

Lecture Contact Hours: 24-27; Homework Hours: 48-54;  
 Laboratory Contact Hours: 24-27; Homework Hours: 0;  
 Total Student Learning Hours: 96-108

**CUYAMACA COLLEGE**  
**COURSE OUTLINE OF RECORD**

**CENTER FOR WATER STUDIES 207 – PRACTICAL SKILLS IN WATER & WASTEWATER SYSTEMS**

1.5 hours lecture, 1.5 hours laboratory, 1 class per week for 8 weeks, 2 units

**Catalog Description**

This course provides practical hands-on experience with the equipment and materials commonly used in the water and wastewater industry. Students will become familiar with and learn the specific uses of each piece of equipment commonly utilized in water distribution and wastewater collection systems. Students will have the opportunity to participate in hands-on learning activities and lessons related to the installation and maintenance of equipment and tools used in the water and wastewater industry. This course will utilize the Field Operation Skills Yard (FOSY) to provide a realistic learning environment for the students.

**Prerequisite**

“C” grade or higher or “Pass” in CWS 107 or equivalent

**Entrance Skills**

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Knowledge of the essential purpose of safety and health regulatory agencies in the water and wastewater industry.
- 2) Familiarity with the Federal and State agencies involved in enforcement of safety and health regulations in California.
- 3) Competently apply knowledge of the safety and health regulations to current and future employment.
- 4) Ability to design a basic Injury and Illness Prevention Program (IIPP) for a small water/wastewater agency

**Course Content**

- 1) History of Water Distribution Systems and Wastewater Collection Systems
- 2) Appurtenances in Water and Wastewater System Design
  - a. Material Certification/Testing Agencies (AWWA, NSF, UL)
  - b. Safety in the Water/Wastewater Industry
  - c. Related Safety Equipment (Identification and Recognition)
- 2) Awareness Level Overview and Hands-on Instruction
  - a. Control Valves Design/Maintenance
  - b. Regulators Design/Maintenance
  - c. Pipe Material Handling and Storage
  - d. Wet Tapping
  - e. Tanks/Maintenance
  - f. System Hydraulics
  - g. OSHA Regulations for the Water/Wastewater Industry
  - h. Personal Protective Equipment (PPE)
  - i. Hand and Power Tools (Use, Safety, Maintenance, Storage)
  - j. Jobsite Stormwater Issues

- k. Ladders/Fall Safety
- l. Related Safety Equipment (Identification and Recognition)
- m. Hoist, Crane and Davit Operation
- n. Heat Illness Prevention
- o. Lock out/Tag out Procedures for Maintenance and Repair

### **Course Objectives**

Students will be able to:

- 1) Identify the various components of water and wastewater systems.
- 2) Identify the tools and equipment commonly utilized for installation, maintenance and repair of water and wastewater systems.
- 3) Demonstrate an understanding of the importance of safety in the water and wastewater industry.
- 4) Demonstrate the ability to identify tools and materials used to assemble, maintain, and repair water and wastewater systems.
- 5) List the top five safety and health related issues in the water and wastewater industry.
- 6) Demonstrate the proper use of personal protective equipment typically used in the repair and maintenance of water and wastewater systems.

### **Method of Evaluation**

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Projects
- 2) Writing assignments
- 3) Homework assignments and quizzes
- 4) Exams (objective, essay)
- 5) Demonstrations & assignments utilizing the Field Operations Skills Yard (FOSY)

### **Special Materials Required of Student**

None

### **Minimum Instructional Facilities**

- 1) Smart classroom
- 2) Wi-Fi Internet Connection
- 3) Field Operations Skills Yard (FOSY)

### **Method of Instruction**

- 1) Lecture and discussion
- 2) Audiovisual
- 3) Safety Equipment Displays
- 4) Internet to research Safety and Health Regulations
- 5) Hands-on Instruction utilizing the Field Operations Skills Yard (FOSY)

### **Out-of-Class Assignments**

- 1) Reading assignments
- 2) Writing assignments
- 3) Projects
- 4) Reports

### **Texts and References**

- 1) Required (representative example): American Water Works Association M3 SAFETY MANAGEMENT

FOR UTILITIES, EIGHTH EDITION ISBN: 9781647170776, 2022.

2) Supplemental:

- a. CSUS - Water Distribution System Operation and Maintenance, 7th Ed., 2018.
- b. CSUS - Operation and Maintenance of a Wastewater Collection System Vol. 1, 8th Ed., 2018.

**Student Learning Outcomes**

Upon successful completion of this course, students will be able to:

- 1) Select the proper tools and successfully perform a tapping operation on a pressurized pipeline.
- 2) Calculate the required dosage and demonstrate the proper procedure for chlorinating a newly installed water main.
- 3) Demonstrate the proper procedure for using a Cal/OSHA approved fall protection system.
- 4) Demonstrate the proper procedures for testing and safely entering a non-permit confined space.