Course Outline

COURSE: WTRM 105      DIVISION: 50      ALSO LISTED AS:  

TERM EFFECTIVE: Fall 2018      Inactive Course  

SHORT TITLE: WATER DISTRIBUTION 1  

LONG TITLE: Water Distribution 1  

<table>
<thead>
<tr>
<th>Units</th>
<th>Number of Weeks</th>
<th>Contact Hours/Week</th>
<th>Total Contact Hours</th>
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<tbody>
<tr>
<td>3</td>
<td>18</td>
<td>Lecture: 3</td>
<td>Lecture: 54</td>
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<tr>
<td></td>
<td></td>
<td>Lab: 0</td>
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<td></td>
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<td>Other: 0</td>
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<td>Total: 3</td>
<td>Total: 54</td>
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COURSE DESCRIPTION:  

This is a comprehensive course that teaches basic principles of operation and maintenance of a water distribution system. It course 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 is now listed as WTRM 205. ADVISORY: WTRM 101 Introduction to Water-Wastewater Technology; WTRM 102 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  

STUDENT LEARNING OUTCOMES:  

1. Describe proper waterworks technology  

Measure: Exam  

1/25/2018
2. Identify the primary functions and responsibilities of water distribution operators
   Measure: Exam
   PLO:
   ILO: 2,6

3. Identify the sources of water available and their uses.
   Measure: Exam
   PLO:
   ILO: 3,7

4. Describe the various types of storage facilities and operational use of each.
   Measure: Exam
   PLO:
   ILO: 3,7

5. Identify the fundamentals of water distribution systems, and the hydraulic characteristics of the different types.
   Measure: Exam
   PLO:
   ILO: 3,7

6. Solve basic mathematical calculations and conversions such as volume, water flow, pressure, and chemical dosage.
   Measure: Take-home graded assignments, Exams
   PLO:
   ILO: 2,3

7. Compare types of pipes used and corresponding water quality issues.
   Measure: Exam
   PLO:
   ILO: 3,7

8. Diagram a typical water distribution system layout.
   Measure: Assignment and short explanation paper, Exams
   PLO:
   ILO: 2,7

Year assessed, or planned year of assessment: Fall 2015
9. Evaluate the impact of various water valves used in a distribution system.

Measure: Exam
PLO:
ILO: 3,7

Year assessed, or planned year of assessment: Fall 2015

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

Inactive Course: 11/13/2017
3 Hours
Content: Distribution System Operations and Maintenance
Student Performance Objectives (SPO): Outline an overview of the water distribution occupation
Out-of-Class Assignments: Essay, library research

3 Hours
Content: Distribution System and Design
Student Performance Objectives (SPO): Outline the specifics of a water distribution systems plan
Out-of-Class Assignments: Take home design assignment

3 Hours
Content: Water Main pipe
Student Performance Objectives (SPO): Describe and compare different pipe characteristics
Out-of-Class Assignments: Reading, essay

3 Hours
Content: Distribution system valves
Student Performance Objectives (SPO): Describe and compare different types of valves in a water distribution system environment
Out-of-Class Assignments: Reading, essay

3 Hours
Content: Water Main installation
Student Performance Objectives (SPO): Outline the challenges and procedures for installing water main pipe
Out-of-Class Assignments: Reading, essay

3 Hours
Content: Backfilling and Main testing
Student Performance Objectives (SPO): Outline the critical aspects involved with installing a water main.
Out-of-Class Assignments: Quiz, reading

3 Hours
Content: Water Storage
Student Performance Objectives (SPO): Outline the different types of tanks and reservoirs used in a water distribution system
Out-of-Class Assignments: Essay, reading

3 Hours

1/25/2018 3
Content: Water Services, meters, and hydrants
Student Performance Objectives (SPO): Describe water services and other elements used in a water distribution system.
Out-of-Class Assignments: Semi-final exam, reading, essay

3 Hours
Content: Distribution Math - Conversions
Student Performance Objectives (SPO): Demonstrate the ability to calculate and convert various water measurements.
Out-of-Class Assignments: Homework problems, reading

3 Hours
Content: Distribution Math - Area and Volume
Student Performance Objectives (SPO): Calculate areas and volumes commonly found in water industry environments.
Out-of-Class Assignments: Homework problems, reading

3 Hours
Content: Distribution Math - Pressures and Flows
Student Performance Objectives (SPO): Calculate pressure and flow, as used in a water distribution system.
Out-of-Class Assignments: Homework problems

3 Hours
Content: Distribution Math - Intro to Dosage, Temperature
Student Performance Objectives (SPO): Describe and demonstrate an understanding of chlorine dosage and temperature calculation.
Out-of-Class Assignments: Homework problems

3 Hours
Content: Distribution System hydraulics
Student Performance Objectives (SPO): Outline the key simple hydraulic principles used in a distribution system design.
Out-of-Class Assignments: Essay, reading

3 Hours
Content: Traffic Control
Student Performance Objectives (SPO): Outline traffic control requirements and associated safety issues.
Out-of-Class Assignments: Essay, reading

3 Hours
Content: Cross Connection, Security, emergency preparedness, and response
Student Performance Objectives (SPO): Describe operational problems involved with running a water distribution system.
Out-of-Class Assignments: Essay, reading

3 Hours
Content: Public Relations, Administration, customer service
Student Performance Objectives (SPO): Prepare an overview of administrative issues related to operating a water distribution system.
Out-of-Class Assignments: Essay, reading

2 Hours
Final

METHODS OF INSTRUCTION:
Lecture and discussion
Visual Aids
Demonstrations
Facilities Tours (as available)
Class Participation
Quizzes
In class work sheets
Exams
Homework

METHODS OF EVALUATION:
CATEGORY 1 - The types of writing assignments required:
Percent range of total grade: 10 % to 20 %
Written Homework
Other: Design project
If this is a degree applicable course, but substantial writing assignments are NOT appropriate, indicate reason:
Course primarily involves skill demonstration or problem solving
CATEGORY 2 - The problem-solving assignments required:
Percent range of total grade: 30 % to 50 %
Homework Problems
Quizzes

CATEGORY 3 - The types of skill demonstrations required:
Percent range of total grade: 10 % to 20 %
Class Performance/s
Performance Exams

CATEGORY 4 - The types of objective examinations used in the course:
Percent range of total grade: 40 % to 60 %
Multiple Choice
Other: Math problems - Show work

REPRESENTATIVE TEXTBOOKS:
Required Representative Textbooks
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

1/25/2018
Associate Degree:
CSU GE:
IGETC:
CSU TRANSFER:
  Transferable CSU, effective 201230
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: WTRM
CSU Crosswalk Course Number: 105
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: CCC000528477
Sports/Physical Education Course: N
Taxonomy of Program: 095800