

**Syllabus****CIVE 539:****Water and Wastewater Analysis****Course Instructor:**

Dr. Susan De Long  
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Office Hours: To be announced in class.

**Course Times:**

|                 |           |             |           |
|-----------------|-----------|-------------|-----------|
| <b>Lecture:</b> | Tuesday   | 12:00-12:50 | ENGR 106  |
|                 | Thursday  | 12:00-12:50 | ENGR 106  |
| <b>Lab:</b>     | Thursdays | 1:00 – 4:00 | Scott 268 |

*Note: Students are expected to work in the lab outside of the scheduled lab time to accommodate certain analyses.*

**Course Description:** This course will introduce students to common water and wastewater analysis techniques for analysis of solids, inorganic chemicals, organic chemicals, and biological constituents. Students will learn how to process data, determine detection limits, calculate error, and develop data presentation skills. Students will also learn the skills and thought processes involved in developing experimental designs, sampling plans, and proposals through a semester project. Writing will be an important component of the course, and writing assignments will be designed to prepare students for writing reports, theses, dissertations, and peer-reviewed manuscripts.

**Course Project Topic:** The semester project will focus on measuring physical, chemical and microbiological water quality parameters in a river. Measurements will be taken and aqueous samples collected along the Cache la Poudre River in and around Fort Collins to characterize how the water quality changes as the river moves from a pristine environment through urban and agricultural landscapes.

**Spring 2014 Specific Project Topic:** Indicator Organisms and Pathogens in the Poudre River Basin

**Course Objectives:** The successful student in this course will be able to:

- Perform basic water quality analyses including: TSS, VSS, COD, BOD, and nutrient measurements;
- Perform some advanced analytical techniques (e.g., gas chromatography);
- Understand how to conduct microbiological and molecular analyses to measure indicator organisms or pathogens; and
- Process and present relevant data.

## Materials:

Required:

1. **Text:** PART II E-BOOK for Chemistry for Environmental Engineering and Science by Clair N Sawyer, Perry L. McCarty, Gene F. Parkin; ISBN-10: 0072480661 ISBN-13: 978-0072480665

To minimize student costs, an e-book of the second half of this book has been created. You will be able to download this from the publisher for approx. \$50. Alternatively, you may also purchase a hardcopy of the entire text (approx. \$160). It is a good book to have.

TO PURCHASE THE E-BOOK:

1. Go to <http://create.mcgraw-hill.com/shop/>
2. Search for and select book by Title, ISBN, Author, or State/School.

ISBN: 9781121807853

Title: Water and Wastewater Analysis

3. Add the book to your cart and pay using a credit card or access code.

2. **Laboratory Notebook**-available at the bookstore.

Additional references:

*Standard Methods for the Examination of Water and Wastewater*

Benjamin, M.M., *Water Chemistry*, First Edition, McGraw-Hill, 2002, ISBN 0-07-238390-9.

Stumm, W., and Morgan, J.J., *Aquatic Chemistry*, Third Edition, John Wiley & Sons, Inc., New York, 1996, ISBN 0-471-83941-8.

**Web:** Course schedule, materials, and assignments will be posted on RamCT. It is your responsibility to access the site regularly.

## Course Evaluation:

Students will be required to submit periodic laboratory reports, a short research proposal, one journal article review, and a final project report. There will be two examinations. Grades will be calculated according to the following breakdown:

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|--------------------------|-----|
| • Laboratory reports     | 25% |
| • Research proposal      | 10% |
| • Journal article review | 5%  |
| • Two Exams at 20% each  | 40% |
| • Final project report   | 20% |

Term grades for this course will use the +/- grading system as described in the CSU catalog.

**Academic Integrity:**

CSU Policies and Guiding Principles will be strictly enforced. This course will adhere to the Academic Integrity Policy of the Colorado State University General Catalog (Page 7) and the Student Conduct Code. All CSU students are responsible for knowing and adhering to the academic integrity policies of this institution. Violations of this policy may include: cheating, plagiarism, aiding academic dishonesty, fabrication, lying, bribery, and threatening behavior. Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). While we encourage the use of study groups, all submitted individual assignments must be your original work. For example, a group of students may discuss the solution of a homework problem, but each student's submission must reflect their personal understanding of the problem and its solution. Each student should then develop their solution in their own words/calculations/coding. Copying of electronic files (EXCEL, WORD, etc.) is not permitted. If in doubt about what is acceptable please ask your course instructors.