

CEE 3340 ENVIRONMENTAL ENGINEERING LABORATORY

Course Description

Theories and applications of environmental laboratory methods for measurements of fundamental properties and characteristics of dissolved and particulate constituents in water, air and soil systems.

Course Objectives

This course, with a set of laboratory exercises and corresponding lectures, is intended to provide undergraduate students with hands-on experience in laboratory experiments to monitor and evaluate important environmental processes. Students will have the opportunities to demonstrate the capability to analyze environmental samples, conduct laboratory experiments, critically analyze experimental data, and present the experimental results.

Course Structure

There are six modules (0-5) throughout the semester. Each module consists of: 1) lectures on fundamentals of the module; 2) problem sets, 3) laboratory experiments; and 4) report submission. Each module lasts about 3 weeks, with the first two weeks for instruction and experiments, and the third week for report writing and submission. The 3rd week of each module overlaps with the 1st week of the next module. See detailed schedule attached.

This course is taught in a **“flipped” format**. This means that the lectures on fundamental principles are recorded and uploaded at the course website. The lectures are taught by the leading professors in the department in each respective topic. **The students are required to watch the lecture videos prior to the class.** When the class meets, the class time is used primarily for discussion, practice problems, lab data analysis, and additional guest lectures. Questions related to the fundamental principles will be addressed, but the materials will not be taught again in the class time.

Prerequisite

CEE 2300 Environmental Engineering Principles; CHEM 1310 General Chemistry

Instructor: Dr. Ching-Hua Huang, Professor

Office: Daniel Environmental Engineering Laboratory (DEEL) Room 306

E-mail: ching-hua.huang@ce.gatech.edu

Teaching Assistants: TBD

Class Schedule

Lectures Tuesday & Thursday 2:00 – 2:50 PM, TBD

Laboratory Friday 12:30 – 3:15 PM (Session D1), DEEL Room 209

Friday 3:30 – 6:15 PM (Session D2), DEEL Room 209

Office Hour TBA or by appointment (e-mail TA or Prof. Huang)

Course Website: at <http://canvas.gatech.edu/>

LAB MODULES

Module 0. Instrumental Analysis: Chemical Oxygen Demand and Spectrophotometry

Module 1. Hydraulic Conductivity of Sand

Module 2. Contaminant Solid-Water Partitioning and Chromatography

Module 3. Tracer Test and Residence Time Distribution

Module 4. Ambient Aerosol Concentrations

Module 5. Total Coliform and Water Quality Monitoring

Lab Safety

- Successful completion of the Lab Safety 101 and Right-to-Know (RTK) trainings is required prior to working in the teaching lab.
- Students should arrive at the lab session on time in order to participate in the experiments. Points deduction will be applied to tardiness.
- In the lab, students are **required to be in proper clothing (good coverage of skin), and wear the provided safety glasses and gloves. Open-toe shoes, shorts, and skirts are not permitted in the lab. Students will not be allowed to enter the lab without proper clothing that's considered laboratory safe (refer to lab safety training for details)**
- Extra care must be taken when handling instruments in the laboratory!
- Students are required to keep the lab space organized and always clean up after each lab experiment.

Grading

Group problem sets & other assignments	28 %
Individual pre-labs & lab participation	15 %
Individual short lab reports (3)	24 %
Individual full lab reports (3)	33 %

Grading Policy

Communications:

- Weekly agenda
- Students submit the “muddiest point” questions in class
- Tue/Thur class time & Friday lab sessions
- Emails
- Student groups
- Course surveys

Class Participation:

- The “muddiest point” question: Each student is expected to submit his/her “the muddiest point” on a weekly basis (normally Tuesday unless specified otherwise). This is the question(s) that you find in need of further explanation or discussion after pre-viewing the module’s materials.

