

Instructor contact information:

Dr. Alvan C. Hengge, Widtsoe 343

Phone: 797-3442

Email: alvan.hengge@usu.edu

Course description:

This is the first course of a two-semester sequence covering the chemistry of organic chemicals. Students will gain an understanding of the physical properties, nomenclature, stereochemistry, and chemical reactivities of organic molecules, and will be able to describe chemical reactions and step-wise reaction mechanisms.

Course format:

All course content will be delivered online, and work will be due every week. The course content is provided through an online interactive text book, recorded lectures (referred to below as Highlight Videos), and homework problems. All materials are accessed through Canvas. The instructor is available to answer questions and provide feedback. Regular office hours will be held via Zoom, according to the schedule posted on the Canvas home page. All due dates and times for assignments and exams refer to the Mountain time zone. If you are in another time zone, adjust your times accordingly.

The instructor will communicate with students using Canvas (Announcements, and office hours via Zoom). For further communication the preferred method is email, either directly or through Canvas. Please put "CHEM 2310" in the subject line of any email. You will typically receive a response within 24 to 48 hours. Please allow a full business day before emailing again on the same question or issue. Emails sent on Saturday or Sunday will receive a reply by Monday.

Online courses require a large amount of time and self-discipline. If you have a hard time keeping up with assigned readings and assignment in face-to-face classes, you may struggle even more in an online course such as this. If this is your first online course, [here](#) is an article to help you prepare, or to decide if an online course is a good fit for you.

Course prerequisites:

Coursework prerequisite: CHEM 1220

Technology: You must have a computer and reliable high speed internet access to complete this course. Late assignments will not be accepted because of internet access or computer problems.

- You will need Microsoft Office applications (Word, Power Point), and Adobe Acrobat or another PDF viewer to view some course materials.
- If you do not have a computer at home with the necessary software or high speed internet access, use the computer centers on campus.
- The [Technical Requirements](#) page identifies the browsers, operating systems, and plugins that work best with Canvas. If you are new to Canvas, review the [Canvas Student Orientation](#) materials.
- Exams will be administered on your own computer using the Proctorio remote proctoring system, which utilizes your computer's camera and microphone to monitor all activity during an exam. Proctorio is incorporated into Canvas and is a plug-in that requires the Chrome browser. More information about Proctorio and exams appears in the Exam Procedures section below.

General Learning Objectives for CHEM 2310

At the end of this course, a student should be able to:

- Describe atomic and molecular structure and bonding, and properly draw organic molecules as Lewis, Kekule, and skeletal structures.
- Classify organic compounds by structure, use the IUPAC nomenclature, and identify conformational effects in organic compounds.
- Write electron-pushing mechanisms for chemical reactions of alkenes and be able to predict the products of such reactions.
- Draw and interpret reaction coordinate diagrams, and relate the energy changes associated with chemical reactions to equilibrium constants and rate; be able to differentiate kinetic versus thermodynamic control of reactions.
- Identify the types of isomerism in organic compounds, identify and classify chiral centers, and explain the physical and chemical consequences of chirality.
- Describe the structures and bonding of alkynes, and write the mechanisms for reactions of alkynes and predict the products of such reactions.
- Identify compounds in which resonance is important, to predict the effect of resonance on the stability of compounds and reactive intermediates, and be able to draw resonance structures.
- Identify conjugated pi systems and to explain the effect of conjugation on molecular structure and reactivity; be able to predict the products of reactions of dienes.
- Write mechanisms for substitution and elimination reactions, and predict the effect of nucleophile, leaving group, and solvent on the relative rates of S_N1 versus S_N2 reactions, and $E1$ versus $E2$ reactions, as well as on the relative rates of substitution versus elimination.

