

Course Outline

COURSE: WTRM 201 **DIVISION:** 50 **ALSO LISTED AS:** WTRM 101

TERM EFFECTIVE: Spring 2019 **CURRICULUM APPROVAL DATE:** 10/9/2018

SHORT TITLE: WATER/WASTEWATER TECH INTRO

LONG TITLE: Introduction to Water, Wastewater Technology

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:

An introduction to the Water and Wastewater Distribution Industry. Topics include industry careers, required certifications, the hydrologic cycle, watersheds, water/wastewater treatment methods, valves and equipment, as well as industry standard math formulas and conversion factors. This course was previously listed as WTRM 101. **ADVISORY:** Eligible for Mathematics 430 or equivalent Arithmetic proficiency.

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 engage in industry networking, including acronyms utilized throughout the industry, career opportunities, as well as state and voluntary certifications and their issuing organizations.

Measure of assessment: Exams, Discussions

Year assessed, or planned year of assessment: 2017

Semester: Fall

2. Describe how Industrial, Commercial, and Domestic water is used.

Measure of assessment: Exams, Homework

Year assessed, or planned year of assessment: 2017

Semester: Fall

3. Provide an overview of water/wastewater treatment.

Measure of assessment: Exams, Homework, Discussions

Year assessed, or planned year of assessment: 2017

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

Curriculum Approval Date: 10/9/2018

6 Hours

Content: Instructor and Student Introductions and Networking. Acronyms throughout the Industry. Career Opportunities. State and Voluntary Certifications and their Issuing Organizations.

Student Performance Objectives: Describe the concept of networking potential. State industry standard acronyms. Recognize professional organizations and the certifications offered. Recognize state organizations and the certifications offered. Identify career opportunities locally, state wide, and nationally.

6 Hours

Content: Hydrologic Cycle. Characteristics of Water, Public Health and Water Quality.

Student Performance Objectives: Outline the phases of the hydrologic cycle. Identify the characteristics of water. Appreciate how water is critical to public health. Describe the need for water quality standards. Recognize and apply industry standard basic math formulas and conversions.

7 Hours

Content: Surface Water. Surface Water Development. Water Sheds. Intake Structures. Basic Math.

Student Performance Objectives: Identify the various forms of surface water. Identify methods of surface water development. Describe the key factors associated with watersheds. Discuss the utilized types of intake structures and overall systems operation. Calculate areas and volumes. Convert cubic feet to gallons to pounds. Calculate linear feet measurements, perimeters and circumference.

7 Hours

Content: Disinfection. Three Forms of Chlorine. Chlorine Safety. P.H. Scale and Measurement. Basic Math.

Student Performance Objectives: Identify and describe disinfection methods used in the water and wastewater industry. Discuss the 3 forms of chlorine that are widely used (gas, liquid, dry). Describe the safe handling and use of chlorine and personal protection equipment required. Define how PH is measured and what each end of the PH scale represents. Calculate pounds of chlorine needed based on the percent strength of the chlorine used (gas, liquid, dry).

8 Hours

Content: Ground Water. Ground Water Development. Wells. Similarities Between Water and Wastewater Treatment Processes. Basic Math.

Student Performance Objectives: Identify the various forms of ground water. Identify various methods of ground water development. Describe and define water bearing formations and aquifers. Identify various types of wells and mechanical parts of the system. Describe the similarities of treatment processes used both in the water and wastewater industry. Calculate well draw-down, specific yield, static water level and pumping water level. Calculate PSI.

6 Hours

Content: How Water is Used. Industrial, Commercial, and Domestic Water Use. Variations in Water Use. Basic Math.

Student Performance Objectives: Identify the various uses of water. Describe the production and use of water based on the type of industry. Define the flow dynamics of water use based on time of day. Define per-capita water use. Calculate total volume of water used and percent use by industry. Calculate population equivalents.

6 Hours

Content: Pipelines and Couplings. Pipeline Trenching and Installation. (Local) Water Issues - Nitrate Contamination and Salt Water Intrusion. Basic Math.

Student Performance Objectives: Identify the various types and use of pipes. Identify the various couplings used for joining pipes. Outline the trenching/shoring requirements for underground pipe installation. Identify various types of pipe runs and placement of mechanical joints and kicker blocks. Describe overdraft conditions which can lead to salt water intrusion. Describe how nitrate contamination is caused from multiple sources. Calculate percent (%) removal/efficiency of treatment processes. Calculate detention time.

6 Hours

Content: Pumps. Valves. Flow Meters. Flow Measurement Devices and Recorders. Basic Math.

Student Performance Objectives: Identify and describe the different types of pumps, valves, flow meters, and flow measurement and recording devices in the water/wastewater industry. Calculate the velocity of moving water. Convert temperature from degrees Fahrenheit to Centigrade, and from degrees Centigrade to Fahrenheit. Demonstrate the ability to manipulate dose, demand and residual formulas as applicable.

2 Hours

METHODS OF INSTRUCTION:

Lectures and Discussions, Visual Aids, Demonstrations, Facilities Tours (as available)

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 54

Assignment Description: Read textbook and complete worksheets.

Required Outside Hours: 28

Assignment Description: Study for quizzes and exams.

Required Outside Hours: 26

Assignment Description: Homework problems and/or questions.

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 30.00 %

30% - 40% Written Homework, In Class Work Sheets

Problem-solving assignments

Percent of total grade: 20.00 %

10% - 20% Homework Problems, Quizzes, Exams, In Class Work Sheets

Objective examinations

Percent of total grade: 30.00 %

20% - 30% Multiple Choice, True/False, Matching Items

Other methods of evaluation

Percent of total grade: 20.00 %

10% - 20% Class participation.

REPRESENTATIVE TEXTBOOKS:

Required Representative Textbooks

Joanne E. Drinan, Frank R. Spellman. Water and Wastewater Treatment: A Guide for the Non-Engineering Professional, Second Edition, or other appropriate college level text.. CRC Press,2012.

This is the most current edition and a standard textbook for the water/wastewater industry.

ISBN: 9781439854006

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: CCC000588725

Sports/Physical Education Course: N

Taxonomy of Program: 095800