



## CHEM2410 Organic Chemistry I Honors

The University of Toledo

Department of Chemistry and Biochemistry

College of Natural Sciences and Mathematics

**CHEM 2410 - 091 CRN 49267**

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<b>Instructor:</b>	Dr. Claire Cohen	<b>Class Location:</b>	WO1205
<b>E-Mail:</b>	<a href="mailto:claire.cohen@utoledo.edu">claire.cohen@utoledo.edu</a>		
	Face-to-face office hours, BO2096H: M,W,F, 9:15am - 10am		
<b>Office Hours:</b>	Remote (online) office hours: Tues and Thurs 8:15am-9:15am and 11:00am- 11:30am	<b>Class Day/Time:</b>	Mon, Wed, Fri 8:00 am - 8:55 am
<b>Office Location:</b>	BO2096H	<b>Credit Hours:</b>	3 credit hours
<b>Office Phone:</b>	419-530-4071	<b>Term:</b>	Fall, 2021

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### **TEXTS AND ANCILLARY MATERIALS**

#### **Required Materials:**

Access to a properly functioning computer with internet access in order to login to Blackboard

(<https://blackboard.utdl.edu/>) From the Blackboard course site you will access:

- An electronic copy of the textbook, *Organic Chemistry: Structure and Function* (8<sup>th</sup> Edition) by Vollhardt and Schore. Published by W.H. Freeman/Macmillan, ISBN-10: 1-319-07945-8; ISBN-13: 978-1-319-07945-1;
- ACHIEVE online homework
- iClicker access

#### **Recommended/Optional Materials:**

Preparing for Your ACS Examination in Organic Chemistry: The Official Guide by the Examinations Institute of the American Chemical Society Division of Chemical Education. 1<sup>st</sup> edition (2002), published by American Chemical Society. ISBN: 0-9708042-1-0.

Study Guide/Solutions Manual for Organic Chemistry 8<sup>th</sup> Edition by Peter Vollhardt and Neil Schore (this includes the answers to the end-of-chapter problems in the textbook).

ISBN-13: 978-1319195748, ISBN-10: 1319195741

## **PREREQUISITES AND COREQUISITES**

Prerequisites: CHEM 1240 with a minimum grade of C-.

## **CATALOG/COURSE DESCRIPTION**

CHEM 2410, Organic Chemistry I, covers the first half of Organic Chemistry, which includes a review of relevant topics from General Chemistry, a study of the structure and bonding of organic compounds, the nomenclature of organic molecules, an introduction to writing reaction mechanisms, and the reaction chemistry of alkenes, alkynes, alkyl halides, alcohols, ethers, and epoxides.

## **COURSE STRUCTURE**

- **Attend lecture and take active notes using the provided lecture outline.** All lectures will be recorded in the event you miss a class or want to review the material. All lecture recordings and outlines will be available for the entirety of the course.
- You will have a set of participation questions to complete on Blackboard for each chapter. You are welcome to use your notes and textbook to complete these questions. You have unlimited attempts and your highest score will be recorded for credit. There will be several extra points available. The deadline for all participation questions is Sunday, 12/12, 11:55pm although it is highly recommended to complete them after each chapter is covered. If time allows, we will also use iClicker (optional, not for points) to answer the same questions during class.
- *It is recommended that you read the text before you view the lecture.*
- Complete the assigned Achieve online homework assignment before each posted deadline. There will be one assigned for each chapter. There are also some tutorials to complete.
- Complete the recommended end-of-chapter homework problems from the textbook. These are not collected or graded, this is recommended practice so that you can do your best on the exams.
- All course materials will be accessed through Blackboard. You should consult the site every class day.

## **COMMUNICATION GUIDELINES**

As your instructor, I am here to help, and will do my best to respond to email within 24 to 48 hours. Students are expected to check their UT email account and Blackboard frequently for important course information. We want you to be successful in this course, so **let's work together!**

## **OVERVIEW OF COURSE GRADE ASSIGNMENT**

### **Homework:**

There are two types of homework associated with this course: 1) Achieve Online homework will count towards your grade; and 2) Problems from the textbook at the end of each chapter will not be graded.

