CHEMISTRY 343, Fall 2019

1:20-2:10 PM, MWF, Room 204 Educational Sciences

Professor: Sam Gellman

Office: 7132 Chemistry Building

E-mail: gellman@chem.wisc.edu

Open Office: 2:15-3:15 PM Wednesdays and 2:15-3:00 Fridays (or by appointment)

Review session led by Prof. Gellman (optional): 5:30 PM Thursdays, location = Room 1315 Chemistry, unless otherwise announced. First session = Thurs 12 Sept

I. TEXT

"Organic Chemistry," 6th edition, Loudon
(Strongly recommended: study guide and molecular models)

II. EXAMS

A. Three exams *during lecture time* (locations TBA) (100 pts each)

Wednesday 2 October
Monday 28 October
Wednesday 4 December

(Note: **There will be no make-up exams**.)

B. Final exam (cumulative; 200 pts)
Monday 16 December 2:45 PM, location TBA

III. GRADING

Course grades will be assigned on the basis of 550 points, using a curve that leads to a distribution similar to those of recent Chemistry 343 sections. In addition to 500 points from exams (as indicated above), students can earn up to 50 points from attending and participating in assigned Discussion Sections.

IV. PROBLEMS

Students should do all problems recommended from the text (recommendations are provided during lectures). Written answers will not be collected or graded, but problems can be discussed at the discussion sessions or during office hours.

The only way a student can master the course material is by carefully working all recommended problems, and then carefully evaluating his or her written answers via comparison with the answers in the study guide/solutions manual. This process will reveal which parts of the material have been mastered, and which require further study. Passive studying, such as attending lecture, reviewing course notes and reading the textbook, is crucial in terms of laying a knowledge foundation, but only by working problems and checking answers does a student understand how to make use of the knowledge, and whether mastery has been achieved. Learning how to learn from one's own mistakes is a critical skill that can be acquired or refined in this course. (Note: Problem numbering differs between the 5th and 6th editions of the textbook; there are other differences as well.)

V. DISCUSSION SESSIONS LED BY TEACHING ASSISTANTS

TA-led sessions are mandatory. Teaching assistants will review course material and answer questions. There will be occasional quizzes. Grading will be explained by the TA (50 pts).

CHEMISTRY 343

Professor Gellman; **1:20-2:10 M W F**; **Fall 2019**

TENTATIVE Schedule (based on textbook chapters)

4 September	Chap. 1	25 October	
6 September		28 October - EXAM #2	
9 September		30 October	Chap. 8
11 September	Chap. 2	1 November	
13 September		4 November	Chap. 9
16 September	Chap. 3	6 November	
18 September		8 November	
20 September	Chap. 4	11 November	
23 September		13 November	
25 September		15 November	Chap. 10
27 September		18 November	
30 September		20 November	Chap. 11
2 October - EXAM #1		22 November	
4 October	Chap. 5	25 November	
7 October		27 November	Chap. 14
9 October		29 November - THANKSGIVING RECESS	
11 October		2 December	
14 October	Chap. 6	4 December - EXAM #3	
16 October		6 December	Chap. 15
18 October	Chap. 7	9 December	
21 October		11 December	
23 October			

RECOMMENDED STUDY HABITS (Chem. 343, Gellman)

1. **Study regularly and often (every day, if possible).** This course covers a large amount of material, and many of the concepts are challenging. Success is most likely for students who are methodical in their study habits; "cramming" before exams is usually ineffective. Most students find that the material becomes more difficult toward the end of the semester, so one should not become complacent if the early material comes easily (this trend continues in Chemistry 345).

2. **Take notes during lectures, and recopy those notes within 24 hours.** Many important points slip by before you can record them during the class, but this information remains in your short-term memory. Recopying gives you the opportunity to retrieve this information, and the process cements your grasp of the points made in the lecture.

3. **Read the appropriate parts of the textbook before the lecture.** Prior familiarity will enhance your understanding of the topics covered. There is not time for all important material to be presented in lecture, and some key points will be left for the text to explain.

