



**MIDWESTERN
STATE UNIVERSITY**

A Member of the Texas Tech University System

Course Syllabus: Analytical Chemistry II
College of MCOSME
CHEM 3405 Section 201
Spring of 2025, 10:00-10:50 am (MWF)

Contact Information

Instructor: Dr. Jianguo Shao
Office: Pierce Hall, 211
Office hours: 9:00 – 11:45 am (T); 1:00 – 4:00 pm (W)
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Course Description

This course provides basic knowledge of instrumental analysis. Students will learn these techniques: Separation (GC, HPLC, SFC and CE), Spectroscopy (AAS, AES, UV-visible, FT-IR and MS) and Electrochemistry (Potentiometry, Coulometry and Voltammetry). Four research papers related with four sections in this course will be assigned and reviewed by students using the knowledge learned in the course.

Textbook & Instructional Materials

Skoog, D. A.; Holler, F. J.; Crouch, S. R. *Principles of Instrumental Analysis*, 7th Ed., Cengage Learning, 2018.

Study Hours and Tutoring Assistance

This course will meet MWF 10:00 – 10:50 am. Free tutoring assistance is NOT provided by MSU Tutoring Center. Students should bring questions to the instructor directly during the office hours assigned or by appointment.

Student Handbook

Refer to: [Student Handbook](#)

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the

individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.

[Office of Student Conduct](#)

Grading Scale

Table 1: Points allocated to each assignment

Assignments	Points	(%)
4 one-hour exams @ 100 pts each	400	57.1%
Final ACS Exam	100	14.3%
4 Quizzes	100	14.3%
4 Paper Reviewing	100	14.3%
TOTAL Assignments	700	100%

Table 2: Percentage for final grade.

Grade	Points
A	≥ 90%
B	80 – 89%
C	70 – 79%
D	55 – 69%
F	< 55%

Quizzes

Quizzes will be given either in the classroom or in home.

Exams

This course includes four one-hour exams and one final ACS exam. The point assigned for each exam is listed in Table 1 above. The style of the four one-hour exams is open-ended while the ACS final is multiple choice. The final exam will be given on May 14, 2025, 10:30 am – 12:30 pm, in PY-BW226.

Late Work

All work must be completed based on the announced due date. Late work is NOT acceptable.

Make Up Work/Tests

Under no circumstances will make-up exams or other assignments be given. Make-up for major exams will be given for excused absence only.

Important Dates

Last day for term schedule changes: **Jan, 21 – 24, 2025**, Check date on [Academic Calendar](#).

Deadline to file for graduation: 02/17/2025, Check date on [Academic Calendar](#).

Last Day to drop with a grade of "W:" 04/30/2025, Check date on [Academic Calendar](#).

Refer to: [Drops, Withdrawals & Void](#)

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into [D2L](#) through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Attendance

Attendance is required as stated in the Student Handbook. Excessive unexcused absences will result in an instructor drop with a grade of "F".

Online Computer Requirements

This course requires you to have access to a computer (with Internet access) to complete and upload your assignments. It is your responsibility to have (or have access to) a working computer in this class. ****Assignments are due by the due date, and personal computer technical difficulties will not be considered reason for the instructor to allow students extra time to submit assignments, tests, or discussion postings.*** Computers are available on campus in various areas of the buildings as well as the Academic Success Center. ****Your computer being down is not an excuse for missing a deadline!!*** Contact your instructor immediately upon having computer trouble. If you have technical difficulties in the course, there is also a student helpdesk available to you. The college cannot work directly on student computers due to both liability and resource limitations however they are able to help you get connected to our online services. For help, log into [D2L](#).

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exist in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

College Policies

Campus Carry Rules/Policies

Refer to: [Campus Carry Rules and Policies](#)

Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes has prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry](#).

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit [MSUReady – Active Shooter](#). Students are encouraged to watch

the video entitled "Run. Hide. Fight." which may be electronically accessed via the University police department's webpage: ["Run. Hide. Fight."](#)

Grade Appeal Process

Update as needed. Students who wish to appeal a grade should consult the Midwestern State University [MSU Catalog](#)

***Notice:** Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

Course Schedule

Date(s)	Chapter	Topic
Jan 22 – 24	26	An Introduction to Chromatographic Separations
Jan 27	27	Gas Chromatography
Jan 29 – Feb 03	28	High-Performance Liquid Chromatography
Feb 05 – 07	30	Capillary Electrophoresis and Capillary Electrochromatography
Feb 10	Test-1	Chapters 26 – 28, 30
Feb 12 – 19	6	An Introduction to Spectrometric Methods
Feb 21 – 28	7	Components of Optical Instruments
Mar 03 – 05	8	An Introduction to Optical Atomic Spectrometry
Mar 07 – 19	9	Atomic Absorption and Atomic Fluorescence Spectrometry
<i>Mar 10 – 14</i>	<i>No Class</i>	<i>Spring Break</i>
Mar 21 – 24	10	Atomic Emission Spectrometry
Mar 26	Test-2	Chapters 6 – 8
Mar 28 – 31	13	An Introduction to UV-visible Molecular Absorption Spectrometry
Apr 02 – 04	14	Applications of UV-visible Molecular Absorption Spectrometry
Apr 07 – 09	15	Molecular Luminescence (fluorescence and phosphorescence)
Apr 11 – 14	16	An Introduction to Infrared Spectrometry
Apr 16 – 21	17	Application of Infrared Spectrometry
<i>Apr 17 – 18</i>	<i>No Class</i>	<i>Holiday Break</i>
Apr 23	Test-3	Chapters 13 – 17
Apr 25 – 30	20	Molecular Mass Spectrometry
May 02	22	Introduction to Electroanalytical Chemistry
May 05 – 07	23 – 25	Potentiometry and Voltammetry
May 09	Test-4	Chapter 20, 22 – 25
May 14	FINAL	10:30 am – 12:30 pm; PY-BW226