### **Achieve Online Homework:**

Thirteen homework assignments (Chapters 1-9, 11 (alkene material only), and 12-14 totaling 150 points) will be administered and graded. In addition, there will be training assignments/videos. A direct link from Blackboard to Achieve will be available *via* this course's Blackboard site. These exercises are not timed, however, you will have unlimited tries with the loss of some credit for each try that is wrong before the due date. The due date/time for each assignment can be found within the Achieve homework system, on Blackboard, and on the syllabus schedule. **Please do your work well in advance of the due date. Do not wait until the last minute!**

### **Suggested Homework Problems:**

There are suggested homework problems assigned from the end-of-chapters in the textbook (end of syllabus). Completion and understanding of these problems will be a big step towards achieving a good

grade in this course. It is recommended that you use the problems in the textbook for study and review in your efforts to master the material covered in each chapter. The chapter questions are not graded but as noted they are HIGHLY RECOMMENDED!

### Examinations:

The exam schedule is listed in the full course schedule. **Make-up exams will not be given for any circumstance.** Excused absences will be given only to students who miss an exam under the conditions listed on page 3. If an excuse is acceptable, your final course grade will be computed accordingly. **The final exam cannot be excused.** For all exams you must show a **photo identification card\***. You will not be permitted to have a cell phone on your desk. \*A photo identification card is mandatory in order for you to take the exam (<http://www.utoledo.edu/orientation/new/StudentID.html>).

### Exam Absence Policies

Refer to UT Missed Class Policy (<https://www.utoledo.edu/policies/academic/undergraduate/pdfs/3364-71-14%20Missed%20class%20policy.pdf>). Students who will not be able to take an exam at the scheduled time due to an irresolvable conflict with a major responsibility must provide some **written** documentation to verify the conflict. This situation may occur for students on official university business, including athletes. *Approval must be obtained before the scheduled test date.*

Students who do not take an exam due to illness, car accident, and death in the family or similar **extreme circumstance** should inform their instructor of their difficulties within 24 hours of the exam. These difficulties must also be **documented** by a physician's note, an accident report, pastor's note, etc. **Contact information** for the police department, pastor, etc. must be included on the note or report. **In all other circumstances, a missed exam will result in a grade of 0.** Exams cannot be excused for personal reasons. Examples of missing an exam due to personal issues include, but are not limited to: oversleeping, transportation problems, vacation plans, work schedule conflicts, child care issues, sick children, etc. **Please plan accordingly.**

### Course Points:

The following is the distribution of possible points in the course:

Achieve Homework Assignments	150 pts
Practice Exam	5 pts
Midterm Exams 3 @ 100 points each	300 pts
Comprehensive Final Exam	200 pts
Remote Lecture Video Participation	50 pts
Honors projects*	35 pts
<b>Total:</b>	<b>740 pts</b>

### \*To receive your honors credit, you must complete the following

- 1) Attend and participate in all recitation sections.
- 2) Assignments: There will be 3 assignments given to be graded by your honors instructor. The 3 assignments will be worth a total of 35 points towards your grade in CHEM2410 (see above course points).

**Grade Scale These are the minimum percentages of total points needed to receive the indicated grade.**

A	90%	A-	86%	B+	82%	B	78%
B-	74%	C+	70%	C	66%	C-	62%
D+	58%	D	54%	D-	50%		

**Midterm Grading** A midterm grade should be taken seriously with respect to how well you are doing in the course approximately half-way through the semester. Midterm grades will be calculated based on the score on Exam 1 and up-to-date participation and will use the grade scale as listed above.

### **Academic Dishonesty:**

The academic honesty policies, as stated in the 2013-2014 UT Catalogue will be STRICTLY ENFORCED. Any student found violating the UT academic honesty policies will be penalized in accordance with these policies. You should read the university's policy on Academic Dishonesty found at [http://www.utoledo.edu/catalog/2000catalog/admissions/academic\\_dishonesty.html](http://www.utoledo.edu/catalog/2000catalog/admissions/academic_dishonesty.html) . There is also an academic honesty policy in the practice exam on Blackboard.

