Advanced Analytical
CHEM-5310

Fall 2022  Section 01  3 Credits  08/22/2022 to 12/06/2022  Modified 11/14/2022

Meeting Times

Lecture time: T: 5:30-8:30 pm (Aug 22, 2022 - Dec 6, 2022)

Contact Information

Location: Chemistry building Room100
Instructor: Suying Wei, Ph.D. Department of Chemistry and Biochemistry
Office CH121N; Phone: 409-880-7976; email: swei@lamar.edu
Office Hours: MWF via ftf or Microsoft Teams by appointment through email (swei@lamar.edu); Please make sure to communicate with me using your LU email account.

Catalog Description

Prerequisite: Graduate standing or consent of instructor Offered: Other

Course Objectives

Objectives: This course is mainly a survey of selected principles and techniques of modern analytical chemistry with a focus on areas such as spectroscopy, separation sciences, and electroanalytical chemistry.

Student Learning Outcomes

Outcomes: Students will leave the course with fundamental theoretical knowledge and understanding of:

1. Proper acquisition, expression and interpretation of data with principles in chemical measurements, uncertainty, basic statistics, and quality assurance.
2. Equilibrium of selected reactions/systems and its manipulation
3. Characteristics and working principles of chosen advanced analytical techniques.

Course Materials

TEXTBOOK:
Quantitative Chemical Analysis, 10th Edition, by Daniel C Harris, Publisher: W.H. Freeman
Modern Analytical Chemistry, David Harvey, Publisher: McGraw-Hill Corporation

Course Policies

Attendance and Classroom Behaviors
1. Regular class attendance is important to the attainment of the educational objectives of the University. Attendance will be checked daily (see federal policies), and absence for more than two times will result in losing 5% of the course grade.

2. Student participation is highly encouraged but disruptive behaviors, including but not limited to cell phone texting, talking, and walking, will not be allowed and possible academic punishment will be resulted. If you have to come late or leave early, please inform the instructor ahead of time, otherwise it is perceived as disruptive behaviors. And any disruptive behaviors may cause point deduction for your grade, which results in a maximum cumulative of 5% point deduction (referring to the Grading scale).

Accreditation Standards

Grading and Assignments

Types of Exams and Projects

Both exams will be a combination of multiple choice/written questions covering all lectured materials, so your attendance of lectures and active participation during class time are critical to your grade. Students need to bring their own scantrons for the tests. Students’ participation is highly encouraged and required for this part of grade. Class participation is referring to students’ attendance and classroom behaviors, and more detailed descriptions are in the following.

GRADE: Based entirely on the two exams and class participations.

<table>
<thead>
<tr>
<th>EXAMS</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm exam</td>
<td></td>
<td>35%</td>
<td>TBA</td>
</tr>
<tr>
<td>Class participation</td>
<td></td>
<td>5%</td>
<td>Aug 22, 2022 - Dec 6, 2022</td>
</tr>
<tr>
<td>Final</td>
<td></td>
<td>60%</td>
<td>Follow school schedule</td>
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A: ≥90; 90>B≥80; 80>C≥70; 70>D≥60; F: below 60

Course Subject Outline

<table>
<thead>
<tr>
<th>Part I</th>
<th>Introduction to Analytical Process; Concentration of the analyte as the focus of chemical analysis; Titration of the analyte as a chosen volumetric analysis technique</th>
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</thead>
<tbody>
<tr>
<td>Part II</td>
<td>Data Management in Chemical Analysis; Statistics—A technique to improve data quality; Quality Assurance and Calibration Methods: procedures and strategies for chemical analysis</td>
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<tr>
<td>Part III</td>
<td>Equilibrium in General; Monoprotic Acid-base Equilibria; Polyprotic Acid-base Equilibria</td>
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<tr>
<td>Part IV</td>
<td>Spectrometry and Chemical Analysis: Fundamentals of Spectrophotometry; Applications of Spectrophotometry, Spectrophotometers. Separations and Chemical Analysis: Introduction to Analytical Separations; Gas Chromatography; High Performance Liquid Chromatography</td>
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Additional Items

Institutional Policies

COVID-19 Statement
As we begin the new academic year, the COVID-19 virus that has challenged us since 2020 persists. Important differences in outcomes are observed, however, as safe and effective vaccines and therapeutic agents that reduce the risk of severe illness are now available. Consequently, we anticipate that our campus community will continue to be impacted by the virus and we encourage all faculty, staff, and students to practice individual safety protocols at their discretion.

We recommend good personal hygiene practices including regular handwashing and/or use of hand sanitizing products when soap and water are not readily available. Please show respect to those who choose to practice social distancing measures and wear face coverings.

