

# Wastewater Treatment Technologies

Wednesday, 6:00 p.m. - 10:15 p.m.

Building 3100 Room 3119

WT 230

CRN: 21312

## Course Syllabus

**Instructor Felix De Leon**

Economic Workforce Development Division

Department of Water and Wastewater Treatment Technology



Imperial Valley College

P.O. Box 158

Imperial, CA 92251

Spring 2019

# WT 230-Wastewater Treatment 2

4.0 Units

**Course Prerequisites:** WT 130

## **Course Description and Objectives:**

This course is designed to train operators in the practical aspects of operating and maintaining wastewater treatment plants, emphasizing the use of safe practices and procedures. Information presented includes the role and responsibilities of a treatment plant operator, an explanation of why wastes must be treated, and detailed descriptions of the equipment and processes used in a wastewater treatment plant. Operators learn to operate and maintain racks, screens, comminutors, sedimentation tanks, trickling filters, rotating biological contactors, package activated sludge plants, oxidation ditches, ponds, and chlorination facilities. Operators also learn to analyze and solve operational problems and to perform mathematical calculations relating to wastewater treatment process control. It will also consist of wastewater plant maintenance, plant safety, sampling, laboratory procedures, hydraulics, records, process control, activated sludge, sludge digestion, solids handling, and possible approaches to solving operational problems.

## **Instructor Information:**

**Mr. Felix De Leon**

Work phone: (760) 337-9053

Cell phone: (760) 791-3510

Email: felix.deleon@imperial.edu

## **Textbook:**

- The following text books are required
- Operation of Wastewater Treatment Plants Vol. 1 & 2
- By Kenneth Kerri, California State University, Sacramento
- (916) 278-6142

## **Course Evaluation:**

### **Grading Criteria\*:**

|                                      |      |
|--------------------------------------|------|
| Class Participation and assignments: | 10%  |
| Chapter Exams                        | 40%  |
| Final Exam:                          | 50%  |
|                                      | 100% |

\*Note: Grading criteria are guides only. Instructor retains the right to lower these criteria, i.e., award higher grades to lower scores.

**Grading scale is on the strict percentage scale.**

|          |     |
|----------|-----|
| 90 – 100 | = A |
| 80 – 89  | = B |
| 70 – 79  | = C |
| 60 – 69  | = D |
| 59 - 00  | = F |

## Course Requirements:

**Readings and exercises projects:** Students are required to complete the necessary reading and exercises assignments prior to the session as reflected in the schedule and are encouraged to bring the textbook to class. Assignments will be made in class and will not be accepted late. Field trips will be scheduled.

**Attendance:** Class attendance is strongly encouraged. Any unexcused absence(s) will be reflected in the reduction of overall performance. Imperial Valley College's policy will be strictly adhered to regarding absenteeism in the General Catalog.

**Drop Classes:** Students will not be dropped from the class. Students are responsible for dropping classes. Failure to drop the class will result in an "F" for the semester.

**Assignments:** Will be made in class and will not be accepted late. Assignments will be both individual and group work, and will include presentations.

This *syllabus may be modified* at the instructor's discretion as necessary to meet the needs of the course.

**Exams:** All exams will be given during lecture times, and will generally consist of multiple choice true/false and calculations. Exam dates are indicated on the course outline. No make-up exams will be given. If an exam is missed a score of zero will be given for that exam.

**Laboratory Work:** Some assignments and projects will be laboratory based. Any of the local Water/Wastewater Treatment Plants' labs will be used. Lab time will occur during normal class hours.

**Field Trips:** If any, they will be scheduled as needed. These will, for the most part, use existing classroom hours. Great efforts by the Institution and instructors are involved and your attendance is expected.

**Academic Conduct and Responsibility:** Cell phones should be turned off during class as these devices are considered disruptive. No drinks or food is allowed in class. Bottled water is accepted. You are expected to execute all course assignments and activities in accordance with the Imperial Valley College's standard (see General Catalog).

**Instructor's Conduct:** Instructor will adhere to Imperial Valley College's standards. Instructor will not accept any kind of contributions, gifts or donations regardless of intentions, no exceptions. The greatest gift to any instructor is your effort and positive outcomes of the actual class.

**Student Outcomes:** To build and strengthen a student's ability to complete the Water and Wastewater Treatment Technology science programs at IVC and to successfully pass various mandated licensing examinations. Assist the student in analyzing operational process control problems. Communicate the various aspects of the California Regional Water Quality Control Board operator certification programs. Provide a strong biological process control base for operational events encountered in the wastewater treatment plant.

