

Course Outline

COURSE: WTRM 205 **DIVISION:** 50 **ALSO LISTED AS:** WTRM 105

TERM EFFECTIVE: Fall 2019 **CURRICULUM APPROVAL DATE:** 11/13/2018

SHORT TITLE: WATER DISTRIBUTION 1

LONG TITLE: Water Distribution 1

Units	Number of Weeks		Contact Hours/Week		Total Contact Hours
3	18	Lecture:	3	Lecture:	54
		Lab:	0	Lab:	0
		Other:	0	Other:	0
		Total:	3	Total:	54

COURSE DESCRIPTION:

This is a comprehensive course that teaches basic principles of operation and maintenance of a water distribution system. It covers the sources of water; principles of design; installation, operation and maintenance of pipes, pumps, valves, meters, and other regulated hydraulic units. Operation and maintenance safety considerations are emphasized. This course is designed to prepare the student to take the State of California Water Distribution Operator exam. This course was previously listed as WTRM 105. **ADVISORY:** WTRM 201 Introduction to Water- Wastewater Technology and WTRM 202 Beginning Water- Wastewater Mathematics.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion

05 - Hybrid

72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

1. Identify the fundamentals of water distribution systems from sources of supply to system layout, including hydraulic characteristics.

Measure of assessment: Exam, Homework

Year assessed, or planned year of assessment: 2018

Semester: Fall

2. Solve basic mathematical calculations and conversions such as volume, water flow, pressure, and chemical dosage.

Measure of assessment: Take-home graded assignments, Exams

Year assessed, or planned year of assessment: 2018

3. This section does not contain any data.

Demonstrate the ability to meet the written test standards for the State of California Water Distribution Operator exam.

Measure of assessment: Quizzes, Exams, Worksheets

Year assessed, or planned year of assessment: 2018

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 11/13/2018

3 Hours

Content: Distribution System Operations and Maintenance

Student Performance Objectives: Outline an overview of the water distribution occupation. Identify the primary functions and responsibilities of water distribution operators.

3 Hours

Content: Distribution System and Design

Student Performance Objectives: Outline the specifics of a water distribution systems plan. Describe proper waterworks technology. Diagram a typical water distribution system layout. Identify the sources of water available and their uses.

3 Hours

Content: Water Main Pipe

Student Performance Objectives: Describe and compare different pipe characteristics. Compare types of pipes used and corresponding water quality issues.

3 Hours

Content: Distribution System Valves

Student Performance Objectives: Describe and compare different types of valves in a water distribution system environment. Evaluate the impact of various water valves used in a distribution system.

3 Hours

Content: Water Main Installation

Student Performance Objectives: Outline the challenges and procedures for installing water main pipe.

3 Hours

Content: Backfilling and Main Testing

Student Performance Objectives: Outline the critical aspects involved with installing a water main.

3 Hours

Content: Water Storage

Student Performance Objectives: Outline the different types of tanks and reservoirs used in a water distribution system. Describe the various types of storage facilities and operational use of each.

3 Hours

Content: Water Services, Meters, and Hydrants. Midterm.

Student Performance Objectives: Describe water services and other elements used in a water distribution system.

3 Hours

Content: Distribution Math - Conversions

Student Performance Objectives: Demonstrate the ability to calculate and convert various water measurements.

3 Hours

Content: Distribution Math - Area and Volume

Student Performance Objectives: Calculate areas and volumes commonly found in water industry environments.

3 Hours

Content: Distribution Math - Pressures and Flows

Student Performance Objectives: Calculate pressure and flow, as used in a water distribution system.

3 Hours

Content: Distribution Math - Introduction to Dosage, Temperature

Student Performance Objectives: Describe and demonstrate chlorine dosage and temperature calculations.

3 Hours

Content: Distribution System Hydraulics

Student Performance Objectives: Outline the key simple hydraulic principles used in a distribution system design.

3 Hours

Content: Traffic Control

Student Performance Objectives: Outline traffic control requirements and associated safety issues.

3 Hours

Content: Cross Connection, Security, Emergency Preparedness and Response

Student Performance Objectives: Describe operational problems involved with running a water distribution system.

3 Hours

Content: Public Relations, Administration, Customer Service

Student Performance Objectives: Prepare an overview of administrative issues related to operating a water distribution system.

2 Hours

METHODS OF INSTRUCTION:

Lectures and discussions, Visual Aids, Demonstrations, Facilities Tours (as available), In class work sheets

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 54

Assignment Description: Read related textbook chapters and handouts. Study for exams.

Required Outside Hours: 54

Assignment Description: Homework/Problem Solving: Take home design assignment. Math homework problems.

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 10.00 %

Percent range of total grade: 10% to 20% Written Homework: Worksheets, Other: Design project

Problem-solving assignments

Percent of total grade: 30.00 %

Percent range of total grade: 30% to 50% Homework Problems, Quizzes

Skill demonstrations

Percent of total grade: 10.00 %

Percent range of total grade: 0% to 20% Demonstration Exams

Objective examinations

Percent of total grade: 50.00 %

Percent range of total grade: 40% to 60% Multiple Choice, Other: Math problems - Show work

REPRESENTATIVE TEXTBOOKS:

Required Representative Textbooks

William C. Lauer, Editor. Water Distribution Operator Training Handbook, 4th Edition, or other appropriate college level text. . American Water Works Association,2013.

NOTE: This is a standard text used in the water industry.

ISBN: 1583219544

Reading Level of Text, Grade: 10th Verified by: Dana Young

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Not Transferable

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: C

Maximum Hours: 3

Minimum Hours: 3

Course Control Number: CCC000588727

Sports/Physical Education Course: N

Taxonomy of Program: 095800