4. **Write out the answers to problems from the text before you look at the printed solutions.** It is easy to look at a problem, think for a moment, look at the printed solution, and then tell yourself, "oh yes, I knew that." This is the path to disaster. Doing your best to solve the recommended problems, and then carefully checking your work against the answer key, is crucial for success.

The only way to master organic chemistry is by working problems. Reviewing lecture notes and the text will make the material familiar, but such familiarity does not guarantee the intellectual mastery that is required to solve new problems (e.g., on exams). The only way to know whether you can truly solve the recommended problems is by carefully checking your written answers against the solutions manual. When you recognize that you have answered a question erroneously, you should try to figure out what misconception or gap in understanding has been revealed by the error, and remedy that conceptual problem. This process takes time; there is no shortcut to the understanding that is our goal in this course. A student who cannot do the recommended problems in the textbook correctly is likely to have difficulties on exams.

5. **Make use of sample exams (from previous years)**, which will be available on the course web site. Try these exams before looking at the keys. Answer keys to this year's exams will be posted when the graded exams are returned.

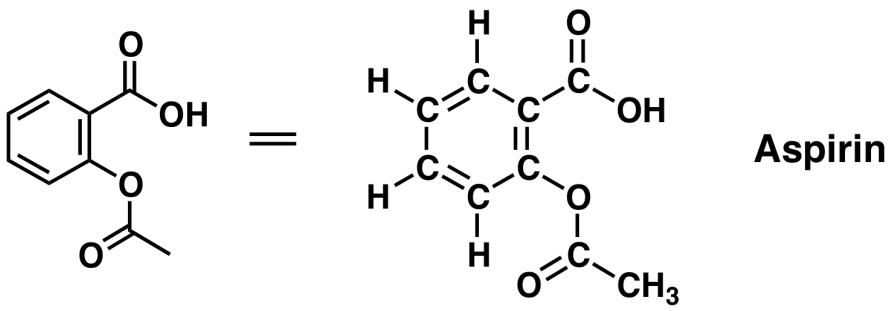
6. **Use molecular models regularly, especially early in the course.** This subject requires an ability to think in three dimensions. The drawings we use to describe organic molecules are two-dimensional, and students must be able to translate those flat images into three dimensions in their minds. You will learn to make this translation by working with models.

7. **General Perspective.** Each student should be mindful of two main goals in this course: (1) to develop a solid grasp of organic chemistry, and (2) to learn how to master a challenging intellectual discipline that requires both understanding of a complex conceptual framework and memorization of specific facts. Intrinsic interest in organic chemistry varies widely among students, but every student should be attracted to the second goal. If you can master organic chemistry, then you will have developed learning strategies applicable to many other subjects. Use this course to hone your learning skills; the strategies that work best for you may differ from those that work for others.

(*Note: It would be useful to review these recommendations periodically*.)

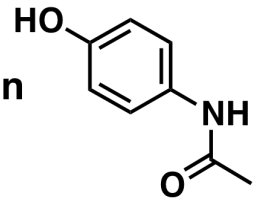
Why should I care about organic chemistry?

