

DEPARTMENT OF CHEMISTRY

Organic Chemistry II (CHEM 2410; CRN 16144; 3 credits) Spring 2020

Instructor: Dr. Joan Mutanyatta-Comar
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Office hours: **MWF: 10:30 am – 12:15 pm.**
Any other time by appointment.

Lecture: MWF 9:30 am – 10:20 am. Classroom South 608

Required Text: 1. “Organic Chemistry: 9th Ed, by John McMurry
Chapters 14-24 will be covered at a rate of approximately one chapter per week.
Purchase from bookstore or online.
ISBN: 978-1-305-63871-6

2. **Preparing for Your ACS Examination in Organic Chemistry:**
The Official Guide, ISBN 0-9708042-1-0
Purchase from GSU bookstore or from GSU Chem club

Optional Text: 1. “Organic Chemistry I & II: A Student Workbook”,
ISBN # 978-0-7575-8271-4, By Keith O. Pascoe

2. Organic Chemistry II as a Second Language, 2nd Ed, by David Klein
ISBN -13 978-0470-12929-6
Purchase online

Prerequisite: Organic Chemistry I (CHEM 2400) with a C or higher.

Communication:

1. Please send emails to me from your GSU e-mail account only.
(e.g., jcole1@student.gsu.edu). Please put the course name in the subject of your email. (**Please do not email me from iCollege**).
2. Please check iCollege daily for class announcements and updates

Course Introduction:

Organic chemistry has great relevance for all students in STEM disciplines. It is important for biologists and health professionals because nearly all of biochemistry involves the organic chemistry you'll learn in this class. For chemical engineers, understanding the properties of organic molecules and how reactions occur is critically important to understanding the processes in an industrial plant. Even if you don't buy the relevance of this class to your field, organic chemistry teaches important problem-solving skills that are directly relevant to all scientists, engineers, and health professionals.

Learning Outcomes: Students in this class will:

- Gain an understanding of how to determine the structure of organic molecules using ^1H and ^{13}C NMR spectroscopy.
- Demonstrate understanding of the properties and reactivity of important functional groups including conjugated π -systems, aromatic compounds, alcohols, phenols, ethers, epoxides, thiols, sulfides, nitriles, amines, and carbonyl compounds.
- Be able to write detailed mechanisms for important reaction classes: electrophilic aromatic substitution reactions and carbonyl nucleophilic additions, substitution and condensation reactions.
- Analyze and plan multi-step syntheses of organic compounds.
- Apply knowledge gained from class to solve problems.
- Demonstrate inquiry skills that will enable them to formulate questions and to develop explanation of organic concepts.
- Demonstrate confidence as independent thinkers and life-long learners.

Grading Scheme:

- **Four in-course exams** will be given during the semester. At the end of the semester, the lowest grade will be dropped. The average score from the remaining three exams will count **65% of your final grade**. You are strongly encouraged to take all four 'in-course' exams. **NO make-up exams will be given. If you miss an exam, that will count as your drop exam.**
- **Eleven online quizzes** will be given during the semester. At the end of the semester, the lowest grade will be dropped. The average score from the remaining ten quizzes will count for **10% of the final grade**. You are strongly encouraged to take all eleven quizzes. **NO make-up quizzes will be given. If you miss a quiz, that will count as your drop quiz.**
- **Eleven homework assignments** will be given during the semester. At the end of the semester, the lowest grade will be dropped. The average score from the remaining ten homework assignment will count for a total of **5% of the final grade**. You are strongly encouraged to take all eleven assignments. **All homework assignments will be due in class. Late homework will be subject to -2 points every 5 minutes starting from 10:20 am. Homework submitted after 11:00 am will not be accepted. NO MAKE-UP ALLOWED.**
- There will be a **final exam (ACS National Exam)** which will count **20%** of the final grade. **The final ACS exam consists of material covered in both organic I & II.**

Tentative Letter Grades:

A+	=	95%
A	=	90%
A-	=	87%
B+	=	84%
B	=	80%
B-	=	77%
C+	=	74%
C	=	70%
C-	=	67%
D	=	60%
F	=	< 60%

Note: CHEM 2410 is a prerequisite for Biochemistry. A grade of "C" or higher in CHEM 2410 is required for registration into Biochemistry (CHEM4600).

