

INTRODUCTORY ORGANIC CHEMISTRY

Instructor: Mas Imura, PhD

Office: Bech Hall 1920

Phone: (707)521-7852

Email: miimura@santarosa.edu

Office Hours:

Mon: 10:00AM – 11:00AM (** at MESA); 11:00AM – 1:30PM

Tue: 9:30AM – 10:30AM

Wed: 12:00PM – 1:00PM

OVERVIEW:

Welcome to CHEMISTRY 8 – Introductory Organic Chemistry!

As the science that describes matter and its changes, chemistry is central in our understanding of many fields, from health to the environment to the design and evaluation of materials. The fact that all of biology and manufacturing deal with matter guarantees that chemical science (esp, Organic Chemistry) will remain central to much of the human endeavor. Knowledge of Organic Chemistry is an essential foundation for technical training of future scientists, engineers, and health professionals.

This course is an introduction to the basics of principles of Organic Chemistry with an emphasis on nomenclature, structure, reactions, and reaction mechanism. Lecture topics include:

- Alkanes
- Alkenes
- Alkynes
- Haloalkanes
- Alcohols
- Ethers
- Thiols
- Aromatic compounds
- Amines
- Carbonyl compounds (aldehydes, ketones, carboxylic acid and their derivatives)
- Biochemical molecules (i.e. Carbohydrates, Proteins, Lipids, etc.)

Thank you for your interest in Organic Chemistry and in CHEM 8. I truly hope that you find this course stimulating and rewarding, and that you find it as enjoyable as I do teaching this course!

STUDENT LEARNING OUTCOMES (as stated in the official Course Outline of Record of SRJC.)

(https://portal.santarosa.edu/SRWeb/SR_CourseOutlines.aspx?Semester=20173&CVID=24068)

Upon successful completion of this course the student will be able to:

1. Identify and explain the basic concepts, terminology, and theories of organic chemistry and biochemistry.
2. Relate the molecular level structures of organic and biological compounds to their physical and chemical properties.
3. Predict and explain reactivity of organic compounds using reaction mechanisms.
4. Perform experiments safely and interpret observations in order to validate concepts in the laboratory.

GENERAL COURSE POLICY

I. Prerequisites: Course Completion of CHEM 1A **and** Course Completion of ENGL 1A or Course Completion of CHEM 42 (or CHEM 55) **and** Course Completion of ENGL 1A

II. Lecture: Bech Hall 1901, Mon and Wed 1:30 PM – 3:00 PM

Laboratory: Bech Hall 1901, Wed 8:00 AM – 9:00 AM (lab lecture);
Bech Hall 1948, Wed 9:00 AM - 12:00 PM

III. REQUIRED Course Materials:

- Textbook: Brown, W. H.; Poon, T. *INTRODUCTION TO ORGANIC CHEMISTRY* 6th, Ed. Wiley, 2016
(ISBN: 9781119233749 for E-Text or 9781119106968 for Loose-leaf)
- Chemistry 8 Lab Manual, Santa Rosa Junior College, Fall 2015
- Zubrick, J. W. *The Organic Chem Lab Survival Manual: A Student's Guide to Techniques* 10th, Ed. Wiley, 2016
(ISBN: 9781119183143 for E-Text or 9781118875780 for Paperback)
- Standard Laboratory Notebook (bound with numbered, duplicate pages)

IV. Attendance:

Attendance is **important** and **required** of all students. Attendance and attention are vital for your learning. Please do not miss or be consistently late to the class. Excessive absences will result in a significant reduction in your course grade, and may lead to the student being dropped from the course completely. **THERE WILL BE NO MAKE-UPS ON LABS OR EXAMS FOR ANY REASON OTHER THAN A DOCUMENTED MEDICAL EXCUSE.**

MISSING MORE THAN TWO LABS WILL RESULT IN AN "F" FOR THE ENTIRE COURSE, REGARDLESS OF THE STUDENT'S PERFORMANCE IN THE CLASS.

