

CHEM 5318 (18103) / 6318 (18104)
Advanced Analytical Chemistry
10:00 am - 11:20 am MWF
UGLC 338

Instructor:

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Office hours: Tue./Thu. 2:00 pm – 3:30 pm or 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
- Specific journal articles which will be made available during the class

Learning Objectives: Students will gain knowledge in

- Fundamentals of analytical chemistry
- Basis of selected spectroscopic and microscopic techniques
- Analytical microscopy and spectroscopy

Contents:

- Introduction to Trace Environmental Quantitative Analysis
- Calibration/Detection Limits
- Data analysis
- Basics of spectroscopy and microscopy
- Analytical spectroscopy and microscopy
- Electron microscopy and spectroscopy
- Vibrational spectroscopy and microscopy

Evaluations:

- Class Participation/Attendance: 20 (10/10) pts (only a total of 5 absences will be excused)
- Midterm presentations: 15 pts
- Final project presentation: 25 pts
- Final reports: 15 pts
- Final exam: 25 pts

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

Students with Disabilities

If you have or believe you have a disability, you may wish to self-identify. You can do so by providing documentation to the Office of disabled Student Services located in Union E Room 203. Students who have been designated as disabled must reactivate their standing with the Office of Disabled Student Services on a yearly basis. Failure to report to this office will place a student on the inactive list and nullify benefits received. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or the director of Disabled Student Services. You may call 747-5148 for general information about the Americans with Disabilities Act (ADA).

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

Week	Dates	Topic
Week 1	08-26-19 to 08-30-19	Introduction, discussion and understanding the syllabus; What is Analytical Chemistry? The Analytical Perspective, Numbers in Analytical Chemistry
Week 2	09-02-19 to 09-06-20	The Language of Analytical Chemistry: Analysis, Determination, and Measurement; Evaluating Analytical Data; Calibrations, Standardizations, and Blank Corrections Material Characterization techniques an overview
Week 3	09-09-19 to 09-13-19	X-ray Photoelectron Spectroscopy and Auger Electron Spectroscopy
Week 4	09-16-19 to 09-20-19	X-ray Photoelectron Spectroscopy and Auger Electron Spectroscopy
Week 5	09-23-19 to 09-27-19	Discussion and presentations on X-ray Photoelectron Spectroscopy and Auger Electron Spectroscopy
Week 6	09-30-19 to 10-04-19	Scanning Electron microscopy/ Transmission Electron microscopy
Week 7	10-07-19 to 10-11-19	Scanning Electron microscopy/ Transmission Electron microscopy
Week 8	10-14-19 to 10-18-19	Scanning Electron microscopy/ Transmission Electron microscopy
Week 9	10-21-19 to 10-25-19	Energy Dispersive Spectroscopy in Electron Microscopes
Week 10	10-28-19 to 11-01-19	Discussion of electron microscopy
Week 11	11-04-19 to 11-08-19	Vibrational spectroscopy
Week 12	11-11-19 to 11-15-19	Vibrational spectroscopy
Week 13	11-18-19 to 11-22-19	Discussion of Vibrational spectroscopy
Week 14	11-25-19 to 11-29-19	Final Presentations
Week 15	12-02-19 to 12-05-19	Final Exam