Sul Ross State University
Syllabus for Organic Chemistry II
CHEM 3408_001 (CRN:21622)
Spring 2026

Class: Organic Chemistry II
Room: WSB 307
Time: MWF 9:00-9:50 am
Date: Jan. 14 to May 6, 2026

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
(Appointments only)

OBJECTIVES:

***Student Learning Objectives (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*:**

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 paper.
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:

1. The language of aromatic-based organic chemistry
2. Reactions and mechanisms of compounds with carbonyl and amino groups
3. In-depth retrosynthetic analysis to design complex organic molecules
4. Basic organometallic reactions and catalytic cycles
5. How to write a chemical essay in the language of organic chemistry

6. SciFinder (Chemical Database)

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

Core Objectives (CO):

1. **Critical Thinking Skills** – Students will gain/improve their critical thinking ability by solving real-life chemistry problems through inquiry, analysis, and evaluation of available information. Students will be tested on their critical thinking ability in exams and through lab experiments.

2. **Communication Skills** – Students will have the opportunity to improve communication skills through oral discussion and writing reports (i.e., observation, explanation, and conclusion, etc.) on the experiments done in the lab sessions.

3. **Empirical and Quantitative Skills** – Students will use the mathematical skills needed to manipulate and analyze numerical data obtained through experimentation to form conclusions.

4. **Teamwork** – Students will use team spirit and consider different points of view to work effectively while conducting experiments as a team work toward a shared purpose or goal.

REQUIRED TEXTBOOK and LAB MANUAL: This organic chemistry II class is linked to the organic chemistry II lab class. Therefore, you need to prepare two books.

Text Book:

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

Lab Manual:

"Techniques and Experiments for Organic Chemistry" (6th Edition) by A. Ault, 1998, University Science Books; (Molecular Model Set optional)

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 by 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):

ChemSketch Download for Academic and Personal Use | ACD/Labs (acdlabs.com)

Cell phones, including **Earphones and Headsets,** ARE **NOT** permitted for use in exams and should be turned off during class time.

HOMEWORK: There is Handy Homework (HH). All homework will be assigned for each chapter. This HH has to be completed in pen. **NO LATE HOMEWORK WILL BE ACCEPTED**. HH must be submitted as a paper using the provided PDF. **It is not accepted by email.** The due date of HH is described in the following Course Calendar.

NOTE: HH (Handy Homework) and Exams MUST be completed in pen!

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

PERCENTAGE BREAKDOWN OF MARKS:

HH (Handy Homework): 20%

Midterm Exam (each 20%): 60%

Final Exam: 20%

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

EXAMINATIONS: There will be ***three in-course*** 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.

Midterm Exam I: Monday, February 16th

Midterm Exam II: Friday, March 6th

Midterm Exam III: Friday, April 17th

Final Exam: Tuesday, May 5th (8:00-10:00 am) at WSB 307

CHEM3408 Organic Chemistry II Course Calendar

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

Date	Lecture #	Chapter #	Topics	Due work
Jan.14	Lecture 1	Ch 10	Discussion on syllabus, free radical reactions of alkanes with halogens, understanding of chain reactions (initiation, propagation, termination)	
Jan.16	Lecture 2		Allylic /benzylic radicals, radical addition to alkenes, chain growth polymers	
Jan.19	Lecture 3		Revision on Chapter 10	
Jan.21	Lecture 4	Ch 11	Structure and nomenclature of alcohols, common physical and chemical properties of alcohols	**Ch 10 HW due**
Jan.23	Lecture 5		Reactions of alcohols, overview of reactions of carbonyl compounds with nucleophiles	
Jan.26	Lecture 6		Preparation of alcohols from carbonyl compounds	
Jan.28	Lecture 7		Oxidation of alcohols, reactions of organolithium and organo-magnesium compounds	
Jan.30	Lecture 8		Revision on Chapter 11	
Feb.2	Lecture 9	Ch 13	Allylic substitution reactions	**Ch 11 HW due**
Feb.4	Lecture 10		1,3-butadiene and the stability of conjugated dienes	
Feb.6	Lecture 11		1,4 addition on conjugated dienes, Diels-Alder reaction	
Feb.9	Lecture 12		Revision of Chapter 13; Review of aromatic compounds. Nomenclature of benzene derivatives	
Feb.11	Lecture 13	Ch 14	Differences between alkenes and benzene compounds in terms of general reactions	
Feb.13	Lecture 14	Review & Test	**Exam I revision**	**Ch 13 HW due**

