

CHEM 2070 Organic Chemistry I – section 1

Auburn University



Prof. Anne E. V. Gorden

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Office Hours: **M&W** after class

M 2-3:30, **W** 1:30-3

Fall 20167

MWF 9am-10am

Chemistry 151

3 credit hours

SI: Will Cordell (wgcoo11)

wgcoo11@auburn.edu

Tuesday 5:30-7pm in Mell 3550b

Thursday 5:30-7pm in Mell 3550b

What is this course about?

This course focuses on the in-depth study of organic chemistry including structure, nomenclature, reactions, reaction mechanisms, stereochemistry, synthesis and spectroscopic structure determination organized by the functional group approach. In the first semester, we will focus on considers alkanes, alkenes, alkynes, alkyl halides, alcohols, and ethers. Pre-requisites are CHEM 1040 or CHEM 1120 or CHEM 1127 or some equivalent.

Why is this course important?

The purpose of this course is to provide a solid introduction to Organic Chemistry, the so-called "chemistry of life" which is based on the chemistry of carbon, hydrogen, nitrogen, and oxygen. Understanding the interactions of these four elements and their reactivity allows one to begin to understand on the molecular level how these are the primary building blocks for larger molecules. Because of this, Organic Chemistry is the foundation for many disciplines including chemical synthesis, medicinal chemistry, and biochemistry, and it is critical for students to master key concepts including nomenclature, simple reactions, and mechanisms.

What are the course policies?

- **EMAIL:** I will respond to e-mail as soon as I can. To be sure that I see your message, please put CHEM 2070 in the subject heading. *If you cannot make scheduled office hours, email me, and we can try to find another time to make an appointment to meet.*
- **CLASS CONDUCT:** You are expected to behave in a respectful manner toward the professor and your fellow students. Students are expected to arrive to class on time and remain until the conclusion. If your behavior in class becomes disruptive or distracting, you will be asked to leave the classroom.
- **ELECTRONICS:** All cell phones, headphones, tablets, and computers should be turned off and put away in class with the ONE exception of using a tablet or laptop to take notes.
- **CLASS NOTES:** Good note taking is important in any higher level course. I will provide "Skeleton Notes" on Canvas. These include a listing of what sections of the textbook will be covered in each class. These are not 100% complete notes, but they will help you follow along in. Problem sets at the end of the notes for each chapter will feature problems like those you can expect on the exams.

What are the course outcomes?

By the End of this Course, you will have a firm foundation on which to build your expertise in organic chemistry and molecular structure. This will include:

- Understanding Molecular Orbital Theory
- Explaining different types of Molecular Stability – Torsional, Steric, & Ring Strain
- Using Electron Flow in Organic Chemistry: Nucleophiles to Electrophiles
- Differentiating Substitution and Elimination Reactions and the Preferred Products
- Predicting Electrophilic Addition Reactions
- Following Radical Reactions
- Comparing Oxidation and Reduction Reactions

What are the grading policies?

- EXAMS: There will be THREE MIDTERM EXAMS and ONE comprehensive FINAL EXAM. Each MIDTERM will be worth 20% of your final semester grade. The FINAL EXAM will be worth 25% of your semester grade. NONE of the exam scores can be dropped.
- EXAM RULES: Please be considerate of your classmates. A periodic table will be provided. Exams must be in standard blue or black ink. No red ink! Exams in red ink will receive a zero. Exams in pencil or erasable ink are not eligible for a regrade. No notes, books, PDAs, cell phones, pagers, headphones, hats, molecular models, graphing calculators, or programmable calculators will be permitted. Opening a cell phone during an exam is cheating. If you are wearing an Apple watch or something that looks like an Apple watch during an exam – it will be assumed you are cheating. You will be expected to show your Auburn ID during exams.
- REGRADES: Occasionally graders do make mistakes. I will allow you to request a regrade. A regrade request must be submitted in writing with specific questions within one week following the return of exams. Be aware I will regrade the entire exam, and this could result in a higher or lower grade.
- MAKE-UP EXAMS: If you require a make-up exam because of a University approved absence or illness with a doctor's note, it will be a different exam. You will need to contact me as soon as possible after missing the exam period. Make-up exams must be scheduled within one week of the exam. The department make-up time is Fridays from 3-5pm in Chemistry 134.
- ONLINE HOMEWORK: **WileyPlus** homework assignments will be assigned as homework. This will be 10% of your semester average. These 10-15 question assignments are designed to help you review the most important material from each chapter. You will get the best help from these if you work on the practice problems from the chapter, and then, use these afterwards to quiz yourself. I will drop the lowest two scores. Having access to a computer and being able to do the assignments prior to the due date is your responsibility. There is a 2 week grace period at the beginning of the semester in which you can access the Wiley Plus for free.
- PRELECTURE QUIZZES (PLQ): Short multiple choice quizzes will be online on **WileyPlus** and due before class Mondays. The average of these scores will be 5% of your semester average.
- EXTRA CREDIT: Some extra credit will be from in class activities, group work, or extra on Canvas assignments. These cannot be made up if you are ill or absent.

