

# Computational Procedures for Water/Wastewater Treatment Technologies

**Mondays 06:30p.m.-09:40 p.m., Technology Room 3200**

**Deadline to Drop with "W": April 13th, 2013**

**Last Day to Add: January 26th, 2013**

**Class Start Date: 14 January, 2013**

**Class End Date: 10 May, 2013.**

**Credits: 3.0**

**CRN: 20281**

## WT 120 Spring 2013 Course Syllabus

**Instructor Manuel M. Sanchez**

College of Technology and Applied Sciences

Department of Water and Wastewater Treatment Technology



Imperial Valley College  
P.O. Box 158  
Imperial, CA 92251

# WT 120-Introduction to Computational Procedures for Water/Wastewater Treatment Technologies

3.0 Credit Units

**Course Prerequisites:** None

## **Course Description and Objectives:**

Basic Mathematical principles used in the treatment of potable water and wastewater form the basis for many approaches to the remediation of contaminated water ways as well as proper techniques of water treatment for human consumption. In addition, these principles can be used in designing, developing and tailoring industrial processes to minimize detrimental environmental effects. This course presents the student with a basic understanding of the hydrologic cycle and how the human interface alters this process and creates an artificial cycle. The chemical and biological elements of treatment will be presented as well as theory of hydrology and treatment technologies. Design engineering of processes will be stressed. Finally, federal and state regulations will be covered which directly impact various treatment technologies. This course may include the academic support of Blackboard such shall be considered an integral part only, and students are required to physically attend all classes as scheduled.

## **Instructor Information:**

**Mr. Manuel M Sanchez**

Cell phone: (760) 259-3834

Email: Manuel.Sanchez@Imperial.edu

## **Textbook:**

**“Basic Math Concepts for Water & Wastewater Operators”**

**By: Joanne Kirkpatrick Price.**

**ISBN 0-87762-808-4**

## **Course Evaluation:**

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

Class Participation and assignments:	30%
Water Science Project	10%
Quizzes	30%
Final Exam:	<u>30%</u>
	100%

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

## 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. Assignments will be both individual and group work, and will include presentations. Field trips may be scheduled.

**Attendance:** Class attendance is strongly encouraged. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week will be dropped. Imperial Valley College's policy will be strictly adhered to regarding absenteeism (General Catalog, page 23). Absences attributed to the representation of the college at officially approved events (conferences, contests, and fieldtrips) will be counted as excused absences. It is the responsibility of the student to make-up the missed assignments when is absent. Students who are habitually late to class or leave early more than three times will be dropped. Three tardies will equal 1 absence.

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

**Calculator:** Each student is responsible to bring their own scientific or non-scientific calculator to every class session. No personal telephones or any other type of electronic devices shall be used in lieu of a regular calculator.



*Example of calculator.*

**Water Science Project:** Each student will be expected to complete work in groups of three. Topics must be approved by the instructor. Students must use an approved form and style for the project involved. Directions will be given by instructor.

**Homework Assignments:** Must be delivered at the beginning of the class session at the Instructor's desk. Homework will not be accepted late.

**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 and calculations. Exam dates are indicated on the course outline. No make-up exams will be given. If an exam is missed, all of the other exam scores will be averaged and that average minus ten percent will be used in lieu of the missed exam. Additionally missed exams will receive a score of zero.

**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, 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, music headsets and any other electronic device must be turned off during class as these devices are considered disruptive. No drinks or food is allowed in class. You are expected to execute all course assignments and activities in accordance with the Imperial Valley College's standards (see General Catalog page 21). Horseplay and foul language are not acceptable.

**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.

Following are the schedules for licensing programs examinations by the State of California:

**WATER TREATMENT OPERATOR CERTIFICATION PROGRAM  
DRINKING WATER TECHNICAL PROGRAMS BRANCH**

<u>Final Filing Date</u>	<u>T1-T4 Test Dates</u>	<u>T5 Test Dates</u>
March 1, 2013	May 18, 2013	June 2013*
September 2, 2013	November 16, 2013	December 2013*
March 1, 2014	May 17, 2014	June 2014*
September 1, 2014	November 15, 2014	December 2014*

*Exam dates are subject to Department approval.*

Applications must be **POSTMARKED ON OR BEFORE** the final filing date to be considered for the current examination period. All minimum education qualification must be met by the final filing date of the exam you wish to participate in. Incomplete or illegible applications will result in a delay in the evaluation of your qualifications and scheduling examination.

