

Course Outline

COURSE: WTRM 216 **DIVISION:** 50 **ALSO LISTED AS:** WTRM 116

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

SHORT TITLE: ADV WASTEWATER COLLECTIONS

LONG TITLE: Advanced Wastewater Collections

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 provides an in-depth understanding of the components of wastewater collection systems and includes the design, operation, monitoring, maintenance and repair of lift pump stations as well as equipment maintenance, safety systems, administration and organization principles. Prepares students for the CWEA Collection System Maintenance Grades 2, 3, and 4 examinations. This course was previously listed as WTRM 116. **ADVISORY:** WTRM 201: Introduction to Water/Wastewater Technology and WTRM 213: Beginning Wastewater Collections.

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. Describe how to evaluate wastewater collection systems and sewers for rehabilitation and/or repair

Measure of assessment: Reading Assignment, Quiz

Year assessed, or planned year of assessment: 2018

Semester: Spring

2. Outline safety programs and practices that are essential to minimize operational and maintenance accidents in a collections system.

Measure of assessment: Reading Assignment, Quiz, 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 2, 3, and 4 examinations.

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

16 Hours

Content: Lift Stations

Student Performance Objectives: Determine the location of lift stations. Describe the requirements of a lift station. Discuss the components of a lift station. Indicate the advantages and disadvantages of different types of controllers. Review lift station prints and specifications. Inspect a new lift station. Keep a lift operating as intended. Determine the frequency of visits to a lift station. Perform necessary lift station maintenance tasks. Prepare record forms for a lift station. Explain control strategies for pumps and lift stations, including how control equipment operates and how lift stations work and their technology.

12 Hours

Content: Equipment Maintenance

Student Performance Objectives: Explain the serious consequence that could occur when inexperienced, unqualified, or unauthorized persons attempt to troubleshoot or repair electrical panels, controls, circuits, and wiring. Communicate with electricians by indicating possible causes of problems in electrical panels, controls, circuits, wiring, and motors. Properly select and use the following pieces of equipment: Voltage Testers, Ammeter, Megger, and Ohmmeter. Describe how a pump is put together; the maintenance and application of pumps; the operation and maintain of a compressor; and how to develop and conduct an equipment lubrication program.

6 Hours

Content: Sewer Rehabilitation

Student Performance Objectives: Evaluate the condition of a sewer. Determine the need for sewer rehabilitation. Establish priorities for a sewer rehabilitation plan. Identify the various rehabilitation methods. Select the appropriate sewer rehabilitation method. Implement and complete a rehabilitation project. Notify and cooperate with the public during a rehabilitation project.

6 Hours

Content: Safety/Survival Programs for Collection System Operators

Student Performance Objectives: Demonstrate awareness of hazards working in the collection system and identify potential and existing hazard. Develop a safety/survival program. List the responsibilities of the different staff levels in a collection system agency that are responsible for a safety/survival program. Prepare and conduct tailgate safety sessions and monthly safety meetings. Develop and implement appropriate safety/survival policies; accurately complete accident forms and properly maintain records.

6 Hours

Content: Administration

Student Performance Objectives: Explain the need for effective administration. Develop goals, tasks, and procedures for an operating plan. Determine lease and/or capital purchases of equipment. Read the various types of maps used by a collection system. Keep maps up to date. Prepare and maintain records essential for budgeting, scheduling, and meeting legal requirements. Organize an effective public relations program for a collections agency.

6 Hours

Content: Organization for System Operations and Maintenance

Student Performance Objectives: Organize an agency to operate and maintain a wastewater collection system. Staff and equip essential units within the agency. Develop priority lists for job assignments for units within an agency. Describe the various types of equipment maintenance programs. List the factors that influence an equipment maintenance program. Evaluate the performance of a collection system and agency.

2 Hours

METHODS OF INSTRUCTION:

Lecture, Discussion, Multimedia, Guest Lecturer, Field Trip

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 32

Assignment Description: Out-of-Class Assignments: Read related chapter(s) from the textbook. Study for quizzes.

Required Outside Hours: 24

Assignment Description: Out-of-Class Assignments: Read related chapter(s) from the textbook. Complete take-home control design problem. Study for Mid-term Exam.

Required Outside Hours: 48

Assignment Description: Out-of-Class Assignments: Read related chapter(s) from the textbook. Complete take home worksheets. Study for quizzes and final exam.

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 10.00 %

Other: Lift station control design problem. Take-home work problem worksheets.

Problem-solving assignments

Percent of total grade: 30.00 %

Homework Problems, Quizzes

Objective examinations

Percent of total grade: 40.00 %

Multiple Choice, Other: Math Show-work

Other methods of evaluation

Percent of total grade: 20.00 %

Class Participation

REPRESENTATIVE TEXTBOOKS:

Required Representative Textbooks

Kenneth D. Kerri. Operation and Maintenance of Wastewater Collection Systems Volume II, 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: CCC000530893

Sports/Physical Education Course: N

Taxonomy of Program: 095800