

# ENV4514C Water and Wastewater Treatment Fall 2020

## INSTRUCTOR

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Office: Black Hall, Room 310

## PREREQUISITES (N/A)

## GENERAL INFORMATION

**Days and Time:** Monday, Wednesday, and Friday

**Lecture:** will be delivered through Zoom at 12:50 to 1:40 pm at MWF. Recorded classes will be also posted on canvas.

**Credit Hours:** 3

**Graders:** Sara (Eghtessadi, Sara [seghtess@ufl.edu](mailto:seghtess@ufl.edu)), Klaudja (Taragjini, Klaudja [tklaudja@ufl.edu](mailto:tklaudja@ufl.edu)), and Fernando (Alvarado Lopez, Fernando [fernandoalvarado@ufl.edu](mailto:fernandoalvarado@ufl.edu))

**Office hours:** Andreia: Friday from 2 PM to 4 PM.

Sara: TBD

Klaudja: Thursdays from 1 PM to 3 PM

**Slides, Homework Lists, and Grades:** All material will be posted on Canvas

## RECOMMENDED READINGS

1. Warren Viessman Jr., Mark J. Hammer, Elizabeth M. Perez, Paul A. Chadik. Water Supply and Pollution Control. Pearson New International Edition, 2004, 8<sup>th</sup> edition.

## COURSE Description

*To understand the process involved in water and wastewater treatment. We will address chemical and physical processes for treatment of drinking water. Such processes include coagulation, lime-soda ash softening, flocculation, and sedimentation. We will also cover some aspects of wastewater treatment, including secondary treatment and advanced water treatment.*

### Program of classes by date

Date	Class Topic
August 31	Syllabus Discussion Sources of Drinking Water and Usage Trends
Sep 2	Water Characteristics and Important Chemical Concepts
Sep 4	Chemical Processes: Coagulation ➤ Homework list 1 (Chemistry)
Sep 9	Coagulation and Rapid Mixing
Sep 11	Coagulation and Rapid Mixing -continuation ✓ Deadline: Homework List 1 ➤ Homework List 2 (Coagulation)

Sep 14	Flocculation
Sep 16	Flocculation – continuation
Sep 18	Sedimentation <ul style="list-style-type: none"> <li>✓ Deadline: Homework List 2 (Coagulation)</li> <li>➤ Homework List 3 (Flocculation)</li> </ul>
Sep 21	Sedimentation
Sep 23 and 25	Water Softening Sep 25: <ul style="list-style-type: none"> <li>✓ Deadline: Homework List 3 (Flocculation)</li> <li>➤ Homework List 4 (Softening and Sedimentation)</li> </ul>
Sep 28-30	Filtration
Oct 2	<ul style="list-style-type: none"> <li>✓ Deadline: Homework List 4 (Softening and Sedimentation)</li> <li>➤ Homework List 5 (Filtration)</li> </ul>
October 5 and 7	Disinfection
October 9	<ul style="list-style-type: none"> <li>✓ Deadline: Homework List 5 (Filtration)</li> <li>➤ Homework List 6 (Disinfection)</li> </ul>
Oct 12-16	<b><u>Midterm</u></b> (exam will make available at 10 am through canvas – deadline at 11:59 pm through canvas)
Oct 12	Bacteria Growth and Nutrient Metabolism
Oct 14	Intro to Wastewater
Oct 16	Enzymatic Kinetics <ul style="list-style-type: none"> <li>✓ Deadline: Homework List 6 (Disinfection)</li> <li>➤ Homework List 7 (Bacteria and Intro to Wastewater)</li> </ul>
October 19-23	Biological Process: Activated Sludge and Kinetics <ul style="list-style-type: none"> <li>✓ October 23: Deadline Homework List 7 (Bacteria and Intro to Wastewater)</li> </ul>
Oct 26	Biological Process: Activated Sludge and Kinetics - continuation
Oct 28 and 30	Problem Solving and Discussion on Activated Sludge <ul style="list-style-type: none"> <li>➤ October 30: Homework List 8 (Activated Sludge)</li> </ul>
Nov 2	Biological Process: Trickling Filters
Nov 4	Biological Process: Stabilization Ponds
Nov 6	Sludge Pos-treatment: Aerobic and Anaerobic Digestion <ul style="list-style-type: none"> <li>✓ Deadline Homework List 8 (Activated Sludge)</li> <li>➤ Homework List 9 (Trickling filters, Ponds, and Sludge Digestion)</li> </ul>
Nov 9	Activated Carbon with Dr. Regina Rodriguez
Nov 13	Membranes for Water Treatment (Jennifer Jackson) <ul style="list-style-type: none"> <li>✓ Deadline Homework List 9</li> <li>➤ Homework List 10 (Activated Carbon and Membranes)</li> </ul>
Nov 16 to 20	Revision for Finals Nov 20: <ul style="list-style-type: none"> <li>✓ Deadline Homework List 10 (Activated Sludge/Membranes)</li> </ul>

