

CHEM 300L: Analytical Chemistry

4 units

Spring 2019: Lecture: 10:00-10:50 MWF, GFS 223

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; introduction to electrochemistry and separation techniques.

Instructors:

Sri Narayan, Professor of Chemistry

LHI 122 (213) 740-5965, sri.narayan@usc.edu

Office Hours LHI 122: Mondays, Wednesdays and Fridays 11:00-12:00PM, or by appointment

Mark Thompson, Professor of Chemistry

SGM 216, (213) 740-6402, met@usc.edu

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

Teaching Assistants:

Konstantin Mallon

Jingyu Ran

Required Texts:

Quantitative Chemical Analysis, 9th Edition

Daniel C. Harris, W. H. Freeman and Co., 2010, ISBN: 9781429218153.

Solutions Manual to Problems.

Course Website:

USC Blackboard

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 (3): 60%

Final exam : 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 (Dates given below are not final):

April 3, 2020 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 April 3, 2020 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 on Academic Conduct and Support Systems:

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex,

gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

Course Schedule Outline:

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

Class #	Date	Topic
1	1/13	Chap. 0: Introduction
2	1/15	Chap. 1 Measurements; 2 Tools
3	1/17	Chap. 3 Experimental Error
	1/20	No Class- Martin Luther King Jr. Holiday
4	1/22	Chap. 4 Statistics
5	1/24	Chap. 4 Statistics
6	1/27	Chap. 6 Equilibrium
7	1/29	Chap. 8 Activity and Systematic Equilibrium
8	1/31	Chap. 8 Continued- End of Exam 1 Material
9	2/03	Chap. 9 Monoprotic Acids
10	2/05	Mid-Term EXAM 1
11	2/07	Chap. 10 Polyprotic Acids
11	2/10	Chap. 11 Acid-base titrations
12	2/12	Chap. 11 Continued
13	2/14	Chap. 12 EDTA Titrations
14	02/11	Chap. 12 Continued
15	2/13	Chap. 14 Fundamentals of Electrochemistry
16	2/15	Chap. 14 Continued
	2/17	No Class- Presidents Day Holiday
17	2/19	Chap. 15 Electrodes and Potentiometry
18	2/21	Chap. 15 Continued
19	2/24	Applications of Electrochemistry/ End Exam 2 Material
20	2/26	Chap. 18 Fundamentals of Spectroscopy
21	2/28	Mid-term EXAM 2
22	3/2	Chap. 18 Continued
23	3/4	Chap. 18 Continued
24	3/6	Chap. 19 Applications of Spectroscopy
25	3/9	Chap. 20 Spectrometers - Interferometry
26	3/11	Chap. 20 Continued
27	3/13	Chap. 21 Atomic Spectroscopy
	03/16-03/20	Spring Recess – No Class

28	3/23	Chap. 21 Continued/ End of Exam 3 Material
29	3/25	Chap. 22 Mass Spectrometry
30	3/27	Mid-Term EXAM 3
31	3/30	Chap. 22 Continued
32	4/1	Chap. 23 Analytical Separations
33	4/3	Chap. 24 Gas Chromatography
34	4/6	Chap.24 Continued
35	4/8	Chap 25 HPLC
36	4/10	Chap 25 Continued
37	4/13	In Class Review (or Additional Lecture)
38	4/15	In Class Review (or Additional Lecture)
39	4/17	In Class Review
40	4/20	In Class Review
41	4/22	In Class Review
42	4/24	In Class Review
43	4/27	In Class Review
44	4/29	In Class Review
45	5/01	In Class Review
	5/02-5/10	Study Days

5/11 for FINAL EXAM (All Materials) 8:00 AM to 10:00 AM