Feb.16	Lecture 15		**Exam I (It covers chapters 10, 11, & 13)**	
Feb.18	Lecture 16	Ch 14	Stability of Benzene: Revision of Chapter 14	
Feb.20	Lecture 17	Ch 15	Electrophilic aromatic substitution reactions	
Feb.23	Lecture 18		Friedel-Crafts alkylation/acylation	**Ch14 HW due**
Feb.25	Lecture 19		Effect of substituents on reactivity and orientation, synthetic applications, revision of Chapter 15	
Feb.27	Lecture 20	Ch 16	Nomenclature of aldehydes and ketones, synthesis of aldehydes and ketones, nucleophilic addition to the carbon-oxygen double bond	**Ch 15 HW due**
Mar.2	Lecture 21		Synthesis of hemiacetals and acetals, addition of primary and secondary amines to carbonyl groups, Wittig reaction; Revision of Chapter 16	
Mar.4	Lecture 22	Review & Test	**Exam II revision**	
Mar.6	Lecture 23		**Exam II (It covers chapters 14, 15, & 16)**	**Ch 16 HW due**
Mar.16	Lecture 24	Ch 17	Nomenclature and physical properties of carboxylic acids and acid derivatives, preparation of carboxylic acids	
Mar.18	Lecture 25		Synthesis and reactions of esters and amides	
Mar.20	Lecture 26		Decarboxylation of carboxylic acids, Summary of the reactions of carboxylic acids and their derivatives, revision of Chapter 17	
Mar.23	Lecture 27	Ch 18	Reactions via enols and enolate anions	**Ch 17 HW due**
Mar.25	Lecture 28		Acetoacetic and malonic ester syntheses, enamine chemistry	
Mar.27	Lecture 29		Revision of Chapter 18	
Mar.30	Lecture 30	Ch 19	Claisen & Dieckmann condensation reactions	**Ch 18 HW due**

Apr.1	Lecture 31		Aldol condensations continued	
Apr.3	Lecture 32		Addition reactions to unsaturated aldehydes and ketones	
Apr.6	Lecture 33		Synthesis of substituted acetic acids, Michael additions, and a summary of important reactions of dicarbonyl compounds. Revision of Chapter 19.	
Apr.8	Lecture 34	Ch 20	Nomenclature and physical properties of amines, basicity of amines, amines vs. amides, preparation of amines	**Ch 19 HW due**
Apr.10	Lecture 35		Reactions of amines, revision of Chapter 20	
Apr.13	Lecture 36	Ch 21	Structure and nomenclature of phenols, physical properties and synthesis of phenols	
Apr.15	Lecture 37	Review & Test	**Exam III revision**	
Apr.17	Lecture 38		**Exam III (It covers chapters 17, 18, 19, & 20)**	**Ch 20 HW due**
Apr.20	Lecture 39	Ch 21	Reactions of phenols	
Apr.22	Lecture 40		Reactions of phenols continued.	
Apr.24	Lecture 41		Revision of Chapter 21	
Apr.27	Lecture 42	Review	**Revision of Ch. 10, 11, & 13 for Final Exam**	**Ch 21 HW due**
Apr.29	Lecture 43		**Revision of Ch. 14, 15, & 16 for Final Exam**	
May.5	Lecture 44		**Final Exam. Tuesday, 8:00 - 10:00 AM, 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 ask a librarian by emailing srsulibrary@sulross.edu.

New for Spring 2026: Mike Fernandez, SRSU Librarian, offers 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 24/7/356 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 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 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 student complaints are located in the student handbook.

SRSU Disability Services: ADA (Americans with Disabilities Act): Sul Ross State University (SRSU) is committed to equal access in compliance with 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 for accessibility services. *Please contact Ms. Rebecca Greathouse Wren, M.Ed., LPC-S, Director/Counselor, Accessibility Services Coordinator, Ferguson Hall (Suite 112) at 432.837.8203; mailing address*

is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. E-mail: rebecca.wren@sulross.edu. Students should then contact the instructor as soon as possible to initiate the recommended accommodations.

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 (including homework) need to be individually completed and not copied from another student's work.***

2. The handy homework must be handwritten and submitted to Dr. Chang directly. This handy homework will not be accepted by email. [Pdf format must be used to submit]