



**CHEM 2323-01E (Organic Chemistry I) Course Syllabus, Fall Semester, 2024**

MWF 10:00a-10:50a; Location: Room 122 of the Science Building

(This is a face-to-face course)

**INSTRUCTOR INFORMATION**

**Instructor:** Allan D. Headley  
**Office:** Science Building, 337  
**Office Hours:** MWF, 9:00 a.m. – 10:00 am; TR, 9:00 a.m. to 11:00 a.m.  
**Telephone:** (903) 468 – 8106  
**E-Mail:** [allan.headley@tamuc.edu](mailto:allan.headley@tamuc.edu) (preferred method of communication)

**COURSE INFORMATION**

Your basic text is: Organic Chemistry, Concepts and Applications" 1<sup>st</sup> Edition, Headley, A. D., John Wiley & Sons; ISBN-13: 9781119504672.

Also required is model set, model sets can be purchase at the campus bookstore or at the following website: [www.stereogenics.com](http://www.stereogenics.com).

**COURSE DESCRIPTION**

This course examines the structures of organic compounds, including conformational analysis and stereochemistry of different molecules. The language of organic chemistry is covered through the study of nomenclature, functional groups, and the different types of reactions of organic compounds. The basic principles of organic chemistry are discussed and applied to mechanistic and synthetic organic chemistry problems. The reactions of alkyl halides, alkenes, alkynes and alcohols are covered through analysis of possible reaction paths, which include the formation of various intermediates, such as carbocations, carbanions, carbenes and free radicals. Spectroscopy is covered extensively in lab. The course is designed to develop and improve the student's ability to think critically and creatively; as a result, students will become better problem solvers. Thus, a letter grade earned in this class not only reflects the student's knowledge of organic chemistry, but also reflects the student's ability to solve scientific problems based on available information, and the ability of students to become better scientists.

Prerequisite: Lvl U CHEM 1312 Min Grade C and Lvl U CHEM 102 Min Grade C and Lvl U CHEM 1112 Min Grade C; corequisite: CHEM 201.

**Student Learning Outcomes**

1. Students should be able to utilize different reactions and strategies to synthesize various target molecules.
2. Students should be able to develop successful strategies for the synthesis of large organic compounds from smaller ones.
3. Students should be able to apply the basic concepts of organic chemistry that are discussed to mechanistic and synthetic organic chemistry problems.

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4. This course is designed to develop and improve the student's ability to think critically and analytically about various problems and as a result, students are expected to solve a wide range of organic problems.
5. Students' ability to think critically and solve problems should be improved.

## COURSE REQUIREMENTS

### Minimal Technical Skills Needed

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 if needed. 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.

### Instructional Methods

This is a face-to-face course, and we will meet as shown in the university schedule of classes. Each week throughout the course, there will be a face-to-face quiz, or a midterm exam and students are expected to be present to take these quizzes and exams. The format of the quizzes and exams will be a combination of multiple-choice questions and written responses. The final exam will be an ACS multiple-choice exam.

### Student Responsibilities or Tips for Success in the Course

It is assumed that the good student will be able to work all the problems in the textbook (even the study problems within each chapter). You must work lots of problems; in addition, ensure that you work through the tutorial questions of CHEM 201, which is the corequisite for this course, and understand the concept of each question. The textbook has a student companion website (<http://bcs.wiley.com/he-bcs/Books?action=index&bcsId=11621&itemId=1119504589>) which has a number of different resource material to assist students better understand and apply the concepts of organic chemistry. It is not a good idea to try to memorize solutions to problems, since identical problems will not be used again. You should always critically analyze your work to ensure that you have applied reasonable steps to deduce your solution. Also, ask yourself how a problem might be rearranged as a possible test item. Be precise with your answers. You will find this helpful in preparing for exams. Since there is typically more than one possible solution to a problem, discuss possible solutions with other students. Be precise with your answers. On your exams, you will be graded on what you write, not what you meant to write, or thought you wrote. If your responses to different problems are difficult for your classmates to understand, then your responses to questions on the exam will be very difficult to grade.

## GRADING

Your course grade will be based on quizzes, midterm exams, and a final exam. Quizzes are worth 20%; each course midterm exam is worth 100 points (20% of your final grade), and a course comprehensive final American Chemical Society (ACS) final exam is worth 20% of your final grade. The key and score distribution will be posted on D2L. Each midterm exam is cumulative, but will emphasize the material covered since the previous midterm exam.

<b>First Exam:</b>	Week of September 16, 2024
<b>Second Exam:</b>	Week of October 14, 2024
<b>Third Exam:</b>	Week of November 11, 2024

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**Final Exam:** Week of December 9, 2024 (see examination schedule:  
<http://appsprod.tamuc.edu/Schedule/Schedule.aspx>)

### Assessments

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.

### Course Specific Procedures/Policies

NO make-up exams will be offered. If you miss a midterm exam 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.

You are encouraged to carefully review your graded exams. If you think a grading error was made, you can request that the exam be regraded, but **ONLY** if the following procedure is followed:

- (1) Write a very concise note explaining what you think the error in grading was. This must be specific as to the mistake, typically no more than two sentences.
- (2) Return your request, along with the graded exam, to the instructor **NO LATER THAN ONE WEEK** after the graded exam was returned.

The entire exam will be regraded and results posted in D2L approximately one week after the request. You are allowed only one regrade for each midterm exam. There are no regrades for the final exam.

