Course Information
Organic Mechanism and Structure (CHEM 513-01W)
(This is a Web-based course)

COURSE SYLLABUS: Spring Semester, 2026
INSTRUCTOR INFORMATION

Instructor: Allan D. Headley
Main Chemistry Office Phone: (903) 886-5392
Office Fax: (903) 468-6020
University Email Address: allan.headley@etamu.edu
Preferred Form of Communication: email
Available for virtual office hour via Zoom in D2L: MWF, 10:00 – 11:00 am; and TR, 1:30 pm – 3:30 pm.

Text: Your basic text is "Perspectives on Structure and Mechanism in Organic Chemistry" Felix A. Carroll, 2nd edn., 2010. Wiley & Sons, Inc., Company, Hoboken, New Jersey. ISBN: 978-0-470-27610-5

Course Objectives and Description: In this course, the analysis of the stereochemistry and different conformations of molecules is covered. In addition, the analysis of the different methods used for studying reaction mechanisms, including isotope effects, Linear Free Energy Relationships (LFER) is covered and applied to understand the mechanisms of substitution, addition, elimination, and pericyclic reactions. The formation and reactivity of different types of reactive intermediates, including carbocations, carbanions, radicals and carbenes are also studied. This course is designed to develop and improve the student's ability to understand recently published manuscripts that relate to the various aspects covered in the course.

EXAMINATIONS AND ASSESSMENTS

Throughout the course of the semester, there will be three midterm exams and a final exam; the tentative dates are given below:

First Exam: Week of February 9, 2026
Second Exam: Week of March 16, 2026
Third Exam: Week of April 13, 2026
Final Exam: Week of May 4, 2026

Each midterm exam is worth 100 points (18% of your final grade); 15% of your grade will come a Zoom oral presentation; 6% of your grade will come you participation in different discussions posted under the D2L Discussion thread, the final exam is worth 25% of your final grade. Your grade will be computed based on the class average, for example if the class average is around 77% with a standard deviation of approximately 15 the grade cutoffs is: A = 90%-100%; **B = 80%-89%; C = 70%-79%; D = 60%-69%; F = 59% or below.** If the class average is lower, the cutoffs will be adjusted, and students informed of the grade cutoffs after each exam and before the final exam. Your grade status in the class at any time will be available in D2L.

NO make-up exams will be offered. If you miss a midterm for a reason beyond your control, you may request in writing to be excused from that exam providing you have valid written documentation supporting your reason.

TENTATIVE SYLLABUS

Week of	TOPICS TO BE COVERED	READING ASSIGNMENT
Jan 12	Introductions and course descriptions	
Jan 19	Stereochemistry and conformers of molecules	53 – 100
Jan 26	Stereochemistry and conformers of molecules	113 – 169
Feb 2	Reactive intermediates	253 – 278
Feb 9	**Exam #1**	
Feb 16	Reactive intermediates	278 – 305
	Reactive intermediates	305 – 321
Feb 23	Methods of studying reaction mechanisms	322 – 341
	Methods of studying reaction mechanisms	341 – 370
Mar 2	Methods of studying reaction mechanisms	370 – 404
Mar 9	**Spring break**	
Mar 16	**Exam #2**	
Mar 23	Acid-base catalyzed reactions	413 – 564
Mar 30	Substitution reactions	453 – 506
Apr 6	Substitution reactions	469 - 544
Apr 13	**Exam#3**	
Apr 20	Addition reactions	551 – 627
Apr 27	Elimination reactions	633 - 687
	Pericyclic reactions	697 – 778
May 4	**Final Exam** (exact date and time will be determined prior to the week of May 4, 2026)	

Reference Books

- Modern Physical Organic Chemistry, By Eric V. Anslyn, Dennis A. Dougherty - University Science (2006) - ISBN 1891389319
- Jerry March, *Advanced Organic Chemistry: Reactions, Mechanisms, and Structure,* fourth edition, John Wiley & Sons, **1992**.

