

CHEM 232 Organic Chemistry

Spring 2014

Schedule Number: 24545

COURSE INFORMATION

Class Days: MWF
Class Times: 10:00–10:50 am
Class Location: SHW-011

Instructor: **Prof. Byron W. Purse**
bpurse@mail.sdsu.edu (preferred contact)
(619) 594-6215 (office)
Office Location: CSL 213
Office Hours Times: M,W,Th 11:00–12:00
Office Hours Location: CSL 213

Midterm Exams

Saturday, February 21, 10:00 am – 12:00 pm.
Saturday, March 21, 10:00 am – 12:00 pm.
Saturday, April 25, 10:00 am – 12:00 pm.

Final Exam

Saturday, May 9, 2015, 10:30 am – 12:30 pm. **The final exam is cumulative.**

Prerequisites

One year of general chemistry (CHEM 200 and 201 with their labs at SDSU) with a grade of C or better. If you have already taken and passed the 232 lab, bring proof to the first lecture. If you have taken General Chemistry elsewhere and want me to evaluate whether you have satisfied the prerequisites, bring written proof of what you have taken and written documentation of what the class entailed.

Course Information

Updated information is available on the course BlackBoard site through SDSU.

Course Catalog Description

Properties and synthesis of organic compounds including reaction mechanisms. Same course as lecture portion of Chemistry 231. Not open to students with credit in Chemistry 231.

Scope and Purpose

This course covers the fundamentals of organic chemistry. The course begins by examining how periodic trends predict bonding properties and how this sharing of electrons gives rise to stable molecules. Further detailed study looks at how bonding geometry and the flexibility of chemical bonds gives rise to shape and conformation of molecules and how these properties in turn lead to the characteristics of materials. The latter part of the course will focus on how to use molecular structure to predict the chemical reactivity of organic molecules, with examples drawn from industrial process chemistry and the biological chemistry of life.

Students should meet these **expected learning outcomes** as a minimum requirement in order to pass the course:

1. Understand physical properties of organic compounds and fundamental chemical reactions in organic chemistry.
2. Determine bonding, hybridization, Lewis structures, and / or stereochemistry of simple organic molecules.
3. Show chemical mechanisms for basic organic reactions using the curved arrow formalism ("arrow-pushing").
4. Determine and differentiate various types of simple organic reactions, for example SN1, SN2, E1 and E2 pathways, radical chain reactions, or additions to double bonds.
5. Understand the relationship between different functional groups and organic chemical reactions.

6. Identify examples of organic chemistry in common “daily life” situations or biochemical processes.
7. Be able to apply and use the outcomes above in more advanced courses such as upper division organic chemistry (Chem 432), biochemistry, and more advanced organic chemistry courses.

Course Outline and Assigned Reading from Solomons 11e.

Chapter 1: The Basics; read pp. 1–49

Chapter 2: Families of Carbon Compounds; read pp. 55–99

Chapter 3: Acids and Bases; read pp. 104–137

Chapter 4: Nomenclature and Conformations of Alkanes and Cycloalkanes; read pp. 142–186

Chapter 5: Stereochemistry; read pp. 191–234

Chapter 6: Ionic Reactions; read pp. 239–284

Chapter 7: Alkenes and Alkynes I; read pp. 291–328

Chapter 8: Alkenes and Alkynes II; read pp. 337–383

Chapter 9: Nuclear Magnetic Resonance and Mass Spectrometry; read pp. 391–445

Chapter 10: Radical Reactions; read pp. 457–492

Chapter 11: Alcohols and Ethers; read pp. 498–535

Adding/Dropping Procedures

February 3 is the last day to add/drop classes or change grading basis. To add a class during the schedule adjustment period, students can request an add code from the instructor. Please email the instructor regarding add codes for other circumstances.

Course Materials

Textbook

Organic Chemistry, 11e., by Solomons, Fryhle, and Snyder, Wiley Publ. 2013; ISBN-13: 978-1118133576. Available from the SDSU bookstore for \$164.49 as a bundle with the *Sapling Learning* (online homework) access (also sold separately; see below).

Optional Learning Materials

Molecular Visions Organic Model Kit or similar organic chemistry molecular modeling set. Optional, but highly recommended. Available for \$18.28 from Amazon.com (ISBN-13: 067-6043362711).

Study Guide and Solutions Manual to Accompany Organic Chemistry, 11e., by Solomons, Fryhle, Snyder, and Antilla, Wiley Publ. 2013; ISBN-13: 978-1118147900. Not required, but useful for studying.

Electronic Homework

Sapling Learning

<http://www.saplinglearning.com/>

Access to *Sapling* is available in a bundle with the textbook from the SDSU bookstore or by purchasing an access code for \$40 directly from Sapling Learning. The Sapling website will direct you to register for this course. eHomework will contribute 150 points to your final grade.

Clickers

We will use *i>clickers* for in-class problem solving exercises. Points will be awarded for these questions, with 2 points given for a wrong answer (i.e. just trying) and 3 points for a correct response. The total of these points will be scaled to 50 as a contribution to your final grade. Up to 10 “bonus” points will be added to your total out of 50, limited by the maximum of 50 clicker points, to accommodate legitimate absences, clicker problems, etc.

Note that you will have to attend class to earn these points! Answering for someone else is cheating and if I catch you, then both you and the person for whom you are answering will lose all clicker points for the entire semester, plus I will refer the case to SDSU CSRR (see below).

