

Syllabus for CHM 2840-001
Organic Chemistry II
Fall Semester, 2010

Course Description: CHM 2840 is the second semester of the year-long course in organic chemistry. Using concepts learned in CHM 2440, the properties and reactions of alcohols, ethers, dienes, aromatics, amines, and carbonyl compounds will be described. The mechanisms for the reactions will be discussed in order to fully understand the products obtained. The spectroscopic techniques covered in CHM 2440 will be expanded upon to include the functional groups listed above. The course is assigned 3 hours of credit.

Prerequisites: Credit in CHM 2440 with a grade of “C” or better.

There is a companion laboratory course (CHM 2845) that is designed to accompany this lecture course, and concurrent enrollment is required for Chemistry majors.

Course Goals: (1) Learn the basic principles of organic chemistry, and develop critical thinking methods for evaluation of organic reactions and compounds.
(2) Build communication skills through discussions and writing answers to questions.
(3) Encourage independent learning and interest in organic chemistry.

Lectures: Monday, Wednesday, Friday 10:00 – 10:50 a.m. Physical Sciences Building Room 4125

Instructor: Dr. Ed Treadwell

Office: PSB Room 4450 Phone: 581-6229

E-mail: emtreadwell@eiu.edu

Office Hours: Mon. 11 am-noon, Tues. noon-1 pm, Weds 9-10 am

Other hours gladly considered by appointment.

Optional Review Sessions: Tuesday 6 – 7 pm

Materials: “Organic Chemistry”, 7th edition by L. G. Wade, Jr.

“Solutions Manual for Wades’s Organic Chemistry” by Jan Simek

Additionally, an organic model set is **strongly** suggested.

Blank exams, as well as keys to quizzes and exams are available on the WebCT course site.

Course Policies:

- (1) Textbook reading assignments and homework problems are listed on page 4 of this syllabus. Although homework will not be collected or graded, the homework is important to your understanding and mastery of the material. Quizzes and tests will contain problems that are similar to homework material.
- (2) Attendance is not recorded or evaluated for grading purposes, but you are strongly encouraged to attend all classes.. It is expected that while attending you will be respectful and attentive, and that your **cell phone is OFF**.
- (3) You are responsible for all announcements made during class, whether you are present or not.
- (4) Absences and Makeup Exams
 - A. Absences for Medical Reasons
If you are absent for a quiz or exam because you were sick, you may take a makeup quiz or exam if you provide an excuse that is *written* and *signed* by a medical official.
 - B. Absences for Athletic Reasons
If you must be absent for a quiz or exam because of required travel with an athletic team, contact me in advance and plan to take the quiz or exam early.Other Absences - Absences for emergency reasons only will be judged on a case-by-case basis. Lack of a valid reason for an absence will result in a zero score on the quiz or exam that was missed.
- (5) Quizzes will be given roughly every week. Only your best 10 quiz scores will be included in your quiz total for the final grade. Collectively the quizzes count for 15% of your final grade, equivalent to an exam.
- (6) There are four 50 minute exams to be given over the semester. On every exam, you are responsible for all material covered previously in the course as well as material covered in CHM 2440.
- (7) There is a comprehensive final exam, covering material from CHM 2840 as well as CHM 2440.
- (8) If you have a documented disability and wish to discuss academic accommodations, please contact Dr. Treadwell as soon as possible.
- (9) All aspects of the student conduct code are expected to be followed, and violations will be reported to the Office of Student Standards.

Possible Points:

<i>Source</i>	<i>Points</i>
10 Quizzes @ 10 points each	100
4 Exams @ 100 points each	400
Comprehensive Final Exam	150
Total Points	650

Grades:

Initially, the normal grading scale (A = 90%+, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, F = <60%) will be employed. IF necessary, a curve will be applied relative to the overall class performance where the minimum percentage for an A is less than 90%, and the remaining grade percentages are adjusted downward to maintain a 10% range between each letter grade. Only the total points will be curved, so that individual quizzes and exams will not receive a letter grade. The curve will be recalculated after every exam, and will be posted outside my office. After the fourth exam but before the final exam, the curve will be adjusted for the last time, so that you will know exactly how many points are needed to obtain your desired grade.

By way of example, last year's final curve is given below. Note that the curve in this class may be higher than the one below.

100 – 85 % = A
below 55% = F

84 – 75 % = B

74 – 65 % = C

64 % – 55% = D

Succeeding:

CHM 2840 is a continuation of CHM 2440, and the material will be presented in a similar manner and with similar emphasis as you had in CHM 2440. However, the material will be **covered in a more rapid pace**, so it even more essential that you keep up with the material. Organic chemistry cannot be learned only on weekends before an exam, and there will be too much material for you to simply memorize the night before an exam. You need to have a good understanding of the material in order to do well on the exams. It would be really helpful if you would read the appropriate sections before coming to class.

As before, be sure to honestly try the assigned problems for each chapter – this means doing the problems without your notes or the study guide open before you. If you do not have time to do every problem, try to do a representative set of the assigned problems. Use your notes to check your answers and then review the material you did not so well on, and then try the problems again later on.

