### Building and Construction Trades

#### Pathway Courses

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Using Perkins Guidelines and Instructions and the CTE Framework, the following definitions are utilized in course sequences and pathways:

**Pathway** – Designed to provide students with a non-duplicative sequence of progressive achievement leading to technical skill proficiency, a credential, a certificate, or a degree.

**Introductory** – Preliminary course, beginning level containing introductory concepts required to build foundational and general knowledge.

**Concentrator** – A CTE course beyond the introductory level that is intended to provide more in-depth instruction in and exploration of a specific industry sector.

**Capstone** – The final course in a planned sequence of courses that provides a rigorous and intensive culmination of a course of study.

**CTE Course Sequencing** – Refer to CALPADS guidelines for pathway sequencing. A pathway sequence is defined as a set of at least two course offerings—concentrator and capstone, which fall within the SAME pathway. The sequence may include the following:

1. Introductory course (can apply to many pathways in a sector).
2. Concentrator course (should only be used for ONE pathway).
3. Capstone course (can only be used for ONE pathway). The total hours of training for a capstone completer is 300 hours.
Industry Sector: Building and Construction Trades

Residential and Commercial Construction Pathway

Student learning opportunities include carpentry; engineering and heavy industrial construction (roads, highways, subdivisions); and construction and building design, performance, and sustainability. Standards focus on residential and commercial structures.

Course Title: Computer Aided Construction Design and Blueprint Development

Course Description: This course introduces students to the technical craft of drawing illustrations to represent and analyze design specifications for the construction industry of residential and commercial buildings. Students will use computer software to design blueprints and drawings that would represent the needed skills in planning and designing of construction projects. Using computers to develop the techniques that are essential in technical drafting and architectural design students will prepare for the construction, architectural and engineering fields.

Course Title: Construction Technology I

Course Description: This course is designed to provide entry-level skills through classroom and hands-on experience in construction and construction-related occupations, including construction, remodeling, maintenance and repair of building and structures. Students will use an assortment of materials such as wood, stone, brick, glass, concrete, metal, and composition substances. Instructional activities include: cutting, fitting, fastening, and finishing various common construction materials; the safe use of a variety of hand and power tools; installation of plumbing and electrical fixtures; blueprint reading; the use of squaring and leveling tools; and safety and job readiness-training for entrance into construction and construction-related occupations.

Course Title: Construction Technology II

Course Description: This course is the second in a series designed to provide classroom and advanced hands-on experiences in construction and construction-related occupations, including construction, remodeling, maintenance and repair of building and structures. Students will use an assortment of materials such as wood, stone, brick, glass, concrete, metal, and composition substances. Instructional activities include: cutting, fitting, fastening, and finishing various common construction materials; the safe use of a variety of hand and power tools; installation of plumbing and electrical fixtures; blueprint reading; the use of squaring and leveling tools; and safety and job readiness-training for entrance into construction and construction-related occupations. This course can be repeated for credit.
Course Title: Green Construction Technology

Course Description: This course is based on the building trades’ industry sector of the California Career Technical Education Model Standards. This course is designed to provide classroom and hands-on experience in the green building principles and practices in the residential construction. Students will explore all the aspects involved in designing and building energy efficient and environmentally friendly green homes.

Course Title: RCOE Construction Technology I

Course Description: Construction Technology 1 is a competency-based overview of the Building Trades designed to provide students with technical instruction and practical experience in basic residential and commercial construction through classroom instruction and applied practice of skills. Instruction includes: an introduction, workplace safety, safe and proper use of hand tools, power tools, trade specific instruction, and reviews of resource management, construction trade mathematics, employability skills, and apprenticeship preparation. Students will learn and follow approved safety standards related to the industry. Additionally, students will work with and maintain equipment used in the industry. Emphasis is placed on the techniques, tools, and materials required for rough and finish carpentry, estimating, plumbing, electric, renewable energy, roofing, and painting. The competencies in this course are aligned with the California Career Technical Education Model Curriculum Standards and has incorporated a rigorous writing component. Students will gain critical-thinking skills as they manage and design small to large construction projects and examine real-world building issues. Students will work in teams to develop communication, leadership, and time management skills. This course is designed prepare students for post-secondary education in engineering, build trades, utility development and construction management. This course has received approval from the University of California for entrance requirement in the “g” category.
Industry Sector: Building and Construction Trades

Course Title: RCOE Construction Technology II

Course Description: This advanced course has been developed to reinforce the skills and concepts introduced in Building and Construction Trades I with an emphasis on applied mathematics. Students will apply the craft skills learned in the previous year to design and build a variety of scaled structures that meet current code requirements. Students will make real-world connections between construction and math using blueprints, construction drawings, and detailed shop plans of assigned construction projects. This course provides students the opportunity to apply academic knowledge and technical skills through a hands-on curriculum that meets pre-apprenticeship requirements for the National Building Trades Council. In preparation for post-secondary education or employment in the construction industry, students will research and evaluate apprenticeship, employment, and college opportunities in the building trades, engineering, and utilities. This course has received approval from the University of California for entrance requirement in the “g” category.

Course Title: RCOE MultiCraft Core: Building Scaled Structures (UCCI)

Course Description: This course has been developed to integrate skills and concepts from the Building and Construction Trades with applied mathematics and English. As a natural progression, students will apply the craft skills required to design and build a variety of scaled structures that meet current code requirements. In addition, students will make real-world connections between construction, math, and English using written projects, construction documents that include creating blueprints, project packets, and student-centered construction projects. This course provides students the opportunity to apply academic knowledge and technical skills through a hands-on curriculum that meets pre-apprenticeship requirements for the National Building Trades Council.

Course Title: Solar Energy Technology for Construction

Course Description: This course prepares students for careers within the solar technology industry. Course content includes alternative energy generation, safety, energy and power, passive solar systems, active solar systems, installation and design of residential-scale photovoltaic systems, building codes, and compliance, and understanding blueprints. Students will practice concepts within the solar photovoltaic lab. Students will cover and utilize skills in principles of photovoltaic systems and incorporate hands-on activities for all topics. Solar Energy fundamentals and applications, electricity and safety basics, PV modules, system components, system sizing, electrical design, mechanical design, and performance analysis and troubleshooting will be explored.