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

<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>
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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:

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

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
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
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
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
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
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
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
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
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