Use the quizzes to your advantage – look at where you lost points and understand why you lost the points. Quizzes make excellent review material for exams, so be sure to look at the complete quiz (not just the questions you answered) when studying for exams.

I really want you to succeed and am committed to trying as much as I can to help you succeed. Feel free to drop by my office for help when needed – the only stupid questions are the ones not asked.

GOOD LUCK!

Approximate Class Schedule

Aug.	Review 9.1-9.2 Alkyne nomenclature	23	9.3-9.6 Physical properties, acidity of alkynes Quiz #1	25	9.7-9.8 Acetylides, Synth. Of Alkynes	27
Sept.	9.9 Alkyne addition reactions	(30)	9.10 Alkyne oxidation 10.1-3, 10.12 Alcohol Nomen.	1	10.4-10.6 Alcohol physical properties Quiz #2	3
	NO CLASS	6	11.14 Alkoxides 10.7-10.10 Synthesis of Alcohols	8	10.11 Reduction of Alcohols Quiz #3	10
	11.1-11.4 Oxidation of Alcohols Quiz #4	13	EXAM 1 (Chs. 11, 17, 18)	15	11.5,11.7 Sulfonates, Reaction of Alcohols with HX	17
	11.8-11.10 Indirect methods forming RX, dehydration rxns	20	11.12-13 Ester formation 12.13-12.15 Mass Spec Quiz #5	22	14.1-14.4 Ethers: Nomen., physical properties	24
	14.5-14.8 Synthesis and cleavage of ethers	27	14.11-14.16 Epoxides Quiz #6	29	15.1-4, 15.8-9 MO Theory	(1)
Oct.	15.12 UV-VIS spectroscopy 17.10-11 1,2/1,4-Addn to dienes	4	15.11 Diels-Alder reaction Quiz #7	6	NO CLASS	8
	16.1-16.12 Aromaticity 16.13 Aromatic Nomen.	11	16.13-16.15 Phys. Properties Of Aromatics Quiz #8	13	EXAM 2 (Ch. 14, 15, 16)	15
	17.1-17.2 Electrophilic Aromatic Substitution	18	17.10-17.11 Friedel-Crafts Chemistry Quiz #9	20	17.5-17.9 Substituent effects	22
	17.12-17.13 NAS 17.14-17.15 Reactions off ring, Phenols	25	18.1-18.6 Carbonyl chem.: introduction, nomen. Quiz #10	27	18.7-18.11 Synthesis of Aldehydes and Ketones	29
Nov.	18.12-18.15 Wittig rxn, Addn. of H ₂ O and HCN	1	18.16 Imines and Enamines Quiz #11	3	18.18-19 Acetals 18.20-21 Oxdn, Redn	5
	20.1-20.4 Carboxylic Acids: Nomen., Phys prop Quiz #11	8	EXAM 3 (Ch. 19,20)	10	20.5-20.10 Fischer esterification	12
	20.11-20.15 Prepn. Amides, Acid Halides, Redn	15	21.1-21.4 Carboxylic Acid Derivatives Quiz #12	17	21.5-21.6 Interconv. of CADS	19
Dec.	21.7-21.16 Hydrolysis, Redn, and Rxn with RM of CADs	(29)	22.1-4 Alkylation of Enolates Quiz #13	1	22.8-22.11 Aldol reactions	3
	22.12-22.17 Claisen condens. Malonic ester	6	EXAM 4 (Ch 21, 22, 23)	8	22.5-22.7 Enols, enolates, α -halogenations	10

Final Exam is Tuesday December 14, 2010 at 10:15 a.m. sharp.

