

LECTURE SYLLABUS

Course	Organic Chemistry I, 31: Lecture and Laboratory
Time and Location	MTWThF - 1:00-4:00 pm Daly Science 207
Texts	Lecture: Text for this course is optional. The following texts/resources may be useful for you in this course: <ol style="list-style-type: none">1. <i>Organic Chemistry</i>, McMurry, 6th or 7th Edition2. Virtual Text in Organic Chemistry: http://www.cem.msu.edu/~reusch/VirtualText/intro1.htm3. Online edition or eBook for McMurry, 6th or 7th edition: Go to https://www.ichapters.com, search McMurry4. Any reasonable organic chemistry text for lecture preparation-reading on topics to be covered in the subsequent lecture. McMurry 6th or 7th edition or texts by Loudon, Carey and Wade are also good.5. <i>Organic Chemistry as a Second Language</i>, Kline Lab: <i>Introduction to Organic Techniques, A Microscale Approach</i> Pavia, Lampman, Kriz and Engel, Fourth Edition, 2007 Supplements: Molecular model set; Bound notebook for laboratory
Instructor	Lecture: Dr. John D. Spence Email: jdspence@scu.edu ; Phone: 554-6948 jspence@csus.edu http://www.csus.edu/indiv/s/spencej/ Laboratory: Drs. Paul Gendler, Mary Lee
Office Hours	DS 123 MTWThF 4:00-5:00 pm Other times by appointment

Objectives and Approach

This course will develop a number of basic concepts that will serve as the foundation for understanding organic chemistry. Learning these fundamentals will enable you to evaluate and comprehend all of the new material encountered during the organic chemistry sequence. The approach to achieve this objective is to reinforce these basic principles throughout the course demonstrating their application to problem solving.

An important goal of this introductory course is to teach the principles of organic reactivity through the careful study of each step in the reaction processes we encounter. A stepwise description of the reaction process is commonly referred to as the reaction mechanism. An understanding of mechanism is the foundation for further learning and problem-solving in organic chemistry and eases the burden of memorization in the course by demonstrating the relationships between reactions. The use of mechanism in problem-solving develops cognitive skills as the basic knowledge and understanding of chemical reactions must be applied to answer challenging questions on exams and problem sets. Developing the ability to critically analyze a reaction using the rules of chemical reactivity is one of the primary learning objectives for this course.

Since many of these concepts are new, it is important to become familiar with the topics to be discussed before lecture. Scanning the chapter material before class will greatly increase your comprehension of the lecture material and should only take about 30 minutes a lecture. Learning studies have shown that if a student reviews their notes directly after lecture, their comprehension of the concepts greatly improves. Take the time to review your notes after lecture and bring your questions to class or office hours.

To accurately assess your progress in this course, you must do **as many problems as possible**. Chemistry is a problem solving discipline and therefore doing the problems is a prerequisite to success in this and any chemistry course. If certain problems cause difficulty even after consulting the answer keys, see me during office hours for further explanation.

Use of Answer Keys and Problem Solving:

Many students do the problems *with* the study guide/answer key instead of consulting it when they have questions, thereby truncating the learning process. The best approach is to challenge yourself to work the problem a number of times before consulting the answer for assistance. This will force you to review the lecture material and develop your skill and tenacity at working the problems. If you cannot come up with a reasonable answer, consult the key for the answer only! Then try to rework the problem to achieve the right answer. When seeking out help with the problems, from me or other students, be sure to ask for only enough information to get you started on the problem. This process will improve your ability to solve the problems independently and more accurately reflect your progress. Development of strong problem-solving skills is a goal of this course and essential to your future success in science.

Course Content

We will begin reviewing some topics covered in general chemistry such as Lewis structures, molecular geometry, and atomic orbital hybridization. This leads into the topics of covalent bonding and molecular orbitals. From this background we will study three classes of organic compounds and their reactions: alkanes, alkyl halides, and alkenes. Using our understanding of atomic and molecular structure, we will study the relationship between structure and reactivity. To demonstrate the principles of organic reactivity, we will develop our understanding of each step of the reaction mechanisms so that reaction outcomes make “chemical” sense. This fundamental understanding of reaction mechanism will allow you to predict reaction results and interpret the new reaction processes encountered in this course. Other important concepts include: bond formation and cleavage, the strength of acids and bases, resonance and stereochemistry.

Grades

Grades will be based on your performance on 3 quizzes (25 pts each), 1 exam (100 points) and the final exam (200 points). Your grade in laboratory will have a small but possibly significant impact on your overall final grade, possibly to increase or decrease your grade. Unsuccessful completion of the laboratory work is grounds for failure in the course. Final grades will be based on a curve which reflects your performance relative to the average for the class.

Academic Integrity

Giving or receiving unauthorized aid in any form can result in course failure.
See me if further clarification is needed.

Standards

This course is a prerequisite for Chemistry 32, Organic Chemistry II. In order to satisfy the prerequisite, and thus be eligible to enroll in Chemistry 32, you must complete Chemistry 31 with a grade of C- or better. If you do not meet the standards as stated, it is your responsibility to not enroll, or to withdraw from pre-enrollment, in Chemistry 32. If you do enroll for a course for which you do not qualify, you are subject to Administrative Withdrawal on the first day of class.

Disability Accomodation Policy:

To request academic accommodations for a disability, students must contact Disability Resources located in The Drahmman Center in Benson, room 214, (408) 554-4111; TTY (408) 554-5445. Students must provide documentation of a disability to Disability Resources prior to receiving accommodations.

CLASS SCHEDULE

<u>DAY</u>	<u>DATE</u>	<u>CHPT.</u>	<u>TOPIC</u>
M	Jun 16	1	Hybridization, Bonding, Drawing Organic Compounds
T	Jun 17	2	Bond Polarity, Resonance, Acid-Base Chemistry
W	Jun 18	3,12	Functional Groups, IR Spectroscopy, Alkanes (isomers)
Th	Jun 19	3,4	Alkanes (nomenclature, conformational analysis, properties, ¹³ C NMR)
F	Jun 20	4	QUIZ 1 ; Cycloalkanes (nomenclature, conformational analysis)
M	Jun 23	9	Stereochemistry
T	Jun 24	5	QUIZ 2 ; Describing Organic Reactions
W	Jun 25	6	Alkenes (structure, stability, nomenclature, reactivity)
Th	Jun 26	7	Alkenes (preparation and reactions)
F	Jun 27	7	EXAM 1 (Ch 1-5, 9, 12); Alkenes (reactions and synthesis)
M	Jun 30	11	Nucleophilic Substitution and Elimination Reactions
T	Jul 1	11	QUIZ 3 ; Nucleophilic Substitution and Elimination Reactions
W	Jul 2	8	Alkynes (nomenclature, structure, stability, reactions), Course Review
Th	Jul 3	--	FINAL EXAM (Ch 1-7, 9, 11, 12)

Chapters listed correspond to McMurry, 7th Edition.

Course Website

On my website, you will find a link for Chem 31 that will contain select chapter lecture notes (Ch 1, 2, 3, 4, 9, 12), sample quizzes, sample exams, homework problem sets for each chapter, an additional comprehensive homework packet, and answer keys for all homework sets. Answer keys for quizzes and exams this summer will also be posted on the website. Please note that the sample quizzes and exams may cover slightly different material than quizzes and exams for the summer session of chem 31. Remember, you should work as many homework problems as possible to prepare for quizzes and exams, but do not rely too much on the answer keys.