Text:

This course requires all-inclusive digital materials that are provided to you at a significantly lower price than traditional printed materials. These materials are paid for through an “Auto Access Digital Materials” charge placed on your student account when you registered for the course and are accessed through the Canvas course site. You may choose to opt-out of the all-inclusive materials and associated charges, but you will lose access to the required materials, which include assignments necessary to pass the course. [Opt-out requests](#) must be submitted by January 31, 2022 at 11:59 pm Mountain Time, after which you will be responsible for obtaining the required materials through your own means.

The electronic text is: “Organic Chemistry with Biological Topics” by Smith, 6th edition. This is provided via the access program described above. You will access the eText via Connect McGraw Hill’s online system through Canvas. From here you will have access to an interactive reading experience called the Smartbook. You will complete graded homework assignments, and work for credit within the Smartbook, from the McGraw-Hill Connect link. You also have access to the Study Guide and Solutions Manual.

Model Kit:

Optional, but helpful. The Andrus kit is available on the Logan campus in Chem Stores (on the first floor of Widtsoe) and costs about \$25.

A Course Schedule with Assignments and Exam Schedule is below. Homework (HW) and SmartBook (SB) assignments are accessed from within your McGraw-Hill Connect account via Canvas. Highlight video (HL) assignments can be accessed from your PlayPosit account, described below or from links in the Modules section.

Module	Dates	SmartBook Chapter	Assignments
1 Structure and Bonding	1/10 – 1/14	1, sections 1-14	SB1, HW1, HL 1.1 – 1.4
2 Acids and Bases	1/17 – 1/21	2, sections 1-8	SB2, HW2, HL 2.1 – 2.3
3 Intro to Organic Molecules and Functional Groups	1/24 – 1/28	3, sections 1-9	SB3, HW3, HL 3.1 – 3.4
4 Alkanes	1/31 – 2/4	4, sections 1-14	SB4, HW4, HL 4.1 – 4.4
Exam 1	2/7 – 2/8		
5 Stereochemistry	2/7 – 2/15	5, sections 1-13	SB5, HW5, HL 5.1 – 5.3
6 Understanding Organic Reactions	2/16 – 2/23	6, sections 1-11	SB6, HW6, HL 6.1 – 6.3
7 Alkyl Halides and Nucleophilic Substitution	2/24 – 3/7	7, sections 1-18	SB7, HW7, HL 7.1 – 7.5
Spring break	3/7 – 3/11		
8 Alkyl Halides and Elimination Reactions	3/14 – 3/24	8, sections 1-11	SB8, HW8, HL 8.1 – 8.4
Exam 2	3/24 – 3/25		
9 Alcohols, Ethers and Related Compounds	3/28 – 4/1	9, sections 1-13, 15-17	SB9, HW9, HL 9.1 – 9.4
10 Alkenes and Alkynes	4/4 – 4/13	10, sections 1-21	SB10, HW10, HL 10.1 – 10.8
Exam 3	4/14 – 4/15		
11 Oxidation and Reduction	4/18 – 4/26	11, sections 1-12	SB11, HW11, HL 11.1 – 11.4
Final Exam	4/28 – 5/2		Final Exam

SB = Smart Book assignment

HW = Homework assignment

HL = Highlight video

Assignment procedures:

There are three types of assignment in each module, described below. The assignments in each module close on the last date in the table above. Pay attention to dates. Assignments will typically open at 8:00 am one week before first day scheduled for that module (this will allow you to work ahead of the posted schedule if you wish). All assignments will close at 11:59 pm on the final date for that module. It is your responsibility to be aware of due dates.

The three assignment types are:

(1) Homework: Each homework assignment consists of approximately ten questions, worth a total of 20 points for the assignment. The best ten out of eleven homework grades will be counted toward the final grade. You will have an unlimited number of attempts at each homework assignment before the closing date, and only the best score will be counted. After the closing date each homework assignment will be opened for ungraded practice.

There are several types of assistance provided within the homework assignments that can be used:

- **eBook and resources:** Clicking on the eBook Link icon within a question will show you relevant readings. There is no penalty for using this.
- **Hint:** The View Hint link will offer a direct suggestion, but incurs a 5% deduction from the score for that question (the deduction is only applied once per question).
- **Check my work:** You can click the “check my work” icon to see if your answer is correct before submitting it for grading. This can only be used once per question.