- Thomas H. Lowry and Kathleen Schueller Richardson, *Mechanism and Theory in Organic Chemistry*, third edition, Harper & Row Publishers, **1987**.
- Advanced Organic Chemistry, Parts A: Structure and Mechanisms, by Francis A. Carey 2008, published by Springer, ISBN: 978-0-387 44897-8
- Advanced Organic Chemistry, Parts B: Reactions and Synthesis, 5th Edn. by Francis A. Carey 2008, published by Springer, ISBN: 978-0-387 44897-8
- Hehre, W. J.; Shusterman, A. J.; Huang, W. W. "A Laboratory Boon of Computational Organic Chemistry," Wavefunction, Inc., 1996 (ISBN 0-9643495-8).
- Hehre, W. J.; Shusterman, A. J.; Nelson, J. E. "The Molecular Modeling Workbook for Organic Chemistry," Wavefunction, Inc. CA. 1998 (ISBN: 1-890661-06-6).
- Hehre, W. J "A Guide to Molecular Mechanics and Quantum Chemical Calculations," Wavefunction, Inc., 2003 (ISBN:1-890661-18-X).
- "Getting Started With Spartan," 3rd Edition (Spartan Student Edition), Wavefunction, Inc.,2002-2004 (ISBN:1-890661-25-2).
- Isaacs, N. C. *Physical Organic Chemistry*; John Wiley & Sons: New York, 1987.
- Smith, M. B. *Organic Synthesis*, McGraw-Hill, 1994.
- Ritchie, *Physical Organic Chemistry - The Fundamental Concepts*, 1975
- Jones, *Physical and Mechanistic Organic Chemistry*, 1984
- Isaacs, *Physical Organic Chemistry*, London, 1990.
- P. Sykes, *Mechanism In Organic Chemistry*, 1965.
- Bernard Miller "Advanced Organic Chemistry, Reaction and Mechanism" 2nd Ed. Prentice Hall, New Jersey, 2003.

COURSE TECHNOLOGY REQUIREMENTS

COURSE REQUIREMENTS

It is expected that students will have a basic knowledge of the internet and how to interface with D2L Brightspace, our learning management system (LMS). In addition, students must have the ability to scan written work and convert it to a pdf format for upload to D2L. There are many free applications, such as Camscanner, that are available that can be downloaded to smart phones, which will allow students to scan a document and convert it to a pdf format for upload to D2L.

Instructional Methods

There will not be scheduled online lectures, but lecture videos and PowerPoints of lectures will be posted each week on D2L. Students are responsible to view these lecture videos, along with reading the required material in the textbook.

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm
Zoom Video Conferencing Tool
https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a ETAMU campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your instructor. The preferred mode of communication is via e-mail and if you have any questions or are having difficulties with the course material, please contact your instructor; response time is typically within one day.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

https://community.brightspace.com/support/s/contactsupport

STUDENT RESPONSIBILITIES FOR COURSE

CWID and Password

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

Technology-Related Issues

Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a ETAMU campus open computer lab, etc.

TECHNOLOGY REQUIREMENTS AND SUPPORT

Minimal Technical Skills Needed

Students will need reliable computer and internet access for this course. Students must be able to effectively use myLeo email, myLeo Online D2L, and Microsoft Office.

Learning Management System (LMS) – D2L

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are the technical requirements:

- View the Learning Management System Requirements Webpage.
- Learn more on the LMS Browser Support Webpage.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found on the Brightspace Support Webpage.

COMMUNICATION AND SUPPORT

Interaction with Instructor Statement

If you have any questions or are having difficulties with the course material, please contact your instructor. Correspondence will always be through university email (your "myLeo" mail) and announcements in myLeo online (D2L). You will not RECEIVE email through D2L, so be sure to check your ETAMU email for communication. Students are encouraged to check university email daily.

Include the Following in Emails with Instructor:

- Course name and subject in the subject line
- Salutation (Good afternoon, Dr. Jackson)
- Proper email etiquette (no "text" emails – use proper grammar and punctuation)
- Student name and CWID after the body of the email (possibly add to student signature on email)

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

Student Conduct
All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail online in the Student Guidebook.

Students should also consult the Rules of Netiquette Webpage for more information regarding how to interact with students in an online forum.

ETAMU Attendance
For more information about the attendance policy, please view the Attendance Webpage and the Class Attendance Policy

Academic Integrity
Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all their scholastic work. For more details and the definition of academic dishonesty see the following procedures:
Undergraduate Academic Dishonesty University Procedure 13.99.99.R0.03
Undergraduate Student Academic Dishonesty Form
Graduate Student Academic Dishonesty University Procedure 13.99.99.R0.10
Graduate Student Academic Dishonesty Form

Use of Artificial Intelligence
East Texas A&M University acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources

Students with Disabilities-- ADA Statement
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

East Texas A&M University
Velma K. Waters Library Rm 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@etamu.edu
Website: Office of Student Disability Services

Nondiscrimination Notice
East Texas A&M University will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information, or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement
Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in East Texas A&M University buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and ETAMU Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all East Texas A&M University campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

East Texas A&M Supports Students' Mental Health – Counseling Services
The Counseling Center at East Texas A&M University, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel

Mental Health and Well-Being
The university aims to provide students with essential knowledge and tools to understand and support mental health. As part of our commitment to your well-being, we offer access to Telus Health, a service available 24/7/365 via chat, phone, or webinar. Scan the QR code to download the app and explore the resources available to you for guidance and support whenever you need it.

As an Institutional Member of the National Association of Schools of Music, East Texas State A&M University supports the Association's commitment to student health and wellness. The following web address provides links to information for resources related to physical and mental well-being, as well as assists in offering preventative measures that students can take to avoid serious and/or chronic conditions: Musician Health and Safety - East Texas A&M University