CHEM 2216L (and CHEM 2216CL) Syllabus

Quantitative Analysis Laboratory, Section A and Section B, 2 Credits

Fall 2026

Instructor Information

Instructor: Dr. Jessica Deutsch

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General Course Information

Description

Welcome to Quantitative Analysis Laboratory! Quantitative Analysis provides a background in analytical chemistry laboratory techniques and foundational theories. We are particularly focused on developing techniques that will improve your precision and accuracy. This course serves as the foundation of further laboratory chemistry courses such as CHEM 3216L.

Course Learning Outcomes

- Conduct chemical experiments with a high level of precision and accuracy
- Analyze data quantitatively using Microsoft Excel
- Maintain robust experimental records in a laboratory notebook
- Establish and maintain a professional work ethic
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Required Course Materials

- *Quantitative Chemical Analysis 10th or 11th edition* by Daniel C. Harris (suggested reference)
- Experimental procedures and other lab resources will be posted on Canvas.
- Laboratory Coat (see the Professionalism section for more details)
- Safety glasses (see the Professionalism section for more details)
- Electronic Laboratory Notebook through LabArchives. You have a free LabArchives account through Georgia Tech Course Website and Other Classroom Management Tools

Textbook, laboratory coat, and safety glasses can be obtained from Georgia Tech Barnes and Noble. You may obtain a laboratory coat and safety glasses from another source, provided they meet the requirements of the lab (please talk to Dr. Deutsch to ensure requirements are met).

Grading Policy:

Your grade in this course will be determined as follows:

Grade Percentage	Category
75%	Lab Report Submissions (Intro + 8 Experiments + BOOTCAMPP) A lab submission includes a completed pre-lab, illustrative problem, protocol worksheet, notebook submission, and lab report Each lab report will include points for data analysis, abstract, and post-lab questions
15%	Lab Practicum
5%	Experiment Infographic Project
5%	Professionalism

Please note that 2216 Lecture and 2216L Lab courses are separate courses and will have separate letter grades.

Grading Scale

Your final grade lab grade will be reported as a percentage at the end of the semester and will be assigned as a letter grade according to the following scale:

Grading Scale	≥90% = A	≥80% = B	≥70% = C	≥60% = D	≥50% =F

It is within the discretion of Dr. Deutsch at the end of the semester to determine if the cutoff for a grade decreases- for example, an 89.5 or higher might constitute an “A”. You can be assured that if you earn a 90% or higher, you will receive an “A”.

Assignments

QUANTITATIVE DATA ANALYSIS USING EXCEL

Each experiment has a customized Excel Spreadsheet template that you will find on Canvas. Download the template and save the file with your name in the file name. Including your name in file names is professional and helps with grading. You will be expected to utilize Excel functions for computing information in your spreadsheet. Data analysis spreadsheets will be due before midnight on the day after you complete your laboratory experiment. Upload Excel spreadsheets to Canvas.

PRACTICUM

A practicum is a laboratory examination. All work associated with the practicum should be done independently, and teaching assistants are only allowed to clarify safety instructions. TA's cannot assist with experimentation or data processing. A quiet (testing-style) laboratory must be maintained during the practicum, so no music will be allowed during that session.

PRELABS

You must complete a prelab assignment by Sunday, 11:59pm on the week the experiment is held. Prelab deadlines are set in Canvas. Your TA will review your prelab prior to the start of lab. If you submit the prelab assignment late (but before lab starts) you will receive partial credit. If you do not complete the prelab assignment, you are not permitted to complete the laboratory for that day.

LABORATORY LECTURE

There will be a 50 minute laboratory lecture each week. Attendance is required at these laboratory lectures- if you show up late or miss the laboratory lecture, you may be disallowed from completing the experiment that week and may not be given a chance to make up the experiment. The illustrative problem and protocol worksheet must be completed prior to leaving laboratory lecture. If you will miss a laboratory lecture due to an excused absence or illness, please contact Dr. Deutsch as soon as possible to arrange a suitable make up.

