and Estimating; and aligns with NCCER standards. | | |
|------------------------|--|--|--|
| | Career Pathway Program Courses | Career Readiness Indicator (CRI) | In Demand Occupations |
| 17002G1002 | Architecture and Construction Foundations | <ul style="list-style-type: none"> Alabama Certified Employee (ACE) Asphalt Roller – Skills for Success Bulldozer – Skills for Success Construction and Skilled Trade Assessment (CAST) Excavator – Skills for Success NCCER Core (Module 6 is an elective and not required for CRI) NCCER Masonry Level 1 OSHA 30 Ready for Industry - Construction Skid Steer – Skills for Success | <ul style="list-style-type: none"> Construction Laborers Cost Estimators Cement Masons & Concrete Finishers Helper – Installation, Maintenance, & Repair Workers |
| 17047G1001 | Career Pathway Project in Architecture and Construction | | |
| 17017G1000 | CTE Lab in Architecture and Construction | | |
| 17008G1002 | Masonry Laying Techniques | | |
| 17008G1001 | Masonry: Mortar, Materials, and Installation | | |
| 17008G1003 | Masonry: Residential | | |
| 12002G1003 | Project Management | | |
| 17049G1000 | Safety and Health Regulations | | |
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| Career Pathway Program | Plumbing Program (Must teach three courses from this program list within two years) Most people are familiar with plumbers who come to their home to unclog a drain or install an appliance. In addition to these activities, however, plumbers install, maintain, and repair many different types of pipe systems. For example, some systems move water to a municipal water treatment plant and then to residential, commercial, and public buildings. Other systems dispose of waste, provide gas to stoves and furnaces, or supply air conditioning. Pipe systems in power plants carry the steam that powers huge turbines. Pipes also are used in manufacturing plants, such as wineries, to move material through production processes. This program aligns with NCCER's four-level curriculum that covers topics such as Plumbing Tools, Types of Valves, and Potable Water Treatment. | | |
|------------------------|--|--|---|
| | Career Pathway Program Courses | Career Readiness Indicator (CRI) | In Demand Occupations |
| 17002G1002 | Architecture and Construction Foundations | <ul style="list-style-type: none"> Alabama Certified Employee (ACE) Asphalt Roller – Skills for Success Bulldozer – Skills for Success Construction and Skilled Trade Assessment (CAST) Excavator – Skills for Success NCCER Core (Module 6 is an elective and not required for CRI) NCCER Pipefitting Level 1 NCCER Plumbing Level 1 OSHA 30 Plumbing Helper – Skills for Success Ready for Industry - Construction Skid Steer – Skills for Success | <ul style="list-style-type: none"> Construction Laborers Cost Estimators Helper – Installation, Maintenance, & Repair Workers Helpers – Pipelayers, Plumbers, Pipefitters & Steamfitters Plumbers, Pipefitters, & Steamfitters |
| 17047G1001 | Career Pathway Project in Architecture and Construction | | |
| 17017G1000 | CTE Lab in Architecture and Construction | | |
| 17058G1001 | Plumbing and Pipefitting | | |
| 17058G1002 | Plumbing Systems | | |
| 12002G1003 | Project Management | | |
| 17049G1000 | Safety and Health Regulations | | |
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| Career Pathway Program | Technical Design Program (Must teach three courses from this program list within two years) Courses in the Technical Design program are designed to enable students to pursue a successful career in an architectural, engineering, or industrial field. Students learn technical, mechanical drafting, and computer-aided drafting. | | |
|------------------------|--|---|--|
| | Course Number | Career Pathway Program Courses | Career Readiness Indicator (CRI) In Demand Occupations |
| | 21103G1005 | Architectural Design Fundamentals – Required Foundational Course | <ul style="list-style-type: none"> Alabama Certified Employee (ACE) Autodesk- AutoCAD Certified User Autodesk Fusion 360 Certified User Autodesk- Inventor Certified User Autodesk- Revit Certified User Construction and Skilled Trade Assessment (CAST) Land Survey Helper – Skills for Success OSHA 30 Ready for Industry - Construction Solid Edge Certified Associate SolidWorks Associate |
| | 21103G1003 | Architectural Building Information Modeling (BIM) I | |
| | 21103G1004 | Architectural Building Information Modeling (BIM) II | |
| | 21103G1006 | Architectural Structural Design | |
| | 17047G1001 | Career Pathway Project in Architecture and Construction | |
| | 17017G1000 | CTE Lab in Architecture and Construction | |
| | 12002G1003 | Project Management | |
| | 17049G1000 | Safety and Health Regulations | |
| | 21106G1001 | Technical Design Communications I | |
| | 21106G1002 | Technical Design Communications II | |

