

2 cr.

*Prereq: CHEM 163 and CHEM 163L, CHEM 201 and CHEM 201L; or credit or enrollment in CHEM 178; and concurrent enrollment in CHEM 211L.*

**Course Description:** Theory and practice of elementary volumetric, chromatographic, electrochemical, and spectrometric methods of analysis. Chemical equilibrium, sampling, and data evaluation. Emphasis on environmental analytical chemistry; the same methods are widely used in biological and materials sciences as well.

**Lecture:** MW, 11:00 am -11:50 pm, 1652 Gilman Hall

**Instructor:** Dr. David Appy

**Office:** 3754 Gilman Hall

**Email:** dvappy@iastate.edu

**Office Hours:** Thurs. 1-2 pm and Fri 9-10 am, or by appointment.

**Course Materials:**

**Textbook** - “Exploring Chemical Analysis”, 5<sup>th</sup> ed. by Harris. The e-book is automatically purchased and accessible through “Immediate Access Course Materials” in Canvas. You may opt out of Immediate Access within the first 10 days of class if, for instance, you would rather purchase a hard copy of the text through an external source.

**Scientific Calculator** – Any scientific or graphing calculator. Cell phones may not be used as calculators.

**Canvas** will serve as our official electronic course interface. Please check Canvas often for important announcements, course materials, and grade information. Visit [www.canvas.iastate.edu](http://www.canvas.iastate.edu)

**Classroom Technology Policy:**

**Allowed:** Calculators and Electronic devices which lay flat (eg. tablet, ipad) used for class purposes only.

**Not allowed:** Cell phones, laptops with vertical screens.

**Grading Structure:**

Exams – 4 midterm exams (100 pts each, drop 1 lowest) and 1 cumulative final exam (150 points) = 450 pts

Homework assignments – (approx.) 12 assignments @ 5 pts each (drop 2 lowest) = 50 pts.

Total = 500 pts

**Grading Scale:**

The grading scale will be drawn by the instructor at the midterm and again at the end of the semester.

**Late Work:**

Late work is not accepted under any circumstance. Emergency situations are covered by the drop policy.

**Missing/Rescheduling Exams:**

Exams may be rescheduled before or same-day as, **but not after** the actual exam. The exam may be proctored either in-person or virtually. Contact the instructor as far in advance as possible to reschedule an exam. No documentation or proof of excuse is required to reschedule a Midterm Exam, however rescheduling the Final Exam requires a legitimate excuse (not vacation). In cases of sudden emergency

where the exam simply cannot be taken, the exam will be recorded as a zero and will be automatically dropped at semester's end per the drop policy.

**Drop Policy/Purpose of Dropped Assignments:**

In this course the lowest: 1 midterm exam and 2 homework assignments will be dropped by semester's end. The drop policy serves three purposes: 1) To accommodate sudden emergencies; 2) To eliminate the administrative burden associated with deadline extensions, etc.; and 3) To eliminate the need for the instructor to pass judgment on students' circumstances.

**Regarding Review Sessions, Study Guides, and Accuracy of Assessments (Opinion of Dr. Appy):**

When assessing knowledge, we should sample students' true field of knowledge on an average day, since that is the context in which the knowledge will be applied in the future. To the extent that we "prep" students for assessments, whether via review sessions, study guides, or even by disclosing the date, time, and/or content of the assessment, we introduce systematic error which always skews results in the direction of *overestimating* students' true field of knowledge on an average day.

Therefore, **study guides and review sessions will not be provided in this course.** Assessment dates, times, and approximate content will be provided, but with the disclaimer that these practices result in overestimation of the true field of knowledge on an average day. Students can mitigate this error themselves by not studying specifically for assessments, but rather by learning in time with the curriculum and taking assessments as if it were an average day. The goal is not to earn the highest possible score, but rather the *most accurate* score, which is beneficial long-term because accurate feedback is a necessary condition for learning.

**Tentative Schedule for Chem211 (Fall 2022) –**

<b>Week</b>	<b>Dates</b>	<b>Chapter/Topic</b>	<b>HW Assignments</b>
1	M 8/22	Introductions/Syllabus Review Unit Conversions (dimensional analysis)	HW#1 – Introductory Worksheet (see "Files" in Canvas). <u>Due Sun. 8/23, 11:59 pm.</u> Upload pdf to Canvas.
	W 8/24	Problem solving using unit conversions. Expectations for showing work in the course.	
2	M 8/29	Ch. 0	HW#2 - TBD
	W 8/31	Ch. 1	
3	M 9/5	<b>Labor Day – no class</b>	
	W 9/7	Ch. 3	
4	M 9/12	Ch. 3	
	W 9/14	Ch. 4	
5	M 9/19	Exam 1 (thru Ch. 3)	
	W 9/21	Ch. 4	
6	M 9/26	Ch. 5	
	W 9/28	Ch. 6	
7	M 10/3	Ch. 8	
	W 10/5	Ch. 9	
8	M 10/10	Exam 2 (thru Ch. 8)	

	W 10/12	Ch. 10	
9	M 10/17	Ch. 10	
	W 10/19	Ch. 11	
10	M 10/24	Ch. 17	
	W 10/26	Ch. 18	
11	M 10/31	Exam 3 (thru Ch. 17)	
	W 11/2	Ch. 19	
12	M 11/7	Ch. 20	
	W 11/9	Ch. 21	
13	M 11/14	Ch. 21	
	W 11/16	Ch. 22	
<b>Thanksgiving Break 11/21-11/25</b>			
14	M 11/28	Exam 4 (thru Ch. 21)	
	W 11/30	Ch. 22	
15	M 12/5	Ch. 23	
	M 12/7	Ch. 23	
<b>FINAL EXAM – Thursday, Dec. 15<sup>th</sup>, 7:30 – 9:30 am in Gilman 1652</b>			

\*ISU Final examinations policy will be followed absolutely (<http://www.registrar.iastate.edu/exams/>).