(2) *SmartBook reading and in-chapter problems.* As you read the assigned sections in the eText you will periodically be asked questions to demonstrate your comprehension. The number and type of questions depend on your responses. If your responses demonstrate understanding, you will be moved on for more reading. If your responses show a lack of understanding, you will be given additional questions to help strengthen your grasp of the content. Each SmartBook assignment is worth 20 points, awarded when the unit is completed. Partial completion earns partial credit.

(3) *Highlight videos.* For each chapter there are between three and six short lectures, called highlight videos, that focus on important concepts. These include examples of exam-type problems that are analyzed and solved. Each video includes an average of three inserted questions, each worth 1 point, up to 120 points total. These video lectures can be re-watched. The videos are on a website called PlayPosit. To access them you will need to establish a free account and enroll in our course. Follow this link to the [PlayPosit website](#). Be sure to sign up with your name as it is listed in Canvas. Captions can be turned on using the gear icon in the lower right corner of the video. The pdf files of the slides used in each video are posted in each Module.

Exam Procedures:

Exams will be taken on your own personal computer using the Proctorio remote proctoring system, which utilizes your computer’s camera and microphone and monitors computer activity. Proctorio is incorporated into Canvas and requires the Chrome browser. A separate document describing Proctorio, the system requirements your computer must have, and other important information is posted on Canvas. You may use a periodic table and your own notes during exams. Proctorio contains an on-screen calculator you can use during exams. Use of a cell phone or any other electronic device during an exam is not allowed, and will result in a grade of zero.

Grading Scheme:

Point Distribution:

Three one-hour exams (200 pts each, 600 total)

Best ten out of eleven SmartBook assignments (20 pts each, 200 total)

Best ten out of eleven Homework assignments (20 pts each, 200 total)

Best ten out of eleven Highlight videos (12 pts each, 120 total)

Comprehensive Final (400 pts)

Total Points: 1520

Letter Grade Assignment: A student’s grade for the course is determined by points earned on the assignments and exams listed above. The final grade ranges given below are guaranteed. The actual grade ranges may be curved slightly lower at the discretion of the instructor.

A	1414 points or higher (93 to 100%)
A-	1368 to 1413 points (90 to 93%)
B+	1322 to 1367 points (87 to 90%)
B	1262 to 1321 points (83 to 87%)

B-	1216 to 1261 points (80 to 83%)
C+	1155 to 1215 points (76 to 80%)
C	1094 to 1154 points (72 to 76%)
C-	1034 to 1093 points (68 to 72%)
D+	927 to 1033 points (61 to 68%)
D	836 to 926 points (55 to 61%)
F	< 836 points

Course Procedures and Policies:

1. What is covered on the exams? Exams may cover any material from posted lectures and the text. Not all material assigned in the text is repeated in the recorded lectures.

The exams are meant to test your understanding of the topics covered in the text or the posted lectures, not your ability to repeat memorized problems. **Expect to see some exam questions that are different from any of the practice problems.** These are designed to evaluate your ability to apply basic principles taught in the course to solve problems. Practice exams are available on Canvas.

Any questions about exam grading must be discussed with the instructor within one week after the exam scores are posted. No grading adjustments will be made after this time.

2. There will be no make-up exams. An exam may be taken in advance by prearrangement with a valid excuse (i.e. funeral, surgery, or scheduled absence due to university-sponsored activity). A missed examination for a reason meeting the university guidelines for [excused absence](#) will receive a grade equal to the average score earned on other exams. A missed exam for any other reason will receive a grade of zero.

3. Graded assignments. All assignments in each module must be completed before the closing date given in the syllabus and on the Modules page. These are open-book. It is your responsibility to note assignment due dates, monitor your McGraw-Hill Connect and PlayPosit accounts, and ensure that you complete each assignment before it closes and that a score is properly recorded. Do not wait until the last open day to start an assignment. No accommodations will be made for last minute emergencies or internet/computer issues that prevent you from completing an assignment. No extensions will be granted for any reason.

