

**CHEM 311: Instrumental Analysis**  
**Fall 2015**

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**Classes:** Tuesday & Thursday 10:20-11:30am, Hall of Science 206

**Labs:** Monday & Wednesday, 1:15-4:15pm, Superlab (Hall of Science 205)

**Office hours:** Times will be posted on Blackboard.

**Required textbook:** Daniel C. Harris, "Quantitative Chemical Analysis," 8<sup>th</sup> edition (2010).

**Course objectives:**

By the end of this course, students should be able to:

- Describe the fundamental properties of the major separation and detection techniques
- Choose an appropriate analytical technique for a particular sample
- Collect and prepare a representative sample
- Evaluate data and communicate results

**Course Content:**

<b>Subject</b>	<b>Classes (approx)</b>	<b>Chapters in text*</b>
Introduction to analytical chemistry	1	0
Sampling and sample preparation	3	22, 27
Calibration methods and statistics review	4	3,4,5
Spectrophotometry (atomic and molecular)	5	17, 18, 19, 20
Mass spectrometry	4	21
Separation methods (gas chromatography, liquid chromatography, capillary electrophoresis, ion mobility)	6	22, 23, 24, 25
Electrochemistry or NMR	3	16 or N/A

\*We will not cover all portions of all chapters. Outside material will also be included.

## **Assessment (total: 500 points)**

2 midterm tests, in class – **45 points each**

midterm 1: Thursday, October 8

midterm 2: Thursday, November 19

You may bring one page (one side) of handwritten notes and a scientific calculator to each test.

Homework – **45 points**

~every week; due Tuesdays at the **beginning** of class

Quizzes – **45 points**

First 10 minutes of Thursday classes. The lowest quiz grade will be dropped.

Final exam – **70 points**

1:30pm, Thursday, December 17

Cumulative, with emphasis on the last portion of the course

You may bring one page (both sides) of handwritten notes and a scientific calculator to the exam.

Set labs – **150 points**

Due at the **beginning** of lab one week after completion of in-lab component (see lab manual for details)

Lab project – **100 points**

See lab manual for details

## **Grade guidelines:**

A- to A+: 90s; B- to B+: 80s; C- to C+: 70s; D- to D+: 60s; F: <60%

Note: You must obtain at least 50% in each of the class/test and lab components of this course to earn a passing grade.

## **Policy on late lab reports and class assignments**

- Homework will be accepted **up to one day late**, with the loss of 10% of grade. Late labs will be accepted with the loss of 10% per day, including weekends. Late penalties start when class/lab begins.
- You may have one day grace for each of one assignment and one lab during the semester.

## **Policy on attendance**

Class attendance and active participation will be considered when determining whether to elevate borderline grades (e.g. from B- to B etc.).

As homework is handed in and quizzes take place at the start of the class period, on-time arrival will improve your grade. If you have an unavoidable absence (due to an extenuating circumstance that is documented by an academic dean or health professional), please notify the course instructor as soon as possible. You are responsible for providing documentation and

making arrangements in a timely manner or else a grade of zero will be assigned for missed work.

Lab is at the center of this course, and attendance at all lab sessions is mandatory. You cannot pass the course if you have not completed all set labs and the lab project.

**Policy on academic honesty**

Please be familiar with the [college policy on academic honesty](#) that applies to this course. Any work submitted in only your name is to be your work alone. You may discuss work with others on assignments, but merely copying answers is not acceptable.

**Accommodations Statement**

Students who wish to request accommodations in this class for a disability must contact Ms. Elaine Mara, Assistant Director of Academic & Disability Support, located on the first floor of Monocacy Hall, or by calling [610-861-1401](tel:610-861-1401). You are also welcome to contact me privately to discuss your academic needs; however, accommodations cannot be provided until authorization is received from the Academic & Disability Support office.