ILLUSTRATIVE PROBLEMS AND PROTOCOL WORKSHEET

To foster success with utilizing Microsoft Excel for data analysis and give students an opportunity to understand the data analysis to be performed, each experiment will have an illustrative problem. The protocol worksheet covers concepts and protocol calculations. These assignments will be completed during the laboratory lecture and must be submitted by the end of the lab lecture.

POST-LABORATORY QUESTIONS AND ABSTRACTS

Each experiment will have a series of associated post-lab questions (in Canvas). Post-lab assignments and abstracts are due by 11:59pm on the day after your laboratory period. Abstracts should be 250 words or less and summarize the experiment. Students should review post-lab questions during the laboratory period to get some assistance from your TA's.

EXPERIMENT INFOGRAPHIC

You will select one experiment performed during the semester (Experiments 3-8) and create an infographic for the experiment. A detailed project outline, grading rubric, and example infographics can be found on Canvas. You must submit an infographic draft for feedback (worth 10 points). The final infographic is worth 90 points.

PROFESSIONALISM

Student conduct in the laboratory will be monitored and evaluated each week in the following categories.

1. Timeliness
2. PPE and Appropriateness of Clothing
3. Laboratory Housekeeping
4. Preparedness (including familiarity with the protocol)
    a. Prelab to be completed 24 hours before your lab starts
5. Laboratory Notebook Pages (worth 10 points each)
    a. These are due by the time you leave lab (6:15 pm the day of your lab)

BOOTCAMPP

Boosting Opportunities of this Course and Making Precision Possible

Analytical techniques are often improved through practice and repetition. To this end, students must participate in one session of BOOTCAMPP during the semester which will occur over the first two experiments. Please see the lab schedule for additional times when BOOTCAMPP is offered. To attend BOOTCAMPP, you must sign up via Canvas. Sign-ups must take place a week in advance to ensure we have the proper space and equipment. Expect to spend 2-3 hours in the BOOTCAMPP. More details will be provided on the course's Canvas page.

Course Policies

Attendance and/or Participation

Attendance is required for all sessions of CHEM 2216L laboratories. You must attend your assigned laboratory section. Timeliness in reporting to each laboratory session is imperative due to safety. Tardiness will result in grade penalties.

- ≤15 min late: Deduction on Professionalism points
- >15 min late: You will not be allowed to complete the day's lab work and will be assigned a "0" for that experiment's report.

Unexcused lab absence will not be made up, and the associated grades will be entered as zero. Permitted absence includes illness, personal emergency, religious observance, career advancement events, and athletic/performance activities.

If you are not feeling well in the morning of the lab day, please inform the course instructor and rest at home. If this is the first time that you fell ill in the semester, an email to the instructor is sufficient to be excused for the lab. From the second time and onward, in addition you should also submit medical documentation to the Office of the Dean of Students and ask them to contact the course instructor for the lab to be excused. Because of the emergent nature of illness, if the Dean's email is received by the instructor before the end of the semester, the lab can be excused.

Students may miss labs due to personal emergencies. Again, documentation of some sort should be provided to the Office of the Dean of Students who will communicate with course instructors. Please also email the course instructor as soon as you know you will miss or have missed a lab due to personal emergency.

Students who are absent because of participation in religious observances, career advancement events, and athletic/performance activities will be permitted to make up the work missed during their absence with no late penalty. Students must inform the course instructor two weeks before the planned events to have the missed lab excused. If there is uncertainty of time/date of the event, students should inform the course instructor of the fluid nature of the event ahead of time and communicate with the instructor as soon as the time/date is decided.

In the event of a planned or unforeseen absence, please contact Dr. Deutsch as soon as possible (a minimum of 2 weeks before a planned absence or 3 days after an unplanned absence). Opportunities to make up missed laboratory experiments in CHEM 2216L will be rare due to limitations in laboratory size and the nature of the extensive preparation and waste handling required for typical experiments. Make-up opportunities are the preferred remedy for a missed laboratory session, and you must make yourself available for these options where at all possible. If a make-up is not possible, you may be given data and asked to complete the lab reports for credit. We will do our best to work with you to address any excused absences. Clear and prompt communication helps!

