

CHEM 2310A Quantitative Analysis – Fall 2023

Course Description:

CHEM 2310 Quantitative Analysis: "Theory and practice of volumetric and gravimetric analysis. Theoretical discussion of indicators, buffers, pH, etc. Introduction to data analysis, spectrophotometry, and chromatography. Prerequisite: CHEM 032 (1450) or CHEM 036 (1455) or CHEM 052 (1460)."

Learning Goals:

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What you are expected to get from of this course:

- Develop a theoretical foundation for variety of methods of analytical chemistry, including volumetric, gravimetric and electrochemical analysis, spectrophotometry, ion exchange and complexation
- Apply a subset of the analytical methods in the laboratory that were discussed in lecture
- Develop good practices of experimental observation, keeping a laboratory notebook and experimental technique
- Build a foundation in statistical data evaluation, data interpretation, and reporting of results

Lecture:

Class: _____ in _____
Recitation/review/exams: _____ in _____

Laboratory sections (STEM W407):

L02: TA: TBA
L03: TA: TBA
L04: TA: TBA

Course Instructor:

Email: Giuseppe.Petrucci@uvm.edu

Room: Innovation E354

Phone: 656-0957

<http://www.uvm.edu/%7Egpetrucc/>

Posted on Brightspace.

- I am available at other times as well, and you are welcome to set up an appointment via email.
- Also, I am also available via email for questions; I check my email several times every day.

Teaching Assistants:**Textbook:**

Quantitative Chemical Analysis, 10th Edition by Daniel C. Harris (REQUIRED)

- You won't find the text at the UVM Bookstore, so order it on-line. Search by ISBN number, and you should go to one of several suppliers, including Amazon.
 - ISBN-10: 1319164307
 - ISBN-13: 978-1319164300

Lab Manual:

How the course grade is determined:

Laboratory	30%
Quizzes	10%
Exam 1	15%
Exam 2	15%
Exam 3	15%
Final Exam	15%

- See below for more information about grading of the laboratory. The TAs will go over laboratory expectations your first meeting.
- - At least one quiz will be given each week. Quiz questions will be exclusively based on the previous weeks lecture material.
 - There will be recitation during the semester given during the evening recitation/review/exam period (see BrightSpace for the schedule).
 - The final exam is scheduled for Monday 12/14/2023 from 7:30 am – 10:15 am in Innovation E430.
 - Your exam grade (60% of the total) will be *the average of the top 3 exam scores*. The lowest exam score will be excluded. For example, if you are comfortable with your first 3 exam scores, you may skip the final.

You will receive an automatic F for the course if you do not pass the final exam.

- However, "bound" means nothing more than an inexpensive

Subject Matter to be Covered in CHEM 2310:

- Tools of the trade (0-5)
 - Critical concepts of analytical chemistry
 - Statistics
 - Use of Excel
 - Quality assurance and setting up an analytical method
- Chemical equilibria (6)
- Acids, bases, & buffers (8-10)
- Titrations (7, 11, 12, 16)
- Electrochemistry & redox titrations (14-15)
- Spectrophotometry & applications (18-20)
- Chromatography (23-25)