V. Standards of Conduct:

All students are expected to do their own work. This does not preclude collaboration and group study, but it does mean that anything put to paper and turned in is expected to come from that student. Cheating, or anything that can be construed as cheating will result in no credit given, if not worse.

There will be no inter-student communication during exams; any comments or questions are to be directed toward the instructor. Laboratory experiments will often be done in pairs, but each student is expected to record his or her own data. It is not acceptable for one partner to take notes and the other partner to copy everything at the end of the lab.

VI. Reading Assignments:

Lectures are designed to help you understand the material presented in the textbook. To get most out of the lecture, one should **ALWAYS** read the appropriate sections before they are discussed in class.

VII. Homework Assignments:

Homework is an important vehicle for study; working out the problems is one of the most effective ways to learn and study chemistry. On occasion, the assigned problem may be the source of an exam question!

VIII. Laboratory:

Laboratory exercises are an integral part of the course. They are designed to provide you with a hands-on way to experience the chemical concepts discussed in the lecture.

- Before lab, read the experiment and do all the pre-lab questions.
- Arrive on time, properly dressed.
- Follow all lab safety regulations discussed.
- Turn in your lab reports. Late labs will be marked down by 20% of the value of the lab reports.

TO RECEIVE A PASSING GRADE IN THE COURSE, PASSING WORK MUST BE DONE IN BOTH THE LAB AND LECTURE PORTIONS.

Attendance at laboratory sessions is mandatory. **PLEASE DO NOT MISS LABS.** No incomplete grades (I) will be given for missing labs. **In order to pass the course, no more than TWO (2) missing lab are allowed.**

You are expected to keep a Lab Notebook. The Lab Notebook is an extremely important part of any laboratory experience, since it is the permanent record of what was done and what was observed. Thus, you will be graded on the quality of maintenance of your Lab Notebook.

IX. Exams: There will be 4 exams and a final exam (cumulative) in the course.

NO MAKE-UP EXAMS WILL BE GIVEN IN THIS COURSE. If an examination is missed, a score of zero will be recorded. Excused absence from an exam will be granted only if proper documentation is provided.

X. Accommodations for Students with Disabilities: If you need disability-related accommodations for the class, please provide the authorization letter from the Disability Resources Department to me as soon as possible. Also, please come see me during the office hour as soon as possible to discuss about the accommodations.

XI. Re-Evaluation of Graded Work: Graded work may be submitted for re-evaluation within one class period from when it was received. In comparing ones graded materials with that of fellow students, any difference must be confirmed by submission of both students' work for consideration. The document in question must be submitted with written detailed rationale for any changes requested. Based on this rationale, the entire assignment will be thoroughly evaluated. This re-evaluation can result in positive, negative, or no change to the original score.

XII. Grading: The weighing factors for the various types of assignments and percentage cutoffs are listed below:

| Factors | Weights (%) |
|----------------------|-------------|
| Exams/Quizzes | 50% |
| Homework Assignments | 4% |
| Labs | 26% |
| Final | 20% |

Final course letter grades will correspond to the following percentages:

≥ 88% **A** ≥ 75% **B** ≥ 64% **C** ≥ 50% **D** Below 49% **F**

XIII. Emergency Evacuation Plan:

In the event of an emergency during class that requires evacuation of the building, please leave the class or the lab immediately, but calmly. We will meet in the open area between Bech Hall, Shuhaw Hall and Baker Hall to make sure everyone exited the building safely and to receive further instructions.

Copies of the red Emergency Preparedness Handbook are posted throughout the building and have more detailed information and procedures for most imaginable emergency situations. Any types of emergency can/should be reported to the district police dispatcher at (707) 527-1000.

