Quantitative Analysis
CHEM 249, Fall 2025

Instructor:	Anton Oliynyk (1408B HN), email: anton.oliynyk@hunter.cuny.edu
Lectures:	North Bldg C110, Wednesday, 10:30 am – 12:20 pm
Office hours:	after class and remotely at any mutually agreeable time (email to schedule: anton.oliynyk@hunter.cuny.edu)
Textbook:	Quantitative Chemical Analysis, D.C. Harris 11th ed.
Required Lab manual:	Quantitative Analysis Laboratory by Smeureanu and Drain (from Hunter College bookstore/Shakespeare only)
	Lab notebook, calculator, mask, gloves and goggles.

Grading

	%
Lab Analysis	50%
TopHat Homework	10%
In-class quizzes	5%
Exam 1	10%
Exam 2	10%
Final	15%
	100%

Exams are closed book and cumulative; a data sheet is provided and standard calculators may be used. Your student photo ID is required to verify your identity. You are not allowed to begin an exam after it has been in progress for 30 minutes. You must remain in the exam room until at least 30 minutes have elapsed. Do not copy anyone's work for the exams, quizzes, and problem set assignments. The work submitted with your name on it means that it is your work. Any case of plagiarism or cheating will be reported.

Absences. All students are required to attend all lectures and exams. Excused absence is a privilege, not a right, and is granted at the discretion of the instructor. Permissible excuses are incapacitating illness, severe domestic affliction, or other compelling reasons. You are responsible for the material covered in any lecture that you may have missed. There are no makeup exams.

Homework is required

Attendance is required

Learning Outcomes:

Upon completing this class, students should be able to:

- explain the analytical process
- describe the process of sample preparation, calibration curves, and interpreting results
- describe the types of experimental error, and carry out propagation of uncertainty
- describe the preparation and function of buffers
- make concentration and dilutions calculations
- Understand instrumental methods: Spectroscopy and gas chromatography

Tentative Lecture Schedule

Class Date	Lecture Topic
8/27	Chemical measurements, tools of the trade, experimental error, Accuracy, Precision and Detection Chapters 1-3
9/3	Errors & Statistics, Calibration methods: Chapters 4-5 Chemical Equilibrium continued: Chapter 6
9/10	Intro to Titrations chapter 7
9/17	Activity and Systematic Treatment of Equilibrium Chapter 8
9/24	NO CLASS
10/1	NO CLASS
10/8	Acids, Bases, Buffers: Acid –base titrations, Chapters 10-11
10/15	Acid–base titrations, continued, EDTA titrations Chapter 13, preparation for Exam 1
10/22	Exam 1
10/29	Electrochemistry: Chapter 14
11/5	Redox Titrations: Chapter 16
11/12	Fundamentals of Spectroscopy: Chapter 18 Applications of Spectroscopy: Chapter 19
11/19	Applications of Spectrometry continued: Chapter 20
11/26	Exam 2
12/3	Introduction to Analytical Separations, Chapter 23
12/10	Chromatography (Gas chromatography, HPLC) Chapters 24-25
12/17	Final Exam 9am-11am

Required Homework: As part of this course we will be using a custom platform called TopHat. The TopHat platform will be used as your online homework system and has been designed specifically for our course.
Get started with TopHat in four steps:
1. Sign up for Top Hat using your school email on a web browser
2. Join your course with Join Code: 886920
3. Make a payment to purchase access, redeem an access key, or start your 14 day free trial
4. Use Top Hat on a web browser or download our mobile app for IOS or Android

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up or throughout the term, if you have any technical problems or grading issues, send an email to Dr. Gabriela Smeureanu, lab coordinator, at gsmeurea@hunter.cuny.edu.

How to succeed in this course
Learning chemistry requires hard work and commitment. To succeed in this course, you should:

1. Attend lectures and take notes. The lectures define the scope of material for which you are responsible. Students who regularly miss lectures do not fare well in the course. Take notes in class to reinforce your understanding of the materials. Resist the urge to check your cellphone (which you should turn off in the class) or other social media. Continue to pay attention even when you are not writing notes – you are also responsible for information that may not be explicitly written down. Be brave and ask questions in class.

2. Use your textbook and do your homework. Before lectures, read the assigned sections in the textbook. Review the sample problems, and try some of the recommended end-of-chapter problems, making sure that you can complete each learning objective confidently. Complete the problem sets handed out regularly, they give you a good idea of the types of questions expected on exams and thus serve as excellent preparation for exams.

3. Take responsibility for your own learning. You control your own learning, no one is supervising you. Engage actively in learning and seek out the numerous resources available to you: your instructor, your peers, and the textbook.

I wish you a successful term learning chemistry!

<u>Laboratory:</u>

- Preparation for laboratory experiments is essential. Before coming to lab, read through the entire experiment.
- Advance reading of the Procedure will help you to plan your time efficiently.
- It is recommended that you outline the procedure in your laboratory notebook prior to arriving in the lab. Also, it will be good to do all your necessary calculations prior the lab.
- You are required to use a laboratory notebook to record data and observations.

<u>Laboratory Reports:</u>

Lab report is required for one experiment only (eggshell); otherwise you must hand in your experiment answer on the form available in your laboratory manual at the end of each experiment as follow:

Name, Experiment Title, Result in %± Standard Deviation

The results are due within 1 week after the experiment ends, consult the laboratory teaching assistant

Labs are graded only on how close your analytical results are to the known values. All samples are double blind in that the instructor does not have the "answers.

Use the book as an aid to both understanding the lectures AND to understand the experiments.

Hunter College required statements for syllabi

1. Academic Integrity Statement: "Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures."
2. ADA Statement: "In compliance with the ADA and with Section 504 of the Rehabilitation Act, Hunter College is committed to ensuring educational access and accommodations for all its registered students. Hunter College's students with disabilities and medical conditions are encouraged to register with the Office of AccessABILITY for assistance and accommodation. For information and appointment contact the Office of AccessABILITY located in Room E1214 or call (212) 772-4857 /or VRS (646) 755-3129."
3. Hunter College Policy on Sexual Misconduct "In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.
    a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).
    b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

CUNY Policy on Sexual Misconduct Link:
http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf"