

Course Outline

COURSE: WTRM 119 **DIVISION:** 50 **ALSO LISTED AS:**

TERM EFFECTIVE: Spring 2018 **Inactive Course**

SHORT TITLE: INDUSTRIAL WASTEWATER MGMT

LONG TITLE: Industrial Wastewater Management and Treatment

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:

Industrial Wastewater Management and Treatment reviews various industries and their associated wastewater. The course introduces the characteristics of wastewater such as pH, total suspended solids, total dissolved solids, etc., and then reviews basic treatment methods that are used to remove the particular characteristic from the water. By the end of the course, students will be able to design a wastewater treatment plant by developing block flow diagrams which utilize basic treatment methods to achieve the desired wastewater quality. This course is now listed as WTRM 219. **ADVISORY:** WTRM 101: Introduction to Water/Wastewater Technology, WTRM 107: Beginning Wastewater Treatment Plant Operation

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. Outline the key aspects of industrial wastewater, industry sources, operations, and wastewater characteristics.

Measure: Quizzes, exams, homework assignments

PLO:

ILO: 7,3,2,6

GE-LO: b5, b6, b7

2. Explain the important aspects of basic waste water chemistry.

Measure: Quizzes, exams, homework assignments

PLO:

ILO: 7,3,2,6

GE-LO: b5, b6, b7

3. Outline the current wastewater treatment methods and associated equipment.

Measure: Quizzes, exams, homework assignments

PLO:

ILO: 7,3,2,6

GE-LO: b5, b6, b7

4. Describe wastewater treatment system design, water analysis, equipment selection, equipment sequencing.

Measure:

PLO:

ILO: 7,3,2,6

GE-LO: b5, b6, b7

5. Outline the key components of waste water treatment system design projects and student group system design.

Measure: Quizzes, exams, homework assignments

PLO:

ILO: 7,3,2,6

GE-LO: b5, b6, b7

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

Inactive Course: 03/13/2017

9 Hours

Content: Review of sources and processes creating industrial wastewater.

Student Performance Objectives (SPO): Outline the major sources and industrial processes which create industrial wastewater.

Out-of-Class Assignments: Reading, problems

9 Hours

Content: Basic water chemistry, acid neutralization, oxidation reduction and precipitation.

Student Performance Objectives (SPO): Explain the primary components of basic water chemistry which relate to industrial wastewater treatment, including acid neutralization, oxidation reduction and precipitation.

Out-of-Class Assignments: Reading, group homework

21 Hours

Content: Wastewater treatment unit operations, design and use.

Student Performance Objectives (SPO): Describe the key factors required for effective wastewater treatment unit operations, design and use.

Out-of-Class Assignments: reading, group homework

13 Hours

Content: Wastewater treatment system design and configuration.

Student Performance Objectives (SPO): Outline the key approaches for wastewater treatment system design and configuration.

Out-of-Class Assignments: Reading, problems

2 Hours

METHODS OF INSTRUCTION:

Lecture, Homework, Quizzes, Group Project

METHODS OF EVALUATION:

CATEGORY 1 - The types of writing assignments required:

Percent range of total grade: 10 % to 20 %

Written Homework

Term or Other Papers

If this is a degree applicable course, but substantial writing assignments are NOT appropriate, indicate reason

Course primarily involves skill demonstration or problem solving

CATEGORY 2 - The problem-solving assignments required:

Percent range of total grade: 30 % to 40 %

Homework Problems

Quizzes

Exams

CATEGORY 3 - The types of skill demonstrations required:

Percent range of total grade: 20 % to 30 %

Class Performance/s

Field Work

Performance Exams

CATEGORY 4 - The types of objective examinations used in the course:

Percent range of total grade: 20 % to 40 %

Multiple Choice

Completion

Other: process design

CATEGORY 5 - Any other methods of evaluation:

group projects

Percent range of total grade: 10 % to 15 %

REPRESENTATIVE TEXTBOOKS:

Required:

Daniel Flynn, The Nalco Water Handbook, Nalco, 2009, 3rd Edition, or other appropriate college level text.

ISBN: 0071548831

Reading level of text, Grade: 11 Verified by: Dana Young

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 201270

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: 119

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: CCC000530896

Sports/Physical Education Course: N

Taxonomy of Program: 095800