| Career Pathway Program | Utility Line Worker Program (Must teach three courses from this program list within two years) Utility Line Worker addresses the fundamental aspects of power line and telecommunications work to include safety, electrical theory, climbing techniques, aerial framing and rigging, and operating utility service equipment. | | |
|------------------------|--|---|---|
| | Course Number | Career Pathway Program Courses | Career Readiness Indicator (CRI) In Demand Occupations |
| | 17002G1002 | Architecture and Construction Foundations | <ul style="list-style-type: none"> Alabama Certified Employee (ACE) Asphalt Roller – Skills for Success Bulldozer – Skills for Success CDL A – Skills for Success CDL B – Skills for Success Construction and Skilled Trade Assessment (CAST) Excavator – Skills for Success Fiber Optic tech Installer – Skills for Success Land Survey Helper – Skills for Success NCCER Core (Module 6 is an elective and not required for CRI) OSHA 30 Ready for Industry - Construction Skid Steer – Skills for Success |
| | 17047G1001 | Career Pathway Project in Architecture and Construction | |
| | 17017G1000 | CTE Lab in Architecture and Construction | |
| | 12002G1003 | Project Management | |
| | 17049G1000 | Safety and Health Regulations | |
| | 17104G1011 | Utility Line Worker | |
| | 17104G1012 | Utility Line Workers Service Equipment | |
| | | | |

| Career Pathway Program | Welding Program (Must teach three courses from this program list within two years) Welding is a highly skilled industry that can take you places all over the world. From ladders to aircraft carriers, from NASCAR to national defense, and from the laboratory to sales and repair, the varied welding industry impacts virtually every industry. New ways are being developed to bond dissimilar materials and non-metallic materials, such as plastics, composites, and new alloys. Advances in laser beam and electron beam welding, new fluxes, and other new technologies and techniques all point to an increasing need for highly trained and skilled workers. This program aligns with NCCER's four-level curriculum covering topics such as Oxyfuel Cutting, Welding Symbols, and Stainless-Steel Groove Welds. NCCER's curriculum also correlates to the AWS standards and guidelines for an Entry Welder. | | |
|------------------------|--|---|---|
| | Course Number | Career Pathway Program Courses | Career Readiness Indicator (CRI) In Demand Occupations |
| | 17002G1002 | Architecture and Construction Foundations | <ul style="list-style-type: none"> Alabama Certified Employee (ACE) Asphalt Roller – Skills for Success AWS Certifications (one or more areas): <ul style="list-style-type: none"> FCAW 3-G uphill progression D1.1 GMAW 3-G uphill progression D1.1 GTAW 3-G uphill progression (aluminum) D1.2 GTAW 3-G uphill progression (steel) SMAW 3-G uphill progression D1.1 Bulldozer – Skills for Success Construction and Skilled Trade Assessment (CAST) Excavator – Skills for Success NCCER Core (Module 6 is an elective and not required) NCCER Welding Level 1 OSHA 30 Ready for Industry - Construction Skid Steer – Skills for Success |
| | 17047G1001 | Career Pathway Project in Architecture and Construction | |
| | 17017G1000 | CTE Lab in Architecture and Construction | |
| | 12002G1003 | Project Management | |
| | 17049G1000 | Safety and Health Regulations | |
| | 13207G1003 | Welding: GMAW and FCAW | |
| | 13207G1001 | Welding: SMAW I | |
| | 13207G1002 | Welding: SMAW II | |
| | | | |

