



CHEM 300L
Analytical Chemistry

Units: 4

Term—Day—Time: Fall 2021—MWF—10:00-10:50

Location: VPD 105 (and/or Zoom)

Start date: August 23, 2021

End date: December 03, 2020

Lecture Instructor: Prof. Michael Inkpen

Office: LJS 250

Office Hours: Fridays 11 am-12 pm (Zoom), or by appointment.

Contact Info: inkpen@usc.edu, +1 (213) 821-1910.

Lab Instructor: Prof. Brent Melot

Office: SGM 213

Office Hours: By appointment.

Contact Info: melot@usc.edu, +1 (213) 740-1102.

Teaching Assistants:

Thomas Czyszczon-Burton, czyszcz@usc.edu

Dana Cheng, mchengta@usc.edu

Clarissa Olivar, olivarma@usc.edu

Sara Bollstetter, bollstet@usc.edu

Juan Pablo de los Rios, delosrio@usc.edu

Rudra Persaud, rpersaud@usc.edu

Office Hours: TBA

Please allow 2 working days for a response from instructors or TAs (plan accordingly).

IT Help: N/A, use Blackboard.

Catalogue Description: 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.

Prerequisite(s): 1 from CHEM 105B or CHEM 108 or CHEM 115B

Co-Requisite(s): 1 from CHEM 322A or CHEM 325A

Concurrent Enrollment: N/A

Recommended Preparation: N/A

COVID-19 Statement

Students and instructors are expected to wear masks at all times during class. If you test positive for COVID-19 during the semester, or experience any symptoms, you must stay at home until you obtain a negative test for COVID-19 and/or satisfy any recommended self-isolation requirements. All lectures will be recorded on Zoom to enable you to catch up on any missed classes. Note that this is a backup option only, and should not be considered a good substitute to attending class in person if safe to do so. If the lecture instructor tests positive for COVID-19 or experiences symptoms, lectures will be recorded on Zoom until they can safely return to teach in person.

Students are expected to comply with all aspects of USC's COVID-19 policy. Failure to do so may result in removal from the class and referral to Student Judicial Affairs and Community Standards.

Course Notes

Letter grades will be assigned based on the graded components described below. Copies of lecture slides will be provided on Blackboard.

Technological Proficiency and Hardware/Software Required

N/A

Required Readings and Supplementary Materials

Required Texts:

- (1) *Quantitative Chemical Analysis* (9th Edition), Daniel C. Harris
W. H. Freeman and Co., 2015, ISBN-13: 9781464135385

Supplemental Materials: Supplemental materials may be provided from various sources, including the following textbook(s):

- (2) *Solutions Manual for Quantitative Chemical Analysis* (9th Edition), Daniel C. Harris
W. H. Freeman and Co., ISBN-13: 9781464175633



Description and Assessment of 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 300L. CHEM 300L requires working a lot of numerical problems, particularly in chapters 1-11.

Grading Breakdown

Lecture Section (normalized to 55% of total 300L grade)

1 hour in-class exams (x3): 60%

Final exam (December 13th, 8-10 am): 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 by email 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% of total 300L grade)

Full details provided in the lab manual.

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

Assignment Submission Policy

Lecture Section

TBA

Lab Section

Full details provided in the lab manual.

Policy on Dropping and Incompletes

November 12, 2021 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 November 12, 2021 and (2) is unable to complete the course because of serious illness or documented emergency occurring after that date.

Note that dates given are not final and subject to change.

Additional Policies

Students are expected to attend all in-person lectures and participate in class discussions. The use of laptops and other electronic devices during lectures for class-related web searches or calculations is encouraged, so long as their use is not disruptive to the rest of the class.

University Holidays (no classes on these dates)

Monday, September 6th – Labor Day

Friday, October 15th – Fall Recess

Wednesday, November 24th – Thanksgiving Holiday

Friday, November 26th – Thanksgiving Holiday

Course Schedule: A Weekly Breakdown

A rough outline of the topics to be covered is provided below (dates are subject to change).

Class #	Date	Topic	Deliverables
1	08/23	Ch. 0: Introduction	
2	08/25	Ch. 1 Measurements; 2 Tools	
3	08/27	Ch. 3 Experimental Error	
4	08/30	Ch. 4 Statistics	
5	09/01	Ch. 4 Statistics	
6	09/03	Ch. 6 Equilibrium	
September 6 – Labor Day			
7	09/08	Ch. 8 Activity and Systematic Equilibrium	
8	09/10	Ch. 8 Continued	[End of Exam 1 Material]
9	09/13	Ch. 9 Monoprotic Acids	
10	09/15	-	Mid-Term EXAM 1
11	09/17	Ch. 10 Polyprotic Acids	
12	09/20	Ch.11 Acid-base titrations	
13	09/22	Ch. 11 Continued	
14	09/24	Ch. 12 EDTA Titrations	
15	09/27	Ch. 12 Continued	
16	09/29	Ch. 14 Fundamentals of Electrochemistry	
17	10/01	Ch. 14 Continued	
18	10/04	Ch. 15 Electrodes and Potentiometry	
19	10/06	Ch. 15 Continued	
20	10/08	Applications of Electrochemistry	[End of Exam 2 Material]
21	10/11	Ch. 18 Fundamentals of Spectroscopy	
22	10/13	-	Mid-Term EXAM 2
October 14-15 Fall Recess			
23	10/18	Ch. 18 Continued	
24	10/20	Ch. 18 Continued	
25	10/21	Ch. 19 Applications of Spectroscopy	
26	10/15	Ch. 20 Spectrometers - Interferometry	
27	10/17	Ch. 20 Continued	
28	10/29	Ch. 21 Atomic Spectroscopy	
29	11/01	Ch. 21 Continued	[End of Exam 3 Material]
30	11/03	Ch. 22 Mass Spectrometry	
31	11/05	-	Mid-Term EXAM 3
32	11/08	Ch. 22 Continued	
33	11/10	Ch. 23 Analytical Separations	
34	11/12	Ch. 24 Gas Chromatography	
35	11/15	Ch.24 Continued	
36	11/17	Ch 25 HPLC	
37	11/19	Ch 25 Continued	
38	11/22	In Class Review (or Additional Lecture)	
November 24-28 Thanksgiving Holiday			
39	11/29	In Class Review	
40	12/01	In Class Review	
41	12/03	In Class Review	
December 4-7 – Study Days			
-	12/13 8-10 am	All Materials	FINAL EXAM

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with *The Office of Disability Services and Programs (DSP)* each semester (for more information, see below). A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to course instructors as early in the semester as possible.

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.

Discrimination, sexual assault, intimate partner violence, stalking, and harassment are prohibited by the university. You are encouraged to report all incidents to the Office of Equity and Diversity/Title IX Office <http://equity.usc.edu> and/or to the Department of Public Safety <http://dps.usc.edu>. This is important for the health and safety of the whole USC community. Faculty and staff must report any information regarding an incident to the Title IX Coordinator who will provide outreach and information to the affected party. The sexual assault resource center webpage <http://sarc.usc.edu> fully describes reporting options. Relationship and Sexual Violence Services <https://engemannshc.usc.edu/rsvp> provides 24/7 confidential support.

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 one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. 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. The recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. 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. Should there be any suspicion of academic dishonesty, students will be referred to the Office of Student Judicial Affairs and Community Standards for further review. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Support Systems:

Scholarly Writing

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute <http://ali.usc.edu>, which sponsors courses and workshops specifically for international graduate students.

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 (DSP) - (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.

Campus Support & Intervention - (213) 821-4710

campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.