

## DEPARTMENT OF CHEMISTRY

### Organic Chemistry II (CHEM 2410; CRN 88015/90006; 3 credits) Fall 2018

**Instructor:** Dr. Joan Mutanyatta-Comar  
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**Office hours:** MWF: 9:40 am – 1:00 pm.  
**Any other time by appointment.**

**Lecture:** MWF 8:00 am – 8:50 am. LS 102  
**Breakout Session:** MWF 9:00 am – 9:20 am. LS 102 (**Group Class Exercises**)

**Required Text: 1. “Organic Chemistry”,** 9<sup>th</sup> Edition, By John McMurry  
Chapters **13-24** will be covered at a rate of approximately **one chapter per week.**  
**Purchase from GSU bookstore or online**

**2. Preparing for Your ACS Examination in Organic Chemistry:  
The Official Guide, ISBN 0-9708042-1-0**  
**Purchase from GSU bookstore or online or CHEM club  
(Langdale Hall, office #832; Tuesdays 10:00 am - 11:00 am)**

**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, second semester  
topics, 4E, by David Klein**  
**ISBN 978-1-119-11065-1**  
**Purchase online**

**Prerequisite:** Organic Chemistry 1 (CHEM2400) with a grade of “C” or higher.

#### **Communication:**

1. Please send emails to me from your GSU e-mail account (e.g., jcole1@student.gsu.edu). Please put the course name in the subject of your email. **(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  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectroscopy.
- Demonstrate understanding of the properties and reactivity of important functional groups including conjugated  $\pi$ -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 **55%** of your final grade. You are strongly encouraged to take all four 'in-course' exams. **NOTE: If you are in the honors organic chemistry II section, your exams will consist of more challenging questions.**
- **Eleven 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.**
- **Homework (individual) + Class Exercises (group work)** will count for a total of **5%** of the final grade.
- There will be a final exam (**ACS National Exam**) which will count **30%** of the final grade. **The final ACS exam will also have several questions from material covered in "Organic 1"**

**Tentative Letter Grades:**

A+	=	>95%
A	=	90%
A-	=	88%
B+	=	84%
B	=	80%
B-	=	78%
C+	=	75%
C	=	69%
C-	=	65%
D	=	61%
F	=	< 54%

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

**Important Dates:**

Aug. 20 <sup>th</sup>	Classes begin
Sept. 3 <sup>rd</sup>	Holiday (Labor Day)
Oct. 9 <sup>th</sup>	Last day to withdraw with grade "W"
Nov. 19-24 <sup>th</sup>	Thanksgiving Break
Dec. 3 <sup>rd</sup>	Last day of class
<b>Dec. 5<sup>th</sup></b>	<b>Final Exam: Wednesday, December 5, 2018 (8:00 am -10:00 am), LS 102</b>

**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	Aug 20	L + CE	L + CE	L + Q
02	27	L + CE + <b>HW1 Due</b>	L + CE	L + Q
03	Sept 03	<b>H</b>	L + CE	L + Q
04	10	L + CE	<b>Exam 1</b>	L + CE
05	17	L + CE	L + CE	L + Q
06	24	L + CE + <b>HW2 Due</b>	L + CE	L + Q
07	Oct 01	L + CE	<b>Exam 2</b>	L + CE
08	08	L + CE	L + CE	L + Q
09	15	L + CE	L + CE	L + Q
10	22	L + CE	<b>Exam 3</b>	L + CE
11	29	L + CE	L + CE	L + Q
12	Nov 05	L + CE + <b>HW 3 Due</b>	L + CE	L + Q
13	12	L + CE	L + CE	L + Q
14	19	<b>H</b>	<b>H</b>	<b>H</b>
15	26	L + CE + <b>HW 4 Due</b>	L + CE	<b>Exam 4</b>
16	Dec 03	L + Q	<b>Final Exam</b>	-

**L** = Lecture    **CE** = Class Exercise    **Q** = Quiz    **HW** = Homework    **H** = Holiday

**Quizzes**

- All quizzes will be taken in class from 9:00 - 9:20 am (10 points each)
- **NO MAKE UP QUIZZES WILL BE GIVEN**
- If you miss a quiz, that will count as your drop quiz

**Homework (Individual work): Total = 65 points**

- Homework 1 (15 points)
- Homework 2 (15 points)
- Homework 3 (15 points)
- Homework 4 (20 points)

**Class Exercises (group work): 9:00 am - 9:20 am**

- 27 group exercises/5 points each: Total = 135 points

**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

**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.

- 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 quizzes or exams.**
- ✓ **Successful students do not allow technology/social media to distract them during class.**
- ✓ **Students are requested to place their cell phones/apple watches in their book bags during quizzes or exams. Persons violating this request will be asked to leave the room. They will receive a grade of zero and will be reported to the Dean of Students for academic dishonesty.**
- ✓ **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 to success in organic chemistry:**

You have all successfully completed Organic Chemistry I (CHEM2400), so you have an idea of what it takes to succeed in Organic Chemistry II (CHEM2410).

**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 (see class notes and learning outcomes on iCollege)
- **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 workshops, questions from the textbook, 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 Chemistry Tutoring Center (STEM tutoring center, 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.** 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, Chemistry Tutoring Center (STEM tutoring center, Sports Arena), Student

Support Services (SSS)-STEM (contact: Deidre Steed, [dsteed1@gsu.edu](mailto:dsteed1@gsu.edu), 404-413-1682, in person: 145 sparks Hall) .

**CHEM 3411 – starts 2<sup>nd</sup> week of classes**

This is a problem solving class to help you with the lecture. The credits count toward your GPA but not towards your degree. Grading is based on your attendance. [Check GoSolar for more details.](#)

**\*Students with Disabilities: Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services 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.**