

SYLLABUS
CHEMISTRY 345, INTERMEDIATE ORGANIC CHEMISTRY, SPRING 2015
LECTURE SECTION 2 (BURKE)

This course will be taught as a mix of traditional lecture, Socratic inquiry, and problem solving formats. Unifying concepts of organic chemistry and deductive reasoning skills applicable to problem solving will be pursued. **Understanding and mastery (how and why) will be emphasized; this course is best approached not as an exercise in memorization of facts, but an exploration of unifying themes and development of problem solving skills. The facts become more meaningful and easier to remember this way.**

Lecture: 9:55-10:45 am, MWF, room 1351 Chemistry Bldg.

Instructors: Professor Steve Burke (replacing Prof. Eric Strieter, on leave), Office: room 8132 Shain Tower, Chemistry; phone 262-4941; email: burke@chem.wisc.edu

TA, Spencer Scholz: soscholz@wisc.edu

TA, Nicholas Dolan: nsdolan@wisc.edu

TA, Alicia Phelps: amphelps@wisc.edu

TA, Julie Alderson: jalderson@wisc.edu

Discussions: DISC 425, Fri. 11:00 am, Room B379 (Scholz); DISC 431, Fri. 11:00 am, Room B357 (Alderson); DISC 421, Fri., 12:05 pm, Room B351 (Dolan); DISC 426, Fri., 12:05 pm, Room B379 (Scholz); DISC 432, Fri. 12:05 pm, Room 2377 (Alderson); DISC 433, Fri. 12:05 pm, Room 2381 (Phelps); DISC 422, Fri. 1:20 pm, Room B351 (Dolan); DISC 429, Fri. 1:20 pm, Room B355 (Alderson); DISC 434, Fri. 1:20 pm, Room 2381 (Phelps); DISC 427, Fri. 2:25 pm, Room B379 (Dolan); DISC 430, Fri 2:25 pm, Room B355 (Phelps); DISC 423, Fri 3:30 pm, Room B351 (Dolan); DISC 428, Fri, 3:30 pm, Room B379 (Phelps); DISC 424, Fri. 4:35 pm, Room B351 (Scholz).

Optional Weekly Problem Sessions (Burke): Tuesdays, 5:30-7:00, Room B371? Much better than individual office appointments.

Office Hours: (Burke), by appointment, Room 8132.

TA Office Hours: All in Room B317 ; Alicia Phelps 8:50-9:55 MW; Julie Alderson 1:20-3:30 M, 2:25-3:30 T; Nick Dolan 9:55-11:00 TR; Spencer Scholz 11:00-12:05 W, 2:25-4:35 F

Web Materials: All handouts, notes, practice exams, exams, keys etc. will be posted on Learn@UW

Library Reserve: Textbook, Study Guide, and alternate texts on reserve in Chemistry Library, Room 2361.

Required Course Materials:

Text: "Organic Chemistry, 5th Edition," by Marc Loudon, ISBN 9780981519432

Study Guide: "Study Guide and Solutions Manual to Accompany Organic Chemistry, 5th Edition," by Loudon and Stowell (accompanies Loudon text), ISBN 9780981519449

Molecular Models: HGS "C" Set, Darling, Proteus Framework, or equivalent. [On sale in Chem. Bldg. Lobby by 1351 during first two weeks of class.] MODELS ARE ALLOWED (and sometimes needed) IN EXAMS.