## TENTATIVE COURSE OUTLINE / CALENDAR

<u>Week of</u>	<u>TOPICS TO BE COVERED</u>
Aug 26	Introductions, electronic structure of atoms, chemical bonds, chemical formulas, the covalent bond; hybridized orbitals.
Sep 2	Intermolecular attractions, functional groups, saturated hydrocarbons; organic nomenclature, structure and nomenclature of alkanes, structure, properties, and nomenclature of alkenes; properties, structure, and nomenclature of benzene.
Sep 9	Structure, properties and nomenclature of alkynes; nomenclature, properties and structure of alcohols, phenols and thiols; structure, nomenclature, and properties of aldehydes and ketones; structural isomers, conformational isomers of alkanes, conformational isomers of alkanes, geometric isomers, stability of alkanes, stability of alkenes, stability of alkynes.
Sep 16	<b>Midterm Exam #1</b> Chiral stereoisomers, chiral stereoisomers, significance of chirality, nomenclature of the absolute configuration of chiral molecules; properties of stereogenic compounds, compounds with more than one stereogenic carbons, resolution of enantiomers.
Sep 23	Overview of acid-base reactions, addition reactions, reduction reactions, elimination reactions, oxidation reactions, substitution reactions, pericyclic reactions, catalytic coupling reactions, Lewis acids and bases.

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Sep 30	Relative strengths of acids and bases, predicting the relative position of acid-base equilibria, factors that affect acid and base strengths.
Oct 7	Addition of hydrogen chloride to alkenes (hydrochlorination of alkenes), addition of halogens to alkenes (halogenation of alkenes), addition of hydrogen to alkenes (hydrogenation of alkenes).
Oct 14	<b>Midterm Exam #2*</b> Addition of water and halogens to alkenes (halohydrin formation), addition of water to alkenes (hydration of alkenes); addition of carbenes to alkenes.
Oct 21	The mechanism for addition reactions involving alkynes, addition of bromine to alkynes, addition of hydrogen halide to alkynes, addition of water to alkynes, addition of hydrogen to alkynes.
Oct 28	Mechanism for addition reactions involving carbonyl compounds, addition of HCN to carbonyl compounds; addition of water to carbonyl compounds; addition of alcohols to carbonyl compounds; addition of ylides to carbonyl compounds (the Wittig reaction).
Nov 4	Mechanism for addition reactions involving imines; addition of water to imines; mechanism for addition reactions involving nitriles; addition of water to nitriles.
Nov 11	<b>Midterm Exam #3*</b> Reducing agents of organic chemistry; reduction of C=O and C=S containing compounds; reduction of imines; reduction of aromatic compounds, alkenes, and alkynes.
Nov 18	Combustion of alkanes; oxidation of alcohols and aldehydes; applications of oxidation of alcohols and aldehydes to synthesis; oxidation of alkenes without bond cleavage.
Nov 25	Oxidation of alkenes with bond cleavage; oxidation of alkynes; oxidation of aromatic compounds; autooxidation of ethers; mechanisms of elimination reactions; elimination bimolecular (E2) reaction mechanism; elimination unimolecular (E1) reaction mechanism; elimination of hydrogen and halide (dehydrohalogenation).
Dec 2	Elimination of water (dehydration); dehydration products; carbocation rearrangement; pinacol rearrangement; applications of elimination reactions – synthesis.
December 9	FINAL EXAMINATION* (see examination schedule)

\* Each midterm exam is cumulative, but will emphasize the material covered after the previous midterm exam. Check examination schedule for specific date and time of final examination:

<http://appsprod.tamuc.edu/Schedule/Schedule.aspx>

### TECHNOLOGY REQUIREMENTS LMS – myLeo Online – D2L Brightspace

All course sections offered by Texas A&M University-Commerce 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](https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm)

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YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

### **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@tamuc.edu](mailto:helpdesk@tamuc.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 TAMUC campus open computer lab, etc.

### **COMMUNICATION AND SUPPORT**

I will communicate mostly through myLeo Online Learning Management System, D2L Brightspace with students. As a result, make sure that you have a way to get alerts of announcements that are posted on D2L. I will also communicate with students via e-mail, so please make sure to check your e-mail daily for important announcements and information about the course.

#### **Technical Support**

If you are having technical difficulty with any part of D2L 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>

#### **Interaction with Instructor Statement**

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.

#### **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.

### **University Specific Procedures**

#### **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 in the [Student Guidebook](#) .

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](#)

<http://www.albion.com/netiquette/corerules.html>

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## **TAMUC Attendance**

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

## **Academic Integrity**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

## **ADA Statement**

### **Students with Disabilities**

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**

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: [studentdisabilityservices@tamuc.edu](mailto:studentdisabilityservices@tamuc.edu)

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

## **Nondiscrimination Notice**

Texas A&M University-Commerce 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 Texas A&M University-Commerce 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 A&M-

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Commerce 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.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

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

### **A&M-Commerce Supports Students' Mental Health**

The Counseling Center at A&M-Commerce, 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](http://www.tamuc.edu/counsel)

### **Additional Information**

Students should not attend class when ill or after exposure to anyone with a communicable illness. Communicate such instances directly with your instructor. Faculty will work to support the student getting access to missed content or completing missed assignments.

Texas A&M University-Commerce 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.