- Group problem sets (group work) will typically be given out in Tuesday class time. Students in groups should work on the problem set with their partner for one week. **One copy should be submitted per group** by the following week's Tuesday.
- Attendance: Attending all the laboratory experiments and class meetings is expected for all students and attendance will be recorded. Absence is understandable if you have been granted permission from the instructor or have legitimate emergency (e.g., health issues). **You are required to inform the Instructor, TA and your lab partner as soon as possible if you anticipate an absence from the lab session.**

Pre-Lab Assignment & Lab Reports (individual work):

- **Pre-Lab Assignments and Lab Reports are individual work.**
- Each student should submit his/her own Pre-Lab Assignment for each module according to the due date (typically on Friday). The pre-lab assignment is to enhance your preparation for the objectives of the lab experiments and facilitate your lab report writing.
- Short lab reports (3) and full lab reports (3) are required for this course. A full report includes Abstract, Introduction, Procedures, Results, Analysis and Discussion, Conclusions, References and Appendix (if any), while a short report can omit Abstract, Introduction and Procedures. Note that **you share the same raw data with your teammate, but must complete and submit the report independently.**
- Lab reports should follow the required format as provided and discussed in the Lab Report Guidelines in this course. Lab report format for other courses may be different and cannot be used here.
- The report should be submitted as a single Word file, labeled as **Lab#_Group#_Your Last name_Fall2026.docx**.
- Each group of lab partners is also required to submit one Excel file of the data collected and analyzed for the lab report by the report due date. The file should be labeled as **Lab#_Group#_Last name 1_Last name 2_Fall2026.xlsx**.

Late Assignments Policies:

- 5 points of deduction will be taken for each day of delay in assignment submission.
- Each student can have up to 3 late days without any penalty on assignment(s) of his/her choice in this semester. If you wish to apply the free late day(s), you must indicate so in your submission to inform the TA.
- If strenuous personal circumstances arise that require extra extension for an assignment, you must contact the instructor to request it. It is entirely the instructor's discretion to grant the extension or not.
- **Students are required to submit all six lab reports to pass this course.**

Academic Integrity

- Students in this class are expected to abide by the Georgia Tech Honor Code and avoid any instances of academic misconduct.
- Plagiarizing is defined by Webster's Dictionary as "to steal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source." If caught plagiarizing, you will be dealt with according to the GT Academic Honor Code.
- When working on the lab reports, you may work with your teammate in lab data analysis. However, each student must write and submit her/his own lab report.

- Cheating off of another person's quiz, problems or report is unethical and unacceptable. Cheating off of anyone else's work is a direct violation of the GT Academic Honor Code, and will be dealt with accordingly.
- Unauthorized use of any previous semester course materials, such as quizzes, problems, reports, and any other coursework, other than that provided by the instructor, is prohibited in this course. Using these materials will be considered a direct violation of academic policy and will be dealt with according to the GT Academic Honor Code.
- Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit: <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>
- Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the [Office of Student Integrity](#), who will investigate the incident and identify the appropriate penalty for violations.

Generative AI (GenAI) Policy

In this course, we treat AI-based assistance, such as Microsoft Copilot or ChatGPT Edu, the same way we treat collaboration with other people: you are welcome to talk about your ideas and work with other people, both inside and outside the class, as well as with AI-based assistants. However, all work you submit must be your own. You should **never** include in your assignment anything that you did not write directly without proper citation (including quotation marks and in-line citation for direct quotes). Including anything you did not write in your assignment without proper citation will be treated as an academic misconduct case.

If you are unsure where the line is between collaborating with AI and copying AI, we recommend the following heuristic:

Never hit “Copy” within your conversation with an AI assistant. You can copy your own work into your own conversation, but do not copy anything from the conversation back into your assignment. Instead, use your interaction with the AI assistant as a learning experience, then let your assignment reflect your improved understanding. Deviating from this heuristic does not automatically qualify as academic misconduct; however, following this heuristic essentially guarantees your collaboration will not cross the line into misconduct. (Adapted from the School of Computer Science, Georgia Institute of Technology, Spring 2025)

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Resources:

The [CARE Center](#) and the [Counseling Center](#), Stamps Health Services, and the Dean of Students Office will offer both in-person and virtual appointments. Student Center services and operations are available on the [Student Center](#) website. For more information on these and other student services, contact the Dean of Students or the [Division of Student Life](#).