Impt. Dates:	Jan.	13 th	Classes begin
	Jan.	20 st	Martin Luther King Jr. Holiday
	Mar.	3 rd	Last day to withdraw with grade "W"
	Mar.	16 th - 22 th	Spring Break
	April	27 th	Last day of class
	May	1 st	Final Exam: Friday, (8:00 am – 9:50 am, 1 hr 50 min.), Classroom South 608

Tentative Teaching Schedule:

Note: This calendar is subject to change with prior notice, at the instructor's discretion

Wk. #	Wk. Of:	M	W	F
01	Jan 13	Lecture	L	L + HW1 Due + Quiz 1
02	20	MLK Holiday	L	L + HW2 Due + Quiz 2
03	27	L	L	L + HW3 Due + Quiz 3
04	Feb 03	L	Exam 1	L
05	10	L	L	L + HW4 Due + Quiz 4
06	17	L	L	L + HW5 Due + Quiz 5
07	24	L	Exam 2	L
08	Mar 02	L	L	L + HW6 Due + Quiz 6
09	09	L	L	L + HW7 Due + Quiz 7
10	16	H	H	H
11	23	L	L	L + HW8 Due + Quiz 8
12	30	L	Exam 3	L
13	Apr 06	L	L	L + HW9 Due + Quiz 9
14	13	L	L	L + HW10 Due + Quiz 10
15	20	L	L	L + HW11 Due + Quiz 11
16	27	Exam 4	NO CLASS	Final Exam

L = Lecture

List of topics taught in CHEM 2410 (John McMurry, 9th edition)

1. Chapter 13: Structure Determination: Nuclear Magnetic Resonance Spectroscopy
2. Chapter 14: Conjugated Compounds, Ultraviolet Spectroscopy
3. Chapter 15: Benzene and Aromaticity
4. Chapter 16: Chemistry of Benzene: Electrophilic Aromatic Substitution
5. Chapter 17: Alcohols and Phenols
6. Chapter 18: Ethers and Epoxides; Thiols and Sulfides
7. Chapter 19: Aldehydes and Ketones: Nucleophilic Addition Reactions
8. Chapter 20: Carboxylic Acids and Nitriles
9. Chapter 21: Carboxylic Acid Derivatives: Nucleophilic Acyl Substitution Reactions
10. Chapter 22: Carbonyl Alpha-Substitution Reactions
11. Chapter 23: Carbonyl Condensation Reactions
12. Chapter 24: Amines and Heterocycles

Note:

- **This semester, we will begin with chapters 18-23, followed by 14-17 then 24. NMR has already been covered in organic I (Fall 2019)**
- **Each exam will contain at least one question on NMR (¹H and ¹³C NMR)**

Notes:

- a) If you miss an exam for any reason that score will be dropped automatically. **NO MAKE-UP EXAMS WILL BE GIVEN.** Students missing an exam will be expected to submit a written note explaining why the exam was missed. A student will not be excused from more than one test for any reason.
- b) **If you have concerns regarding the grade assigned to your exams you must submit your answer sheet for re-grading along with a written explanation of the concern. This submission must be made within one week of the date the exam was returned.**
- c) Students need to show their GSU Panther I.D. card when taking exams.
- d) The instructor reserves the right to assign seating during exams and quizzes.
- e) **Final grades are only available on PAWS/GoSolar. They will not be posted on iCollege. Please note that grades cannot be given to students by phone or email.**

Class Preparation and attendance: Students are **expected** to attend all lectures. As a courtesy to your fellow students, please arrive on time and do not leave during the lecture. Students are solely responsible for the timely completion of all assignments, absence being no excuse. **Suggested reading assignments given during the course of a lecture should be completed before the next lecture.**

Chemistry Departments Student Integrity Policy: The Department of Chemistry follows the University policy on academic honesty published in the “Faculty Affairs Handbook” and the “On Campus: The Undergraduate Co-Curricular Affairs Handbook”. All tests taken must represent the student’s individual, unaided effort. To receive or offer information during any examination will be considered cheating. Any suspected offense may be referred to the Department’s Chairman for appropriate action.