## **UNIVERSITY POLICIES**

Policy Statement on Non-Discrimination on the basis of Disability (ADA). The University is an equal opportunity educational institution. Please read [The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance](#).

## **INSTITUTIONAL CLASSROOM ATTENDANCE POLICY**

Please be aware that the university has implemented an attendance policy, which requires faculty to verify student participation in every class a student is registered at the start of each new semester/course. For this course, if you have not attended/participated in class (completed any course activities or assignments) within the first 14 days, I am required by federal law to report you as not attended. Unfortunately, not attending/participating in class impacts your eligibility to receive financial aid, so it is VERY important that you attend class and complete course work in these first two weeks. Please contact me as soon as possible to discuss options and/or possible accommodations if you have any difficulty completing assignments within the first two weeks.

## **ACADEMIC POLICIES**

[Undergraduate Academic Policies](#)

[Graduate Academic Policies](#)

## **ACADEMIC ACCOMMODATIONS**

The University of Toledo embraces the inclusion of students with disabilities. We are committed to ensuring equal opportunity and seamless access for full participation in all courses. For students who have an accommodations memo from Office of Accessibility and Disability Resources, I invite you to correspond with me as soon as possible so that we can communicate confidentially about implementing accommodations in this course. For students who have not established affiliation with Office of Accessibility and Disability Resources and are experiencing disability access barriers or are interested in a referral to healthcare resources for a potential disability or would like information regarding eligibility for academic accommodations, please contact the [Office of Accessibility and Disability Resources Office](#) by calling 419.530.4981 or sending an email to [StudentDisability@utoledo.edu](mailto:StudentDisability@utoledo.edu).

### **Policy Statement on Non-Discrimination on the Basis of Disability (ADA)**

The University is an equal opportunity educational institution. Please read [The University's Policy Statement on Nondiscrimination on the Basis of Disability – Americans with Disabilities Act Compliance](#).

## **TECHNOLOGY REQUIREMENTS, SKILLS, AND PRIVACY POLICIES**

Please view the [technology considerations](#) for this course, including technical skills needed, general

technology requirements, and technology privacy policies.

## **TECHNOLOGY REQUIREMENTS FOR EXAMS**

### **LockDown Browser + Webcam Requirement\***

This course requires the use of LockDown Browser and a webcam for online exams taken outside the classroom. The webcam can be the type that's built into your computer or one that plugs in with a USB cable.

Watch this brief video to get a basic understanding of LockDown Browser and the webcam feature.

<https://www.respondus.com/products/lockdown-browser/student-movie.shtml>

### **Download Instructions**

Download and install LockDown Browser from this link:

<https://download.respondus.com/lockdown/download.php?id=213815819>

\*Students who take the exam **in the classroom** with a personal laptop can take the exam using LockDown Browser without the webcam requirement

## **GENERAL TECHNOLOGY REQUIREMENTS**

Students need to have access to a properly functioning computer throughout the semester. The Browser Check Page <http://www.utoledo.edu/dl/helpdesk/browser-check.html> will enable you to perform a systems check on your browser, and to ensure that your browser settings are compatible with Blackboard, the learning management system that hosts this course.

Software Student computers need to be capable of running the latest versions of plug-ins, recent software and have the necessary tools to be kept free of viruses and spyware. The computer needs to run the following software, available in the UT Online Download Center. • Word Processing Software • Adobe Acrobat Reader • Java Plugin Console • Adobe Flash Player • Adobe Shockwave Player • Google Chrome Browser – Recommended

Internet Service High-speed Internet access is recommended, as dial-up may be slow and limited in downloading information and completing online tests. This course does contain streaming audio and video content.

Use of Public Computers: If using a public library or other public access computer, please check to ensure that you will have access for the length of time required to complete tasks and tests. A list and schedule for on-campus computer labs is available on the Open Lab for Students webpage.

UT Virtual Labs: Traditionally, on-campus labs have offered students the use of computer hardware and software they might not otherwise have access to. With UT's Virtual Lab, students can now access virtual machines loaded with all of the software they need to be successful using nothing more than a broadband Internet connection and a web browser. The virtual lab is open 24/7 and 365 days a year at VLAB: The University of Toledo's Virtual Labs.