**Reading and Suggested Homework Problems from
Wade's "Organic Chemistry"
CHM 2840
Organic Chemistry II
Fall 2010**

Chapter	Reading*	Suggested Homework Problems**
8	8.12-8.15	8.29, 8.34 (<i>a,b</i>), 8.35, 8.36, 8.37 (<i>a,b</i>) 8.47, 8.48, 8.59, 8.61, 8.64
9	9.1-9.10	9.4, 9.5, 9.7, 9.8 (<i>b,c</i>), 9.13, 9.15, 9.18, 9.21, 9.25 (<i>a,c</i>) 9.27 (<i>a,c,d,f,h,j,k</i>), 9.29 (<i>a,d,f</i>), 9.33, 9.34, 9.36
10	10.1-10.12	10.1, 10.2, 10.4 (<i>a,d</i>), 10.5 (<i>a,c,d</i>), 10.7, 10.8, 10.10, 10.13 (<i>a,b</i>), 10.14 (<i>a,b</i>), 10.15 (<i>a,b</i>), 10.17 (<i>a,b</i>), 10.19 (<i>b,c</i>), 10.23, 10.24 (<i>a,d,e</i>), 10.25 (<i>a,d,e</i>), 10.27, 10.28 (<i>a,c</i>) 10.31 (<i>a,b,c,e,f</i>), 10.32b, 10.33 (<i>b,c,h,k</i>), 10.34, 10.35, 10.36, 10.37, 10.38, 10.39 (<i>a,b,e,h</i>), 10.40, 10.42, 10.45, 10.49, 10.51
11	11.1-1.14	11.1 (<i>b,c,d,e,g,h,k</i>), 11.2 (<i>a,b,e,h</i>), 11.5, 11.6 (<i>a,b,f</i>), 11.9 (<i>a,b,c</i>), 11.10 (<i>a,d</i>), 11.12b, 11.15, 11.19, 11.20, 11.22 (<i>a,b,c</i>), 11.27 (<i>c,d</i>), 11.30 (<i>a,b</i>), 11.31 (<i>a,d</i>), 11.34, 11.37a, 11.38 (<i>b,d</i>) 11.40 (<i>a,b,c</i>), 11.41, 11.42 (<i>a,c</i>), 11.43 (<i>a,b,c</i>), 11.44 (<i>a,b</i>), 11.46, 11.53, 11.54, 11.56 (<i>a,d</i>), 11.58
12	12.13-12.15	12.7, 12.9, 12.11 12.18, 12.22
14	14.1-14.16	14.1, 14.9 (<i>a,b,c</i>), 14.10, 14.15 (<i>a,d</i>), 14.16, 14.19, 14.26, 14.27 (<i>c,d</i>), 14.28 14.30 (<i>a,b,e,h</i>), 14.32 (<i>a,c,d,f</i>), 14.33, 14.38, 14.39, 14.41 (<i>a,b,c,d</i>), 14.47
15	15.1-15.11 15.13	15.1b, 15.5, 15.8, 15.14, 15.15, 15.16 (<i>a,b</i>), 15.18, 15.22 15.25, 15.27 (<i>a,b,g</i>), 15.30, 15.33 (<i>a,b</i>), 15.35 (<i>a,b</i>), 15.36
16	16.1-16.15	16.7, 16.9, 16.10, 16.15, 16.16, 16.18, 16.22 16.27 (<i>a-h,k</i>), 16.28 (<i>a,b,c,e</i>), 16.32 (<i>a,b,e</i>), 16.34 (<i>a,b,c,d</i>), 16.37, 16.38, 16.39a, 16.42 (<i>a,e</i>), 16.45, 16.48
17	17.1-17.15	17.2, 17.5, 17.8, 17.9, 17.12, 17.14, 17.15, 17.16, 17.18c, 17.20, 17.21, 17.25, 17.29 (<i>c,d</i>), 17.30, 17.36, 17.37, 17.40 17.44, 17.46, 17.47, 17.48, 17.49, 17.56, 17.57
18	18.1-18.21	18.1, 18.6, 18.7, 18.9, 18.10 (<i>a,b</i>), 18.11, 18.12 (<i>a,c,e</i>), 18.17, 18.18, 18.22, 18.23, 18.24, 18.27, 18.29, 18.35 18.39 (<i>a-d,i-l</i>), 18.41, 18.44, 18.46, 18.49 (<i>a,b,c,e,f,h</i>), 18.50, 18.51, 18.56, 18.61, 18.62, 18.63, 18.67, 18.70
20	20.1-20.15	20.1 (<i>a-e,j,k</i>), 20.2, 20.3, 20.5, 20.11(<i>b,c,f</i>), 20.12b, 20.14, 20.18, 20.19, 20.24 20.26 (<i>a-d,f,i</i>), 20.29, 20.30, 20.31, 20.32, 20.35, 20.36, 20.39, 20.42, 20.43, 20.47, 20.50
21	21.1-21.14	21.1 (<i>a,b,c,d,h,j,l</i>), 21.4, 21.5, 21.6 (<i>a,c</i>), 21.7, 21.8 (<i>a,b,e</i>), 21.9, 21.12, 21.14, 21.16, 21.19, 21.20, 21.23, 21.25, 21.28, 21.31, 21.34, 21.37, 21.39 21.44 (<i>a,c,d,e,f,h,i</i>), 21.45, 21.46, 21.49 (<i>a,b,d,e</i>), 21.50, 21.54, 21.57, 21.58, 21.59(a), 21.63, 21.66, 21.67, 21.69
22	22.1-22.19	22.1, 22.2, 22.4 (<i>b,c</i>), 22.5, 22.6, 22.10, 22.12 (<i>a,b</i>), 22.13, 22.16, 22.17 (<i>a,b</i>), 22.19, 22.21, 22.22, 22.25 (<i>a</i>), 22.28, 22.29, 22.30, 22.32, 22.34, 22.36, 22.40, 22.42, 22.43, 22.47, 22.50, 22.56, 22.57 22.61, 22.62, 22.63, 22.64, 22.65, 22.68, 22.70, 22.71, 22.77

* refers to the section numbers as given in the text.

** the problems *in italics* are found in the chapter text, the problems in plain text are at the end of the chapter