

Sul Ross State University
Syllabus for Organic Chemistry II: (CRN: 21699)
CHEM 3408 (Spring 2025)

Class: Organic Chemistry II
Room: WSB 307
Time: MW 9:30-10:45 am
Date: Jan. 15 to May 7

Instructor: Dr. Hong Young Chang
Office: WSB 219
Email: hxc19tv@sulross.edu
Office Phone: (432) 837-8113
Office Hours: M-R 2:00-6:30 pm
(In person or via Zoom)
(Appointments only)

Food & Drinks: There will be no eating or drinking in the classroom. If you need to take a sip of your drink during class time, you may leave the room to do so.

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 an 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 II Learning Objectives:

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

- A. The language of aromatic-based organic chemistry

- B. Reactions and mechanisms of compounds with carbonyl and amino groups
- C. In-depth retrosynthetic analysis to design complex organic molecules
- D. Basic organometallic reactions and catalytic cycles
- E. How to write a chemical essay in the language of organic chemistry
- F. SciFinder (Chemical Database)

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 \(acdlabs.com\)](#)

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

The following chapters will be covered:

Chapter 10: Radical Reactions

Chapter 11: Alcohols and Ethers: Synthesis & Reactions

Chapter 12: Alcohols from Carbonyl compounds

Chapter 13: Conjugated Unsaturated Systems

Chapter 14: Aromatic Compounds

Chapter 15: Reactions of Aromatic Compounds

Chapter 16: Aldehydes and Ketones: Nucleophilic Addition to the Carbonyl Group

Chapter 17: Carboxylic Acids and their Derivatives

Chapter 18: Reactions at the α Carbon of Carbonyl Compounds: Enols and Enolates

Chapter 19: Condensation and Conjugate Addition Reactions of Carbonyl Compounds

Chapter 20: Amines

Chapter 21: Phenols and Aryl Halides: Nucleophilic Aromatic Substitution

HOMEWORK:

There is a [Handy Homework \(HH\)](#). All homework will be assigned. This HH has to be completed in pen. **NO LATE HOMEWORK WILL BE ACCEPTED.** HH has to be submitted into a paper using the given PDF. **It is not accepted by email.** The due date for HH is described in the course calendar below.

[NOTE: HH \(Handy Homework\) and Exams MUST be completed in pen!](#)

EXAMINATIONS:

There will be *two in-course* examinations and *a final* examination. **NO MAKE-UP EXAMS WILL BE GIVEN. All examinations will be completed by face-to-face.** The final exam is mandatory and comprehensive.

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

PERCENTAGE BREAKDOWN OF MARKS:

Homework or Assignments: 10 %

Midterm Exam (each 35 %): 70%

Final Exam: 20%

100% score of the organic chemistry II lecture class converts to 75% scores to combine the linked organic chemistry II lab class (it occupies 25%). Therefore, you will get a 100% score in Organic Chemistry II from the lecture (75%) and the lab (25%).

Midterm Exam I: Monday, February 17th

Midterm Exam II: Wednesday, March 26th

Final Exam: Wednesday, April 30th

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 must be individually completed and not copied from another student's work.

2. You need to keep the due date and time for homework or assignments.

3. The homework must be submitted to Dr. Chang directly. The homework will not be accepted by my email [PDF format has to be used to submit homework]

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.

CHEM3408 Organic Chemistry II Course Calendar

* This course calendar could be changeable. Before one week, your professor will let you know the changes.

Date	Lecture #	Chapter #	Topics	Due work
Jan.15	Lecture 1	Ch 10	Discussion on syllabus, free radical reactions of alkanes with halogens, understanding of chain reactions (initiation, propagation, termination)	
Jan.22	Lecture 2		Allylic /benzylic radicals, radical addition to alkenes, chain growth polymers	
Jan.27	Lecture 3		Revision of Chapter 10	
Jan.29	Lecture 4	Ch 11	Structure and nomenclature of alcohols, general physical and chemical properties of alcohols	
Feb.3	Lecture 5		Reactions of alcohols, overview of reactions of carbonyl compounds with nucleophiles, Revision on Chapter 11	
Feb.5	Lecture 6	Ch 12, 13, &14	Preparation of alcohols from carbonyl compounds. Oxidation of alcohols, reactions of organolithium and organo-Magnesium compounds	
Feb.10	Lecture 7		Revision of Chapter 12 Allylic Substitution Reactions, 1,3-butadiene and stability of conjugated dienes 1,4- addition Rx on conjugated dienes, Diels-Alder reaction	

Feb.12	Lecture 8		Revision on Chapter 13; Review of aromatic compounds. Nomenclature of benzene derivatives Differences between alkenes and benzenes compounds in terms of general reactions	
Feb.17	Lecture 9	Review & Test	Exam I revision Exam I (It covers chapters 10, 11, &13)	Homework 1 Due
Feb.19	Lecture 10	Ch 14 &15	Stability of benzene; Revision on Chapter 14 Electrophilic aromatic substitution reactions	
Feb.24	Lecture 11		Friedel-Crafts alkylation/acylation Effect of substituents on reactivity and orientation, synthetic applications, revision on Chapter 15	
Feb.26	Lecture 12	Ch 16	Nomenclature of aldehydes and ketones, synthesis of aldehydes and ketones, nucleophilic addition to the carbon-oxygen double bond	
Mar.3	Lecture 13		Synthesis of hemiacetals and acetals, addition of primary and secondary amines to carbonyl groups, Wittig reaction; Revision of Chapter 16	
Mar.5	Lecture 14		Nomenclature and physical properties of carboxylic acids and acid derivatives, preparation of carboxylic acids	
Mar.10	Lecture 15	Ch 17	Synthesis and reactions of esters and amides	
Mar.12	Lecture 16		Decarboxylation of carboxylic acids, Summary of the reactions of carboxylic acids and their derivatives	
Mar.24	Lecture 17		Review of Chapter 17 Reactions via enols and enolate anions	
Mar.26	Lecture 18	Review & Test	Revision on Exam II Exam II (It covers chapters 14, 15, 16, & 17)	Homework 2 Due

Mar.31	Lecture 19	Cha 18	Acetoacetic and malonic ester syntheses, enamine chemistry	
Apr.2	Lecture 20		Review of Chapter 18	
Apr.7	Lecture 21	Ch 19	Claisen & Dieckmann condensation reactions, Aldol condensations continued	
Apr.9	Lecture 22		Addition reactions to unsaturated aldehydes and ketones	
Apr.14	Lecture 23		Synthesis of substituted acetic acids, Michael additions, a summary of important reaction of Di-carbonyl compounds Revision of Chapter 19.	
Apr.16	Lecture 24	Ch 20	Nomenclature and physical properties of amines, basicity of amines, amines vs. amides, preparation of amines	
Apr.21	Lecture 25		Reactions of amines, revision on Chapter 20	
Apr.23	Lecture 26	Ch 21	Structure and nomenclature of phenols, physical properties and synthesis of phenols Reactions of phenols	Homework 3 Due
Apr.28	Lecture 27	Review & Test	Review of Final Exam	
Apr.30	Lecture 28		Final Exam (it covers all chapters)	

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 LoboID 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 ask a librarian by emailing srsulibrary@sulross.edu.

New for Fall 2023: 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 Timely Care where all SR students will have access to nine free counseling sessions. You can learn more about this 24/7/356 support by visiting Timely care/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 the 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 on the basis of 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 about academic honesty and appropriate student conduct, as described in the student handbook. Students in 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 located in the student handbook.