

**WWTR 112 Section: 1129**  
**WASTEWATER TREATMENT MATH**  
**TUESDAY 6:00 pm – 9:00 pm**  
**SRJC PETALUMA CAMPUS RM #244**  
**COURSE SYLLABUS FOR FALL 2019**

Instructor: Max Kroschel  
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Work email: [mkroschel@lescur-engineers.com](mailto:mkroschel@lescur-engineers.com)  
Office: Classroom before & after class  
Office Hours: Tu 5:40 pm - 5:55 pm & 9-9:15

**Textbook and Required Supplies:**

- *Applied Math for Wastewater Plant Operators*, Joanne Kilpatrick Price, 1991
- *Applied Math for Wastewater Plant Operators - Workbook*, Joanne Kilpatrick Price
- Basic calculator (Only hand-held basic, non-programmable, no memory, self-contained, battery operated/solar, silent, non-printing calculators will be permitted.) This mirrors the State Water Board requirement for all Exams.
- Equivalents and Formula Sheet (Provided by Instructor)
- Pencil, eraser and straight edge. No ink allowed!

**Course Content:**

**Student Learning Outcomes:**

Upon completion of this course, the student will be able to:

1. Utilize mathematical methods applicable to the field of water and wastewater treatment and operations.
2. Analyze and calculate necessary components used in design, operation, process control and maintenance of a wastewater treatment plant.

**Objectives:**

Upon successful completion of this course, the student will be able to:

1. Apply general mathematical concepts to the wastewater/water industry.
2. Utilize special terminology and units as applied to wastewater/water operations.
3. Utilize basic mathematical principles for hydraulic calculations.
4. Utilize unit conversions related to flow, volume, and weight.
5. Analyze and calculate the necessary parameters used in the operation, process control and maintenance of a wastewater treatment plant.
6. Be prepared to take the math portion of the State wastewater operator exams (1&2)

**Attendance:**

- Class begins on the hour and ends at ten (10) minutes before the hour. Class will take two (2) breaks during the evening. **You are responsible for your attendance.** Math is based on building on concepts learned previously.
- Attendance for lecture hours is required. SRJC policy: student may be dropped if they miss more than 10% of the course.
- Absence of 2 classes (for any reason) will constitute Excessive Absence for this Course; any student with excessive absences may be dropped from the class. See policy above.
- Excused absence for extreme cases will be considered and only by contacting the instructor **prior** to the beginning of class.

## Assignments:

- Assignments are your responsibility. All assignments are to be done per instructions and due at the beginning of class on the assigned due date. Late assignments will only be accepted with instructor's **prior** approval.
- Weekly assignments will be announced in class and posted five days prior to due date.
- All assignments shall be done on 8 ½" x 11" paper or sheets provided to you by the instructor. Show all work.
- Put your name, course number and due date on the first page. Staple multiple sheets together prior to turning in.

## Quizzes and Exams:

- **No** make-up exams will be given. **Prior** instructor approval is necessary to reschedule an exam date.
- Quizzes will be given intermittently throughout the semester. Missed quizzes will be docked one-letter grade upon make-up (arrange with instructor to schedule).
- **Midterm exam** will be given on **Tuesday October 15, 2019** unless otherwise notified. Sufficient notice will be given prior to any re-scheduled exam date.
- **Final exam** will be comprehensive and will be given on **Tuesday December 17, 2019** from **6:00 pm to 9:00 pm**.
- Equivalents and Formula Sheet can be used during all quizzes and exams.

## Grading:

Your final grade in the course will be weighted as follows:

- Participation in class and in-class assignments - 6%
- Homework – 10%
- Quizzes – 10%
- Midterm Exam – 25%
- Final Exam - 49%

## Other Important Information:

- **SRJC Student Rights and Responsibilities:**  
<https://studentlife.santarosa.edu/rights-and-responsibilities>
- **Tutoring - Petaluma Campus / Santa Rosa Campus**
- **Engineering & Applied Technology (E&AT)** <http://appliedtechnology.santarosa.edu>
- **Academic Calendar**

**\*\*Note - This class may be used for students needing WTR 102 this semester. WWTR 112 will be accepted for the WTR certificate. \*\***

## Course Outline:

The objective of this outline is to assist you in planning your schedule. Every effort will be made to stay on schedule. However, the instructor may find it necessary to make appropriate changes to meet the learning objectives for the entire class. Instructor will assign homework problems for each topic on the schedule. In-class worksheets and assignments (5-8+/-) and quizzes (3-5+/-) will be given intermittently throughout the semester.

Date	Chapter	Description	Notes
8/20/2019		Introduction Math Functions, Area, Percentages	
8/27/2019	1 Hand outs	Basic Algebra, equations, solving for unknown, factoring Volume Calcs Unit & Temp Conversions	
9/03/2019	2	Velocity and Flow Calculations	
9/10/2019	3.1-3.3	Chemical & Loading Calculations Dosage/ BOD/ COD/ SS	
9/17/2019	3.3 -3.5 4.1 - 4.6	MLSS/ MLVSS/ WAS Loading Rates-Wet / Weir Overflow	
9/24/2019	4.7 - 4.9	Loading Rate Calculations - Solids Organic Loading & F/M ratio	
10/01/2019	4.10 - 4.12	Digester, VS & Population Loading	
10/8/2019	5	Detention Times Review	
10/15/2019		<b>MID-TERM EXAM</b>	Chapters 1-5
10/22/2019	6.1 - 6.4	Efficiency & Percentage Calculations	
10/29/2019	7.1	Density and Specific Gravity	
11/05/2019	7.2 - 7.3	Pressure and Force, Head	
11/12/2019	NO CLASS	NO CLASS- FLEX DAY	
11/19/2019	7.4 6.8	Horsepower and Pump Capacity Pump Efficiency	
11/26/2019	8 9	Primary Treatment Sedimentation	
12/03/2019	12	Waste Activated Sludge SRT (MCRT) Calculations	
12/10/2015	13,14 & 18 Partial	Detention time/ Chemical Dosage/ Review	
12/17/2015		<b>FINAL EXAM</b>	Comprehensive