

# CHEM 3216 Syllabus

Analytical Chemistry CHEM 3216, Section A, 3 Credits

Summer 2026

## Instructor Information

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**Instructor:** Dr. Christy O'Mahony

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## General Course Information

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### Description

Students will learn about analytical chemistry tools, techniques, methods, and instrumentation. The course is designed in three modules: optical spectroscopy, separations, and electroanalytical techniques. We will discuss the fundamental chemistry that enables an analytical technique and what subset of chemistry can be probed with it. Students will also learn “what’s inside the black box,” and will be able to match analytical instrumentation and components to target analyses, which will be practiced via critical thinking in the face of real world analytical chemical challenges.

### Course Learning Outcomes

Upon successful completion of this course, you should be able to:

- Understand the theoretical underpinnings of modern methods of chemical analysis.
- Understand the principles of operation and the essential components of analytical instrumentation.
- Have tackled real-world analytical challenges and have the tools to solve them.
- Understand at a high level the applications of sampling, statistics, separation, and analysis in determining the composition of complex chemical mixtures.

## Required Course Materials

*Principles of Instrumental Analysis*, Skoog, Holler, and Crouch, 6th or 7th edition, Cengage. ISBN-13: 978-0-495-01201-6. Available at Georgia Tech Barnes and Noble Bookstore. eBook available.

## Grading Policy:

Assignment	Description	Weight of Final Grade
<b>Summaries</b>	Every class lecture period <i>16 required at 1% each. Each topic in class must be covered (per the syllabus, e.g. Summary 10 must cover CE and Intro to Electroanalytical)</i>	16%
<b>Weekly problems</b>	<i>10 practice sets at 1% each</i>	10%
<b>Synthesis Projects</b>	<i>3 projects at 8% each. Note: if you miss the original submission deadline, you may not be permitted to submit peer reviews or a final submission for the first project. Details of the projects to be released at a later date</i>	24%
<b>Midterms</b>	Occur during class time. <i>(3 exams at 10% each; 1x single-sided note sheet allowed)</i>	30%
<b>Final Exam</b>	<i>(2x length and % of a midterm exam, but 3x the time; 4x single-sided note sheet)</i>	20%

Your final grade will be assigned as a letter grade according to the following scale:

A	> 90%
B	80-89%
C	70-79%
D	60-69%
F	<59%

## Description of Graded Components

- **Summaries:** This course is designed to be interactive. All class periods will have a summary assignment due by midnight the day after lecture. There will be no remote

attendance option. If you are sick STAY HOME; you may discuss with Dr. Deutsch and Dr. O'Mahony how to make up summaries that you miss due to excused absences or illness.

- **Weekly problems:** These problems are intended as practice for midterms. The deadline schedule is posted on the Canvas site. Solutions to these problems will be released after the class in which they are due. As such, late assignments may not be accepted.
- **Synthesis Projects:** These projects require you to critically evaluate “real world” analytical challenge using the tools and techniques learned in each module. There are three types of synthesis projects: (1) Evaluating a proposed real world problem, conducting a peer review of another student’s response, and a final submission. (2) Review and critique of the current literature (options will be provided to you). (3) Presentation on experimental design and analysis. More details for each project will be provided throughout the semester.
- **Midterm Exams:** Three midterm exams are scheduled throughout the semester during class time. You are permitted a single-sided 8”x11” “crib sheet” per exam. This “crib sheet” must be handwritten and entirely of your own effort. Absolutely no collaboration is permitted for the crib sheets. The graded midterm will be returned to you without a rubric within 1 week of the midterm. Once graded midterms are returned, you may choose to submit corrections to your midterm within 1 week, which can earn you up to 50% of the missed points. The rubric will be released when the corrections period closes.
- **Final Exam:** The final exam will be closed book and in person. You may have four single sides of 8”x11” crib sheet for the final. There will be no correction period available for the final exam.

## Course Policies

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### Attendance and/or Participation

You are expected to attend and actively participate in the class sessions unless you have a compelling reason not to do so. Any anticipated excused attendance must be communicated to the instructors as soon as possible. If you have any reason to believe it would be unsafe for you to attend an in-person session (for example, due to illness), you are encouraged to STAY HOME and inform the instructor of any issues.

