

Syllabus Chemistry 386J, Fall 2013
Physical Organic Chemistry

Course: TTh 12:30-2:00pm, Welch 2.256, Saturdays 9 to noon when listed below.

Prof. Eric V. Anslyn, Office Hours, NHB 5.144, Mondays 11am-noon, and Thursdays 2:00-3:00pm. I love talking about this course material, so please drop by. I highly encourage you to come to office hours.

Teaching Assistants:

Alex Gade, Office hours: Tuesdays 2-3pm, Welch Organic Conf. Rm. 5.330

Diana Zamora, Office hours: Wednesdays 9:30-10:30am, NHB Conf. Rm. 5.202

Recitation sessions are roughly every other Friday at 10:00-11:00am. Location NHB Conf. Rm. 5.202.

- a) 9/6
- b) 9/20
- c) 10/4*
- d) 10/18
- e) 11/1
- f) 11/8*
- g) 11/22
- h) 12/06*

*=before exams:

Text: Modern Physical Organic Chemistry, by Anslyn and Dougherty. You can get the answer key if you like. We do not post the answers to the homework. I will try to cover chapters 1, 2, 5, 6, 7, 8, 9, 10, 11, 15, and 16 – which means we have got to move super quick! The sequence of chapters given here is not set. We will not cover all sections of each chapter.

Course Website: <http://anslyn.cm.utexas.edu/courses/CH386J>. This site will have postings of old exams (maybe with or without a key, we don't make new keys).

Travel: I am traveling a bit this semester, primarily in September. So, we will have some classes on Saturday mornings (9:00am to noon) that I am in town. All exams are on Saturday mornings also (9:00am to potentially noon). These classes and exams will be held at 9:00 am. Please arrange to have all your Saturday mornings open. Here are the dates that I will miss class, the Saturday classes, followed by the exam days. This may change during the semester.

Class dates I will miss (NO CLASS)

September 10th

September 17th

September 26th

October 22nd

November 28th (Thanksgiving)

Saturday classes for a maximum of three hours (9:00am to noon, usually only until 11:00am) (Welch 2.256)

September 7th
September 14th
September 28th
October 12th
October 26th
November 23rd

Exam dates, Saturdays at 9:00am (Welch 2.256) (The TAs (and I when possible) will administer the exams)

October 5th
November 9th
December 7th

Final exam: Friday December 13th, 2:00-5:00pm - room to be announced

Grading: There will be three midterms scheduled on the days listed above. Each midterm will be worth 30% of your grade. The lowest of the three grades will be dropped. Therefore, you can miss one midterm without disturbing your grade. The final exam is comprehensive and is mandatory. It is worth 40% of your grade. All of these exams are best described as extremely challenging. We will also collect homework assignments, which will be passed in and graded. The homework is graded solely on a good (+), fair (-), or you failed to turn it in (0), and will be only used to change the grade up or down in borderline cases. The homework is due the lecture period after the chapter has been finished. We are also having you turn in one of the posted practice exams the Saturday during which the exams are held. These will be simply graded with a (+) or (0) depending upon whether you turned it in or not.

Chapter Section Reading:

Appendix 5

1.1-1.4

All of 2

All of 5 except 5.2.5

6.1-6.5

7.1-7.5, 7.7, 7.8

All of 8 except 8.1.4, 8.1.5, 8.1.6, 8.4.3, 8.4.6

9.3

10.1-10.4, 10.13

11.5

15.1, 15.2 (no State Correlation or Aromatic Transition State Theory) 15.3, 15.4
(not 15.4.4), 15.5, 15.6

16.1, 16.2

Homework:

Appendix 5, 1-3

Chapter 1: 1,3,5,6,9,19,20,21,23,29,33,34

Chapter 2: 1,5,6,8,9,11,15,23,24,25,35,38,40,44,50

Chapter 5: 2,3,4,5,7,9,10,11,14,19,21,22

Chapter 6: 1,3,5,7,8,9,16,17,20,21,22,32

Chapter 7: 1, 2, 3,7,8,9, 13, 15, 16, 17, 19, 22

Chapter 8: 9,10,11,12,13, 16, 18, 19, 20, 21, 22, 25a.b.

Chapter 9: 1,3,4,10,11,12,13,14,15,16,17

Chapter 15: 4,5,20,22,23,25,26,27,37

Chapter 16: 3, 41, 50

Chapter 10: 4-6, 12, 19, 20, 23-24, 26, 31-33, 38, 39, 41, 42, 46, 47 (MAYBE)

Chapter 11: 2-5, 11, 13, 18, 20-22, 24, 29, 39, 51 (MAYBE)

Course Goal: The goal of physical organic chemistry is to understand the details of reaction mechanisms, and gain insight into structures and reactivity common to organic chemicals and of high-energy chemical intermediates. In this regard, the majority of work is aimed at defining the nature of the reaction coordinate: the structure of any intermediates, the extent to which bonds have been formed or broken in the transition states, and the relative energy of reactants, products, intermediates, and transition states.

The specific goal of this course is to introduce the students to concepts necessary to solving mechanistic organic problems encountered in the research laboratory. Common organic reaction mechanisms, common experimental techniques, and theoretical approaches to understanding reaction mechanisms will be covered. After completion of the course, the student should be confident in designing experiments to probe mechanistic questions, choose theoretical approaches to address chemical problems, and invoke known mechanisms and intermediates to explain observed phenomena.