Class will never be cancelled unless an official from the Chemistry Department gives the class personal notification. Don’t assume a note to be enough without checking the Department’s office.

The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or his designee)

1. Give a **WF** to all students who are on their rolls but are no longer taking the class and
2. Report the last day the student attended or turned in an assignment. Students who are withdrawn may petition the Departmental Chair for reinstatement into their classes.

NOTE:

- ✓ Cell phones and laptops are allowed during lectures **BUT NOT** during exams.
- ✓ **Successful students do not allow technology/social media to distract them during class.**
- ✓ **During exams, all cell phones and apple watches must be OFF, must be placed in your bags and the bags must be completely closed/zipped. Persons violating this request will be asked to leave the room and will receive a zero for that exam.**
- ✓ **If you are caught cheating during any exam, you will receive “F” for the course.**
- ✓ **No programmable calculators will be allowed in the classroom.**

Athletes:

You **MUST** bring proper documentation to your instructor, **BEFORE** you leave for a game/tournament to be able to make-up the work for that week. Tournaments are scheduled months in advance so there is no excuse to not have provided proper documentation before the event.

Keys for success in organic chemistry:

Students who do well in organic chemistry possess the following characteristics:

- **Attend class:** There is a very good correlation between class attendance and how well a student will do in this course. Some students may be able to teach themselves from the book, but generally, students who struggle most rarely come to class.
- **Are prepared:** You will get the most out of class if you have read the sections to be covered that day.
- **Ask questions:** If you don't understand something, ask the instructor in class, after class, or during office hours.
- **Keep up:** This course is cumulative and covers a lot of content. You will find it much easier if you study a little bit each week, or even better after each lecture. Study however you find most useful: flashcards, review outlines, practice problems, reaction lists, etc.
- **Practice, Practice, Practice:** Organic chemistry, like any skill, is best learned by doing. The best possible advice is to work as many example problems as you can find. Start with assigned questions from the textbook, followed by ungraded worksheets on iCollege, then ACS study guide, recommended workbook, SI worksheets, but also look for other sources of problems if you need to. When working problems, make sure that you understand why the correct answer is the right one.
- **Learn fundamental concepts:** Organic chemistry is very difficult to learn by rote memorization. If you understand the concepts, you will find it much easier to keep track of the large amount of information, and more importantly be able to apply it on the tests. Again, practice, practice, practice!!!.
- **Get help early if they need it:** If you get behind, it can be very difficult to catch up. If you feel you are falling behind, increase your effort. Go to the FREE STEM Tutoring Center (located in the Sports Arena). Also consider getting outside help. I am happy to work with you during office hours. If you feel you need more extensive help, consider hiring a tutor. I can recommend some excellent tutors but a list of active tutors is also available from the Chemistry Department web page.
- **Collect all returned graded exams, worksheets and quizzes.** They go over the questions they got wrong and ask the instructor for clarification. This way they don't make the same mistake again.
- **Make extensive use of FREE support services:** office hours, SI sessions, STEM Tutoring Center (located in the Sport Arena), Student Support Services (SSS)-STEM (contact: Deidre Steed, dsteed1@gsu.edu, 404-413-1682, in person: 145 sparks Hall).

***Students requiring testing accommodations:** Students who wish to request testing accommodations may do so by registering with the **Access & Accommodations Center (AACE)**. Students may only be accommodated upon issuance by AACE of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which an accommodation is sought.

***A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent for the observance**

of a religious holy day shall be allowed to take an exam or complete an assignment scheduled for that day within a reasonable time after the absence.

***Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take time to fill out the online course evaluation.**

***Deviations from this syllabus may be required.**