2025 – 2026 Subject and Personnel Codes
Architecture and Construction Cluster

| Architecture and Construction Cluster Courses | |
|--|---|
| Course Number | Course Name |
| 17002G1002 | Architecture and Construction Foundations |
| 21103G1003 | Architectural Building Information Modeling (BIM) I |
| 21103G1004 | Architectural Building Information Modeling (BIM) II |
| 21103G1005 | Architectural Design Fundamentals – Required Foundation Course |
| 21103G1006 | Architectural Structural Design |
| 17007G1002 | Cabinetmaking Finishing |
| 17007G1001 | Cabinetmaking Joinery |
| 17047G1001 | Career Pathway Project in Architecture and Construction |
| 17013G1001 | Carpentry: Commercial Framing and Layout |
| 17002G1003 | Construction Building Systems |
| 17011G1001 | Construction Finishing |
| 17002G1011 | Construction Foundations Layout |
| 17017G1000 | CTE Lab in Architecture and Construction |
| 17102G1000 | Electrical Fundamentals |
| 17103G1001 | Electrical Installation |
| 17102G1001 | Electrical Technology |
| 17056G1001 | HVAC Fundamentals |
| 17055G1001 | HVAC Installation and Operation |
| 17052G1001 | HVAC Refrigeration Systems |
| 17013G1002 | Industrial Carpentry |
| 17013G1003 | Industrial Site Layout, Formwork, and Concrete |
| 17008G1002 | Masonry Laying Techniques |
| 17008G1001 | Masonry: Mortar, Materials, and Installation |
| 17008G1003 | Masonry: Residential |
| 17104G1010 | Motor Controls |
| 17058G1001 | Plumbing and Pipefitting |
| 17058G1002 | Plumbing Systems |
| 12002G1003 | Project Management |
| 17002G1010 | Residential Building |
| 17049G1000 | Safety and Health Regulations |
| 21106G1001 | Technical Design Communications I |
| 21106G1002 | Technical Design Communications II |
| 17104G1011 | Utility Line Worker |
| 17104G1012 | Utility Line Worker Service Equipment |
| 13207G1003 | Welding: GMAW and FCAW |
| 13207G1001 | Welding: SMAW I |
| 13207G1002 | Welding: SMAW II |
| 17006G1001 | Wood Technology: 2D Design |
| 17006G1002 | Wood Technology: 3D Design |

| Shared Courses | | | |
|-----------------------|-------------------------------|--|---------------------------------------|
| Course Number | Course Name | Cluster(s) | Required Year to Implement COS |
| 17049G1000 | Safety and Health Regulations | Health Science Manufacturing Transportation, Distribution and Logistics | 2022-2023 |
| 12002G1003 | Project Management | Business and Marketing | 2022-2023 |

General Note: Course descriptions and content standards for most courses are located on the Alabama Department of Education website at:
<https://www.alabamaachieves.org/career-and-technical-education/cte-courses-of-study/>.

College and Career Readiness Indicator Course Matrix

| Program Name | Construction Technology | Technical Design Program | Electrical | Heating, Ventilation, And Air Conditioning, |
|-------------------------------|---|--|--|---|
| Foundation Course(s) | Architecture and Construction Foundations | Architecture Design Fundamentals – Required Foundation Course | Architecture and Construction Foundations | Architecture and Construction Foundations |
| Concentrator Course(s) | Cabinetmaking Finishing Cabinetmaking Joinery Carpentry: Commercial Framing and Layout Construction Building Systems Construction Finishing Construction Foundations Layout Industrial Carpentry Industrial Site Layout, Formwork, and Concrete Project Management Residential Building Safety and Health Regulations Wood Technology: 2D Design Wood Technology: 3D Design | Architectural Building Information Modeling (BIM) I Architectural Building Information Modeling (BIM) II Architectural Structural Design Project Management Safety and Health Regulations Technical Design Communications I Technical Design Communications II | Electrical Fundamentals Electrical Installation Electrical Technology Motor Controls Project Management Safety and Health Regulations | HVAC Fundamentals HVAC Installation and Operation HVAC Refrigeration Systems Project Management Safety and Health Regulations |
| Capstone Course(s) | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction |

| Program Name | Masonry | Plumbing | Utility Line Worker | Welding |
|-------------------------------|--|---|---|--|
| Foundation Course(s) | Architecture and Construction Foundations | Architecture and Construction Foundations | Architecture and Construction Foundations | Architecture and Construction Foundations |
| Concentrator Course(s) | Masonry Laying Techniques Masonry: Mortar, Materials, and Installation Masonry: Residential Project Management Safety and Health Regulations | Plumbing and Pipefitting Plumbing Systems Project Management Safety and Health Regulations | Project Management Safety and Health Regulations Utility Line Worker Utility Line Worker Service Equipment | Project Management Safety and Health Regulations Welding: GMAW and FCAW Welding: SMAW I Welding: SMAW II |
| Capstone Course(s) | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction | Career Pathway Project – Architecture and Construction CTE Lab in Architecture and Construction |

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.**