How to do well in ORGANIC CHEMISTRY

1. Prior to lecture - read the assigned sections in the textbook. This will make the lectures easier to follow. It is also very helpful to do some of the in the chapter problems as you read –this will help you retain the information.
2. Set aside at least 1 hour every day specifically for studying and practicing organic chemistry. Doing a little each day will help you with your retention. An average student can expect to need to do 10-12 hours of homework per week.
3. Read the book aloud to yourself. It really helps, especially with vocabulary and retention.
4. Find a “Study Buddy” - someone that can help you work through difficult questions and help keep you motivated and on track
5. Print out the notes online each day before you come to class. Use these skeleton notes to make notes on during class. Write down only the most important points in class.
6. Rewrite your notes from class and match this with the sections to review in the book. Practice drawing structures will help your confidence on exams.
7. Try to learn to learn without memorizing everything. Through the analysis of similar processes, you can develop an intuitive sense of how reactions work. This will help when you get to a problem you have not seen before.
8. At a minimum, do the end of the chapter homework problems from the notes. Try to do each one without consulting the study guide.
9. Only after you have done the reading and at least some of the practice problems – then use the online homework to quiz yourself. You can do the assignments up to 5 times, so use it to see what you need to go back and focus more time on.
10. Use the extra online resources to help you practice. The WileyPlus comes with video explanations of practice problems and extra review materials including Reaction Explorer and Solved Problem Videos in the Read, Study, Practice tab.
11. Participate in the in class activities. These are designed to get you working with a partner and thinking through problems. This helps with new concepts, your problem solving strategies, 3-dimensional thinking, and retention.
12. COME to CLASS! Experience has shown that attendance, that little bit of chemistry each day, and participation in class activities can greatly enhance your understanding of the material (and your grades! 😊).

Textbook requirements

Required Text: *Organic Chemistry, David Klein 3rd ed. J. Wiley and Sons, 2017.*
Ball and Stick Model Set (any one you like)
For HOMEWORK, You will be required to submit assignments online using WileyPLUS.

Recommended: *Student Study Guide and Solutions Manual for the Klein Text*

Dates are Subject to Change...

Course Calendar			
Week	Date	Agenda/Topic	Due on this date
August			
1	Mon 8/21	Topic : What is Organic Chemistry? Read: Chapter 1.1-1.7 Activity: A WileyPlus how-to/ Group Puzzle	
	Wed 8/23	Topic : Electronic Structure and Bonding Read: Chapter 1.1-1.7 Activity: Particles AND Waves	
	Fri 8/25	Topic: Molecular Orbital Theory Read: Chapter 1.7-1.11 (1.12 and 1.13 not covered in class)	
2	Mon 8/28	Topic: Representing Organic Molecules Read: Chapter 2.1-2.7 Activity: Functional Groups Matching	PRE-LECTURE QUIZ #1 Ch.2 ONLINE HOMEWORK #1 INTRO ONLINE HOMEWORK #2 Ch. 1
	Wed 8/30	Topic: Remembering Resonance Read: Chapter 2.7-2.12	
September			
	Fri 9/1	Topic: Covalent Bonds, Acids, and Bases Read: Chapter 3.1-3.5	
3	Mon 9/4	LABOR DAY!!! NO CLASS	

