Course Outline

COURSE: WTRM 213    DIVISION: 50    ALSO LISTED AS: WTRM 113

TERM EFFECTIVE: Spring 2019    CURRICULUM APPROVAL DATE: 11/13/2018

SHORT TITLE: BEG WASTEWATER COLLECTION

LONG TITLE: Beginning Wastewater Collection

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

This course covers the proper installation, inspection, operation, maintenance and repair of wastewater collection systems. It provides the knowledge and skills required to effectively operate and maintain collection systems. This course also provides knowledge as to why collection systems affect treatment facilities and how they have a significant impact on the operation and maintenance costs and effectiveness of these systems. Prepares students for the CWEA Collection System Maintenance Grade 1 examination. This course was previously listed as WTRM 113. ADVISORY: WTRM 201 Introduction to Water-Wastewater Technology; 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. Outline the tasks of the operator and the goals of the collection system as it pertains to the proper installation, inspection, operation, maintenance, and repair of wastewater collection systems.

   Measure of assessment: Quiz, Exam, Homework
   Year assessed, or planned year of assessment: 2018
   Semester: Spring

2. Describe how to organize and administer the operation and maintenance of wastewater collection systems.

   Measure of assessment: Quiz, Exam, Homework
   Year assessed, or planned year of assessment: 2018
   Semester: Spring

3. Demonstrate the ability to meet the written test standards for the State of California CWEA Collection System Maintenance Grade 1 examination.

   Measure of assessment: Quiz, Exam, Worksheet
   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: The Wastewater Collection System Operator
Student Performance Objectives: Explain the type of work done by collection operators. Describe where to look for jobs in this profession. Outline how to learn or determine procedures necessary to perform the collection system operator's job. Describe the tasks that the collection operator is expected to complete to keep the collection system functioning as intended.

3 Hours
Content: Why Collection System Operation and Maintenance
Student Performance Objectives: Explain why wastewater collection systems must be properly operated and maintained. Describe the selection and operation of equipment to resolve identified problems and minimize recurrence of problems on the collection system.

6 Hours
Content: Wastewater Collection Systems - Purpose, Components and Design
Student Performance Objectives: Describe the problems of operating and maintaining a wastewater collection system. Justify the need to operate and maintain the system. State what collection systems are expected to achieve. Outline the primary goals of collection systems.

12 Hours
Content: Application of Arithmetic to Collection Systems
Student Performance Objectives: Utilize basic mathematical concepts that are used in collection systems including area, volume, flow, and velocity.

8 Hours
Content: Safe Procedures. Midterm Exam.
Student Performance Objectives: Discuss the different procedures including traffic safety, vehicle operation, using gas detection equipment, confined space procedures, electrical hazard prevention, fires, and noise protection.

6 Hours
Content: Inspecting and Testing Collection Systems
Student Performance Objectives: Inspect existing sewers and new sewer installations. Test for leaks in joints, taps, sewers, and manholes. Provide meaningful reports to superiors on pipeline conditions. Effectively use inspecting and testing tools including closed-circuit television, smoke testing, dye testing, and pipeline lamping. Describe how to inspect and test newly constructed sewer mains and existing wastewater collection systems.

6 Hours
Content: Pipeline Cleaning and Maintenance Methods
Student Performance Objectives: Identify types and causes of sewer stoppages. Select proper methods to clear stoppages and clean sewers. Record essential data regarding cleaning and cleaning operations. Familiarize oneself with equipment and techniques including Balling, High Velocity Cleaning, Flushing, Sewer Scooters, Bucket Machines, and Hand Rods. Explain both the method of selection and the application of various chemicals. Explain how to locate and evaluate stoppage problems.

4 Hours
Content: Underground Repair
Student Performance Objectives: Describe how to safely repair or construct sewer lines and manholes. State how to determine the need for shoring and describe shoring regulations. Describe how to excavate, repair, and back-fill service and main lines; raise a manhole frame and cover to grade; repair and install manhole bottoms; and seal leaky sewers by grouting.

2 Hours

METHODS OF INSTRUCTION:
Lecture, Video Presentation, Guest Lecturer, Field Trip

OUT OF CLASS ASSIGNMENTS:
Required Outside Hours: 54
Assignment Description: Read textbook chapters. Study for exams.
Required Outside Hours: 54
Assignment Description: Homework: Take home graded assignments related to basic mathematical concepts that are used in collection systems. Take home work problem work sheets with sample problems to be graded and discussed in class.

METHODS OF EVALUATION:
Writing assignments
Percent of total grade: 0.00 %
Course primarily involves skill demonstration or problem solving
Problem-solving assignments
Percent of total grade: 40.00 %
Percent range of total grade: 30% to 60% Homework Problems, Quizzes
Objective examinations
Percent of total grade: 50.00 %
Percent range of total grade: 40% to 60% Multiple Choice, True/False, Other: Math - Show Work
Other methods of evaluation
Percent of total grade: 10.00 %
Percent range of total grade: 0% to 20% Student Participation

REPRESENTATIVE TEXTBOOKS:
Required Representative Textbooks
This text is an industry standard text.
Reading Level of Text, Grade: 11th Verified by: Dana Young

ARTICULATION and CERTIFICATE INFORMATION
Associate Degree:
CSU GE:
IGETC:
CSU TRANSFER:
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: CCC000588791
Sports/Physical Education Course: N
Taxonomy of Program: 095800