# Scope & Sequence

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| Course Name: Principles of Construction **PEIMS Code:** 13004220 | | | **Course Credit:** 1.0  **Course Requirements:** Recommended for Grades 9-12.  **Prerequisites:** None.  **Recommended Prerequisites:** None.  **Corequisites:** None. |
| **Course Description:** Principles of Construction is intended to provide an introduction and lay a solid foundation for those students entering the construction or craft skilled areas. The course provides a strong knowledge of construction safety, construction mathematics, and common hand and power tools. For safety and liability considerations, limiting course enrollment to 15 students is recommended. This course also provides communication and occupation skills to assist the student in obtaining and maintaining employment. | | | |
| **NOTE:** This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered. | | | |
| **Total Number of Periods**  **Total Number of Minutes**  **Total Number of Hours** | 175 Periods  7,875 Minutes  131.25 Hours\* | \*Schedule calculations based on 175/180 calendar days. For 0.5 credit courses, schedule is calculated out of 88/90 days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc. | |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***  (assumes 45-minute periods)  Total minutes per unit | **TEKS Covered**  **130.43. (c) Knowledge and skills** | |
| **Unit 1: Professional Standards/Employability Skills**  Students will discuss the professional standards and employability skills, including the role of an employee in the construction industry. Students will demonstrate critical-thinking skills, demonstrate the ability to solve problems using critical-thinking skills, demonstrate knowledge of basic computer systems, explain common uses for computers in the construction industry, and define effective relationship skills. Students will further develop and demonstrate these skills and attributes throughout the course. In small groups and/or in other classroom activities, students will recognize workplace issues such as sexual harassment, stress, and substance abuse, explain the Occupational Safety and Health Administration (OSHA) General Duty Clause, and explain OSHA 1926 CFR Subpart C. | 15 periods  675 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) explain the role of an employee in the construction industry;  (B) demonstrate critical-thinking skills;  (C) demonstrate the ability to solve problems using critical-thinking skills;  (D) demonstrate knowledge of basic computer systems;  (E) explain common uses for computers in the construction industry;  (F) define effective relationship skills;  (G) recognize workplace issues such as sexual harassment, stress, and substance abuse;  (H) explain the Occupational Safety and Health Administration (OSHA) General Duty Clause; and  (I) explain OSHA 1926 CFR Subpart C. | |
| **Unit 2: Construction Mathematics**  Students will discuss basic construction mathematics. In small groups and/or in other classroom activities, students will add, subtract, multiply, and divide whole numbers with and without a calculator, add, subtract, multiply, and divide fractions, add, subtract, multiply, and divide decimals with and without a calculator, convert decimals to percentages and percentages to decimals, and convert fractions to decimals and decimals to fractions. Students will further develop and demonstrate these skills throughout the course. | 15 periods  675 minutes | (4) The student understands basic construction mathematics. The student is expected to:  (A) add, subtract, multiply, and divide whole numbers with and without a calculator;  (B) add, subtract, multiply, and divide fractions;  (C) add, subtract, multiply, and divide decimals with and without a calculator;  (D) convert decimals to percentages and percentages to decimals; and  (E) convert fractions to decimals and decimals to fractions. | |
| **Unit 3: Measuring Practices**  Students will discuss the basic measuring practices. In small groups and/or other classroom activities, students will use a standard ruler, a metric ruler, a measuring tape, and an architectural/engineering scale to measure, explain what the metric system is and how it is important in the construction trade, recognize and use metric units of length, weight, volume, and temperature, and recognize some of the basic shapes used in the construction industry and apply basic geometric principles to measure them. Students will further develop and demonstrate these skills throughout the course. | 15 periods  675 minutes | (5) The student demonstrates basic measuring practices. The student is expected to:  (A) use a standard ruler, a metric ruler, a measuring tape, and an architectural/engineering scale to measure;  (B) explain what the metric system is and how it is important in the construction trade;  (C) recognize and use metric units of length, weight, volume, and temperature; and  (D) recognize some of the basic shapes used in the construction industry and apply basic geometric principles to measure them. | |
| **Unit 4: Communication**  Students will interpret and present information used in workplace situations. In small groups and/or other classroom activities, students will interpret information and instructions presented in written form, interpret information and instructions presented in verbal form, communicate effectively using verbal and writing skills, and communicate effectively on the job using electronic communication devices. Students will further develop and demonstrate these skills throughout the course. | 15 periods  675 minutes | (9) The student interprets and presents information used in workplace situations. The student is expected to:  (A) interpret information and instructions presented in written form;  (B) interpret information and instructions presented in verbal form;  (C) communicate effectively using verbal and writing skills; and  (D) communicate effectively on the job using electronic communication devices. | |
