

Sul Ross State University
Syllabus for Organic Chemistry I: CHEM 2423 001 (Fall 2026)
(CRN: 11514)

Class: Organic Chemistry I
Room: WSB 307
Time: MW 8:00-9:15 am
Date: Aug.24 to Dec.9

Instructor: Dr. Hong Young Chang
Office: WSB 219
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Office Phone: (432) 837-8113
Office Hour: M-R 2:00-4:30 pm

OBJECTIVES:

Student Learning Outcomes (SLO):

A student graduating with a *chemistry major* is expected to demonstrate that (s)he can do the following:

1. Organic Chemistry—Students will be able to draw organic molecular structures and explain organic reactions, stereochemistry, structural analysis, and reactions in biological systems.
2. Inorganic Chemistry—The student will be able to demonstrate understanding of coordination chemistry, valence theory, elementary actions, and advanced molecular theory.
3. Analytical Chemistry—The student will be able to demonstrate an understanding of theory of analytical chemistry and conduct analytical analysis, including data analysis and calibration, equilibrium chemistry, gravimetric analysis, titrimetric analysis, spectroscopic analysis, and electrochemical analysis.

4. Physical Chemistry—The student will be able to demonstrate an understanding of the application and theory of physical chemistry, including topics such as atomic structure, electrochemistry, surface chemistry, solid-state chemistry, and thermodynamics.
5. Research—The student will collect and analyze published chemical literature and undertake a chemistry research project.

BSc in Chemistry Marketable Skills

At the end of this course, a student should have a good understanding of:

1. Students will become good at punctuality and time management.
2. Students will analyze &/or synthesize molecules and perform spectroscopic characterization and interpret their results scientifically.
3. Students will become proficient at writing scientific papers and identifying appropriate references for their papers.
4. Students will become proficient at orally presenting scientific topics including the use of visual aids.

Organic Chemistry I Learning Objectives:

At the end of this course, a student should have a good understanding of:

1. The language of aliphatic-based organic chemistry
2. The major functional groups in organic compounds
3. Retrosynthetic analysis to design simple and complex organic molecules
4. Applications of thermodynamic and kinetic principles to predict regiochemical and stereochemical outcomes of organic reactions
5. Infrared (IR), nuclear magnetic resonance (NMR), and mass spectroscopy (MS)

REQUIRED RESOURCES AND TEXTS:

TEXT BOOK:

“Organic Chemistry” by T. W. Solomons, C. B. Fryle and S.A. Snyder (11th ed.), **2014**, John Wiley & Sons

The SRSU library has one copy of this textbook in the “Textbook Collection” section. Please ask the library front desk if you need help finding this textbook.

Suggested reading: “Survival guide to organic chemistry: bridging the gap from general chemistry” by Patrick E. McMahon, Bohdan B. Khomtchouk, and Claes Wahlestedt, **2017**, CRC Press, Taylor & Francis Group.

SRSU Library Services: The Sul Ross Library offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library’s website, library.sulross.edu. Off-campus access requires your LoboID and password. Check out materials using your photo ID. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

Electronic Tool to Draw Chemical Structures:

ACD/ChemSketch is a computer program that you can use to draw organic structures, organic reactions, etc. You can download ACD/ChemSketch) onto your own personal computer (PC or Mac): [ChemSketch Download for Academic and Personal Use | ACD/Labs \(acdlabs.com\)](http://www.acdlabs.com)

Make sure you follow the requirements for the password and use your SRSU email address to register.

The following chapters will be covered:

Chapter 1: The Basics: Bonding and Molecular Structure

Chapter 2: Families of Carbon Compounds: Functional Groups and Intermolecular Forces

Chapter 3: Acids and Bases: Introduction to Organic Reactions and Their Mechanisms

Chapter 4: Nomenclature and Conformations of Alkanes and Cycloalkanes

Chapter 5: Stereochemistry: Chiral Molecules Determination

**Chapter 6: Ionic Reactions: Nucleophilic Substitution and Elimination Reactions
of Alkyl Halides**

Chapter 7: Alkenes and Alkynes I: Properties & Synthesis

Chapter 8: Alkenes and Alkynes II Addition Reactions

HOMEWORK:

All homework will be assigned for each chapter, and it will be uploaded to Blackboard.