You can either purchase an *i>clicker2* device (\$51.50 new or \$34.35 used from the SDSU bookstore) or you can use *i>clicker GO*, which is an app for web browsers, Android, and iOS. *i>clicker GO* costs \$9.99 for a 180 day subscription (available as an in-app purchase or by vouchers sold at the SDSU bookstore). *Please note that most professors using clickers at SDSU currently require the device and do not support the i>clicker GO app; ask if you want to be sure because the device will work for all your classes that require i>clickers.*

To register your *i>clicker2* device (not the app!), follow the link under “Tools” on the Blackboard page for this course.

If you choose *i>clicker GO*, then its website or app will direct you to search for this course and register. *i>clicker GO* is available from the Apple App Store, Google Play, or at <https://iclickergo.com/>.

You must register your *i>clicker* or you will earn no clicker points! Clicker points will start to count during Week 2 of the course.

Course Structure and Conduct

The course will use a traditional lecture format with discussion as allowed by a large class size. Electronic homework using Sapling is discussed under **Course Materials**, along with *i>clickers*, which will be used for in-class problem solving exercises. BlackBoard will be used for course management.

Course Assessment and Grading

There will be three 2 hour midterm exams during the semester, each worth 150 points. The final exam (also 2 hours) is cumulative and is worth 300 points. If your final exam score is higher than any of your midterm exam scores, then the lowest midterm exam score will be dropped and your final exam score will be scaled to a maximum of 450 points. I.e., your final exam will count for more, replacing the lower midterm exam grade, and giving you a better overall class performance. **There will be no make-up exams.** If you miss an exam, for **any reason**, it will count as the dropped exam. The final exam is not optional and cannot be dropped. **There will be no quizzes.**

Your final grade will be based on a maximum of 950 points, distributed as follows:

Midterm 1	150 points
Midterm 2	150 points
Midterm 3	150 points
Final exam	300 points
Homework	150 points
Clickers	50 points
Total	950 points

Letter Grade Assignments

A = 825–950
B = 700–824
C = 580–699
D = 475-579
F < 475

+/- grades will be included in these ranges and set at the instructor’s discretion

Students with Disabilities

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability Services. Your cooperation is appreciated.

Academic Honesty

The University adheres to a strict policy regarding cheating and plagiarism. These activities will not be tolerated in this class. Become familiar with the policy (<http://www.sa.sdsu.edu/srr/conduct1.html>). Any cheating or plagiarism will result in failing this class and a disciplinary review by Student Affairs.

Examples of Plagiarism include but are not limited to:

- Using sources verbatim or paraphrasing without giving proper attribution (this can include phrases, sentences, paragraphs and/or pages of work)
- Copying and pasting work from an online or offline source directly and calling it your own
- Using information you find from an online or offline source without giving the author credit
- Replacing words or phrases from another source and inserting your own words or phrases
- Submitting a piece of work you did for one class to another class

If you have questions on what is plagiarism, please consult the policy (<http://www.sa.sdsu.edu/srr/conduct1.html>) and this helpful guide from the Library: (http://infodome.sdsu.edu/infolit/exploratorium/Standard_5/plagiarism.pdf)

Labs

The lab coordinator for this course is Dr. "Sam" Somanathan. **You must attend your first scheduled lab or your spot may be forfeit!**

Chem 232 Lab Crashers

Crashers will be taken on a **lottery** basis depending on the availability of space.

1. Preference will be given to SDSU enrolled students, open university students will be accepted, provided no SDSU enrolled student participates in the lottery.
2. Preference will be given to students taking Lecture and lab together
3. Students enrolled must show up for the first day of their lab (week 1/26-30)

To keep their space in the lab, failure to show-up after 1hr the space will be given to crasher. If unable to make it to the lab and still want to keep the space, email rromanatha@mail.sdsu.edu or Chem office 619-594-5595 at least 2hr before lab start up time.

4. Add codes for the lecture (students who are repeating the lecture to get a better grade, provided they passed the lab) can be obtained from the Lecturer

Lecturer gives add codes for Chem 232 lecture

Sam gives add code for Chem 232 lab

For crashers getting a lab space determines whether they are in the lecture or not.

Extra Help

Help is available in a variety of forms.

- Work with your classmates on difficult material.
- Talk to your laboratory TA.
- Get a tutor. The Chemistry office (GMCS 209) or I can also help you to find one.

You can come to my office hours or contact me by email, but please make a strong effort to solve problems on your own or work with study groups because doing so will enhance your learning experience. I will try to respond promptly to emails, but do not expect me to answer them regularly on weekends or late at night.

Lecture Materials

Powerpoint slides will be posted after class. Worked problems and examples done on the board generally will not be posted. You will miss this material if you don't attend.

Tips for Success

****Do not fall behind.**** We will start with the fundamentals and build on them so that you can develop a deep understanding of how the structure of organic molecules determines their properties. **Consequently, material later in the course—and in O Chem II—will be enormously more difficult if you haven't mastered the material that comes first, and we will never move on to a point where you will not need the earlier material.** Students who fall behind in organic chemistry often experience much higher stress levels and end up with disappointing grades. **In my opinion, the most important skill for success is your ability to self-assess. Don't plan to study for a fixed number of hours. Plan to study for as long as it takes until you are confident that you've mastered the material. Develop a plan to check the completeness of your understanding by problem solving exercises and discussion with your peers. You should be confident of your skills when heading into an exam. Obviously, this is much harder to achieve if you don't start preparing until the day before an exam.**

You can't be a proficient scientist without a basis of factual knowledge, meaning that some memorization is an essential part of your education. That said, exams will be designed as much as possible to test your **comprehension** rather than focusing on rote memorization. **Expect that some exam questions will include a small "twist" that will be very easy to handle if you have understood, but very hard if you have only memorized.** This will be completely clear; I do not intentionally use trick questions.