Exam Schedule (1 h 45 min evening exams):

Exam 1, Wednesday, February 18, 7:30-9:15 pm (room 1351 and 1361)

Exam 2, Monday, March 23, 7:30-9:15 pm (room 1351 and Noland room 132)

Exam 3, Wednesday, April 29, 7:30-9:15 pm (room 1351 and 1361)

Final Exam, Friday, May 15, 2:45-4:45 pm (room to be announced)

Grading: 10% Discussion evaluation (quizzes, best 5 of 6)

10% Sapling on-line problem sets (help you understand and master material and skills) **SEE PAGE 3 OF SYLLABUS**

60% Exams

20% Final (cumulative)

Re-grading: Unfairly graded or wrongly totaled exams can be turned in for re-grading by identifying on the exam cover in a few words why a re-grade is justified (e.g. See #2 because---). These will be carefully considered, **but not negotiated at front of classroom.**

LECTURE AND EXAM SCHEDULE

1/21, 1/23, 1/26, 1/28, 1/30, 2/2: Chapters 12 and 13, Introduction to Spectroscopy and NMR Spectroscopy

2/4, 2/6, 2/9: Chapter 16, Chemistry of Benzene and Derivatives

2/11, 2/13: Chapter 17, Allylic and Benzylic Reactivity

2/16 : Begin Chapter 18, Chemistry of Aryl and Vinylic Halides, Phenols, and Transition Metal Catalysis

WEDNESDAY 2/18: EXAM I

2/20: Return and go Over Exam I

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2/23, 2/25: Finish Chapter 18, Chemistry of Aryl and Vinylic Halides, Phenols, and Transition Metal Catalysis

2/27, 3/2, 3/4: Chapter 19, Aldehyde and Ketone Carbonyl Addition Reactions

3/6, 3/9, 3/11, 3/13, 3/16: Chapters 20 and 21, Chemistry of Carboxylic Acids and Derivatives

3/18, 3/20: Begin Chapter 22, Chemistry of Enolates, Enols, and α,β -Unsaturated Carbonyls

MONDAY 3/23: EXAM II

3/25: Return and go over exam II

3/27: Finish Chapter 22, Chemistry of Enolates, Enols, and α,β -Unsaturated Carbonyls

3/30, 4/1, 4/3: Spring Break

4/6, 4/8/ 4/10: Chapter 23, Chemistry of Amines

4/13, 4/15: Chapter 24, Carbohydrates

4/17, 4/20: Chapter 25, Aromatic Heterocycles

4/22, 4/24/ 4/27: Chapter 26, Amino Acids, Peptides, and Proteins

WEDNESDAY 4/29: EXAM III

5/1: Return and go Over Exam III

5/4, 5/6, 5/8: Chapter 27, Pericyclic Reactions

FRIDAY 5/15: FINAL EXAM, 2:45-4:45 pm

KEYS TO SUCCESS

- Keep up with reading and problem working. Don't let things slide. Study organic chemistry every day.
- Study text intently--it is your primary source of factual information (it is your map on this journey, Burke is your guide).
- **Practice, Practice, Practice**--working problems develops and tests your knowledge.
- Make a stack of note cards as we go through the semester. You can study them in the many short periods of time each day that might otherwise be wasted.
- Form study groups, and participate. Rarely is everyone in a group stumped, whereas individuals often are.
- Most of your learning needs to occur outside of class—developing your problem solving (O-Chem test taking) skills requires **practice**.

READING ASSIGNMENTS and RECOMMENDED END OF CHAPTER PROBLEMS [Do all of problems in chapter body as you read assigned sections, to test your understanding before going further]

Chapter 12 Reading: 12.1-12.5, 12.6A-B, skim 12.6C-E. **Recommended problems:** 24, 25, 26, 27, 28, 33, 34, 35

Chapter 13 Reading: Whole chapter. **Recommended problems:** 35, 36, 38, 39, 40, 41, 42, 43, 44, 45, 48, 50, 51, 52, 54, 55

Chapter 16 Reading: 16.1-16.6. You can skim 16.2. On p. 671, eq 16.26 has a typo -- the first structure is missing an O at the end of the double bond. **Recommended problems:** 32-34, 36-38, 40, 41, 42, 43, 45, 51, 52, 56, 59, 61, 65

**In general or if you took 343 Honors, please read Section 15.7 on aromatic compounds. You will need to understand the concept of aromaticity before you can tackle Chapter 16.