### Academic Integrity

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. Review [Georgia Tech’s Honor Code](#) and the student [Code of Conduct](#).

Any student suspected of cheating or plagiarism 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.

## **Core IMPACTS**

[Core IMPACTS](#) is the University System of Georgia's General Education curriculum. This course does not count towards the Core IMPACTS.

## **Accommodations for Students with Disabilities**

If you are a student with learning needs that require special accommodation, [contact the Office of Disability Services](#) (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail us as soon as possible in order to set up a time to discuss your learning needs.

## **Student-Faculty Expectations Agreement**

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. [The Student-Faculty Expectations](#) articulate some basic expectations that you can have of us and that we have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, we encourage you to remain committed to the ideals of Georgia Tech while in this class.

## **Pre- &/or Co-Requisites**

Pre-Requisite: CHEM 2216 and CHEM 2216L

Co-Requisite: CHEM 3216L

## **Collaboration, Group Work, and Use of Generative AI**

Collaboration on summaries and problem sets is encouraged! Collaboration on any project or exam is STRICTLY prohibited (unless explicitly stated by the instructor). The use of generative text-based AI (e.g. ChatGPT) is encouraged for studying (e.g. ask it to generate practice problems for you), but its use is not permitted to generate responses to any assignment. Any potential collaboration or use of AI will be sent to the Office of Student Integrity for review, with a consequence of receiving a 0 on the assignment.

*Note: We have been teaching this for a while. You will probably be caught. Don't risk it!*

The use of any other student's exam (whether for a prior semester or for the current semester) is prohibited in this course. The term "use" is to be construed in the broadest

way possible. You may not own, view, reference, discuss or possess any other student's CHEM 3211 or 3216 exams from any semester. This applies to electronic, paper, and oral exams. Using, owning, viewing, referencing or possessing other students' previously submitted exams will be considered a direct violation of academic policy and will be dealt with according to the GT Academic Honor Code.

You are explicitly forbidden from giving other students any information about exams whether written or oral. Giving other students information about exams will be considered a direct violation of academic policy and will be dealt with according to the GT Academic Honor Code.

### **Extensions, Late Assignments, & Re-Scheduled/Missed Exams**

If you will miss an exam, you must notify Dr. O'Mahony or Dr. Deutsch VIA E-MAIL as soon as you know about your planned absence. All absences that have an accompanied make-up exam request must also be sent through the Dean of Students.

### **Student Use of Mobile Devices in the Classroom**

Because of the active learning nature of this class, please bring a laptop or other internet connected mobile device with you to in-person sessions and be prepared to be asked to research the answers to questions posed by the instructor in real-time.

### **Additional Course Policies**

- Accommodations for religious observances can be easily made by contacting the instructor. Please do so at the start of the semester so accommodations can be planned for.
- Please do not plan to consume food during in-person sessions
- Please inform the instructor of planned absences as soon as they are known.
- Please don't record lectures! Here is the text encouraged by Georgia Tech:
  - Classes may not be recorded by students without the express consent of the instructor unless it is pursuant to an accommodation granted by the Office of Disability services. Class recordings, lectures, presentations, and other materials posted on Canvas are for the sole purpose of educating the students currently enrolled in the course.
  - Students may not record or share the materials or recordings, including screen capturing or automated bots, unless the instructor gives permission. Digitally proctored exams may require students to engage the video camera, but those recordings will not be shared with or disclosed to others without consent unless legally permitted.

- For classes requiring class participation, if students are identifiable by their names, facial images, voices, and/ or comments, written consent must be obtained before sharing the recording with people outside of currently enrolled students in the class.

## Campus Resources for Students

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### **Undergraduate Student Academic Success Resources:**

Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at [success.gatech.edu/tutoring](https://success.gatech.edu/tutoring), email us at [tutoring@gatech.edu](mailto:tutoring@gatech.edu), or come see us at Clough Undergraduate Learning Commons, Suite 283.

### **Student Well-Being:**

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A [comprehensive list](#) of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being ([student-resource-guide \(gatech.edu\)](#))