

CHEM 300L: Analytical Chemistry

Lecture: 10:00 MWF, ZHS 159

Office Hours: Mondays 11:00-12:00PM, or by appointment

Catalog Description:

From the course catalog: Theory and practice in chemical analysis, emphasizing instrumental techniques; error analysis, fractional distillation, extraction; chromatography; visible, ultraviolet, and infrared spectroscopy; introductions to electrochemistry and nuclear magnetic resonance spectroscopy.

Expected Background:

As a 300 level course, Analytical Chemistry is considered upper division. You are expected to have a firm understanding of molecular structure, functional groups, and ideas of molecular polarizability. These concepts are covered in the first semester of Organic Chemistry (CHEM322a or equivalent) and will not be reviewed at all in this course. **If you have chosen to enroll in this course without the necessary background, you do so at your own risk.**

Instructors:

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Teaching Assistants :

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Required Texts:

Quantitative Chemical Analysis, 9th Edition
Daniel C. Harris, W. H. Freeman and Co., 2010, ISBN: 9781429218153.

Course Website:

<http://chemmac1.usc.edu/chem300/>

Homework Assignments:

Homework assignments consisting of Exercises and/or Problems assigned for each chapter will be posted on the course website. These will not be collected or graded, but you must do them promptly to stay on track in CHEM 300. CHEM 300 requires working a lot of numerical problems, particularly in chapters 1-11.

Grading:

Lecture Section - normalized to 55% One-hour in-class exams ($\times 3$): 60%
Final exam (Monday December 11%, 8-10AM): 40%

No make-up exams can be given. Absences will be excused only for medical reasons or in the case of extreme necessity. Written excuses or student health center slips must be presented to the lecturer for approval and should be secured in advance whenever possible. In the case of an excused absence, a grade will be assigned which is based on the average of the students class rank on the other two exams. Any unexcused absence will result in a grade of zero for that exam. Requests for regrading of any exam must be submitted within one week after the graded exam is made available to you. Graded exams will be photocopied before redistribution. A request for regrading of an altered exam is a serious violation of academic integrity

Lab Section - normalized to 45%

Experimental Write Ups (×6) More details will be given in the individual lab sections

To receive a passing grade in the course, you must receive a passing grade (prior to normalization) in BOTH the lab and lecture parts.

Policy on Dropping and Incompletes:

September 9th is the last day to drop this course with a mark of W. University policy requires strict adherence to this deadline. The mark of Incomplete (IN) can be given only to a student who (1) is doing passing work as of January 31st and (2) is unable to complete the course because of serious illness or documented emergency occurring after that date.

Electronics Policy:

Please turn off all cell phones, laptops, tablets, MP3 players, wireless PDAs, pagers, handheld devices, and other electronic communication devices *before* class. These items are disturbing to class and are inconsiderate to the instructor as well as to others trying to pay attention. If they become a distraction, the offending student will be asked to leave the classroom.

Statement for Students with Disabilities:

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open 8:30 am-5:00 pm, M-F. The phone number for DSP is (213) 740-0776.

Statement about Academic Integrity:

General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted, and the obligations both to protect ones own academic work from misuse by others as well as to avoid using anothers work as ones own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Course Outline:

A rough outline of the topics to be covered are provided on the last page. These dates are subject to change depending on the progress we make each week!

Lecture #	Date	Topic
1	Monday 8/20	Chap. 0: Introduction
2	Wednesday 8/22	Chap. 1 Measurements; 2 Tools
3	Friday 8/24	Chap. 3 Experimental Error
4	Monday 8/27	Chap. 4 Statistics
5	Wednesday 8/29	Chap. 4
6	Friday 8/31	Chap. 6 Equilibrium
	Monday 9/3	<i>Labor Day-no class</i>
7	Wednesday 9/5	Chap. 6
8	Friday 9/7	Chap. 8 Activity and Systematic Equilibrium
9	Monday 9/10	Chap. 8 End Exam 1 Material
10	Wednesday 9/12	Chap. 9-10 Mono- and Polyprotic Acid Titrations
	Friday 9/14	EXAM 1
11	Monday 9/17	Chap. 9-10
12	Wednesday 9/19	Chap. 12 EDTA Titrations
13	Friday 9/21	Chap. 12
14	Monday 9/24	Chap. 23 Analytical Separations
15	Wednesday 9/26	Chap. 24 Gas Chromatography
16	Friday 9/28	Chap. 24
17	Monday 10/1	Chap. 25 HPLC
18	Wednesday 10/3	Chap. 25
19	Friday 10/5	Chap. 22 Mass Spectrometry
20	Monday 10/8	Chap. 22 End Exam 2 Material
21	Wednesday 10/10	Chap. 18 Fundamentals of Spectroscopy
22	Friday 10/12	Chap. 18
23	Monday 10/15	EXAM 2
24	Wednesday 10/17	Chap. 18
25	Friday 10/19	Chap. 19 Apps of Spectroscopy
26	Monday 10/22	Chap. 20 Spectrometers
27	Wednesday 10/24	Chap. 20
28	Friday 10/26	Chap. 20
29	Monday 10/29	Chap. 21 Atomic Spectroscopy
30	Wednesday 10/31	Chap. 21
31	Friday 11/2	NMR Spectroscopy
31	Monday 11/5	NMR Spectroscopy End Exam 3 Material
32	Wednesday 11/7	NMR Spectroscopy
33	Friday 11/8	Exam 3
34	Monday 11/12	Chap. 14 Fundamentals of Electrochemistry
35	Wednesday 11/14	Chap. 14
36	Friday 11/16	Chap. 15 Electrodes and Potentiometry
37	Monday 11/19	Chap. 15
38	Wednesday 11/21	Chap. 17 Electroanalytical Techniques
	Friday 11/23	<i>Thanksgiving-no class</i>
39	Monday 11/26	<i>Applications of Analytical Chemistry</i>
40	Wednesday 11/28	<i>Applications of Analytical Chemistry</i>
41	Friday 11/30	Review
	Monday 12/10	FINAL EXAM, 8:00-10:00 AM