Syllabus Chemistry 386J, Fall 2019
Physical Organic Chemistry

Course: TTh 12:30-2:00 PM, PHR 2.114, Saturdays 9:00 AM to 12 PM when listed below, WEL 2.140.

Prof. Eric V. Anslyn, Office Hours, NHB 5.144, Tuesdays 10:00-11:00 AM, and Thursdays 2:00-3:00 PM. I love talking about this course material, so please drop by. I highly encourage you to come to office hours. I am going to get on your case if you are not coming to office hours. You have been warned.

Teaching Assistants:

Samuel Dahlhauser, Office hours: Mondays 10:00-11:00 AM, NHB Conf. Rm. 5.202

Axel Steinbrueck, Office hours: Wednesdays 14:00-15:00 PM, NHB Conf. Rm. 5.202

Recitation sessions are Fridays at 9:00-10:00 AM. NHB Conf. Rm. 5.202.

a) 9/6
b) 9/20
c) 9/27*
d) 10/11
e) 10/25
f) 11/1*
g) 11/15
h) 11/22
i) 12/6*

*=before exams
(some may change during the semester so pay attention!)

Text: Modern Physical Organic Chemistry, by Anslyn and Dougherty. We highly recommend you obtain the solutions manual by Sponsler. 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/Welcome.html. This site will have postings of old exams (with a key if it is available).

Travel: I am traveling quite a lot this semester. So, we will have several classes on the Saturday mornings (9:00am to noon) that I am in town. All

exams are on Saturday mornings also (9:00am to potentially noon). Please arrange to have all your Saturday mornings open. Included below are dates that I will miss for class, Saturday classes, and the exam days. This may change during the semester.

Class dates I will miss. These are subject to change because more traveling may be added. Either there will be no class, or Kami Hull with cover, or we have a special topic the TAs will cover.

September 5th (Special class on arrow pushing)
September 10nd (Kami Hull covers)
September 12th (No class)
September 17th (Kami Hull covers)
September 19th. (No class)
October 3rd (No class)
October 8th (No class)
November 28nd (Thanksgiving)

Saturday classes for a maximum of three hours from 9:00am to noon (Welch 2.110). Depending on how fast the class is moving, we may not need all these classes.
September 14th
September 21st
October 5th
October 26th
November 9th
November 23rd

Exam dates, Saturdays at 9:00am (Welch 2.110) The TAs (and I when possible) will administer the exams.
September 28th
November 2rd
December 7th

Final exam: Saturday December 14th, 2:00-5:00 PM (room to be announced)

Weapons: Whereas the Texas concealed weapons act allows those with permits to carry during the classroom sessions, weapons are not allowed on the floor on which my office hours operate.

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 affecting your grade. The final exam is comprehensive and 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 letter 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. Late homeworks/exams will not be accepted. 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, 2, 5, 6, 9, 10, 20, 21, 23, 29, 34
Chapter 2: 1, 6, 8, 9, 15, 23, 35, 40, 44, 50
Chapter 5: 2, 3, 9, 11, 14, 19, 21, 22
Chapter 6: 5, 8, 9, 16, 17, 20, 22, 32
Chapter 7: 2, 7, 8, 9, 13, 15, 16, 17, 18, 22
Chapter 8: 9, 10, 12, 13, 16, 18, 19, 21, 22, 25, 28
Chapter 9: 1, 4, 10, 11, 12, 13, 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 BUT PROBABLY)
Chapter 11: 2-5, 11, 13, 18, 20-22, 24, 29, 39, 51, 52 (MAYBE BUT PROBABLY)

And practice exams to be turned in on exam days, passed out a week in advance.

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 to 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.