XIV. XIV. Important Dates:

| | |
|-----------------------------|---|
| Jan 22 nd , 2017 | Last day to register/add w/o instructor's signature/add code |
| Jan 29 th , 2017 | Last day to drop semester length class (eligible for refund) |
| Feb 5 th , 2017 | Last day to register/add WITH instructor's signature/add code |
| Feb 5 th , 2017 | Last day to drop a class without "W" symbol |
| Feb 16 th , 2017 | Mandatory PDA Institutional Day (No classes) |
| Feb 17 th , 2017 | Lincoln's Day Holiday |
| Feb 20 th , 2017 | Washington's Day Holiday |
| Mar 20~26, 2017 | SPREING BREAK |
| Apr 23 rd , 2017 | Last day to drop a class with "W" symbol |

EXAM Dates:

| | |
|-------------------------------|-------------------------------|
| Feb 13 th , 2017 | Exam #1 |
| March 15 th , 2017 | Exam #2 |
| April 19 th , 2017 | Exam #3 (**during lab period) |
| May 8 th , 2017 | Exam #4 |

FINAL EXAM: May 24th, 2017 1:00PM ~ 3:45 PM
The Final Exam will be cumulative.

TENTATIVE LECTURE SCHEDULE

| <u>Week Beginning (Mon):</u> | <u>Topic</u> | <u>Chapter</u> |
|------------------------------|---|--------------------|
| Jan 16 | What is Organic Chemistry? | Chap. 1 |
| Jan 23 | Covalent bonding Shapes of Molecules | Chap 1 |
| Jan 30 | Acids and Bases Intro to Alkanes and Cycloalkanes | Chap. 2 Chap. 3 |
| Feb 6 | Alkanes and Cycloalkanes | Chap. 3 |
| Feb 13 | EXAM #1 – Feb 13th Mon Alkenes and Alkynes | Chap. 4 |
| Feb 20 | Alkenes and Alkynes (cont'd) | Chap 4 |
| Feb 27 | Reactions of Alkenes/Alkynes Intro to Haloalkanes | Chap. 5 Chap. 7 |
| Mar 6 | Haloalkanes | Chap. 7 |
| Mar 13 | Chirality EXAM #2 – March 15th Wed | Chap. 6 |
| Mar 20 | SPRING BREAK | |
| Mar 27 | Chirality (cont'd) Alcohols, Ethers, Thiols | Chap 6 Chap 8 |
| Apr 3 | Alcohols, Ethers, Thiols | Chap 8 |
| Apr 10 | Amines Spectroscopy | Chap 10 Chap 11 |
| Apr 17 | Benzene & Aromatic Compounds EXAM #3 – April 19th Wed (**during lab) | Chap 9 |
| Apr 24 | Aromatic Compounds Aldehydes and Ketones | Chap. 9 Chap 12 |
| May 1 | Carbonyl Compounds | Chap. 12/13/14 |

May 8

EXAM #4 – May 8th Monday

Carbonyl Compounds

Carbohydrates

Chap. 17

May 15

Carbohydrates (cont'd)

Amino Acids/Proteins

Lipids

Other topics

Chap. 17

Chap. 18

Chap. 19

FINAL EXAM WEDNESDAY May 24th, 2017 @1:00PM ~ 3:45 PM

The Final Exam will be cumulative.

TENTATIVE LABORATORY SCHEDULE

Lab Date:

Jan 18th

Jan 25th

Feb 1st

Feb 8th

Feb 15th

Feb 22nd

Mar 1st

Mar 8th

Mar 15th

Mar 22nd

Mar 29th

Apr 5th

Apr 12th

Apr 19th

Apr 26th

May 3rd

May 10th

May 17th

Topic:

NO LAB

Check-in/Safety

Identifying Unknown

Recrystallization and Melting Points

Steam Distillation of Cloves (Part I)

Steam Distillation of Cloves (Part II)

Thin-Layer Chromatography

Dehydration of Alcohol

Nucleophilic Substitution Reactions of Alkyl Halides

SPRING BREAK

Separation Anxiety

tba

Sodium Borohydride Reduction

**** Exam #3 during lab period**

Synthesis of DEET

Lidocaine Synthesis

Lidocaine Synthesis (cont'd)

Check-out