GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: WTRM 101 DIVISION: 50 ALSO LISTED AS:

TERM EFFECTIVE: Spring 2018 **Inactive Course**

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:

This course constitutes an introduction to Water-Wastewater- Distribution Industry. Topics include industry careers, required certifications, hydrologic cycle, watersheds, water/wastewater treatment methods, valves and equipment, as well as industry standard math formulas and conversion factors. This course is now listed as WTRM 201. ADVISORY: Eligible for Mathematics 205.

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

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: Exams

PLO:

ILO: 1, 4, 3, 2, 7

Year assessed, or planned year of assessment: Fall 2016

2. Outline the components of the hydrologic cycle, including the characteristics of water. public health and water quality.

Measure: Exams

PLO:

ILO: 3, 2, 7

Year assessed, or planned year of assessment: Fall 2016

3. Describe the key aspects of surface water, such as surface water development, water sheds and intake structures.

Measure: Exams

PLO:

ILO: 3, 2, 7

Year assessed, or planned year of assessment: Fall 2016

4. Outline the primary water industry disinfection methods, including three forms of chlorine, chlorine safety, as well as PH scale and measurement.

Measure: Exams

PLO:

ILO: 3, 2, 7

Year assessed, or planned year of assessment: Fall 2016

5. Define the key aspects of ground water, including ground water development. wells. and the similarities between water and wastewater treatment processes.

Measure: Exams

PLO:

ILO: 3, 2, 7

Year assessed, or planned year of assessment: Fall 2016

6. Describe how water is used. Industrial, Commercial, and Domestic Water Use. Variations in Water Use. Basic Math.

Measure: Exams; assigned problems

PLO:

ILO: 3, 2, 7

Year assessed, or planned year of assessment: Fall 2016

7. Explain relevant pipelines and couplings, including pipeline trenching and installation, in addition to an appreciation for local water issues, such as nitrate contamination and salt water intrusion.

Measure: Exams

PLO:

ILO: 3, 2, 7

Year assessed, or planned year of assessment: Fall 2016

8. Explain the relevant pumps, valves and flow meters used in the water industry.

Measure: Exams; assigned problems

PLO:

ILO: 3, 2, 7

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

Inactive Course: 11/13/2017

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 (SPO): Describe the concept of networking potential. Understand 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.

Out-of-Class Assignments: For each topic, students will review in class, and in the text book, examples to complete hand-out homework assignments.

6 Hours

Content: Hydrologic cycle. Characteristics of water, public health and water quality.

Student Performance Objectives (SPO): 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.

Out-of-Class Assignments: For each topic, students will review in class, and in the text book examples to complete hand-out homework assignments.

7 Hours

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

Student Performance Objectives (SPO): Identify the various forms of surface water. Identify methods of surface water development. Describe the key factors associated with watersheds. Understand 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.

Out-of-Class Assignments: For each topic, students will review in class, and text book examples to complete hand-out homework assignments.

7 Hours

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

Student Performance Objectives (SPO): Identify and describe disinfection methods used in the water and wastewater industry. Understand 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)

Out-of-Class Assignments: For each topic, students will review in class, and text book examples to complete hand-out homework assignments.

8 Hours

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

Student Performance Objectives (SPO): 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 drawdown, specific yield, static water level and pumping water level. Calculate PSI.

Out-of-Class Assignments: For each topic, students will review in class, and text book examples to complete hand-out homework assignments.

6 Hours

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

Student Performance Objectives (SPO): 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.

Out-of-Class Assignments: For each topic, students will review in class, and text book examples to complete hand-out homework assignments.

6 Hours

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

Student Performance Objectives (SPO): 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.

Out-of-Class Assignments: For each topic, students will review in class, and text book examples to complete hand-out homework assignments.

6 Hours

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

Student Performance Objectives (SPO): 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.

Out-of-Class Assignments: For each topic, students will review in class, and in the text book, examples to complete hand-out homework assignments.

2 Hours

Final

METHODS OF INSTRUCTION:

Lecture and discussion

Visual Aids

Demonstrations

Facilities Tours (as available)

Class Participation

Quizzes

In class work sheets

Exams

Homework

METHODS OF EVALUATION:

CATEGORY 1 - The types of writing assignments required:

Percent range of total grade: 30 % to 40 %

Written Homework

Other: In Class Work Sheets

CATEGORY 2 - The problem-solving assignments required:

Percent range of total grade: 15 % to 20 %

Homework Problems

Quizzes

Exams

Other: In Class Work Sheets

CATEGORY 3 - The types of skill demonstrations required:

Percent range of total grade: 10 % to 30 %

Class Performance/s

CATEGORY 4 - The types of objective examinations used in the course:
Percent range of total grade: 25 % to 30 %
Multiple Choice
True/False
Matching Items
Other: Class Participation

REPRESENTATIVE TEXTBOOKS:

Required:

Joanne E. Drinan. 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:

Transferable CSU, effective 201230

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: WTRM
CSU Crosswalk Course Number: 101
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: CCC000528544
Sports/Physical Education Course: N
Taxonomy of Program: 095800