| **Unit 5: Safety**  Students will discuss that safe working standards are imperative in the classroom and in the field. In small groups and/or in other classroom activities, students will explain the idea of a safety culture, explain the importance of a safety culture in the construction crafts, explain the role of the OSHA in job-site safety, explain fall protection, ladder safety, stair safety, and scaffold safety procedures, demonstrate the use and care of appropriate personal protective equipment, including safety goggles and glasses, hard hats, gloves, safety harnesses, and safety shoes, define safe work procedures around electrical hazards, and explain the importance of Safety Data Sheets (SDS). Students will further develop and demonstrate these skills throughout the course. | 15 periods  675 minutes | (2) The student understands that safe working standards are imperative in the classroom and in the field. The student is expected to:  (A) explain the idea of a safety culture;  (B) explain the importance of a safety culture in the construction crafts;  (C) explain the role of the OSHA in job-site safety;  (D) explain fall protection, ladder safety, stair safety, and scaffold safety procedures;  (E) demonstrate the use and care of appropriate personal protective equipment, including safety goggles and glasses, hard hats, gloves, safety harnesses, and safety shoes;  (F) define safe work procedures around electrical hazards; and  (G) explain the importance of Safety Data Sheets (SDS). | |
| **Unit 6: Hazards and Accidents**  Students will discuss the importance of recognizing potential hazards and preventing accidents in the classroom and in the field. In small group and/or in other classroom activities, students will identify causes of accidents, identify impacts of accident costs, define hazard recognition, identify struck-by hazards, identify caught-in-between hazards, identify other construction hazards on the jobsite, including hazardous material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires, and explain the importance of hazard communication (HazCom). | 20 periods  900 minutes | (3) The student understands the importance of recognizing potential hazards and preventing accidents in the classroom and in the field. The student is expected to:  (A) identify causes of accidents;  (B) identify impacts of accident costs;  (C) define hazard recognition;  (D) identify struck-by hazards;  (E) identify caught-in-between hazards;  (F) identify other construction hazards on the jobsite, including hazardous material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires; and  (G) explain the importance of hazard communication (HazCom). | |
| **Unit 7: Hand Tools**  Students will discuss the care and identification of hand tools. In small groups and/or other classroom activities, students will recognize and identify the basic hand tools and their purposes for the construction trades, inspect basic hand tools visually to determine if they are safe for use, and use the basic construction hand tools safely and properly. | 20 periods  900 minutes | (6) The student acquires knowledge about care and identification of hand tools. The student is expected to:  (A) recognize and identify the basic hand tools and their purposes for the construction trades;  (B) inspect basic hand tools visually to determine if they are safe for use; and  (C) use the basic construction hand tools safely and properly. | |
| **Unit 8: Powered Hand Tools**  Students will discuss the care and identification of powered hand tools. In small groups and/or other classroom activities, students will identify powered hand tools commonly used in the construction trades, practice safe and proper applications of powered hand tools used in the construction trades, and explain how to properly maintain and clean powered hand tools used in construction trades. | 20 periods  900 minutes | (7) The student acquires knowledge about care and identification of powered hand tools. The student is expected to:  (A) identify powered hand tools commonly used in the construction trades;  (B) practice safe and proper application of powered hand tools commonly used in the construction trades; and  (C) explain how to properly maintain and clean powered hand tools commonly used in construction trades. | |
| **Unit 9: Ergonomic Tools and Safe Material Handling**  Students will discuss ergonomic tools and procedures as well as safe material handling standards. In small groups and/or classroom activities, students will define a load, establish a pre-task plan prior to moving a load, apply proper material-handling techniques, choose appropriate material-handling equipment for the task, and recognize hazards and follow safety procedures required for material handling. | 20 periods  900 minutes | (10) The student identifies ergonomic tools and procedures as well as safe material handling standards. The student is expected to:  (A) define a load;  (B) establish a pre-task plan prior to moving a load;  (C) apply proper material-handling techniques;  (D) choose appropriate material-handling equipment for the task; and  (E) recognize hazards and follow safety procedures required for material handling. | |
| **Unit 10: Construction Drawing**  Students will discuss the basics of construction drawing. In small groups and/or other classroom activities, students will interpret and use drawing dimensions, recognize and identify basic construction terms, recognize and identify basic drawing components, recognize and identify commonly used drawing symbols, relate information on construction drawings to actual locations on the print, and recognize different classifications of construction drawings. As a culminating activity for this unit, students will present on the basics of construction drawing with examples woven into their presentation. | 20 periods  900 minutes | (8) The student develops the basics of construction drawing. The student is expected to:  (A) interpret and use drawing dimensions;  (B) recognize and identify basic construction terms;  (C) recognize and identify basic drawing components;  (D) recognize and identify commonly used drawing symbols;  (E) relate information on construction drawings to actual locations on the print; and  (F) recognize different classifications of construction drawings. | |