CHEM 300L
Analytical Chemistry
Units: 4
Term—Day—Time: Fall 2023—MWF—10:00-10:50

Location: GFS 101 (and/or Zoom)

Start date: August 21, 2023
End date: December 01, 2023

Lecture Instructor: Prof. Michael Inkpen
Office: LJS 250
Office Hours: Mondays 11 am-12 pm, or by appointment.
Contact Info: inkpen@usc.edu, +1 (213) 821-1910.

Lab Instructor: Prof. Mark Thompson
Office: SGM 216
Office Hours: By appointment.
Contact Info: met@usc.edu, +1 (213) 740-6402.

Teaching Assistants:
Megan Cassingham, cassingham@usc.edu,
Gemma Goh, yanggoh@usc.edu,
Christina Trang, trangc@usc.edu,
Luana Zagami, zagami@usc.edu,
Ao Jiao, aoji@usc.edu,
Yizhen Chen, yizhen@usc.edu,
Chris Pakhanyan, pakhanya@usc.edu

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 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.
https://coronavirus.usc.edu

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

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

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 11th, 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
Policy on Dropping and Incompletes
November 10, 2023 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 10, 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)
September 4 – Labor Day
October 12-13 – Fall Recess
November 10 – Veteran’s Day
November 22-26 – Thanksgiving Recess
### Course Schedule: A Weekly Breakdown

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

<table>
<thead>
<tr>
<th>Class #</th>
<th>Date</th>
<th>Topic</th>
<th>Deliverables</th>
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<tbody>
<tr>
<td>1</td>
<td>08/21</td>
<td>Ch. 0: Introduction</td>
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<tr>
<td>2</td>
<td>08/23</td>
<td>Ch. 1 Measurements; 2 Tools</td>
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<td>3</td>
<td>08/25</td>
<td>Ch. 3 Experimental Error</td>
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<td>4</td>
<td>08/28</td>
<td>Ch. 4 Statistics</td>
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<td>5</td>
<td>09/30</td>
<td>Ch. 4 Statistics</td>
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<td>6</td>
<td>09/01</td>
<td>Ch. 6 Equilibrium</td>
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<td>7</td>
<td>09/06</td>
<td>Ch. 8 Activity and Systematic Equilibrium</td>
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<tr>
<td>8</td>
<td>09/08</td>
<td>Ch. 8 Continued</td>
<td>[End of Exam 1 Material]</td>
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<td>9</td>
<td>09/11</td>
<td>Ch. 9 Monoprotic Acids</td>
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<tr>
<td>10</td>
<td>09/13</td>
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<td>11</td>
<td>09/15</td>
<td>Ch. 10 Polyprotic Acids</td>
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<td>09/18</td>
<td>Ch. 11 Acid-base titrations</td>
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<td>13</td>
<td>09/20</td>
<td>Ch. 11 Continued</td>
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<td>14</td>
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<td>Ch. 12 EDTA Titrations</td>
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<td>15</td>
<td>09/25</td>
<td>Ch. 12 Continued</td>
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<td>16</td>
<td>09/27</td>
<td>Ch. 14 Fundamentals of Electrochemistry</td>
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<td>17</td>
<td>09/29</td>
<td>Ch. 14 Continued</td>
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<td>18</td>
<td>10/02</td>
<td>Ch. 15 Electrodes and Potentiometry</td>
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<td>19</td>
<td>10/04</td>
<td>Ch. 15 Continued</td>
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<tr>
<td>20</td>
<td>10/06</td>
<td>Applications of Electrochemistry</td>
<td>[End of Exam 2 Material]</td>
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<tr>
<td>21</td>
<td>10/09</td>
<td>Ch. 18 Fundamentals of Spectroscopy</td>
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<td>22</td>
<td>10/11</td>
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<td>[Mid-Term EXAM 2]</td>
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<td>23</td>
<td>10/16</td>
<td>Ch. 18 Continued</td>
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<td>24</td>
<td>10/18</td>
<td>Ch. 18 Continued</td>
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<td>25</td>
<td>10/20</td>
<td>Ch. 19 Applications of Spectroscopy</td>
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<td>26</td>
<td>10/23</td>
<td>Ch. 20 Spectrometers - Interferometry</td>
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<td>27</td>
<td>10/25</td>
<td>Ch. 20 Continued</td>
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<td>28</td>
<td>10/27</td>
<td>Ch. 21 Atomic Spectroscopy</td>
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<td>29</td>
<td>10/30</td>
<td>Ch. 21 Continued</td>
<td>[End of Exam 3 Material]</td>
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<td>30</td>
<td>11/01</td>
<td>Ch. 22 Mass Spectrometry</td>
<td>[End of Exam 3 Material]</td>
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<td>31</td>
<td>11/03</td>
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<td>[Mid-Term EXAM 3]</td>
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<td>32</td>
<td>11/06</td>
<td>Ch. 22 Continued</td>
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<tr>
<td>33</td>
<td>11/08</td>
<td>Ch. 23 Analytical Separations</td>
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<td>34</td>
<td>11/13</td>
<td>Ch. 24 Gas Chromatography</td>
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<td>35</td>
<td>11/15</td>
<td>Ch. 24 Continued</td>
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<td>36</td>
<td>11/17</td>
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<td>37</td>
<td>11/20</td>
<td>Ch 25 Continued</td>
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<td>38</td>
<td>12/01</td>
<td>In Class Review (or additional lecture)</td>
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<td>39</td>
<td>12/01</td>
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<td>12/01</td>
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<td>41</td>
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<td>In Class Review (or additional lecture)</td>
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<td>-</td>
<td>12/11</td>
<td>All Materials</td>
<td>FINAL EXAM</td>
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**September 4 – Labor Day**

**October 12-13 Fall Recess**

**November 22-26 Thanksgiving Holiday**

**December 2-5 – Study Days**
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 ones own academic work from misuse by others as well as to avoid using anothers work as ones 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: 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.