

ODE Construction Design and Management Career Field Pathway Courses (DF)	Career Technical Assurance Guide (CTAG) Area	Career Technical Articulation Number (CTAN)	Statewide Guaranteed Credit Hours	Sinclair Equivalent Courses	Sinclair Credit Hours
<b>Construction Technology – Core and Sustainable Construction</b> <b>Subject Code: 178000</b> Students will learn principles in basic safety (10-hr OSHA), construction math, hand and power tool are and operation, blueprint reading, material handling, communication and employability skills. An emphasis will be placed on safe and green construction practices.	Safety (OSHA 10 hour)	CTS001	1 sem.	CAT 1810 - Construction Techniques I NCCER Core CAT 1431 OSHA Construction Standards * 10 hours	3 sem.  1 sem.
<b>Carpentry and Masonry Technical Skills</b> <b>Subject Code: 178001</b> This first course in the pathway will introduce to students the materials, methods, and equipment used in carpentry and masonry. Students will organize a project work sequence by interpreting plans and diagrams within a construction drawing set. They will layout and install basic wall, floor and roof applications. Students will perform introductory concrete applications including formwork, reinforcement, mixing, and finishing. Current advancements in technology, safety, applicable code requirements and correct practices are learned.				CAT 1820 - Construction Techniques II NCCER Carpentry Level 1 OR CAT 1201 - Construction Methods and Materials <b>(only if combined with Subject Code - 178002)</b>	3 sem.  5 sem.
<b>Mechanical, Electrical and Plumbing Systems</b> <b>Subject Code: 178002</b> Students learn physical principles and fundamental skills across mechanical systems in construction. Students will select materials, assemble, and test basic electrical circuits. Students will select materials and assemble simple copper and plastic plumbing applications for both supply and drains. They will perform simple maintenance of electric motors, electric fixtures and plumbing fixtures. Students will be able to select and install basic ductwork components and learn the operation and maintenance of heating and cooling equipment.				CAT 1201 - Construction Methods and Materials <b>(only if combined with Subject Code - 178001)</b>	5 sem.

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<b>Construction Electrical Systems</b> <b>Subject Code: 178007</b> This introductory electrical course will emphasize electrical theory, materials, equipment. Students will explore the National Electrical Code and learn worksite safety. They will interpret schematics; construct basic circuits, use test equipment and electrical hand and power tools. Version FV1.2 Posted 13 AUG 2014 8				EET 1181 - Electrical Construction I-NCCER Electrical Level 1	3 sem.
<b>Heating and Cooling Systems</b> <b>Subject Code: 178012</b> Students will apply principles of heating and cooling to the installation, troubleshooting and maintenance of residential and commercial Heating, Ventilation, and Air conditioning/Refrigeration (HVAC/R) Systems.					
<b>Construction Safety and Crew Leadership</b> <b>Subject Code: 178018</b> This course covers OSHA standards (30-hr OSHA) and requirements as they apply to the construction industry and crew/project management. Topics include safety and health hazards, safe practices, construction safety management, and crew management. Emphasis is on hazard identification, avoidance, control and prevention.					
<b>Plan Reading</b> <b>Subject Code: 178019</b> Students learn blueprint reading as it relates to the architecture and construction. Students will use scaling, orthographic projections, dimensioning practices, symbols, notations, and abbreviations to perform area calculations and to interpret floor plan, section, and elevations. Using construction plans, students will identify problems or shortcomings related to the layout and installation of materials for the project.				CAT 1141 - Architectural Blueprint Reading	3 sem