Learner Technical Support can be found here <http://www.utoledo.edu/dl/students/learnersupport.html>

## **ACCESSIBILITY OF COURSE TECHNOLOGIES**

Please view [Accessibility of Course Technologies](#) for information regarding the accessibility of Blackboard and other technologies used in this course.

## ACADEMIC AND SUPPORT SERVICES

Please view the [Learner Support](#) page for links and descriptions of the technical, academic, and student support services available to UT students.

## SAFETY AND HEALTH SERVICES FOR UT STUDENTS

Please use the following link to view a comprehensive list [Campus Health and Safety Services](#) available to you as a student.

## COURSE SCHEDULE

WEEK	DATES	TOPIC	SLOs (Listed p.8)	ASSIGNMENTS DUE
1	8/30 – 9/3	Syllabus, Intro Chapter 1 Structure and Bonding in Organic Molecules	1,7	<b>Practice Exam (with Respondus Lockdown Browser):</b> Due Friday, 9/3, 11:59pm  <b>Achieve Training (2 assignments)</b> Due Sunday, 9/5, 11:55pm
2	9/6 – 9/10	Chapter 1 Continued and Chapter 2 Structure and Reactivity	1,2,7	(Labor Day is Mon. 9/6, no class) <b>Suggested Deadline 9/10:</b> Ch 1 Participation Questions  <b>Achieve Chapter 1</b> Due Sunday, 9/12, 11:55pm
3	9/13 – 9/17	Chapter 2 Continued and Chapter 3 Reactions of Alkanes	1,2-4,7	<b>Suggested Deadline 9/17:</b> Ch 2 Participation Questions  <b>Achieve Training and Chapter 2</b> Due Sunday, 9/19, 11:55pm (Last day to drop this course is: 9/13)
4	9/20 – 9/24	Chapter 3 Continued, Chapter 4 Cycloalkanes, and Chapter 5 Stereoisomers	1,3,4,7, 8,11	<b>Suggested Deadline 9/24:</b> Ch 3 Participation Questions  <b>Achieve Chapter 3</b> Due Sunday, 9/26, 11:55pm
5	9/27 – 10/1	Chapter 5 Continued <b>10/1, In Class, Exam 1</b> <b>Chapters 1 – 4, 5 (partial)</b>	7,8,11	<b>Suggested Deadline 9/30:</b> Ch 4 Participation Questions  <b>Achieve Training and Chapter 4</b> Due Sunday, 10/3, 11:55pm
6	10/4 – 10/8	Chapter 5 Continued, Chapter 6 Properties and Reactions of Haloalkanes (S <sub>N</sub> 2)	1,3,4,7, 8,11	<b>Suggested Deadline 10/8:</b> Ch 5 Participation Questions  <b>Achieve Chapter 5</b> Due Sunday, 10/10, 11:55pm
7	10/11 – 10/15	Chapter 6 Continued and Chapter 7 Further Reactions of Haloalkanes (S <sub>N</sub> 1 and E <sub>X</sub> Reactivity)	1,3-6,8	Fall Break (no classes on 10/14 and 10/15)  <b>Suggested Deadline 10/16:</b> Ch 6 Participation Questions

