

C341: Organic Chemistry
Summer Session 2017

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Lecture:
8:05-9:10 AM, MTWRF
Discussion:
9:20-10:10 AM MW or
9:20-10:10 AM TR

Website: <http://courses.chem.indiana.edu/c341/default.asp>
Grades will be posted on Canvas.

Course Description:

Organic chemistry is the study of the structure and reactivity of carbon-containing compounds. Throughout the semester, we will discuss the physical properties and chemical transformations of organic compounds. Of primary emphasis will be the development of a systematic rationale for these properties and transformations.

Specific goals include:

1. Understanding the nature and behavior of chemical bonds
2. Learning the mechanisms for some of the common reaction types
3. Exploring the basic reactivity of some major functional groups

Because these topics are all built upon a foundation of key topics, the first lectures of the course will be dedicated to the fundamental principles of molecular structure. A mastery level of understanding of these topics is expected.

Text Materials:

Required: Organic Chemistry 7ed by Vollhardt and Schore with solutions manual

Suggested: "Organic Chemistry Models" molecular modeling kit (You may find it helpful to share a kit.); Klein, David R. "Organic Chemistry as a Second Language 2nd ed." ISBN978-0-470-12929-6

Instructor Office Hours: Just show up: 11:30-12:30 MTWR in Chemistry A206
 By appointment: 9:30-10:30 WRF in Chemistry A206

Class Organization:

In this three-credit course, there will be classroom lecture daily and discussion sections MW or TR. Attendance is required in both lecture and discussion.

Associate Instructors: Please take advantage of their help during discussion sections and other times. Their office hours will be announced in class.

| Discussion | AI | Email | Office Hour |
|-----------------|--------------|--|--------------------------------|
| MW 9:20AM BH304 | Arati Iyer | aviyer@iu.edu | MW 10:20-11AM in Chemistry 046 |
| TR 9:20AM BH304 | Levin Taylor | levtaylo@indiana.edu | TR 10:20-11AM in Chemistry 046 |

Grading:

| | |
|---------------------|---------------|
| Discussion quizzes: | 100 pts |
| Exams: | 300pts |
| Final Exam: | <u>200pts</u> |
| Total | 600 pts |

Anticipated grading scale: A = above 90%, B = 80-89.9%, C = 65-79.9%, D = 50-64.9%, F=below 50%. Plus/minus grades will be awarded.

Quizzes: Twelve 10-point quizzes will be given at the beginning of discussion section. The quizzes will be based on the material covered in the Discussion Worksheet from the previous discussion. The lowest two quiz grades will be dropped to give a final total of 100 points possible. There will be no makeup quizzes. If a discussion is missed when a quiz is given, it can count as a dropped quiz score.

Exams: Three midterm exams, each worth 100 points, will be given from 8:30AM-10:30AM on June 16, June 30, and July 14 in Chemistry 122. The two hour time slot is designed so that you will not need to rush through the exam. Because organic chemistry is a subject that builds upon previously learned material, all exams will be cumulative, but will focus on the material covered since the previous exam. No makeup exams will be given; if a valid excuse is given for missing an exam, the percentage grade on the final will be substituted for the missed exam grade. Please talk to the instructor one week ahead of an exam if there is a known conflict with one of the exams.

Final Exam: The final exam will be cumulative and worth two midterm exams. The final will be given from 8:00 AM- 11:00AM, July 28, in Chemistry 122. If you have a class conflict during that time, you must contact the instructor at least one full week prior to the final.

Academic Honesty:

The determination of academic misconduct is at the discretion of the instructor. The sanctions may range from deduction of points to a failing grade for the class. In all cases, the infraction will be immediately reported to the Dean of Students as well as the dean or director of the student's school. Please read the *Code of Student Rights, Responsibilities, and Conduct* for further detail.

Homework: Working out problems is the only way to be successful in Organic chemistry. To help in your studying, I have broken out the problems into three sets in the schedule at the end of the syllabus. Daily Homework is intended to be a small subset of problems that cover the main ideas, but not sufficient to do well in the class. Consider them the minimum that you should do every day to keep up in the class. Even if you get behind a little bit, never miss doing these problems. Additional problems are the rest of the homework problems from the book. It is necessary that you do most or all of them so that you have enough practice to be able to do typical exam-level questions. Discussion worksheets cover the most recent concepts from class and allow you to see the process of working out problems with your AI during discussion section. Complete any of these problems not done during discussion section.

My suggested plan for approaching C341 in the summer: Because summer session goes by so quickly and there is so much to do in C341, you should maximize the results you get for the amount of effort you put in. You can use the same amount of time in different ways and be more or less effective. If you avoid procrastination, you will do much better in the class!!! Here is how I would do it if I were you.

1. **Before class**, at minimum, I would read the section of the text to be discussed and (ideally) complete a number of the in-text problems. For instance, before class on June 8, I would read/skim section 2.1-2.3 in the text and attempt problem 2.11, 2.13, 2.28, and 2.29 listed in the Daily Homework.
2. **During class**, because I have already become familiar with the topics and types of questions, I would take notes, writing more details concerning any of problems/topics that I did not understand.
3. **AS SOON AS POSSIBLE after class** (while things are still fresh), I would do the additional homework problems. If I didn't understand, I would write down questions to be answered in discussion section and/or office hours.
4. **Before discussion section** I would study the previous discussion material for the quiz and read through the discussion handout to be covered that day.