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<b>Architecture Design – Structural and Mechanical/Electrical/Plumbing</b> <b>Subject Code: 178020</b> Students will use architecture design principles to organize and arrange structures to create a perspective of a building. Students will use orthographic/pictorial projection, freehand technical sketching and computer-aided drafting (CAD) skills to generate floor and wall plans, elevations, sections, details and schedules. Students will develop sets of structural framing and mechanical working drawings that include plumbing, HVAC and electrical power and lighting plans.				CAT 1101 - Architectural Drafting	3 sem.
<b>Architecture Design – Site and Foundation Plans</b> <b>Subject Code: 178021</b> Students use advanced architectural design concepts to construct design models including perspective drawings for final presentations. Students use orthographic/pictorial projection, freehand technical sketching and computer-aided drafting (CAD) tools to create site foundation and section plans that include topographical details and schedules. Additionally, students perform zoning analysis, develop preliminary plot plans, and construct grading and utilities plans that include legal descriptions and cut and fill volumes.					
<b>Construction Management</b> <b>Subject Code: 178022</b> This course provides an integrated look at balancing the planning, estimating, and directing of construction operations. Students learn the process of creating and monitoring a construction project including standard agreements, bidding, estimates and project schedules. Students will learn to manage change orders, accident prevention and loss control, closeouts, and claims with an emphasis in production and quality control. Additionally, students will apply leadership, communications, and problem solving skills to construction management.					

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<b>Remodeling/Renovation</b> <b>Subject Code: 178023</b> Students will apply structural and mechanical skills to remodeling and renovations. In addition, students will learn the process of securing the required building permits, the management of subcontractors, and the coordination of formal building inspections. Students will troubleshoot design or logistics issues and provide possible solutions. Throughout the course, the safe handling of materials, personal safety, prevention of accidents and the mitigation of hazards are emphasized.					
<b>Facility and Building Maintenance</b> <b>Subject Code: 178024</b> Students are introduced to the maintenance and management processes used in public buildings and industrial facilities. Students will troubleshoot building and systems issues and provide solutions following applicable procedures and standards. Students will operate and maintain machinery and equipment used in grounds and facilities maintenance tasks. Throughout the course, the safe handling of materials, personal safety, prevention of accidents and the mitigation of hazards are emphasized.					
<b>Custodial Services</b> <b>Subject Code: 178025</b> Students select and use the tools and equipment required for maintaining the safety and sanitation of building environments. Students select and apply methods, chemicals and equipment used to clean and maintain resilient, natural, synthetic and special surfaces. Students perform routine and renovation cleaning activities in both common and special service areas with an emphasis in client satisfaction. Additionally, students follow standard safety practices and procedures.					

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<b>Heavy Equipment Operations</b> <b>Subject Code: 178026</b> Students perform heavy equipment operating techniques and perform operator level maintenance. Students will learn to survey using lasers, transits and machine control systems. Additionally, students learn the techniques and processes for clearing, grubbing, stripping, excavating, backfilling, stockpiling, and cutting and spreading of fill material. Throughout the course, safety is emphasized.					
<b>Construction Site Preparation</b> <b>Subject Code: 178027</b> Students use surveying, topographic, satellite positioning, and geomatic instruments to locate and prepare a site for construction. Students establish lot and building lines as well as grade levels, and use site plans and elevation drawings to determine excavation needs. Students locate and mark underground and overhead services, identify soil conditions that may require shoring and position batter boards. Additionally, students identify the parameters for site selection, zoning regulations, and the process for filing building permits.					
<b>Interior Design</b> <b>Subject Code: 178028</b> Students learn principles and elements of design as they relate specifically to interior spaces. Students develop functional and aesthetic design concepts with an emphasis in providing design solutions. Students select materials for appropriateness, quality, performance, and cost for interior applications. Students use presentation techniques, technical drawings and other visual materials to enhance and present interior designs.					

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<p><b>Construction Pre-Apprenticeship/Capstone</b>  <b>Subject Code: 178029</b></p> <p>The capstone course provides opportunities for students to apply knowledge, attitudes and skills that were learned in Construction programs in a more comprehensive and authentic way. Capstones often include project/problem based learning opportunities that occur both in and away from school. Under supervision of the school and through community partnerships, students may combine classroom learning with work experience. This course can be delivered through a variety of delivery methods including cooperative education or apprenticeship.</p>					