

Quantitative Chemical Analysis, CHEM 3415W– FALL 2023

Required Text: *Quantitative Chemical Analysis*, Daniel C. Harris;
W.H. Freeman and Company, New York
The current edition is the 10th. The 8th or 9th editions are acceptable.

Required Items:

1. Scientific calculator (Graphing calculators are NOT allowed on exams.)
2. (Two) locks for lab drawers
3. Dish detergent and paper towels
4. Small bound notebook for lab

Counseling

Undergraduate Chemistry Advisor: Professor Andrzej Jarzecki
jarzecki@brooklyn.cuny.edu

Chemistry Department

Office: 359 New Ingersoll; phone extension 5457

Webpage: <http://academic.brooklyn.cuny.edu/chem/index.htm>

Academic dishonesty is prohibited in the City University of New York.

Cheating, plagiarism, internet plagiarism and obtaining unfair advantages are violations of policies of academic integrity and are punishable by penalties, failing grades, suspension and expulsion.

For more information about CUNY policy on academic integrity see

<http://www.brooklyn.cuny.edu/bc/policies/pdt7CUNY%20PolicyAcademicIntegrity.pdf>

Student Disability Services

To receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at 718-951-5538. If you have already registered with the Center for Student Disability Services please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.

Student Bereavement Policy

Students who experience the death of a loved one during the semester should consult the student bereavement policy here: <http://www.brooklyn.cuny.edu/web/about/initiatives/policies/bereavement.php>

Non-Attendance Due to Religious Beliefs

Students who are unable to attend class due to religious observations should consult the Brooklyn College Undergraduate Bulletin for the college's policy, and contact the lecturer to discuss the issue. Students must come forward with the issue in a timely manner.

Important Dates: (CHECK WITH REGISTRAR'S OFFICE TO CONFIRM DATES!)

September 4 (M)	College Closed
September 15	Course withdrawal period begins. A grade of "W" is assigned to students who officially withdraw from a course
September 15 (F)	No Classes
September 25 (M)	No Classes
October 9 (M)	College Closed
October 10 (T)	Conversion Day: Classes follow a Monday schedule
November 22 (W)	No Classes
November 23 (Th)	College Closed
November 24 (F)	College Closed

Grading: Your final grade will be determined as follows:

40% 4 Lecture Exams (lowest dropped)

NO MAKEUPS ARE GIVEN FOR LECTURE EXAMS

18% Laboratory Reports

7% Laboratory final

35% Final Exam

Final grades are set according to the following scale:

A+	95 or higher
A	88-94
A-	86-87
B+	83-85
B	73-82
B-	71-72
C+	69-70
C	63-68
C-	59-62
D	50-58
F	Below 50

Lecture Exams: Topics to be announced

- **First Lecture Exam:** Thursday, September 21
- **Second Lecture Exam:** Thursday, October 19
- **Third Lecture Exam:** Thursday, November 16
- **Fourth Lecture Exam:** Thursday, December 7

All lecture exams are given during the period in class

Final Exam: Thursday, December 14, 3:30-5:30 PM

Contact Information:

Dr. Mathias

jmathias@brooklyn.cuny.edu

(PUT YOUR NAME AND CHEM 3415W IN THE SUBJECT LINE!)

Office Hours: 3315 Ingersoll

Monday 12:30-1:30

Tuesday 2:30-3:30

Homework Assignments:

It is recommended that you do Exercises and Problems from your textbook; **solutions to exercises** and **answers to the problems** are found at the end of the text.

Homework is NOT collected; however, the investment of time you make in this area will be reflected in your mastery of the material and, hence, your final grade.

Chemistry 3415w: Lectures and Topics

	ASSIGNED READING	TOPICS
	Chapters 0-3	The Analytical Process; Measurement science; Analytical tools; Error Analysis
	Chapters 4-5	Statistics and Quality Assurance
	Chapter 6	Chemical equilibrium
	Lecture Exam 1	
	Chapter 7	Titration
	Chapters 8	Activity & Systematic Treatment of Equilibrium
	Chapter 9-10	Monoprotic & Polyprotic Acid-Base Equilibria
	Chapter 11	Acid-Base Titrations
	Chapter 12	EDTA Titrations
	Lecture Exam II	
	Chapter 14	Electrochemistry
	Chapter 15	Electrodes & Potentiometry
	Chapter 16	Redox Titrations
	Chapter 17	Electroanalytical Techniques
	Lecture Exam III	
	Chapters 18-19	Fundamentals & Applications of Spectrophotometry
	Chapters 20	Spectrophotometers
	Chapter 21	Atomic Spectroscopy
	Chapter 22	Mass Spectrometry
	Chapters 23-25	Analytical Separations
	Lecture Exam IV	

Chemistry 3415W: Laboratory

SAFETY GOGGLES MUST BE WORN IN THE LABORATORY AT ALL TIMES!

The goggles must be indirectly-vented to offer splash protection. If you violate the eye-protection policy, or any other safety policy, your instructor may remove you from the laboratory and/or affix at least a 10% penalty to your lab report grade.

You are required to keep a **Scientific notebook** in the laboratory. This must be a **BOUND** notebook; data is to be recorded in blue or black, non-erasable ink. All data is to be recorded **DIRECTLY** into the notebook, immediately after the measurement is made: **No scrap paper**. Mistakes should be crossed out with a single line; **do not use white-out**.

Your instructor may inspect your notebook at any time in order to verify that these procedures are being followed.

LAB REPORTS ARE DUE ONE WEEK AFTER THE EXPERIMENT UNLESS OTHERWISE STATED. A 10% PENALTY IS ASSESSED FOR REPORTS THAT ARE ONE WEEK LATE. NO REPORTS ARE ACCEPTED AFTER ONE WEEK LATE AND A GRADE OF ZERO IS ASSIGNED FOR THAT LAB.

Meeting	Experiment	Exercise
PART I:		
INDIVIDUAL ASSIGNMENTS		
1		Check-in. Safety orientation.
2	Exp 1	Introduction to Analytical Measurements: Weighing, Calibration and Statistical Approach using Microsoft EXCEL
3,4	Exp. 2	Determination of Chloride by the Mohr Method
5	Exp. 3	Determination of Phosphoric Acid Level in Soft Drinks by Potentiometric Titration and Computer Data Analysis
6	Exp. 4	Determination of Zn in a Cold-Relief Lozenge Medication by EDTA Complexometric Titration
7	Exp. 5	Spectrometric Determination of Iron
8,9	Exp. 6	Determination of Iron in an Ore Sample by Oxidation-Reduction Titration
PART II:		
GROUP ASSIGNMENTS will be given out by your instructor		
10	Exp. 7	Flame Photometry: Determination of Sodium and Potassium in an Unknown Sample
11	Exp. 8	Gas Chromatography: Analysis of a Mixture of Organic Compounds
12	Exp. 9	Cyclic Voltammetry: Dependence on the Concentration of an Analyte; Determination of the Concentration of an Iron Complex
13	Exp. 10	UV-VIS Spectroscopy: Determination of a Composition of a Two-Component Mixture
14	Check out.	Laboratory Final