

**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

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 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

Kenneth D. Kerri. Operation and Maintenance of Wastewater Collection Systems Volume 1, 7th Edition, or other appropriate college level text. . California State University, Sacramento: University Enterprises, Inc.,2015.

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:

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: CCC000588791

Sports/Physical Education Course: N

Taxonomy of Program: 095800