

CHEMISTRY 332 Organic Chemistry II Spring 2024

Sections:	Online, Section 4
Room:	Exams will be held in-person on Monday nights from 6:45-7:45pm . More detailed information will come later.
Instructor:	Krishna K. Sharma
Office:	3166 Hach Hall
Phone:	
E-Mail:	kksharma@iastate.edu [Write " Chem 332 " on the subject]
Office Hours:	Held via WebEx. Wednesdays: 9:30 – 10:30 AM, Fridays: 9:30 – 10:30 AM, or available by appointment.

Textbook: *Organic Chemistry*, 4th Edition, by David Klein (available as Ebook and physical book). Chapters 12, 13, 16-22, 24, and 25. The book is part of the Immediate Access Program at ISU. Each Course Content Module in Canvas will contain the learning objectives in the chapters, lecture videos, lecture notes, assigned readings, homework problems, and practice problems. An accompanying optional Student Study Guide & Solutions Manual is also available and recommended. You may consider buying a molecular model kit or accessing free resources if you have trouble visualizing in 3-dimensions. Some students also find *Pushing Electrons: A Guide for Students of Organic Chemistry*, 4th Ed. by Daniel Weeks and Art Winter to be a helpful supplement.

Canvas: We will be using Canvas for this course. Lecture videos, previous exams, grades, homework assignments, and class announcements will be posted there.

Online Homework: We will use the online homework system called WileyPlus, which is integrated into Canvas. Problem sets are questions that are derived from the end-of-chapter problems from the book. The homework is worth 10% of your final grade. In addition to the homework, there will be weekly quiz assignments for each chapter worth 10 points each. These quizzes will be worth 5% of your grade. There is an opportunity for extra credit with the Adaptive Learning assignments. They will be worth an extra 3% towards your overall grade at the end of the semester. The extra credit is proportional to the number of Adaptive Assignments completed, so completing half the assignments will grant 1.5% extra credit, and so on. More information will be posted on Canvas.

Grading: Grades will be assigned based on 60% midterm exams, 25% final exam, 10% online homework, and 5% quizzes. There will be four mid-semester exams (60% of total grade) and a cumulative final exam (25% of total grade). The course grade will be based on the **three best mid-semester exam** scores plus the final exam score (which cannot be dropped), the online homework (10%), and any midweek quizzes (5%). The lowest score on a mid-semester exam will be automatically dropped. Missing an exam for any reason will result in that exam being dropped. Cheating on an exam will earn a zero for that exam, which **cannot** be dropped. You are guaranteed the following grades: >92% A, > 88% A-, >85% B+, >79% B, > 75% B-, >70% C+, >60% C, >50% D; <50% F. Thus, in principle everyone in the class can earn an A. Since an exam will be dropped, it is not possible to tell you exactly where you stand grade-wise until all exam grades have been submitted. **Any errors in points or grades posted on Canvas should be addressed to kksharma@iastate.edu within a week from the date posted. It is your responsibility to monitor your score in Canvas.**

Exams: All exams are currently scheduled to held **IN PERSON on Monday nights from 6:45 – 7:45 PM**. More details will be communicated the week before the exam. In addition to the Final Exam, there will be **four in-class exams** (100 pts each). **THERE WILL BE NO MAKE-UP EXAMS.** Any re-grades on an exam must be requested within one week after receiving the graded exam. **Missing an exam for any reason will result in that exam being dropped.** The reason that I drop an exam is that it allows you to miss an exam for a personal or family emergency

(such as an illness, a death in the family, car troubles, etc), or for other legitimate cause without suffering a grade penalty.

Exam Dates: 6:45-7:45 PM on February 5th, February 26th, March 25th, and April 22nd. The final exam will be offered only at the time set by the registrar. Do not make any prior travel plans!

Relationship to in-person sections (taught by Dr. Mason Koeritz): The text/homework/exams will be the same.

Co-requisite: Chem 332 is a CO-REQUISITE for Chem 332L.

Drops and Audits: Students taking Chem 332L will be required to drop the lab if they drop or decided to audit Chem 332 lecture course. Auditing does not count towards full-time student status.

Schedule for Chem 332 (Spring 2024)

