

**Chemical Systems I –2229  
CHEM 3110 Section 1  
Winter Quarter 2018**



**Instructor:** Asst. Professor Brian W. Michel

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**Office:** Seeley G. Mudd 232

**Lecture:** MWF 10:00 – 10:50 am, Olin 103

**Office Hours:** By appointment, stop by

**Required Text:** *Modern Physical Organic Chemistry*, by Eric Anslyn and Dennis Dougherty

**Course Objective:** In this course we will learn about the field of physical organic chemistry. This includes topics on the structure, bonding and strain of organic molecules. Additionally, how to analyze reaction kinetics and thermodynamics will be addressed. How does our understanding of structure and bonding influence the reactions that molecules undergo. You have learned about many of these reactions in lower level organic chemistry classes, but we will get into much greater detail. We will also discuss and study important fundamentals of catalysis. This course is designed for graduate and advanced undergraduate students. While we will very briefly review some topics we must move fast to get to more advanced material. Therefore it is expected that you are familiar with the topics covered in a year of undergraduate organic chemistry. A review of previous texts and notes may be useful in the first week of class.

**Problem Sets:** 100 points

**Exams:** There will be three exams worth 100 points each (two midterms and one final).

**Final Grade:** Your final grade will be determined out of the 400 available points on exams and problem sets and adjusted based on the overall class performance. Additionally, everyone in the class is expected to participate in board sessions, failure to participate could negatively influence your grade. **There will be no makeup exams. If you miss an exam for any reason, that exam will be dropped and the final will count for 200 points. The final exam is not optional. I would not recommend having a large portion of your grade determined by a single cumulative exam.**

**Cell Phone and Electronic Device Policy:**

While I understand that mobile devices have become integral to our lives, they are disruptive to the learning environment. Therefore, I request that all electronic devices be turned off (not muted) during class (i.e.; please don't text/facebook during class). If an emergency arises, and you need to contact the outside world during our lecture or recitation time, I request that you quietly leave the room and conduct your conversation outside. Additionally, most all of our lectures will require far too much structural drawing for effective notes to be taken on a laptop so please leave these devices off during lecture.

**Lecture and Testing Accommodations:**

I will make every effort to accommodate students diagnosed with a learning disability. I will do this in complete confidence. I do, however, request that any student requiring these accommodations inform me the first week of class. For further information, please see the University Disability Services' website at <http://www.du.edu/disability/dsp/index.html>.

**Academic Integrity:**

While I advocate collaborative learning and teamwork, I also firmly believe that each individual should maintain the highest ethical standards. As such, I support and will strictly enforce the Honor Code of the University of Denver. [www.du.edu/honorcode](http://www.du.edu/honorcode).

**Honor Code Statement.**

All members of the University of Denver are expected to uphold the values of *Integrity*, *Respect*, and *Responsibility*. These values embody the standards of conduct for students, staff, faculty, and administrators as members of the University community. These values are defined as:

*Integrity*: acting in an honest and ethical manner;

*Respect*: honoring differences in people, ideas, and opinions;

*Responsibility*: accepting ownership for one's own conduct.

**Pioneer Pledge.**

As a University of Denver Pioneer I pledge...

- to act with INTEGRITY and pursue academic excellence;
  - to RESPECT differences in people, ideas, and opinions and;
  - to accept my RESPONSIBILITY as a local and global citizen;
- Because I take pride in the University of Denver I will uphold the *Honor Code* and encourage others to follow my example.

**Topics to be covered:** Preliminary Course Schedule – Subject to Change – read through section noted, i.e. read sections 1.1 and 1.2 unless otherwise indicated by page numbers.

<b>Week</b>	<b>Topic</b>	<b>Readings</b>
<b>1:</b> 2 lectures	Arrow pushing workshop Structure and Bonding	pp 003-026 (1.1-1.2) pp 052-059 (1.4-1.5)
<b>2:</b> 3 lectures	Strain and Stability Non-covalent forces  Acid-Base Chemistry	pp 065-73 (2.1-2.1.3), 82-127 (2.2-2.5) pp 145-148, 162-186 (3.1-3.1.2-3.2.4) pp 259-270 and 276-292 (5.1-5.2.5, 5.4-5.6)
<b>3:</b> 2 lectures (MLK)	Finish Acid-Base Chemistry if needed Stereochemistry	pp 297-323 (6.1-6.5)
<b>4:</b> 1 lecture, 1 review day, 1 <sup>st</sup> midterm	Maybe Start Kinetics Catch up and review	pp 355-374 (7.1-7.2)
<b>1/26/17</b>	<b>Midterm Exam</b>	
<b>5:</b> 3 lectures	Kinetics And Thermodynamics	pp 374-397 (7.3-7.5) pp 421-441 (8.1)
<b>6:</b> 3 lectures	LFER, Problem solving Catalysis	pp 441-477 (8.2-8.8.7) pp 489-523 (9.1-9.3)
<b>7:</b> 3 lectures	Additions/Eliminations	pp 537-607 (10.1-10.17)
<b>8:</b> 1 lecture, 1 review day, 1 <sup>st</sup> midterm	Catch up and review	
<b>2/23/17</b>	<b>Midterm Exam</b>	
<b>9:</b> 3 lectures	Finish Addition/Eliminations if needed Substitutions $\alpha$ to carbonyl	627-636 (11.1-11.4)
<b>10:</b> 3 lectures	More Reactions or Case Studies	TBD
<b>11:</b> 1 lectures 3/12/17	Catch up and review	
<b>3/14/17</b>	<b>Final Examination</b>	