Chapter 17 Reading: Whole chapter. **Recommended Problems:** 18, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 40, 41, 45

Chapter 18 Reading: Whole chapter. **Recommended Problems:** 44, 45, 47, 48, 49, 50, 51, 53, 54, 55, 59, 62, 64, 65, 69, 71, 73, 76, 77, 85

Chapter 19 Reading: Whole chapter. ****The next four chapters build on the concepts introduced here; this is a really key chapter to master before we move on.** **Recommended Problems:** 38, 39, 40, 41, 42, 43, 44, 45, 47, 48, 49a-m, 50*, 51, 52, 53, 59, 60

Chapter 20 Reading: Whole chapter. **Recommended Problems:** 25, 26, 27, 29, 30, 31, 32, 36, 37, 38, 41, 45, 47, 49, 51

Chapter 21 Reading: 21.1-21.2, 21.4-21.11. **Recommended Problems:** 31, 32, 33, 34, 37, 39, 40, 43, 46, 47, 51, 52, 55, 56, 57, 60

Chapter 22 Reading: 22.1-22.5, 22.7-22.11 (skip fatty acid biosynthesis). **Recommended Problems:** 50, 51, 54, 57, 59, 62, 63, 65, 66, 69, 70, 71, 75, 77, 80, 81, 83b, 84, 89

Chapter 23 Reading: 23.1-23.5, 23.7-23.10, 23.11A,B,D,E, 23.12. (skip 23.6 and 23.11C). **Recommended Problems:** 38, 39, 40, 44, 46, 47, 49, 50, 53, 55, 59, 60, 62, 64, 65, 68, 69, 72, 73, 74

Chapter 24 Reading: 24.1-24.6, 24.9-24.10. **Recommended Problems:** 33, 38, 42, 43, 46, 50, 57, 59

Chapter 25 Reading: 25.1-25.4. **Recommended Problems:** 25, 27, 30, 32, 34, 38, 47

Chapter 26 Reading: 26.1-26.5, 26.10. **Recommended Problems:** 37, 38, 42, 47, 54, 65, 66, 71

Chapter 27 Reading: Whole chapter. **Recommended Problems:** 29, 30, 31, 33, 34, 35, 38, 41, 42, 44, 46, 49

Sapling Learning - Organic Chemistry Question Sets

Sapling's chemistry questions are delivered in a web browser to provide real-time grading, response-specific coaching, improvement of problem-solving skills, and detailed answer explanations. Dynamic answer modules enable one to interact with 3D models and figures, utilize drag-and-drop synthetic routes, and draw chemical structures - including stereochemistry and curved arrows. Altogether, Sapling is cheaper (for you, free!!) than a tutor, provides more value than a solutions manual, and goes beyond a mere assessment exercise to give a learning experience.

Students:

1. Go to <http://saplinglearning.com> and click on your country ("US Higher Ed" or "Canada") at the top right.

2a. If you already have a Sapling Learning account, log in and skip to step 3.

2b. If you have a Facebook account, you can use it to quickly create a Sapling Learning account. Click "Create an Account", then "Create my account through Facebook". You will be prompted to log into Facebook if you aren't already. Choose a username and password, then click "Link Account". You can then skip to step 3.

2c. Otherwise, click "create account". Supply the requested information and click "Create my new account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.

3. Find your course in the list (you may need to expand the subject and term categories) and click the link.

4. Use the following access code to access the Sapling Learning site: chem345burke

5. Work on the Sapling Learning training materials. The activities, videos, and information pages will familiarize you with the Sapling Learning user environment and serve as tutorials for efficiently drawing molecules, stereochemistry, etc. within the Sapling Learning answer modules. These training materials are already accessible in your Sapling Learning course.

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up - and throughout the term - if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than your instructor.

To optimize your Sapling Learning experience, please keep your internet browser and Flash player up to date and minimize the use of RAM-intensive programs/websites while using Sapling Learning.