ENVE 415: Environmental Engineering Laboratory
Winter 2018

INSTRUCTORS:	Prof. Tyler Radniecki
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Email:	tyler.radniecki@oregonstate.edu
Office hours	M 11:00 – 12:00 & W 15:00-16:00 or by appointment

TEACHING ASSISTANT: Catherine Mays maysc@oregonstate.edu

CLASS SCHEDULE: Lecture – T 15:00 – 16:50, BRC 133
Sec 11 – R 12:00 – 14:50, JOHN 214B
Sec 12 – F 13:00 – 15:50, JOHN 214B

Required: Personal Protective Equipment (Chemical Safety Goggles, Lab Coat).

Text: None. Texts used in prior coursework will be useful as reference materials.

Class Description & Goals:
This course aims to develop students' ability to carry out theoretical and empirical analysis of environmental engineering unit operations involving the physical, chemical and biological treatment of water and wastewater, practice safe work habits, while emphasizing formal work processes and teamwork, oral and written communication, and personal accountability.

Learning Objectives: At the end of the course, each student should be able to:

1. Design and conduct experiments, as well as to analyze and interpret data
2. Communicate effectively, use science and engineering writing conventions, including citation format, organization of information, and professional discourse and style.
3. Implement formal practices of project planning and management
4. Find trends in process data, relate those trends to environmental engineering principles, and optimize process performance
5. Evaluate multiple process technologies in a broad context and assess imperfect or incomplete data, risks and alternatives, and make sound problem-solving decisions.

To Achieve these learning outcomes students are responsible to:

- prepare for laboratory activities in a timely manner.
- demonstrate safe work practices at all times.
- prepare safety assessments, experimental designs, team technical reports, and an oral presentation.
- actively participate in class activities (lectures, labs, out of class team work, etc).
- demonstrate personal accountability.

CLASS COMMUNICATIONS
Class communications will take place through Canvas.

Ensure that email sent to your ONID account is read daily (e.g., forward it to an account you do read).

Emails addressed to the Instructors (including the Teaching Assistant) must be professional, well-written, and free of spelling and grammatical errors – poorly organized/written communications will be summarily disregarded.

GRADING

Evaluation is composed of Individual and Team components.

The Individual part will be composed of your Pre-Lab assignments and Lab update reports/meetings. There is no mid-term or final currently planned. At the instructor's discretion, a mid-term and/or final may be added if it appears this will improve the learning outcomes for the class.

The Team part will be based on the Final Reports and Oral Presentations for the Unit Operation labs and an evaluation of your Laboratory Notebook.

The proposed breakdown (subject to modification if necessary) is as follows:

45% Individual Grade

- (25%) Pre-Lab Assignments
- (20%) Update Reports (10%) and associated Team Meetings (10%)

55% Team Grade

- (35%) Final Reports
- (5%) Lab notebook
- (15%) Oral Presentations

Individual Assignments (Pre-Labs and Update Reports/Meetings): The Pre-Labs will provide opportunities to apply knowledge acquired in previous classes in the context of the specific unit operation you are investigating. The Pre-Labs must be completed in a timely fashion to ensure you are well prepared for lab activities. As implied by the name, these will not be accepted after the start of the lab activities. You may discuss Pre-Labs with your class/teammates, NOT DUPLICATE THEIR ANSWERS! Individual assignments must be written up independently.

Each team will also submit two Update Reports in advance of entering the final lab session for each of the assigned projects. Along with each interim report, each team will meet with the instructor to discuss critical elements of the project, with discussion of each element led by a different team member. For a 3-member team, these elements will include: (1) goals, outcomes to date and plans for the next lab session; (ii) background and governing relationships; and (iii) materials, methods and procedures.

Team Assignments (Unit Operations Final Reports, Oral Report, Project Fundamentals): As the name implies, the Team Assignments must be completed by the whole team in collaboration. At the end of the term, each student will be requested to reflect on the quality of the team work; input shared by the team members will be reflected on the final grades.

Team Work and Attendance: Team Work and Attendance are fundamental to achieve the goals of the course, and you must make every effort to avoid missing team responsibilities. If you must be absent it is imperative that you notify both the instructors and your team well in advance of the absence and that any issues resulting from the absence are discussed and outcomes agreed upon.

Illness Policy

In case of illness, especially in cases of contagious illness that may be easily transmitted to classmates/instructors, a legitimate excuse for an absence can be made by discussing with the instructor and teammates ASAP.

Religious Holiday Statement
Oregon State University strives to respect all religious practices. If you have religious holidays that are in conflict with any of the requirements of this class, please see me immediately so that we can make alternative arrangements.

Late and/or Illegible Work Policy
Late work will not be accepted. Illegible material will be assumed incorrect.

Cheating and Student Conduct
The instructors of this class take the issue of academic honesty very seriously. You are expected to be honest and ethical in your academic work and there is a "zero tolerance" policy in effect for cheating in this class. Any instance in which a student is caught cheating will be handled in strict accordance with the policies outlined at http://www.orst.edu/admin/stucon/achon.htm.

Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- Cheating- use or attempted use of unauthorized materials, information or study aids
- Fabrication- falsification or invention of any information
- Assisting- helping another commit an act of academic dishonesty
- Tampering- altering or interfering with evaluation instruments and documents
- Plagiarism- representing the words or ideas of another person as one's own

In particular, unless otherwise stated by the instructor, you are not allowed to look at previously worked answers relevant to the assignment (e.g., materials from previous years), before the due date. Using such unauthorized sources will be considered a case of academic dishonesty. This applies to both Individual and Team assignments.