Dec 1 - 5	<b><i>Final Exam</i></b> (exam will make available at 10 am through canvas – deadline at 11:59 pm through canvas)
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Nov 23 to 27: Thanksgiving

**GRADING**

The final grade will be based on homework completion, midterm, and final exams.

**Homework:** There will be a total of two writing homework to guide and help students prepare for the exams. Students are encouraged to use all sources of information available (papers, books, patents, blogs, articles) to answer the questions. Homework due date is to be determined by the instructor. ***Overdue homework will NOT be accepted.*** Therefore, students must pay attention to the deadlines.

**Exams:** Midterms and final exams will be coherent with the topics discussed in class (one exam for each topic). Students should expect in-class and closed-book exams with both discursive and multiple choices questions. Exams will be applied following the conclusion of water and wastewater sections. ***There will be no make-up exams*** unless the student is unable to attend due to religious observances, sickness (extreme circumstances), or family emergency (extreme circumstances). The instructor may request proofs such as a letter from physicians and hospitals. In the face of any of those situations, the student must inform the instructor as soon as possible (andrea.faria@essie.ufl.edu), preferably before the exam. Each case will be treated individually.

<b>Grading Distribution</b>		
Homework	40%	
Midterm	30%	
Final Exam	30%	
<b>Grading Scale</b>		
A: 94 – 100	B-: 80-82	D+: 67-69
A-: 90 – 93	C+: 77 – 79	D+: 63-66
B+: 87 – 89	C: 73 – 76	D-:60-62
B: 83 – 86	C-: 70-72	E < 60

In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C - average is equivalent to a GPA of 1.67, and therefore, does not satisfy the graduation requirement. For more information on grades and grading policies, please visit: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

**ONLINE COURSES**

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

### **ACCOMMODATIONS FOR STUDENTS WITH DISABILITY**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter that must be presented to the instructor when requesting an accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### **ATTENDANCE POLICY**

As mentioned before, excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>).

### **ACADEMIC HONESTY**

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others. More information on honesty policies at UF, please visit the webpage <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>.

### **SOFTWARE USE**

All faculty, staff, and students of the University of Florida are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

### **STUDENT PRIVACY**

Federal laws are protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please access: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

### **COURSE EVALUATION**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### **UF COUNSELING SERVICES**

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team

can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575.

**The U Matter**, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Life can get difficult at times, especially while in college. Many students face stress and challenges that can affect their success as a student. These stressors can appear in many different forms: difficulty adjusting to university life, family issues, financial difficulties, accessing accommodations, etc. Our goal is to ensure that every Gator has the knowledge and path to connect to the appropriate resource on campus. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1. You can also e-mail [umatter@ufl.edu](mailto:umatter@ufl.edu) in need of help. The resources to help in case of distress include but are not limited to:

- **Counseling and Wellness Center**, 3190 Radio Rd., 392-1575, Personal and Career Counseling, <http://www.counseling.ufl.edu/cwc>
- **SHCC Mental Health**, Student Health Care Center, 392-1161, Personal Counseling , <http://shcc.ufl.edu/>
- **Center for Sexual Assault/Abuse Recovery and Education (CARE)**, Student Health Care Center, 392-1161, sexual assault counseling.
- **University Police Department** at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

### **ACADEMIC RESOURCES**

**E-learning Technical Support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

**Library Support**, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

**Writing Studio**, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

**Student Complaints Campus**: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

**On-Line Students Complaints**: <http://www.distance.ufl.edu/student-complaint-process>.