**After accomplishing this course, it is expected that students will...**

1. Retain some foundational knowledge: remember basic terms associated with Water and Wastewater Treatment Technologies, environmental issues, recognize potential cross-media impacts, acknowledge linkages between technology and environmental and human health impacts, identify sources of uncertainty in environmental problems, estimate costs and benefits (even qualitatively) of technology and associated environmental impacts.
2. Apply knowledge to other areas: enhance critical thinking in relation to complex problems, find appropriate data sources and use and cite them correctly, assess statistics and scientific information objectively, evaluate options from various viewpoints (e.g., technological feasibility, environmental impact, policy implications, everyday operations' strategy, etc.)
3. Integrate knowledge: combine knowledge of everyday consumer choices with basic engineering principles and environmental impacts, see the connectedness of human activities with environmental impacts on a global scale.
4. Reflect on the human dimension: remain conscious of their personal impact on the environment via their choices, educate others on the impact of decisions, realize that decision making is difficult and often doesn't have one right answer.
5. Remain motivated: feel that environmental issues are accessible to their general comprehension; be knowledgeable, not intimidated, by statistics, estimations, calculations, and general scientific information
6. Learn how to learn: ask questions to develop a more robust understanding, collaborate with others with different backgrounds, find good data and identify weak data

***Collaboration, Cheating and Plagiarism:*** Collaboration is encouraged in the course for discussing topics outside class and in completing homework assignments. Collaboration in the latter sense means working together to frame problems, devise approaches, and comparing results. (As a student, this was invaluable for me - as minor errors using a calculator could be caught.) The final work however must be the work of the individual student, indicating that you alone prepared the work and understand the material. Cheating is copying someone else's work and turning it in as your own work and is unacceptable. Plagiarism is a serious offense. All material originally the work of others should be cited properly. Refer to any common writing style manual for guidelines in citing material and writing source references. Published references are more static and permanent than internet sources and are preferred when available. Cheating and plagiarism will be dealt with according to IVC's policies (General Catalog, page 27).

### Course Outline

| Date    | Chapter | Topic   | Assignment  |
|---------|---------|---|---|
| Feb. 13 |         | Course Overview Goals & Objectives                    | Review Syllabus for WT. 230<br>Take home Quiz Chap. 8                                 |
| Feb. 20 | 8       | Activated Sludge (Package Plants & Oxidation Ditches) | Discussion & Review of Chapter 8  |
| Feb. 27 | 8       | Activated Sludge (Package Plants & Oxidation Ditches) | Review Chapter 8/Exam Chapter 8<br>Take home Quiz Chap. 10                            |
| Mar. 06 | 10      | Disinfection & Chlorination                           | Discussion & Review of Chapter 10<br>Lab ECWWTP Chap. 16                              |
| Mar. 13 | 10      | Disinfection & Chlorination                           | Review Chapter 10 / Exam Chapter 10   |
| Mar. 20 | 11      | Operation of Activated Sludge Plants                  | Discussion and Review of Chapter 11<br>Take home Quiz                                 |
| Mar. 27 | 11      | Operation of Activated Sludge Plants                  | Discussion and Review of Chapter 11   |
| Apr. 03 | 11      | Operation of Activated Sludge Plants                  | Review Chapter 11 / Exam Chapter 11<br>Take home Quiz Chapter 12                      |
| Apr. 13 | 12      | Sludge Digestion and Solids Handling                  | Discussion and Review Chapter 12<br>Saturday Morning Field trip to City of Holtville  |
| Apr. 17 | 12      | Sludge Digestion and Solids Handling                  | Review Chapter 12/Exam Chapter 12<br>Take home Quiz Chapter 13<br>Lab ECWWTP Chap. 16 |
| May 01  | 13      | Effluent Disposal                                     | Review Chapter 13/Exam Chapter 13<br>Take home Quiz Chapter 14                        |
| May 8   | 14      | Plant Safety  | Review Chapter 14/Exam Chapter 14<br>Take home Quiz Chap.15                           |
| May 15  | 15      | Plant Maintenance                                     | Discussion and Review Chapter 15<br>Lab ECWWTP Chap. 16                               |
| May 22  | 15      | Plant Maintenance                                     | Review Chapter 15/Exam Chapter 15   |
| May 29  | 8-15    | All Chapters  | Review for Final Exam<br>Chapter 8- 15  |
| Jun. 05 | All     | <b>Final Examination</b>                              | Good luck!  |

**All dates are tentative. I reserve the right to make changes to this schedule as needed.**

#### DISABILITY POLICY:

Any student with a documented disability who may need educational accommodations should notify the instructor or the instruction student programs (DSP&S) office as soon as possible.

DSP&S

ROOM 2117

Health Sciences Building PH. (760) 355-6312

#### NON – DISCRIMINATION POLICY:

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The mission of the IMPERIAL VALLEY COLLEGE is to foster excellence in education that challenges students of every background to develop their intellect, character and abilities; to assist students in achieving their educational and career goals; and to be responsive to the greater community.