4. Scheduling of the Final Exam. It is University policy that unless you have three scheduled final exams on the same day, you must take the final exam for this course at the officially scheduled time. Rescheduled exams are not given to accommodate personal travel, weddings, etc. Permission to take a final exam at any other time can only be obtained from the Dean of the College of Science.

5. Withdrawal Policy, "I" Grade Policy and Dropping Courses. If a student does not attend a class during the first week of the term or by the second class meeting, whichever comes first, the instructor may submit a request to have the student dropped from the course. (This does not remove responsibility from the student to drop courses which they do not plan to attend.) Students who are dropped from courses will be notified by the Registrar's Office through their preferred e-mail account.

Students may drop courses without notation on the permanent record through the first 20 percent of the class. If a student drops a course following the first 20 percent of the class, a W will be permanently affixed to the student's record (check [General Catalog](#) for exact dates). Students with extenuating circumstances should refer to the policy regarding Complete Withdrawal from the University and the Incomplete (I) Grade policy in the General Catalog.

6. Disability accommodations. USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) as early in the semester as possible (University Inn # 101,

435-797-2444, drc@usu.edu). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations. [DRC Website](#)

7. Academic Freedom and Professional Responsibilities: Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. [USU Policy 403](#) further defines academic freedom and professional responsibilities.

8. Grievance Process. Students who feel they have been unfairly treated (in matters other than discipline, admission, residency, employment, traffic, and parking - which are addressed by procedures separate and independent from the Student Code) may file a grievance through the channels and procedures described in the Student Code: [Article VII Grievances](#)

9. Sexual Harassment. Utah State University is committed to creating and maintaining an environment free from acts of sexual misconduct and discrimination and to fostering respect and dignity for all members of the USU community. Title IX and [USU Policy 339](#) address sexual harassment in the workplace and academic setting. The university responds promptly upon learning of any form of possible discrimination or sexual misconduct. Any individual may contact [USU's Affirmative Action/Equal Opportunity \(AA/EO\) Office](#) for available options and resources or clarification. The university has established a complaint procedure to handle all types of discrimination complaints, including sexual harassment ([USU Policy 305](#)), and has designated the AA/EO Director/Title IX Coordinator as the official responsible for receiving and investigating complaints of sexual harassment.

10. No-Test Days Policy. For classes that meet for a full semester, a five-day period designated as "no-test" days precedes final examinations. During this time, no major examinations, including final examinations will be given in order that students may concentrate on classwork, the completion of special assignments, writing projects, and other preparation for duly scheduled final examinations. Approved exceptions include final papers, weekly chapter quizzes, quizzes, projects, and examinations associated with a lab that does not meet during final examinations. Complete information related to [Final Examination Policies](#) can be reviewed in the General Catalog.

11. Mental Health. Mental health is critically important for the success of USU students. As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. Utah State University provides free services for students to assist them with addressing these and other concerns. You can learn more about the broad range of confidential mental health services available on campus at [Counseling and Psychological Services \(CAPS\)](#). Students are also encouraged to download the "[SafeUT App](#)" to their smartphones. The SafeUT application is a 24/7 statewide crisis text and tip service that provides real-time crisis intervention to students through texting and a confidential tip program that can help anyone with emotional crises, bullying, relationship problems, mental health, or suicide related issues.

Suggestions for Success in This Course:

- This is not a memorization course; to be successful on the exams you will need to understand the principles and use them to solve problems. Work as many practice problems in the text as you have time for, and use the Study Guide and Solutions Manual. Studying and working practice problems in groups is very beneficial if everyone contributes.

- Use the practice tests posted in Canvas to help you prepare for exams.
- **Keep up** with the recorded lectures and reading material. Getting behind in this course leads to disaster. You will benefit more from the recorded lectures if you read the material in advance.