To confirm Water Operator examination schedules and requirements visit:  
<http://www.cdph.ca.gov/certlic/occupations/Documents/Opcert/Treatment%20exam%20schedule.pdf>

## WASTEWATER TREATMENT PLANT OPERATOR CERTIFICATION

### Examination Information and Schedule (2013)

Written examinations for each of the five grades of certifications will be conducted at selected sites on the following dates:

<u>Date of Examination</u>	<u>Final Date for Filing Applications</u> <u>(Postmark)</u>
April, 6, 2013	February 1, 2013

To confirm Wastewater Operator examination schedules and requirements visit:  
[http://www.swrcb.ca.gov/water\\_issues/programs/operator\\_certification/docs/exam\\_sched2011\\_12.pdf](http://www.swrcb.ca.gov/water_issues/programs/operator_certification/docs/exam_sched2011_12.pdf)

With no exceptions, all students are highly encouraged to attend any of the state examinations at a proper level while attending IVC's Water and Wastewater Treatment programs.

**Student Outcomes:** To build and strengthen a student's math ability to complete the Water and Wastewater Treatment Technology science programs at IVC and to successfully pass various mandated licensing examinations. To assist the student in analyzing word problems, to communicate the various aspects of the California Department of Health Services licensing programs, and to provide a strong mathematical base for concepts encountered in the Water Utility Science program.

**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.

DATE	CHAPTER	DESCRIPTION	DEADLINE
Jan. 14 <sup>th</sup> 2013	1	Introduction and Overview of Treatment Technologies, Solving Math Problems	None
Jan 21 <sup>th</sup> .	<b>Holiday</b>		
Jan. 28 <sup>th</sup> .	2	Solving for the unknown	Pages 7,8, 9
Feb. 4 <sup>th</sup> .	3	Fractions.	None Study for Quiz #1
Feb. 11 <sup>th</sup>	4,5	Decimals & Fractions. <b>Quiz #1</b>	Pages 27,29, and 32
Feb. 18 <sup>th</sup>	<b>Holiday</b>		
Feb. 25 <sup>th</sup>	6	Averages.	Pages 36, 56,74 Study for Quiz #2
March 4 <sup>th</sup> .	7	Ratios and Proportions. <b>Quiz #2</b>	Pages 118,120, and 136
March 11 <sup>th</sup> .	8	Conversions. <b>MIDTERM</b>	Pages 138,144, and 154
March 18 <sup>th</sup> .	9	Linear Measurements.	Study for Quiz #3
March 25 <sup>th</sup> .	10	Scales and graphs. <b>Quiz #3</b>	Pages 176,184, 192, and 202
April 1 <sup>st</sup> .	<b>Spring Recess</b>		
April 8 <sup>th</sup> .	11	Area measurement.	Pages 204,208,and 212
April 15 <sup>th</sup> .	12,13	Power, roots, and scientific notations	Pages 259,270, and 281
April 22 <sup>nd</sup> .	14	Rounding	Pages 283, 300,308,
April 29 <sup>th</sup> ,	15	Dimensional analysis <b>Quiz #4</b>	Study for Final.
May 6 <sup>th</sup> .	<b>Final Examination</b>		

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. 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).

**Blackboard:** It is an internet based classroom supplement giving students access to class related materials and information. Blackboard's content includes access to supplemental course information, course calendar, announcements, quizzes and weekly assignments. Student academic conduct and responsibility is also required and expected.

## Important Dates:

### Spring Semester 2013

January	2-11	Monday-Friday	No Classes – Campus Open
	14	Monday	First day of classes – Spring 2013 Semester Begins
	21	Monday	Holiday (Martin Luther King’s Birthday) – Campus Closed
February	8-9	Friday-Saturday	Holiday (Abraham Lincoln’s Birthday) – Campus Closed
	18	Monday	Holiday (Presidents’ Day) – Campus Closed
April	1-6	Monday-Saturday	Spring Recess – Campus Closed
May	4-10	Saturday-Friday	Final Exams – Spring Semester 2013
	11	Saturday	Commencement

***Disability Policy:*** Any student with a documented disability who may need educational accommodations should notify the instructor of the Instruction Student Programs (DSP&S) Office as soon as possible.

**DSP&S  
Room 2117  
Health Services Building  
(760) 355-6212**