

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 280 – BACKFLOW TESTER TRAINING**

1.5 hours lecture, 1.5 hours laboratory, 2 units

**Catalog Description**

Preparation for the American Water Works Association (AWWA) and the American Backflow Prevention Association (ABPA) certification for Backflow Prevention Assembly Tester Certification. Includes backflow device installation and testing procedures required for the certification testing.

**Prerequisite**

None

**Course Content**

- 1) Cross connections: historical perspective, case studies, definitions
- 2) Regulatory codes for backflow prevention assemblies
- 3) Typical devices: specifications, installation
- 4) Backflow device maintenance procedures
- 5) American Water Works Association and American Backflow Prevention Association testing standards

**Course Objectives**

Students will be able to:

- 1) Perform accurate backflow prevention tests using proper test equipment.
- 2) Analyze backflow prevention test results using standardized test reporting forms.
- 3) Evaluate backflow testing device malfunctions.
- 4) Articulate the importance of proper backflow testing equipment.
- 5) Cite specific laws pertaining to cross connection control programs.
- 6) Complete basic backflow testing device repairs requiring breakdown and reassembly.
- 7) Articulate the AWWA and ABPA testing standards.

**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) Lab activities, writing assignments and/or quizzes/exams which measure students' ability to describe and/or implement various backflow device installation methods and testing procedures required for certification testing.
- 2) Perform "hands on" assessment to determine students' proficiency in detecting malfunctions in various backflow protection device assemblies.
- 3) Projects and assignments utilizing the Field Operations Skills Yard

**Special Materials Required of Student**

None

**Minimum Instructional Facilities**

- 1) Smart classroom
- 2) Laboratory facility with water connections and capable of withstanding frequent exposure to water
- 3) Cross connection control devices with stands and plumbing connection
- 4) Test gauges, tools for equipment repair, repair materials

**Method of Instruction**

- 1) Lecture and demonstration
- 2) Lab activities
- 3) Demonstrations utilizing the Field Operations Skills Yard

**Out-of-Class Assignments**

- 1) Reading assignments
- 2) Writing assignments

**Texts and References**

- 1) Required (representative example): Schwartz, Paul H. *Manual of Cross Connection Control*. 10th edition.
- 2) Supplemental:
  - a. University of Southern California Foundation for Cross Connection Control and Hydraulic Research, 10th edition 2020. ISBN: 978-0-9638912-6-6
  - b. *California Administrative Code, Title 17*
  - c. International Association of Plumbing & Mechanical Officials (IAPMO). *Uniform Plumbing Code*. International Association of Plumbing and Mechanical Officials (IAPMO), 2009.
  - d. AWWA M14 Backflow Prevention and Cross Connection Control, 4th Edition, 2015.

**Student Learning Outcomes**

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

- 1) Describe the different backflow devices and how each is utilized to prevent backflow.
- 2) Compare and contrast the limitations of commonly used backflow prevention devices.
- 3) Describe the installation specifications for commonly used backflow prevention assemblies.
- 4) Successfully troubleshoot and perform an accurate backflow prevention test.