Week	Dates	Chapter (Recommended Reading)
1	Jan 16-19	Chapter 12: Alcohols and Phenols
2	Jan 22-26	Chapter 12: Alcohols and Phenols Chapter 13: Ethers and Epoxides; Thiols and Sulfides
3	Jan 29-Feb 2	Chapter 13: Ethers and Epoxides; Thiols and Sulfides Chapter 16: Conjugated Pi Systems and Pericyclic Reactions
4	Monday, Feb 5th Feb 5-Feb 9	Exam 1, 6:45-7:45pm (Covers Chapters 12 & 13) Chapter 16: Conjugated Pi Systems and Pericyclic Reactions Chapter 17: Aromatic Compounds
5	Feb 12-Feb 16	Chapter 17: Aromatic Compounds Chapter 18: Aromatic Substitution Reactions
6	Feb 19-Feb 23	Chapter 18: Aromatic Substitution Reactions
7	Monday, Feb 26th Feb 26-Mar 1	Exam 2, 6:45-7:45pm (Covers Chapters 16, 17, & 18) Chapter 19: Aldehydes and Ketones
8	Mar 4-Mar 8	Chapter 19: Aldehydes and Ketones Chapter 20: Carboxylic Acids and their Derivatives
9	Mar 11-Mar 15	SPRING BREAK; No Classes
10	Mar 18-Mar 22	Chapter 20: Carboxylic Acids and their Derivatives
11	Monday, Mar 25th Mar 25-Mar 29	Exam 3, 6:45-7:45pm (Covers Chapters 19 & 20) Chapter 21: Alpha Carbon Chemistry
12	Apr 1-Apr 5	Chapter 21: Alpha Carbon Chemistry Chapter 22: Amines
13	Apr 8-Apr 12	Chapter 22: Amines
14	Apr 15-Apr 19	Chapter 24: Carbohydrates
15	Monday, Apr 22nd Apr 22-Apr 26	Exam 4, 6:45-7:45pm (Covers Chapters 21, 22 & 24) Chapter 25: Amino Acids, Peptides, and Proteins
16	Apr 29-May 3	Prep Week: Review for Final Exam – Lecture is Optional
17	May 6-May 10	Final Exam (Time to be Determined)

The Final Exam Schedule will be posted by April 1st. Do not schedule end-of-semester travel plans before knowing when the Final Exam will take place.

The three most important tips for doing well in this class:

1. Work as many practice problems as you can! We're building pattern recognition skills that will help you work on solving more complex problems, so the more you practice, the better you will be at applying those patterns to new systems.
2. Don't forget the foundational concepts from Organic Chemistry I. These concepts continuously build on each other, so you may need to brush up on topics like acid/base chemistry or basic arrow pushing.
3. Ask questions! If you don't understand something, it's ok to reach out and ask for help! It's better to get the assistance you need than to stress over the problem and fall behind.

Learning Objectives: Organic Chemistry II will be a demanding course. You will be asked to digest a large amount of material in a relatively short time. In addition, you will be asked to master the basic language and fundamental concepts (such as reactivity trends, steric and electronic effects, and basic kinetic and thermodynamic effects) that are the required foundation to solve problems in organic chemistry. The sheer volume of information to be covered is such that rote memorization becomes impractical as a singular learning strategy. Thus, it is critical that you are able to connect to and build upon new and existing knowledge of fundamental principles and concepts in organic chemistry. The most successful students in organic chemistry are often those who understand basic reactivity (nucleophile or electrophile, acid or base) of common functional groups and reagents and are able to apply trends to new problems.

At the end of Chem 332, you will have been through as much organic chemistry as most beginning Ph.D. students in chemistry! That said, most of you have long-term learning and career goals in which chemistry is just a part. The following is a summary of what we want you to know or be able to do upon completion of the year sequence of organic chemistry.

1. You should have a good understanding of molecular structure. This includes sigma and pi bonding, strain, aromaticity, and stereochemistry. You should have a good grasp of three-dimensional structure of molecules and should understand that intermolecular interactions depend on structural relationships.
2. You should be able to recognize the reactive parts of molecules. In particular, you should be able to identify nucleophilic and electrophilic centers. You should understand how to make certain centers more nucleophilic or electrophilic, e.g., by deprotonating or protonating them.
3. You should be able to recognize types of reactions that you see in different contexts. For example, you should recognize substitutions, additions, oxidations, and reductions, no matter whether you see them in organic chemistry or in a biochemistry class.
4. You will have a good fundamental understanding on the chemical reactivity of several common classes of reactive intermediates, especially cationic and anionic centers.
5. You should be able to understand complex reaction mechanisms if they are presented to you. You should be able to suggest reasonable reaction mechanisms for almost every reaction you know, and – based on knowing something about the reactive parts of molecules and reactive intermediates – make a good guess about the mechanism of a new reaction presented to you.
6. You should have a reasonable repertoire of reactions that you can call upon to imagine how to synthesize a molecule of modest complexity or follow its synthesis or biosynthesis as presented to you. In practice, many of you will find this most useful in biological and biochemical contexts.
7. From Chemistry 332 in particular, you should develop a thorough understanding of carbonyl chemistry, including addition, reduction, and oxidation. You will learn several ways in which carbonyl compounds can be used to construct new carbon-carbon bonds. Yes, there are many other functionalities covered in 332, but this is the heart of the reactivity we examine.

Mandatory Syllabus Statements:

Academic Dishonesty

The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office.

<http://www.dso.iastate.edu/ja/academic/misconduct.html>

Disability Accommodation

Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact (instructor name) to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Retroactive requests for accommodations will not be honored.

Prep Week

This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook <http://www.provost.iastate.edu/resources/faculty-handbook> .

Harassment and Discrimination

Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, [Student Assistance](#) at 515-294-1020 or email dso-sas@iastate.edu, or the [Office of Equal Opportunity and Compliance](#) at 515-294-7612.

Religious Accommodation

If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the [Dean of Students Office](#) or the [Office of Equal Opportunity and Compliance](#).

Free Expression.

Iowa State University supports and upholds the First Amendment protection of [freedom of speech](#) and the principle of [academic freedom](#) in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Contact Information

If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu.