

## SYLLABUS

### CHEMISTRY 343-4, INTRODUCTORY ORGANIC CHEMISTRY, FALL 2014 HONORS and MAJORS, LECTURE SECTION 4 (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 will be developed and applied to problem solving. **Understanding and mastery (how and why) will be emphasized: this course is best approached NOT as an exercise in memorization of facts, but as an exploration of unifying themes and development of problem solving skills. The facts become more meaningful and easier to remember this way.**

**Time:** 9:55-10:45am, MWF, room 1315 Chemistry Bldg.

**Instructors:** Professor *Steve Burke*, Room 8132; phone 262-4941; e-mail: [burke@chem.wisc.edu](mailto:burke@chem.wisc.edu)

TA *Andrew Maza* ([amaza@chem.wisc.edu](mailto:amaza@chem.wisc.edu))

**Discussions:** DISC 361, Mon., 4:35-5:25 pm, Room 2373

DISC 362, Tue., 1:20-2:10 pm, Room 2311

DISC 363, Tue., 4:35-5:25 pm, Room 2311

Extra Weekly Problem Sessions by Prof. Burke: Wednesdays, 5:30-7:00 pm, Room 2373, starting Wed. 9/10

\*\*\*\*\*On-line Problem, Review, Practice Source being established\*\*\*\*\*

**Office Hours:** (Steve Burke), by appointment, Room 8132, Shain Tower.

**TA Office Hours:** (Andrew Maza). Mon 11:00-11:50 and Tue 11:00-11:50, Room B317.

**Web Materials:** All handouts, notes, old 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 1<sup>st</sup> two weeks of classes, Chemistry lobby, Mills and University for \$16 or \$30] **MODELS ARE ALLOWED IN EXAMS.**

**Exam Schedule:** Exam 1, Wednesday, October 1, 7:30-9:15 pm (*room 1315*)

Exam 2, Wednesday, November 5, 7:30-9:15 pm (*room 1315*)

Exam 3, Wednesday, December 10, 7:30-9:15 pm (*room 1315*)

Final Exam, Monday, December 15, 10:05 am-12:05 pm (*room to be announced*)

**Grading:** On-line Problem Sets: 10% (50 points, timely completion of assignments)

Discussion Quizzes: 10% (50 points, 5 quizzes throughout semester)

Exams: 60% (3 exams worth 100 pts each; there will be some bonus points available)

Final: 20% (cumulative, 100 points)

Grade determined by total points,  $x/500$

**Re-grading:** Unfairly graded or wrongly totaled exams can be turned in for re-grading by stating in a few words on the exam cover why a problem re-grade is justified. These will be carefully considered, **but will not be negotiated at the front of the classroom.**

Class grade is on total points (e.g.  $x/500$ ) and is not on curve (*not* 10%A, 20%AB and B, 40%C, etc.; rather  $>80\% = A$ , even if everyone did (unlikely)—***see previous grade distributions at end of this syllabus***

**Problem Assignments:** (1) Use the problems within the text of each chapter to guide your study. (2) Use the following problems at the end of each chapter to test your knowledge, hone your skills, and prepare for exams. Additional problem sets and **practice exams** will also be provided. *Exam problems will resemble those on old practice exams. Working problems is VITALLY important: exam performance relates directly Problems at end of chapters in Loudon for practice (not turned in or graded) These are more like exam problems than on-line practice problems. Actual practice exams and key will be posted on Learn@UW site.*

Chapter 1: 24, 25, 27, 31, 33, 34, 42, 45, 46  
Chapter 2: 26, 27, 28, 29, 30, 31, 34, 36, 39, 43, 45, 46, 47, 48  
Chapter 3: 25, 26, 27, 29, 31, 32, 33, 40, 43, 44, 48  
Chapter 12: 25, 28, 33, 34, 39  
Chapter 13: 35, 36, 38, 39, 42, 43, 44, 50, 53, 54, 55  
Chapter 4: 39, 40, 43, 46, 48, 49, 51, 53, 54, 55, 57, 61, 63, 66  
Chapter 5: 27, 29, 30, 32, 34, 37, 38, 41, 43, 46, 48, 50, 52  
Chapter 6: 27, 29, 30, 32, 33, 36, 37, 38, 41, 42, 45, 46, 48, 51  
Chapter 7: 32, 34, 36, 37, 40, 42, 43, 45, 47, 49, 53, 57, 58, 61, 63, 65  
Chapter 8: 33, 35, 36, 38, 39, 40, 41, 42, 44, 49, 53, 55, 57, 59, 61, 62  
Chapter 9: 34, 35, 36, 37, 39, 40, 42, 46, 47, 49, 52, 53, 55, 58, 61, 62, 63, 65, 69  
Chapter 10: 35, 36, 37, 43, 45, 46, 50, 52, 54, 56, 59, 61  
Chapter 11: 44, 45, 46, 49, 51, 54, 56, 58, 60, 61, 63, 66, 68, 70, 71, 73, 75, 77, 79  
Chapter 14: 26, 27, 28, 30, 33, 34, 37, 40, 42, 43, 45

### **LECTURE, READING, AND EXAM SCHEDULE**

**Unit 1:** 9/3, 9/5, 9/8, 9/10, 9/12, 9/15: Chapters 1 (Bonding and Structure), 2 (Alkanes), and 3 (Acid-Base and Curved-Arrow Formalism)

**Unit 2:** 9/17, 9/19, 9/22, 9/24, 9/26, 9/29: Chapters 12 (Introduction to Spectroscopy ) and 13 (NMR Spectroscopy)

#### **Wednesday 10/01 Exam I**

**Unit 3:** 10/3, 10/6, 10/8, 10/10, 10/13, 10/15: Chapter 4 (Alkene Structure and Reactivity) and Chapter 5 (Addition Reactions of Alkenes)

**Unit 4:** 10/17, 10/20, 10/22, 10/24, 10/27, 10/29, 11/1: Chapter 6 (Stereochemistry) and Chapter 7 (Cyclic Compounds and more Stereochemistry)

**Unit 5:** 11/03: Begin Chapter 8 (Intro. To Alkyl Halides, etc.) and Chapter 9 (Chemistry of Alkyl Halides): ON EXAM III (not on Exam II)

#### **Wednesday 11/05 Exam II**

**Unit 5:** 11/07, 11/10, 11/12, 11/14, 11/17, 11/19: Continue Chapter 8 (Intro. To Alkyl Halides, etc.) and Chapter 9 (Chemistry of Alkyl Halides)

**Unit 6:** 11/21, 11/24, 12/01: Chapter 10 (Chemistry of Alcohols and Thiols) and Chapter 11 (Chemistry of Ethers, Epoxides, etc.)

**Unit 7:** 12/03, 12/05, 12/08,: Chapter 14 (Chemistry of Alkynes and Introduction to Synthesis)

#### **Wednesday 12/10 Exam III**

12/12 [Last Class Day]

#### **Monday 12/15 Final Exam (CUMULATIVE)**

#### **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 quest, Burke and Maza are your guides).
- Practice. Practice. Practice--working problems develops and tests your knowledge.
- Make constant use of On-line Problems—it will be worth much more than 10% of your grade
- 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 simultaneously stumped, whereas individuals often are, with time wasted and frustration built.
- Most of your learning needs to occur outside of class—developing your problem solving (O-Chem test taking) skills requires practice, much like playing a sport or a musical instrument.

## PRIOR YEAR GRADE DISTRIBUTIONS IN BURKE HONORS/MAJORS SECTIONS

CHEM343_08 >79% A (19) 73-78% AB (8) 61-72% B (12) 55-61% BC (1) 51-54% C (3) <50% F (2)	CHEM343_07 >79% A (13) 76-78% AB (6) 61-74% B (17) 56-59% BC (3) 41-49% C (3) <40% F (2)	CHEM343_03 >79% A (17) 74-76% AB (5) 60-73% B (16) 56-59% BC (3) <55% C (1)	CHEM343-Multiyear Averages Every Year is Close to These >79% A 74-78% AB 60-73% B 55-59% BC <55% C or worse
CHEM343_09 >79% A (20) 75-78%AB(15) 61-74% B (10) 55-60% BC(3)	CHEM343_10 >79% A (13) 74-78% AB (14) 61-73% B (16) 54-60% BC (1) <55% C (1)	CHEM343-11 >80% A (10) 73-78% AB (8) 61-72% B (12) <53% C (3)	CHEM 343-12 >80% A (23) 75-78% AB (11) 62-74% B (11) 55% BC (1) 43% F (1)
CHEM343-13 >79% A (25) 76-79%AB(9) 61-75% B (28) 57-60% BC(4) <55% C (4)			

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### Just for fun:

THESE MATH TRICKS ARE NOT MAGIC, AND NEITHER IS ORGANIC CHEMISTRY; BOTH ARE LOGICAL AND SYSTEMATIC

#### **1089!**

1. Pick **any** 3-digit number where the first and third digits are different.
2. Reverse the digits, and subtract the smaller from the larger to get 2<sup>nd</sup> number.
3. Reverse the digits of 2<sup>nd</sup> number to get 3<sup>rd</sup> number; add 2<sup>nd</sup> and 3<sup>rd</sup> numbers.

#### **GUESS THE UNSEEN DELETED NUMBER!**

1. Choose any 5-digit number where the digits are not all the same.
2. Scramble the digits, and subtract the smaller from the larger.
3. Secretly delete any digit (except zero) from this number, and total the remaining digits.
4. I say the deleted number is \_\_\_\_\_!

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### **GROUP QUESTION: WHY DO WE HAVE A CARBON-BASED LIFE FORM?**