NO LATE HOMEWORK WILL BE ACCEPTED.

EXAMINATIONS:

There will be *three midterm* examinations and *a final* examination.

NO MAKE-UP EXAMS WILL BE GIVEN.

All examinations will be completed face-to-face.

The final exam is mandatory and comprehensive.

**ATTENDANCE PREREQUISITE: BEING ABSENT FROM MORE THAN 9 LECTURES
WILL RESULT IN FAILING THE COURSE.**

PERCENTAGE BREAKDOWN OF MARKS:

Homework 15 %

Each Midterm Exam (30 %): 60 %

Final Exam: 25 %

Midterm Exam I: Wednesday, September 30th

Midterm Exam II: Monday, November 2nd

Final Exam: Wednesday, December 2nd (8:00-9:15 am), WSB307

Scholastic Dishonesty:

*Students who violate the University rules on scholastic dishonesty are subject to penalties, including the possibility of an **F** in the course and/or dismissal from the University.*

1. All assignments and homework need to be individually completed and not copied from another student's work.

2. You need to keep the due date and time.

SRSU Disability Services: ADA (Americans with Disabilities Act):

Sul Ross State University (SRSU) is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Mrs. Mary Schwartz Grisham, LPC, SRSU's Accessibility Services Director at 432-837-8203 or email mschwartz@sulross.edu. Our office is located on the first floor of Ferguson Hall, room 112, and our mailing address is P.O. Box C122, Sul Ross State University, Alpine. Texas, 79832.

Course Calendar: The following pages include the course calendar. You need to focus on the date, lecture number, chapter number, topics, homework due day, and examination days. This course calendar could be changed. Before one week, your professor will let you know the changes.

Date	Lecture #	Chapter #	Topics	Due work
Aug. 24	Lecture 1	Ch 1	Discussion on Syllabus, a background in organic chemistry, An overview of chemical bonding, Lewis structures and formal charges, resonance structure	
Aug. 26	Lecture 2		Basics of hybridization, bond lengths, geometric isomerism, and three-dimensional formulas	
Aug. 31	Lecture 3		Structural basics of hydrocarbons; revision of Chapter 1	
Sep. 2	Lecture 4	Ch 2	Introduction to functional groups, Physical properties and molecular structure, Intermolecular forces	Ch1
Sep. 9	Lecture 5		Solubility of organic molecules according to their polarity, Hydrophilicity and Hydrophobicity	
Sep. 14	Lecture 6		Revision on Chapter 2 , Overview of acid-base theories and reactions, Factors affecting the acidity of compounds	
Sep. 16	Lecture 7	Ch 3	Introduction to organic acids and bases, acid-base reactions involving organic molecules, Acidity (K_a) constant and pK_a , Lewis's acid & base	Ch2
Sep. 21	Lecture 8		Predicting the strengths of conjugated base, Bond cleavage, carbanion and carbocation, predicting outcomes of acid-base reactions	
Sep. 23	Lecture 9		Relation b/w acidity & structure, factors to influence acidity (polarity, electron delocalization, hybridization, inductive effects, etc.) Solvent effect on acidity	
Sep. 28	Lecture 8		Revision on Chapter 3, Exam 1 Revision	
Sep. 30	Lecture 9	Review & Test	Exam 1 day (Exam 1 covers ch 1, 2, & 3)	Ch3

