

Analytical Chemistry II

Chemistry 426 (526)

Spring 2023

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Web Page: <http://course1.winona.edu/Mengen/>

Course Description: Analytical Chemistry II

Lectures: 426, 526 MWF 9:00-9:50 PA 307

Labs: 426-1 Th 1:00-4:50 SL 364

Texts: **Cengage Unlimited Subscription** with access to “*Fundamentals of Analytical Chemistry*.” Skoog and West, Cengage Learning, 9th Ed.; “*Principles of Instrumental Analysis*”, Skoog, Holler, and Crouch, 7th Ed. A laboratory notebook.

Course Details and Requirements:

In order to do well or pass the course, the student is expected to attend and participate in the lecture-discussion periods, complete and turn in the assigned laboratory studies, read the assigned chapters, work assigned problems, and pass quizzes and exams. **No make-up exams, quizzes, homework or in-class assignments will be given without prior approval or an “officially excused absence”.** Read “[Academic Integrity Policy](#)”, academic integrity is expected and will be enforced.

Guaranteed Grade Assignment Scale

90 %	A
75 %	B
60 %	C
50 %	D

Marking Distribution

Lab	30 %
Packets	15 %
Problems	15 %
Exams (4)(10% each)	40 %

Laboratory:

- Laboratory attendance is mandatory. Missing two or more laboratory sessions will result in failure of the class. Laboratory will count toward **30% of the overall grade**.
- All laboratory information is on the class web page.
- A short group lab report for each experiment will be due before beginning the next experiment. This report will be based on the “Results” portion of the ACS Report Format listed on the webpage. The results must meet precision and accuracy standards for the particular experiment. Experiments can be repeated to meet required standards for: a. Scores of 50% - poor precision and poor accuracy and/or gross error b. 75% - poor precision or poor accuracy. Satisfactory results will receive 90 to 100% with no repeat submissions.
- At the end of the semester each student will be required to write a full ACS style report. After completion of all experiments each student will be assigned one of the experiments for which they will write a formal report. It will be critical that full and accurate notebook accounts of all experiments be kept. You will need to use and turn in your notes with the formal report.
- Your laboratory instructor will provide you with additional detailed instruction as to what will be expected.

Packets

A packet will be available out for each chapter and can be found on the class website. They will be submitted to D2L on selected due dates. Packets will include definitions, discussions, and problems from each assigned chapter. Packets will be scored based on completion and will count toward **15% of your overall score**.

Problem Sets

End of chapter problems have been selected and will be turned into D2L for each chapter. See webpage for assigned problems. **Homework will account for 15% of your overall score**.

Exams

Four semester exams be given. An approximate date for each exam is listed in the schedule. Exam questions and problems will be based on information in the packets and assigned homework problems. **Exams account for 40% of your overall score**.

Chemistry 526

In addition to the requirements for Chemistry 426 you will be required to write a formal report following the ACS format. The report will be based on a literature review of a topic agreed upon by both student and professor.

<i>Chemistry 426 Schedule</i> Spring 2023					<i>Exam Schedule</i>
<i>Week</i>	<i>Week of</i>	Topic	Chapter(s) Inst. Analysis	Chapter(s) Analytical Chem.	
1	1/09	Chemical Analysis, Instrumental Methods, Calibration of Instrumental Methods	1 - 5	7, 8	Exam I
2	1/16	Electrical Components and Circuits			
3	1/23	Operational Amplifiers, Digital Electronics and Computers, Signals and Noise			
4	1/30	Introduction to Optical Spectroscopy	6 - 10	24, 25, 28	Exam II
5	2/06	Components of Optical Instruments			
6	2/13	Introduction to Optical Atomic Spectroscopy			
7	2/20	Atomic Absorption Spectroscopy (AAS)			
8	2/27	Atomic Emission Spectroscopy (AES)			
	3/06	Spring Break			
9	3/13	Introduction to UV-Vis Molecular Absorption Spectrometry	13 - 15	26, 27	Exam III
10	3/20	Applications of UV-Vis Molecular Absorption			
11	3/27	Molecular Luminescence Spectrometry			
12	4/03	Mass Spectrometry Introduction to Chromatography Gas and Liquid Chromatography	11, 21, 26 - 28	29, 31-33	Exam IV
13	4/10				
14	4/17				
15	4/24				
16	5/01	Finals Week			