IMPORTANT: To ensure you gain adequate hands-on experience in the laboratory, **you must perform at least 7 in-person experiments AND the in-person practicum**. If prolonged or repeated absences prevent you from completing the minimum in-person experiments, you will not be able to make-up or be provided with data for any further experiments. In this case, you may not be able to complete the course and will need to work with the Office of the Dean of Students to find a solution.

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 me 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 me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Pre- &/or Co-Requisites

Pre-Requisite: CHEM 1212K

Co-Requisite: CHEM 2216CL (lab lecture, must register for this separately from the lab section)

Co-Requisite: CHEM 2216

BOOTCAMPP as an Extra Credit Opportunity

While you must participate in BOOTCAMPP at least once, you are encouraged to participate several times. You must sign up for the 2nd and 3rd BOOTCAMPP on Canvas under appropriate BOOTCAMPP modules. You will be given a grade based on your performance in BOOTCAMPP- while based on precision and accuracy, this grade is meant to be of benefit to you. If you attend multiple BOOTCAMPPs:

- Your first BOOTCAMPP is required and graded as an experiment
- Your second BOOTCAMPP can replace the grade of the first BOOTCAMPP if the score is better (if not, you will retain the first BOOTCAMPP grade). You may receive up to 0.5% extra credit on your final grade for participating in a second BOOTCAMPP
- Your third BOOTCAMPP can replace the grade of previous BOOTCAMPP attempts if the score is better (if not, you will retain your highest BOOTCAMPP grade). Completion of a third BOOTCAMPP may earn you up to 1% extra credit on your final grade

Collaboration, Group Work, and Use of Generative AI

You are encouraged to work with classmates on data analysis and to study with others outside of class. You should keep in mind that the effort you put into these assignments will be reflected in what you gain from them. Ensure that collaboration is not violating the Honor Code.

Ethical Use of Generative Artificial Intelligence

You are permitted to use AI-based assistance, such as Chat GPT and Copilot, the same way you collaborate with other people meaning:

- 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 was not written directly by you 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.
- You are not permitted to copy your conversation with an AI assistant. You can copy your own work into your 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.
    - Do not have your assignment and the AI agent open at the same time.
        - Similar to above, use your conversation with the AI as a learning experience, then close the interaction down, open your assignment, and let your assignment reflect your revised knowledge
- If you use GenAI, you must include the prompt you gave the AI and a screenshot of the entire conversation so that the instructor can see how you modified your response
- The USG Student Guide to GenAI is available on Canvas (linked on the syllabus page)

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

Late Assignment Policy

Any late assignment that is unexcused will be assigned a penalty of a 10% deduction per day that the assignment is late. To receive an extension, please contact Dr. Deutsch to communicate the reason for the requested extension. Documentation may be required to justify granting an extension on an assignment.

Making Up an Excused Experiment

There are several weeks throughout the semester designated as “make up” weeks. Should you miss an experiment for an excused reason, you must both communicate with Dr. Deutsch and sign up for the make up week on Canvas under the Course Resources Module. Sign ups must be completed a week before the make up week.

Student Use of Mobile Devices in the Classroom

Laptop computers and tablets are not permitted in lab. You will be provided with a desktop computer for use during the lab. Why? The lab is full of chemicals that can damage or contaminate your laptops or tablets! Use the desktops provided and leave the chemicals behind when you leave the lab. Please be respectful both to fellow students and the instructor in using phones during class. We recommend stepping

outside of lab if you need to use your phone. You must use plastic wrap (provided) if you are using your phone.

Additional Course Policies

Equipment and Supply Replacement

If glassware, plasticware, equipment and supplies are damaged or broken by students, the student may be required to pay for the replacement of those items with his/her Buzz Card. Students are expected to report any damage, destruction, or other incidents involving equipment, materials, and supplies to the teaching assistant and/or instructor.

Campus Resources for Students

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, email us at 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)