Oct. 5	Lecture 10	Ch 4	Nomenclature of alkanes, Physical properties of alkanes & cycloalkanes, and derivatives	
Oct. 7	Lecture 11		Conformational isomerism of alkanes and cycloalkanes, Synthesis of alkanes and the index of hydrogen deficiency	
Oct. 12	Lecture 12		Revision on Chapter 4 , Isomerism, constitutional and stereoisomers, chiral molecules	
Oct. 14	Lecture 13	Ch 5	Nomenclature and physical properties of enantiomers, Introduction to the synthesis of chiral molecules, molecules with more than one stereo-genic center.	Ch4
Oct. 19	Lecture 14		Revision on Chapter 5 , Nucleophilic substitution reactions	
Oct. 21	Lecture 15	Ch 6	Basic mechanism, kinetics, and examples of SN_2 , SN_1 reaction mechanism SN_1/SN_2 reaction mechanism	Ch5
Oct. 26	Lecture 16		Stereochemistry of nucleophilic, factors affecting the rate of SN_1 and SN_2 reactions, and substitution reactions	
Oct. 28	Lecture 17		Functional group transformation using SN_2 reactions, Revision on Chapter 6, Exam 2 Revision	
Nov. 2	Lecture 18	Review & Test	Exam 2 day (Exam 2 covers ch 4, 5, & 6)	Ch6
Nov. 4	Lecture 19	Ch 7	Introduction to elimination reactions, E2 and E1 mechanisms and examples, and substitution vs elimination	
Nov. 9	Lecture 20		Synthesis of alkenes and alkynes by elimination reactions and the acidity of the terminal hydrogen of alkynes, hydrogenation of alkenes and alkynes	
Nov. 11	Lecture 17		Relative stability of alkenes, Addition of hydrogen halides to alkenes & synthesis of alcohol from alkenes via addition reactions Revision on Chapter 7	

Nov. 16	Lecture 18	Ch 8	Electrophilic addition of hydrogen halides to alkenes and Markovnikov's rule, Ionic addition to an alkene, Addition of halogens to alkenes and alkynes, oxidation of alkenes and alkynes	Ch7
Nov. 18	Lecture 19		Addition of water to alkenes, Hydration formation, Oxidative cleavage of alkenes, Ozonolysis of an alkene, Homolysis of alkyl halide, Free radical reactions of alkenes, Revision on Chapter 8	
Nov. 23	Lecture 20	Review & Test	Review of final exam	Ch8
Nov. 30	Lecture 21		Review of final exam	
Dec. 2	Lecture 22		Final Exam (it covers all chapters), WSB-307	

Libraries:

The Bryan Wildenthal Memorial Library in Alpine offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu/. Off-campus access requires logging in with your LobolD and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or by phone (432-837-8123).

No matter where you are based, public libraries and many academic and special libraries welcome the general public into their spaces for study. SRSU TexShare Cardholders can access additional services and resources at various libraries across Texas. Learn more about the TexShare program by visiting library.sulross.edu/find-and-borrow/texshare/ or asking a librarian by emailing srsulibrary@sulross.edu.

New for Fall 2024: Mike Fernandez, SRSU Librarian, is based in Eagle Pass (Building D-129) to offer specialized library services to students, faculty, and staff. Utilize free services such as Interlibrary Loan (ILL) and Scant to get materials delivered to you at home or via email.

Academic Integrity:

Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. Students should submit work that is their own and avoid the

temptation to engage in behaviors that violate academic integrity, such as turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden. Students should also avoid using open AI sources ***unless permission is expressly given*** for an assignment or course. Violations of academic integrity can result in failing assignments, failing a class, and/or more serious university consequences. These behaviors also erode the value of college degrees and higher education overall.

Counselling:

Sul Ross has partnered with TimelyCare where all SR students will have access to nine free counseling sessions. You can learn more about this 24/7/365 support by visiting [Timelycare/SRSU](#). The SR Counseling and Accessibility Services office will continue to offer in-person counseling in Ferguson Hall room 112 (Alpine campus), and telehealth Zoom sessions for remote students and RGC students.

Classroom Climate of Respect:

Importantly, this class will foster free expression, critical investigation, and an open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose, and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another based on race, religion, ethnicity, age, gender, national origin, or sexual preference. Still, we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues.

Distance Education:

Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires a secure login. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students on web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website. Directions for filing a student complaint are in the student handbook.