

CHEM 5318 (18103) / 6318 (18104)

Advanced Analytical Chemistry

10:30 am - 11:50 am MW

Chemistry Computer Sci Bldg 1.0204

Instructors:

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Office: CCSB 2.0112

Office hours: by appointment

References (not required for the class):

- David Harvey, "Modern Analytical Chemistry", McGraw-Hill Higher Education, ISBN 0-07-237547-7
- Yang Leng, "MATERIALS CHARACTERIZATION: Introduction to Microscopic and Spectroscopic Methods" John Wiley & Sons (Asia) Pte Ltd, ISBN 978-0-470-82298-2
- Microfluidic Devices for Biomedical Applications, by XiuJun Li (**ISBN:** 9780857096975)
- Specific journal articles and review papers

Learning Objectives: Students will gain knowledge in

- Fundamentals of analytical chemistry
- Basis of selected spectroscopic and microscopic techniques
- Analytical microscopy and spectroscopy
- Advanced modern analytical techniques and their application in interdisciplinary research

Contents:

Module 1: Introduction; Synthesis of metal organic framework and electrocatalytic applications

Module 2: Different Characterization techniques for MOFs

- Electron Spectroscopy (X-ray Photoelectron Spectroscopy)
- Microscopic techniques (SEM, TEM, EDS)
- Synchrotron (Tentative)

Module 3: Advanced Separation Techniques

- Fundamentals
- Capillary Electrophoresis (CE)

Module 4: Microfluidic Lab-on-a-Chip

- Microfabrication
- Microchip CE separation
- Applications

Evaluations:

- Class Participation/Attendance: 5 pts (only a total of 2 absences will be excused)
- Class presentations: 20 pts (15 mins presentation including 2-3 mins questions)
- Exam 1, Exam 2 and quizzes: 45 pts
- Final project presentation: 30 pts (20 mins presentation 5 mins questions)

A: 100 pts - 90 pts, B: 89 - 80 pts, C: 79-70 pts, D: 69-60 pts, F: <60 pts

Academic honesty:

Materials (written or otherwise) submitted to fulfill academic requirements must represent a student's own efforts. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Violations will be taken seriously and will be referred to the Dean of Students Office for possible disciplinary action. Students may be suspended or expelled from UTEP for such actions.

Incomplete Grade Policy

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to the instructors immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

Accommodations Policy

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will

be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

Scholastic Integrity

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

Guidance on Artificial Intelligence

The use of generative AI tools such as Chat GPT is permitted in this course for the following activities, which must be noted or cited:

- Language correction
- Grammar check

However, you may not use AI tools to complete the following activities:

Write a part or the entire assignment, find ideas or anything that is not mentioned above.

Students must cite any borrowed content sources to comply with all applicable citation guidelines, copyright law, and avoid plagiarism. Instances that violate these guidelines will be referred to the Office of Student Conduct and Conflict Resolution.

PLAGIARISM DETECTING SOFTWARE

Some of your course work and assessments may submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used review assignment submissions for originality and will help you learn how to properly attribute sources rather than paraphrase.

Syllabus is subject to change. Any changes will be announced in class and potentially emailed to the whole class during the semester. You are solely responsible for getting the most updated information.