If evidence of academic dishonesty comes to the instructor's attention, the instructor will document the incident, permit the accused student to provide an explanation, advise the student of possible penalties, and take action. The instructor may impose any academic penalty up to and including an "F" grade in the course after consulting with his or her department chair and informing the student of the action taken.

Student Conduct Code
Choosing to join the Oregon State University community obligates each member to a code of responsible behavior which is outlined in the Student Conduct Code. The assumption upon which this Code is based is that all persons must treat one another with dignity and respect in order for scholarship to thrive. For a copy of the Student Conduct Code,
see: http://studentlife.oregonstate.edu/sites/studentlife.oregonstate.edu/files/student_conduct_code_1.pdf .

Diversity Statement
Oregon State University strives to create an affirming climate for all students including underrepresented and marginalized individuals and groups. Diversity encompasses differences in age, color, ethnicity, national origin, gender, physical or mental ability, religion, socioeconomic background, veteran status, sexual orientation, and marginalized groups. We believe diversity is the synergy, connection, acceptance, and mutual learning fostered by the interaction of different human characteristics.

Disruptive Behavior
The University is a place where the free exchange of ideas and concepts allows for debate and disagreement. All classroom behavior and discourse should reflect the values of respect and civility; you can find the OSU pledge of civility at http://osu.orst.edu/admin/stucon/index.htm.

Specific examples of inappropriate behavior include:

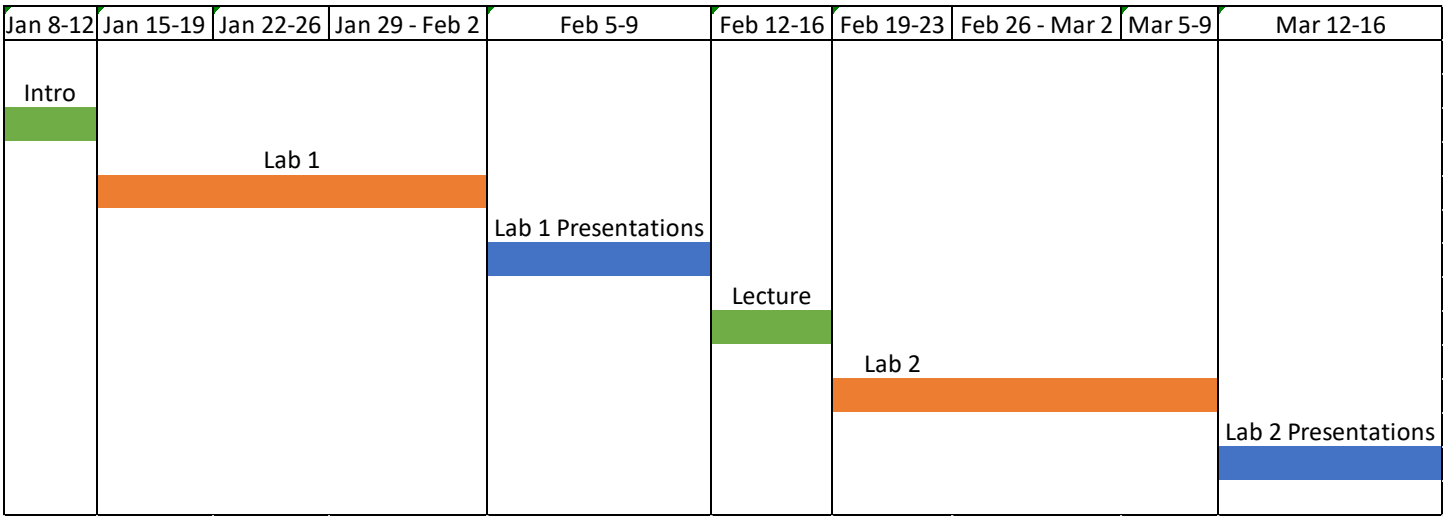
- The use of cell phones or pagers in class (exceptions may be made on a case-by-case basis)
- The use of Laptops or other electronic devices for activity outside of assigned use for THIS class (i.e, surf the web, email, pictures)
- Reading the Barometer / eating during class
- Practicing discriminatory behavior

As your instructors, we are dedicated to establishing a learning environment that promotes diversity of race, culture, gender, etc. Anyone noticing discriminatory behavior in this class, or feeling discriminated against should bring it to the attention of the instructors or other University personnel as appropriate.

Veterans
Veterans and active duty military personnel with special circumstances are welcome and encouraged to communicate these, in advance if possible, to the Instructor.

Disability
"Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations."

The class schedule will be approximately as follows (subject to modification if useful/necessary):



Sequence for Lab Projects

- Team Assignments posted mid-Week 1
- Project Assignments posted on Canvas
- Weeks 2 and 7: Individual Pre-Lab Assignment due at beginning of lab
- Weeks 3, 4, 8 and 9: Update Reports/Meetings are to be completed
- Weeks 5 and 10: Team Final Reports due at beginning of class; Oral Presentations are given
- Week 6: Lecture only, no lab

Possible Unit Operations Projects:

1. Rapid Sand Filtration: Removal of Fine Suspended Solids
2. Disinfection Basin: Baffle Design for Optimum Contact Time
3. BOD/COD for Organic Carbon Quantification
4. Coagulation and Settling: Alum to Remove Suspended Solids
5. Granular Activated Carbon Adsorption Column: Removal of Acetic Acid