WWTR 112 Course Outline as of Fall 2017

CATALOG INFORMATION

Dept and Nbr: WWTR 112   Title: MATH FOR WATER TECH
Full Title: Math for Water and Wastewater Technology
Last Reviewed: 2/13/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00   Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly: ENVT 112

Catalog Description:
Practical application of mathematical calculations for hydraulics, chemicals, and solids used in the design, operation, process control and maintenance of water and wastewater distribution systems and treatment facilities.

Prerequisites/Corequisites:

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Practical application of mathematical calculations for hydraulics, chemicals, and solids used in the design, operation, process control and maintenance of water and wastewater distribution systems and treatment facilities. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended:
Limits on Enrollment:

Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree: **Area**   Effective: Inactive:
CSU GE: **Transfer Area**   Effective: Inactive:

IGETC: **Transfer Area**   Effective: Inactive:

CSU Transfer: Effective: Inactive:

UC Transfer: Effective: Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Perform calculations common to the fields of water distribution technology, water treatment technology, and wastewater treatment technology
2. Use a spreadsheet program such as Excel to perform calculations

Objectives:
In order to achieve these learning outcomes, during the course the students will:
1. Convert between common units of time, mass, length, area, volume, and temperature
2. Apply general mathematical concepts to calculations common in the water and wastewater industry, such as calculation of: areas, volumes, mass, density, specific gravity, ratios, percentages, median and average values, concentrations, flows, pressures, velocities, percent composition, chemical quantities, dosage, pumping rates, detention times, loading rates, efficiencies, and power usage
3. Complete the mathematical portions of the state certification exams for: Water Distribution System Operator (Grades 1 or 2), Water Treatment Operator (Grades 1 or 2), and Wastewater Operator (Grade 1 and 2)

Topics and Scope:

I. Units and unit conversion with English and Metric systems
    A. Length, areas, and volumes
    B. Mass, density, and specific gravity
    C. Time and flow rates
    D. Temperature
    E. Velocity and pressure
    F. Price and unit price
    G. Power and power cost
    H. Dimensional analysis
II. Basic arithmetic

XII. Effluent treatment calculations
    A. Concentration-Time (CT)
    B. Chlorine dosage, demand, and residual
    C. Hypochlorite
    D. Dechlorination
    E. Ultraviolet (UV) and ozone
    F. Log removal and disinfection efficiency

Assignment:

1. In-class exercises (8-10)
2. Problem solving assignments (10-14)
3. Quizzes and/or Midterms (2-10)
4. Final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

In-class exercises and homework assignments	Problem solving 40 - 60%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes, midterms, and final (multiple choice, short answer, true-false and problem solving)	Exams 40 - 60%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation in class activities	Other Category 0 - 10%

Representative Textbooks and Materials:
Math Text for Water and Wastewater Technicians. 3rd ed. Wright, Grover. Wright's Training. 1997 (classic)

Applied Math for Wastewater. Price, Joanne Kilpatrick. First CRC Press. 1991 (classic)
Applied Math for Wastewater Workbook. Price, Joanne Kilpatrick. First CRC Press. 1991 (classic)
Instructor prepared materials