	Wed 9/6	Topic: Nucleophiles and Electrophiles Read: Chapter 3.5-3.9	PRE-LECTURE QUIZ #2 Ch.3 ONLINE HOMEWORK #3 Ch. 2
	Fri 9/8	Topic: Naming Organic Compounds Read: Chapter 4.1 – 4.5 Activity: Naming organic compounds BRING YOUR MODEL SETS!	
4	Mon 9/11	Topic: Conformations of Alkanes Read: Chapter 4.6-4.8 Activity: Rotation about a Bond BRING YOUR MODEL SETS!	PRE-LECTURE QUIZ #3 Ch.4 ONLINE HOMEWORK #4 Ch. 3
	Wed 9/13	Topic: Cycloalkanes Read: Chapter 4.9-4.12 Activity: Cycloalkanes BRING YOUR MODEL SETS!	
	Fri 9/15	Topic: Substituted Cyclohexanes Read: Chapter 4.12-4.14 Activity: Cyclohexanes BRING YOUR MODEL SETS!	
5	Mon 9/18	Topic: Stereochemistry Read: Chapter 5.1 – 5.3 Activity: What is R & S? BRING YOUR MODEL SETS!	ONLINE HOMEWORK #5 Ch. 4 REVIEW 1 CHEM 151 4pm
	Wed 9/20		EXAM #1
	Fri 9/22	Topic: Diastereomers Read: Chapter 5.3 - 5.6 (5.4 not covered in class) Activity: What! More than one Chiral Center? BRING YOUR MODEL SETS!	Online: Reflection (will open on Canvas after Exam #1)
6	Mon 9/25	Topic: Resolving Enantiomers Read: Chapter 5.8-5.11 (5.10 not covered in class)	PRE-LECTURE QUIZ #4 Ch. 5
	Wed 9/27	Topic: Kinetics and Thermodynamics Read: Chapter 6.1-6.6	

	Fri 9/29	Topic: Mechanisms and Arrow Pushing Read: Chapter 6.7-6.12 (6.11 not covered in class)	
7	Mon 10/2	Topic: Substitution Reactions Read: Chapter 7.1-7.5	PRE-LECTURE QUIZ #5 Ch. 7 ONLINE HOMEWORK #6 Ch. 5
	Wed 10/4	Topic: SN1 vs. SN2 Read: Chapter 7.1-7.5, 7.9	
	Fri 10/6	Topic: Naming Alkenes Read: Chapter 7.6-7.8 Activity: Alkenes	
8	Mon 10/9	Topic: Elimination Reactions Read: Chapter 7.7-7.10	
	Wed 10/11	Topic: E1 vs E2 Read: Chapter 7.10-7.13	
	Fri 10/13	FALL BREAK NO CLASS!	
9	Mon 10/16	Topic: E1 vs E2 Read: Chapter 7.10-7.13 Activity: SN1vsSN2vsE1vsE2	PRE-LECTURE QUIZ #6 Ch. 8 ONLINE HOMEWORK #7 Ch. 7
	Wed 10/18	Topic: Addition Reactions with Alkenes Read: Chapter 8.1-8.3	
	Fri 10/20	Topic: Acid Catalyzed Addition Read: Chapter 8.4-8.5	
10	Mon 10/23	Topic: Hydrogenation/Halogenation Read: Chapter 8.6-8.9 Activity: Predict the Product	REVIEW 2 CHEM 151 4pm