WEEK	DATES	TOPIC	SLOs (Listed p.8)	ASSIGNMENTS DUE
				<b>Achieve Chapter 6</b> Due Sunday, 10/17, 11:55pm
8	10/18, 10/22	Chapter 7 Continued and Chapter 8 Hydroxy Functional Group: Alcohol	1,3-6, 8, 11	<b>Suggested Deadline 10/22:</b> Ch 7 Participation Questions  <b>Achieve Chapter 7</b> Due Sunday, 10/24, 11:55pm
9	10/25 – 10/29	Chapter 8 Continued and Chapter 9 Further Reactions of Alcohols and the Chemistry of Ethers <b>10/29, In Class Exam 2, Chapters 5 (partial), 6 – 8</b>	1,3-5, 8, 11	<b>Suggested Deadline 10/29:</b> Ch 8 Participation Questions  <b>Achieve Chapter 8</b> Due Sunday, 10/31, 11:55pm
10	11/1 – 11/5	Chapter 9 Continued and Chapter 11 Alkenes	1,3-5, 7, 8	<b>Suggested Deadline 11/5:</b> Ch 9 Participation Questions  <b>Achieve Chapter 9</b> Due Sunday, 11/7, 11:55pm (Last day to withdraw from this course is: 11/5)
11	11/8 – 11/12	Chapter 11 Continued and Chapter 12 Reactions of Alkenes	1,3,4,7, 8,11	<b>Suggested Deadline 11/12:</b> Ch 11 Participation Questions  <b>Achieve Chapter 11</b> Due Sunday, 11/14, 11:55pm Veterans Day is Thursday, 11/11, no classes
12	11/15 – 11/19	Chapter 12 Continued	3,4,8,11	<b>Suggested Deadline 11/19:</b> Ch 12 Participation Questions  <b>Achieve Chapter 12</b> Due Sunday, 11/21, 11:55pm
13	11/22 – 11/26	Chapter 13 Alkynes	1,3,4,10	Thanksgiving Break, no classes 11/24 – 11/26
14	11/29 – 12/3	Chapter 13 Continued  <b>12/3, In Class Exam 3, Chapters 9, 11 – 13</b>	3,4,10	<b>Suggested Deadline 12/3:</b> Ch 13 Participation Questions  <b>Achieve Chapter 13</b> Due Sunday, 12/5, 11:55pm
15	12/6 – 12/10	Chapter 14 Delocalized Pi Systems	1,3-5, 8,9	<b>Suggested Deadline 12/10:</b> Ch 14 Participation Questions  <b>Achieve Chapter 14</b> Due Sunday, 12/12, 11:55pm  All participation questions (All Chapters) are due by Sunday, 12/12, 11:55pm
Finals Week	12/13 – 12/17	Final Exam Monday 12/13 8am-10am		<b>Monday, 12/13, 8am – 10am You must take the final at this time!</b>

## **STUDENT LEARNING OUTCOMES**

Following the completion of this course students will be able to:

1. Recognize chemical terminology specific to organic chemistry, especially classification of functional groups.
2. Identify acids and bases, predict  $pK_a$ , and apply  $pK_a$  to organic reactivity.
3. Explain fundamental chemical mechanisms, including  $S_N2$ ,  $S_N1$ , E2, E1, addition, cycloaddition, oxidation, reduction, carbon-carbon bond formation, and radical reactions.
4. Use curved arrow convention to convey organic reaction mechanisms.
5. Choose reaction products by comparing relative energies in the context of conformation and reaction coordinate diagrams.
6. Demonstrate understanding of solvent effects of protic and aprotic systems.
7. Describe and compare bonding in different types of organic substances.
8. Identify stereochemistry, stereochemical relationships, and predict stereochemical outcomes of reactions
9. Predict product distributions of reactions based on kinetic and thermodynamic factors.
10. Develop multi-step synthesis to create complex molecules.
11. Identify and describe societal applications of organic chemistry.

The following problems listed below are **suggested** end-of-chapter problems (Independent Homework) to attempt. You should be able to do these problems and they might appear on an in-class examination.

**The solutions to these problems can be found in this optional resource:**

Study Guide/Solutions Manual for Organic Chemistry 8<sup>th</sup> Edition by Peter Volhardt and Neil Schore  
ISBN-13: 978-1319195748, ISBN-10: 1319195741

### **Unit I: Chapters 1-5**

Chapter 1 – Structure and Bonding in Organic Molecules	25-31, 33-34, 37, 39-46, 49, 52, 53, 58
Chapter 2 – Structure and Reactivity	33-36, 38-39, 42-50, 52, 55-56, 62-63, 65-66
Chapter 3 – Reactions of Alkanes	15-16, 22-23, 27-29, 48
Chapter 4 – Cycloalkanes	21-22, 25, 27, 31-32, 34, 37, 44, 58-59
Chapter 5 – Stereoisomers	32-42, 44-47, 50-52, 54-56, 65, 68-71