Vaccines are available to those who seek them throughout the region and at the Student Health Center. Please self-screen for any signs or symptoms of COVID-19 and seek medical attention if you begin to feel ill.

**Academic Continuity Policy**

In the event of an announced campus closure in excess of four days due to a hurricane or other disaster, students are expected to check Lamar University’s website and login to LU Connect for instructions about continuing courses remotely.

**Academic Honesty Policy**

Lamar University expects all students to engage in academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in their academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action.

The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion, and the abuse of resource materials.

All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include failure of the assignment and/or course up to suspension or expulsion from the university. The penalty may vary by instructor.

Additional information is available on the Academic Policy website (https://students.lamar.edu/academic-support/academic-policies.html).

**Attendance Verification**

Students must complete an Attendance Verification Quiz for ALL COURSES - both on-campus and online - in which they are enrolled each term by the third class day to comply with U.S. Department of Education attendance requirements. Failure to complete this quiz by the deadline may result in loss of course enrollment and/or financial aid. The quiz is located in EVERY COURSE through LULearn (Blackboard), even if the course meets on campus.

**Course Drop Policy**

Students may drop a course and receive a grade of "Q" during the penalty-free period of the semester or session. For drops after this penalty-free period, grades are recorded as "Q" or "F," indicating the student was passing or failing at the time of the drop. A grade of "Q" may not be assigned unless an official drop has been processed through the Records Office. Students may drop a course online up to the census day by logging into Self-Service Banner. After the census day, courses must be dropped through the Records Office. For additional help, contact the academic advisor or the Records Office at registration@lamar.edu. **Students may not drop a course during the last 20 percent of the term.** Students should check the academic calendar at https://www.lamar.edu/academic-calendar for specific dates.

**Students with Disability Policy**

Lamar University is committed to providing equitable access to learning opportunities for all students. The Accessibility Resource Center (ARC) is located in the Communication building, room 105. Office staff collaborate with students who have disabilities to provide and/or arrange reasonable accommodations.
If you have, or think you may have, a disability (e.g. mental health, attentional, learning, chronic health, sensory, or physical), please contact the ARC at 409-880-8347 or arc@lamar.edu to arrange a confidential appointment with the Director of the ARC to explore possible options regarding equitable access and reasonable accommodations.

If you are registered with the ARC and have a current letter requesting reasonable accommodations, we encourage you to contact your instructor early in the semester to review how the accommodations will be applied in the course.

Additional information is available at the [ARC website](http://www.lamar.edu/disability-resource-center/).

**Academic Support**

Academic Support can be located at [https://www.lamar.edu/students/#acad-supp](https://www.lamar.edu/students/#acad-supp).

There are many areas (i.e. Advising, Writing Center, etc.) of academic support. Each area provides their own specific contact information and days and hours of operation.

**Student Services**

*Lamar University recognizes that students may experience challenges that hinder success in their academics and/or college experience. We believe in giving all students access to resources that allow them to overcome these challenges. If you are struggling with stress, procrastination, anger management, depression, anxiety, substance abuse and/or eating disorders, please reach out to our counseling professionals at the Student Health Center at 880-8466 to call for an appointment or visit our website [https://www.lamar.edu/students/student-engagement/student-health-center/index.html](https://www.lamar.edu/students/student-engagement/student-health-center/index.html) for more information about our services.*

*Students who face challenges securing food or housing, tuition and/or books and believes this may affect their performance in the course is urged to contact the LU Strong program. The program is located in the Setzer Student Center, Room 230 at 409-880-8458 or at lustrong@lamar.edu. Furthermore, please notify your professor if you are comfortable in doing so. This will enable them to provide any additional resources they may possess.*

*Your information and situation will be treated with the utmost privacy and is protected by Texas law. These services are available to all currently enrolled students at Lamar University and Lamar Institute of Technology.*

*Information on Student Services can be located at [http://students.lamar.edu/index.html](http://students.lamar.edu/index.html). There are many resources (i.e. Course schedules, important phone numbers, etc.) available. Each area provides their own specific contact information and days and hours of operation.*

**Emergency Procedures**

Many types of emergencies can occur on campus; instructions for severe weather or violence/active shooter, fire, or chemical release can be found at the [Office of Environmental Health/Safety and Risk Management](https://www.lamar.edu/about-lu/administration/risk-management/index.html) webpage.

**Severe Weather**

Follow the directions of the instructor or emergency personnel.

Seek shelter in an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.