Tips for maximum success:

- **You need to attend all classes and discussions.**
- Practice, practice, practice. Organic chemistry requires drawing many structures, so you must write out every homework problem. **Do not simply look at problems and think that you know how to do them.**
- Develop and use your own study aids, such as flashcards and study guides.
- Be persistent in asking questions. Take advantage of discussion sections. Come to office hours as soon as you are having problems.
- Form study groups. Many different skill sets are needed to comprehend the material, including visual/spacial reasoning, logic, abstract reasoning, memorization, organization, and drawing. Few individual students have strengths in all of these areas, but a group of students probably will. At the beginning of the semester, form a 3-4 person study group to meet weekly to review homework and major topics.
- Don't get behind! One day behind puts you two days behind because you won't understand the next day because you missed the previous.

I want to see you succeed! My personal goal is to see every individual student succeed to the level he or she is willing to work. Please feel free to talk with me any time you want—keep me up to date with how you are doing.

Tentative Schedule: This schedule may be changed by the instructor to better meet the needs of the class. See the web for current daily problems.

| Date | Chapter/Topics | # | Daily homework |
|---------|--------------------------------------|----|--------------------------------|
| June 5 | 1.1-1.4, 1.9 Lewis Dot | 1 | Ch 1: 25, 28, 41, 43 |
| June 6 | 1.5 Resonance | 2 | Ch 1: 29, 32, 45, 46 |
| June 7 | 1.6-1.8 Orbital structure | 3 | Ch 1: 35, 36, 37, 38, 57 |
| June 8 | 2.1-2.3 Acid-base | 4 | Ch 2: 11, 13, 28, 29 |
| June 9 | 2.3 Acid-base | 5 | Will be updated on the website |
| June 12 | 2.4-2.7 Nomenclature | 6 | |
| June 13 | 2.8-2.9 Conformation | 7 | |
| June 14 | 3.1-3.6 Radical chain mechanism | 8 | |
| June 15 | 3.7-3.9 Radicals in synthesis | 9 | |
| June 16 | Exam 1: Chapters 1-3 | | |
| June 19 | 4.1-4.4 Cyclohexane conformation | 10 | |
| June 20 | 5.1-5.4 Chirality and enantiomers | 11 | |
| June 21 | 5.5-5.7 Diastereomers | 12 | |
| June 22 | 6.1-6.6 Sn2 mechanism | 13 | |
| June 23 | 6.7-6.11 Sn2 reactivity principles | 14 | |
| June 26 | 7.1-7.5 Sn1 mechanism | 15 | |
| June 27 | 7.6-7.7 E1 and E2 mechanisms | 16 | |
| June 28 | 7.7 E2 mechanism | 17 | |
| June 29 | 7.8-7.9 Substitution and elimination | 18 | |
| June 30 | Exam 2: Chapters 4-7.7 | | |
| July 3 | No Class | | |
| July 4 | No Class | | |
| July 5 | 8.1-8.6 Redox of alcohols | 19 | |
| July 6 | 8.7-8.8 Grignard reaction | 20 | |
| July 7 | 8.9 Synthesis of alcohols | 21 | |
| July 10 | 9.1-9.4 Acid/base of alcohols | 22 | |
| July 11 | 9.5-9.8 Ethers | 23 | |
| July 12 | 9.9-9.10 Epoxides | 24 | |
| July 13 | Review: Reactions of alcohols | 25 | |
| July 14 | Exam 3: Chapters | | |
| July 17 | 11.1-11.7 Alkene structure | 26 | |
| July 18 | 12.1-12.4 E+ Addition mechanism | 27 | |
| July 19 | 12.5-12.8 Reactions of alkenes | 28 | |
| July 20 | 12.9-12.11 Reactions of alkenes | 29 | |
| July 21 | 12.12-12.15 Reactions of alkenes | 30 | |
| July 24 | 13.1-13.5 Alkynes in synthesis | 31 | |
| July 25 | 13.6-13.8 Addition to alkynes | 32 | |
| July 26 | 13.9 Alkenyl halides and synthesis | 33 | |
| July 27 | Review | 34 | |
| July 28 | Final Exam (comprehensive) | | |

Discussion Worksheet and Quiz Schedule:

| Date | Discussion Worksheet | Quiz over Discussion Worksheets: |
|---------|-------------------------------------|----------------------------------|
| June 5 | Discussion Sheet 1 | |
| June 6 | | |
| June 7 | Discussion Sheet 2 | Quiz 1 |
| June 8 | | Quiz 1 |
| June 9 | | |
| June 12 | Discussion Sheet 3 | Quiz 2 |
| June 13 | | Quiz 2 |
| June 14 | Review 1 | Quiz 3 |
| June 15 | | Quiz 3 |
| June 16 | Exam 1 | |
| June 19 | Discussion Sheet 4 | |
| June 20 | | |
| June 21 | Discussion Sheet 5 | Quiz 4 |
| June 22 | | Quiz 4 |
| June 23 | | |
| June 26 | Discussion Sheet 6 | Quiz 5 |
| June 27 | | Quiz 5 |
| June 28 | Review 2 | Quiz 6 |
| June 29 | | Quiz 6 |
| June 30 | Exam 2 | |
| July 3 | No Discussion Discussion Sheet 7 | |
| July 4 | | |
| July 5 | Discussion Sheet 8 | |
| July 6 | | |
| July 7 | | |
| July 10 | Discussion Sheet 9 | Quiz 7, Quiz 8 |
| July 11 | | Quiz 7, Quiz 8 |
| July 12 | Review 3 | Quiz 9 |
| July 13 | | Quiz 9 |
| July 14 | Exam 3 | |
| July 17 | Discussion Sheet 10 | |
| July 18 | | |
| July 19 | Discussion Sheet 11 | Quiz 10 |
| July 20 | | Quiz 10 |
| July 21 | | |
| July 24 | Discussion Sheet 12 | Quiz 11 |
| July 25 | | Quiz 11 |
| July 26 | Review 4 | Quiz 12 |
| July 27 | | Quiz 12 |
| July 28 | Final Exam | |