### **Unit II: Chapters 6-8**

Chapter 6 – Properties and Reactions of Haloalkanes ( $S_N2$ )	31-39, 41, 43-47, 49-50, 56, 61, 65
Chapter 7 – Further Reactions of Haloalkanes ( $S_N1$ and $E_X$ Reactivity)	25-28, 30, 32-36, 43-52, 61, 67-70
Chapter 8 – Hydroxy Functional Group: Alcohols	24-25, 29-31, 34-36, 40, 42-46, 48, 53, 55-56, 64-65

### **Unit III: Chapters 9, 11-13**

Chapter 9 – Further Reactions of Alcohols and the Chemistry of Ethers	34-40, 42-44, 49-51, 56, 60, 65-66, 84-86
Chapter 11 – Alkenes	33-35, 42-43, 45, 54, 74, 76
Chapter 12 – Reactions of Alkenes	



**Unit IV: Chapter 14****SPECIAL COURSE EXPECTATIONS DURING COVID-19**

Maintaining a safe campus during the ongoing COVID-19 pandemic remains a top priority. UToledo continues to follow the guidance of the U.S. Centers for Disease Control and Prevention and Ohio Department of Health to keep our campus safe. **ATTENDANCE** The University of Toledo has a missed class policy. It is important that students and instructors discuss attendance requirements for the course. Before coming to campus each day, students should take their temperature and complete a self-assessment for symptoms of COVID-19, such as cough, chills, fatigue or shortness of breath. Anyone with a temperature at or above 100.0 degrees Fahrenheit or who is experiencing symptoms consistent with COVID-19 should not come to campus and contact their primary care physician or the University Health Center at 419.530.5549. For more information on the symptoms of COVID-19, please go to <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

COVID-19 testing for sick students is available on both Main Campus and Health Science Campus. Call 419.383.4545 for an appointment. Absences due to COVID-19 quarantine or isolation requirements are considered excused absences. Students should notify their instructors and follow the protocols summarized in this document on Navigating COVID-Related Course Concerns.

In the event that you have tested positive for COVID-19 or have been diagnosed as a probable case, please review the CDC guidance on self-isolation and symptom monitoring, and report the disclosure to the Division of Student Affairs by emailing [StudentAffairs@utoledo.edu](mailto:StudentAffairs@utoledo.edu) or by connecting with their on-call representative at 419.343.9946. Disclosure is voluntary and will only be shared on a need to know basis with staff such as in the Office of Student Advocacy and Support, The Office of Residence Life, and/or the Office of Accessibility and Disability Resources to coordinate supportive measures and meet contact tracing requirements.

**FACE COVERINGS** Face coverings are required while on campus, except while eating, alone in an enclosed space, or outdoors practicing social distancing. Students will not be permitted in class without a face covering. If you have a medical reason preventing you from wearing a face covering due to a health condition deemed high-risk by the CDC, submit an online application to request an accommodation through the Office of Accessibility and Disability Resources. Students will need to provide documentation that verifies their health condition or disability and supports the need for accommodations. Students already affiliated with the Office of Accessibility and Disability Resources who would like to request additional accommodations due to the impact of COVID-19, should contact their accessibility specialist to discuss

their specific needs. You may connect with the office by calling 419.530.4981 or sending an email to [StudentDisability@utoledo.edu](mailto:StudentDisability@utoledo.edu).

**VACCINATION** Doctors and other health care professionals agree that the best way to protect ourselves and each other is to get vaccinated. Case data clearly show that vaccines remain highly effective at preventing serious illness from COVID, including the highly contagious delta variant. If you have not yet received your COVID vaccine, the University encourages you do so as soon as possible. No appointment is needed to get the shot at the UTMC Outpatient Pharmacy, University Health Clinic or Main Campus Pharmacy. Once you receive the COVID vaccination, please register on the COVID Vaccine Registry site at: <https://utvaccinereg.utoledo.edu/>.

**SPECIAL NOTES** It's important to note, that based on the unpredictability of the COVID-19 virus, things can change at any time. So please be patient and understanding as we move through the semester. I also ask that you keep me informed of concerns you may have about class, completing course work/assignments timely and/or health concerns related to COVID.