If you are in a multi-story building and you cannot get to the ground floor, pick a hallway in the center of the building.

Stay in the center of the room, away form exterior walls, windows, and doors.

**Violence/Active Shooter**

CALL - 7777 from a campus phone (Text 409-241-8002 from a cell phone). Note: Calling 911 from either a campus or cell phone will contact the City of Beaumont dispatch rather than the LU police.
AVOID - If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.

DENY - Barricade the door with desks, chairs, bookcases or any other items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it is safe.

DEFEND - Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.

Copyright Policy Statement

Copyright is defined as the ownership and control of the intellectual property in original works of authorship, which are subject to copyright law. As an institution of higher learning that values intellectual integrity, Lamar University prohibits the distribution of published materials (print or electronic) in violation of copyright law.

LU Connect Portal

Students are asked to obtain a Lamar Electronic Account username and password so they can log onto the LU CONNECT website. Students may get information on how to get into the LU CONNECT website from the University’s homepage (http://www.lamar.edu) by clicking on the LU CONNECT link on the left top corner of the screen. Follow the steps to secure your LU CONNECT username and password.

LU Learn/Blackboard Learning Management System (LMS)

Students will utilize Lamar University’s Learning Management System (LMS), Blackboard, for online courses.

For Blackboard technical support go to https://blackboardsupport.lamar.edu. Phone: 866-585-1738

Phone and chat are available 24/7/365

Exams and quizzes taken within LULearn (Blackboard) may require online proctoring. For additional information about online proctoring, click here and view details under proctoring services.

Network Use

ACCEPTABLE USE

Students must respect the integrity and security of Lamar University computer systems and network, and the privacy and preferences of other users. Responsibility for learning about and complying with Lamar University Acceptable Use Policy ultimately rests with the individual. The network may be used to download, copy, or store any software, shareware, digital media files or freeware, as long as the use complies with copyright law licensing agreements, and campus policies, such as storage space limitations and network bandwidth restrictions. The network may not be used for any activity, or to transmit any material, that violates United States or local laws.

UNACCEPTABLE USE

The network may not be used for commercial purposes. Advertising and sponsorships on Lamar University websites is restricted. In addition, students may not permit other persons to use their usernames, passwords, accounts or disk space, or disclose their usernames, passwords or account information to any third party. Students may not log on to someone else’s account, internet address, or other network codes, or attempt to access another user’s files. Students may not create false or dummy accounts to impersonate someone else. Students may not try to gain unauthorized access (“hacking”) to the files or computer systems of any other person or organization. Students may not impersonate another person by forging e-mail, web pages or other electronic media. Students who maliciously access, alter, delete, damage or destroy any computer system, computer network, computer program, or data will be subject to disciplinary action by Lamar University, and criminal prosecution as well. Students may not disrupt or attempt to disrupt network traffic, and they may not attempt to monitor or capture network traffic in any way. Finally, students may not intentionally create, store, display, print or transmit information that violates the university’s Sexual Harassment Policy.

Netiquette (Online Etiquette) Statement

Please adhere to the same standards of behavior and professional respect online that you would follow in face-to-face
communication with others, but most particularly when writing emails and when taking part in collaborative and discussion board activities. Lamar provides access to network resources, including the Internet, in order to support learning and to prepare students for the 21st century world. Students, however, are expected to adhere to the Lamar University Acceptable Use Policies when Using Networks. A more comprehensive student code of conduct can be found at https://students.lamar.edu/academic-support/code-of-conduct.html (https://students.lamar.edu/academic-support/code-of-conduct.html).

GENERAL GUIDELINES TO RESPECT ALL PARTICIPANTS

- Respect the right of each person to disagree with others.
- Treat people the same as you would face-to-face.
- Respect the time of others.

GUIDELINES WHEN COMMUNICATING WITH OTHERS (EMAIL, DISCUSSIONS, BLOGGING, AND ETC.)

- Always sign your name to any contribution you choose to make.
- Be constructive in your responses to others in the class.
- Do not use all caps (Doing so may be interpreted as shouting).
- Re-read your postings before sending them.
- Always think before you write.
- Respond respectfully.
- Use appropriate grammar and structure.
- Spell-check your postings.
- Use short paragraphs focused on one idea.
- Use appropriate business language at all times.

Technical Support


Phone: 409-880-2222
Email: servicedesk@lamar.edu

Hours of Operation (CST):
Monday - Thursday 7:30 a.m.-12:00 a.m.
Friday 7:30 a.m. - 7:30 p.m.
Saturday 9:00 a.m. - 6:00 p.m.
Sunday 3:00 p.m. - 12:00 a.m.