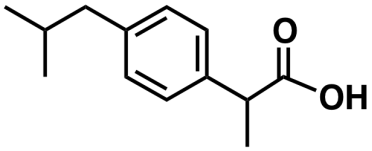
Chem 343
Prof. Gellman



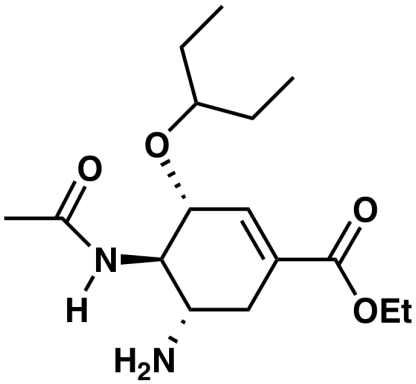
Aspirin

Acetaminophen

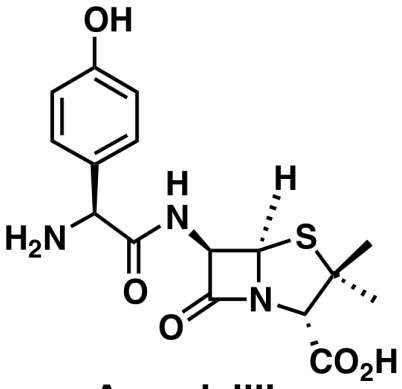




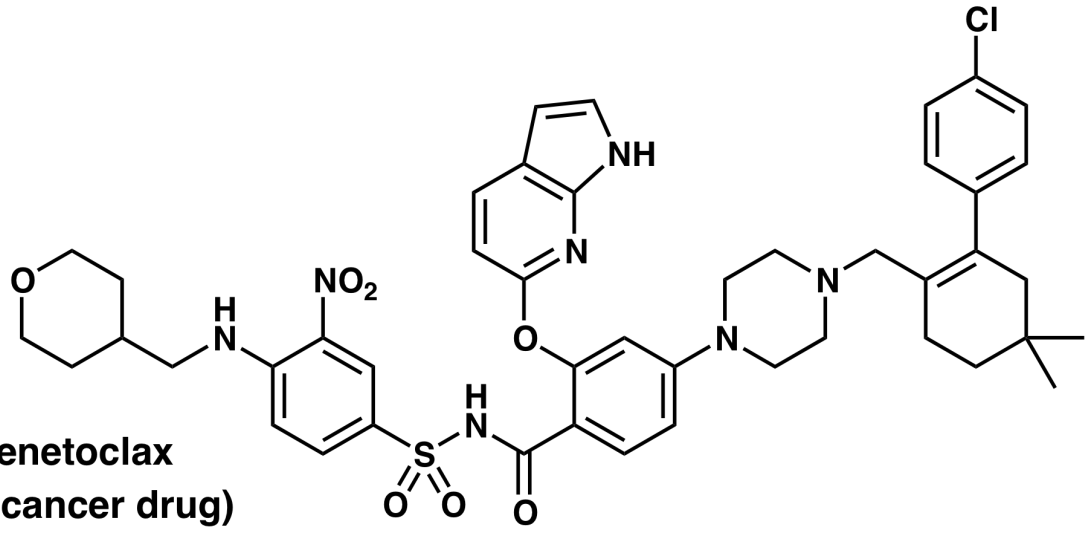
Ibuprofen



Tamiflu (antiviral)



Amoxicillin
(a synthetic penicillin)



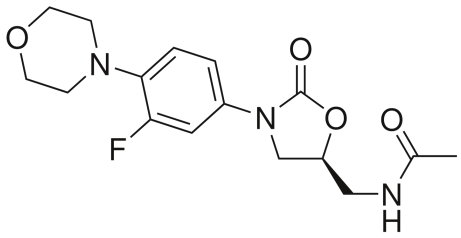
Venetoclax
(anticancer drug)

Scientists Discover New Cure for the Deadliest Strain of Tuberculosis

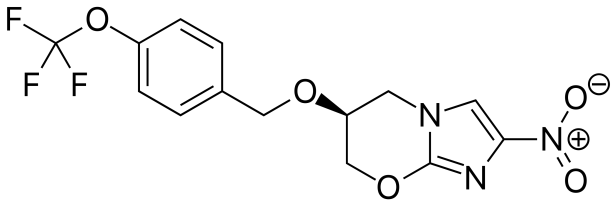
Once, a diagnosis of extensively drug-resistant TB meant quick death. A three-drug regimen cures most patients in just months.

New York Times 14 August 2019

Linezolid (https://en.wikipedia.org/wiki/Linezolid):



Pretomanid (https://en.wikipedia.org/wiki/Pretomanid):



Bedaquiline (https://en.wikipedia.org/wiki/Bedaquiline):