	Wed 10/25		EXAM #2
	Fri 10/27	Topic: Oxidative Cleavage Read: Chapter 8.10-8.14	
11	Mon 10/30	Topic: It Takes Alkynes! Read: Chapter 9.1-9.4 Activity: Alkynes	PRE-LECTURE QUIZ #7 Ch. 9 ONLINE HOMEWORK #8 Ch. 8
	Wed 11/1	Topic: Reactions with Alkynes Read: Chapter 9.5-9.8	
	Fri 11/3	Topic: Tautomerization Read: Chapter 9.9-9.11 Activity: Star Chart	
12	Mon 11/6	Topic: Alkyl Halides Read: Chapter 10.1-10.4,10.8,10.9	PRE-LECTURE QUIZ #8 Ch. 10 ONLINE HOMEWORK #9 Ch. 9
	Wed 11/8	Topic: Radical Reactions Read: Chapter 10.5-10.7,10.10,10.13	
	Fri 11/10	Topic: Radical Polymerization Read: Chapter 10.10-10.12 Activity: Recycling	
13	Mon 11/13	Topic: Alcohols Read: Chapter 12.1-12.3	PRE-LECTURE QUIZ #9 Ch. 12 ONLINE HOMEWORK #10 Ch. 10
	Wed 11/15	Topic: Oxidation and Reduction Reactions Read: Chapter 12.4-12.7	
	Fri 11/17	Topic: Reactions with Alcohols Read: Chapter 12.8-12.13 Activity: Worksheet	
14	Mon 11/20	THANKSGIVING	

	Wed 11/22	THANKSGIVING	
	Fri 11/24	THANKSGIVING	
15	Mon 11/27	Topic: Reactions with Alcohols Read: Chapter 12.8-12.13	ONLINE HOMEWORK #11 Ch. 12 REVIEW 3 CHEM 151 4pm
	Wed 11/29		EXAM #3
	Fri 12/1	Topic: Ethers and Epoxides Read: Chapter 13.1-13.3,13.5,13.6 Activity: Epoxides	
	Mon 12/4	Topic: Stereochemistry of Epoxides Read: Chapter 13.7-13.10 Activity: Epoxides BRING YOUR MODEL SETS	PRE-LECTURE QUIZ #10 Ch. 13
	Wed 12/6	Topic: Synthesis Read: Chapter 11 Activity: Putting it together	ONLINE HOMEWORK #12 Ch.13
	THURS 12/7		FINAL REVIEW 3PM CHEM 151
	Fri 12/8	Topic: Synthesis Read: Chapter 11 Activity: Putting it together	
	THURS 12/14	8am!!!	FINAL EXAM

Important Dates:

Labor Day (Holiday - No Class)	Sept. 4
Last day to withdraw with no grade	Sept. 11
Fall Break (Holiday - No Class)	Oct. 12-13
Student deadline for request to move finals	Oct. 19
Last day to withdraw with a "W"	Nov. 3
Thanksgiving (Holiday - No Class)	Nov. 20-24

Summary of Grades

Description	Points	Your Score	Due Dates
EXAM 1	200		Sept. 20
EXAM 2	200		Oct. 25
EXAM 3	200		Nov. 29
FINAL EXAM	250		Dec. 14
MONDAY QUIZZES	50		
HOMEWORK	100		
Total	1000		

The Technical Stuff ...

ACADEMIC INTEGRITY:

Students are expected to do their own work both on exams and online submitted homework assignments in keeping with the Auburn University Academic Code of Honesty.

ACCOMODATIONS:

If you will be needing Accommodations, please email me and set up an appointment as soon as possible. Please bring your memo and Instructor Verification Form to your appointment. If you do not have these documents and need accommodations, please make an appointment with Office of Accessibility, 1228 Haley Center, 844-2096, and they can assist you.

Do you need extra help?

If so, here are some resources:

Supplemental Instruction – <http://academicsupport.auburn.edu/supplemental-instruction/schedules/>

Study Partners – <http://academicsupport.auburn.edu/study-partners-home/>

A list of graduate students that tutor is available on the Canvas page under Files

Optional REVIEW Sessions:

Review for Exam 1 Monday Sept. 18 (Room #151–4-5:30pm)
Review for Exam 2 Monday Oct. 23 (Room #151 - 4-5:30pm)
Review for Exam 3 Monday Nov. 27 (Room #151 - 4-5:30pm)
Review for Final Thursday Dec. 7 (Room #151–3-4:30pm)