Chemistry 118 Special Topics in Organic Chemistry  
“The Chemistry of Beer and Brewing”  
Spring 2018

Contact Information
Instructor: Chester Simocko, PhD  
Office Location: Duncan 1  
Telephone: (408)924-5496  
Email: chester.simocko@sjsu.edu  
Office Hours: TR 10:30AM-12:00PM  
Class Days/Time: Tu 6:00PM – 6:50PM  
Classroom: DH 415  
Prerequisites: CHEM 112B (with a grade of "C" or better; "C-" not accepted)  
or instructor consent.

Faculty Web Page and MYSJSU Messaging
Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the Canvas site associated with Chemistry 118. I will also use the email address listed on your mySJSU account regularly to send information on Chem 118. You are responsible for checking for messages on this email and the Chem 118 Canvas site on a regular basis to learn of any updates.

Course Description and Prerequisites
Special Topics in Organic Chemistry covers a specific topic related to organic chemistry and is designed for chemistry majors for which it counts as a 1 credit chemistry elective. Prerequisite: CHEM 112B (with a grade of "C" or better; "C-" not accepted) or instructor consent.

Chemistry 118 is designed to introduce you to specific topics that involve organic chemistry, this semester that topic will be beer and brewing. The intent of this course is to familiarize you with the basic concepts and principles of beer from a chemistry perspective. An important goal of this course will be to link chemistry with these basic ideas with and tie your chemistry knowledge together with an everyday concept. As you will see, chemistry impact many areas of beer and fermentation!
Course Goals and Learning Objectives

Course Learning Outcomes (CLOs)

- Appreciation for the nature and scope of chemistry in beer.
- Application of key concepts from general chemistry and organic chemistry including electronegativity, solubility, sugars and starches, and functional groups to beer and brewing.
- Understanding the general principles of going from a grain to a glass of beer.
- Draw skeletal structures for organic compounds.
- Apply acid-base concepts to organic systems; predict ordering of acid or base strength.
- Discussing the importance of water chemistry in a healthy fermentation system.
- Learn common flavor components of beer and appreciate aroma and flavors.
- Understand the chemistry that occur during the mashing, boiling, and fermentation of beer.
- Discuss common techniques used to analyze beer.
- Discuss different types of beer and how ingredients determine the style.
- Understanding the different options for beer packaging with pros and cons of each.

Program Learning Outcomes (PLOs)

Chemistry 118 satisfies the following Undergraduate Program Learning Outcome for the Chemistry Department:

Program Learning Objective #2 - Demonstrate understanding of core concepts, methods and limits of scientific investigation to effectively solve problems in organic chemistry.

Required Texts/Readings

Textbook

There is no required textbook but I will be using the follow text to formulate my lectures and the class:
Other Readings and supplies

Additional documents will be provided, usually posted on the Canvas site for this course. Further information on beer brewing can be found at http://www.howtobrew.com/, information from this source will be used to supplement the lecture and the above textbook.

For tasting and beer style information we will be referring to the BJCP style guidelines that I will put on Canvas. They can also be found at BJCP Style Guidelines.

Library Liaison

The Chemistry Library Liaison is Yen Tran (yen.tran@sjsu.edu)

Course Requirements and Assignments

Catalog Description Special Topics in Organic Chemistry covers a specific topic related to organic chemistry and is designed for chemistry majors for which it counts as a 1 credit chemistry elective.

The scheduled time for this course is TBA.

Tentative Course Calendar:
A tentative schedule for the semester appears at the end of this document. Note in particular the dates for the Hour Exams and the Final Exams.

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of four-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.
NOTE that University policy F69-24, “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Attendance Policy

Beyond the initial day of class, roll will not be taken. However, attendance of the lectures is mandatory. If you miss a lecture, you are still responsible for all the material discussed in lecture (some of which may not be in the text). Note we will cover a significant amount of material during each class meeting. If you miss class meetings, it will be difficult to catch up due to the volume. Also, you are responsible for keeping up with any changes in the course or exam schedule, which otherwise will not be publicized outside of the lecture time. Please arrive promptly at TBA. A tentative lecture and course schedule is found at the end of this syllabus.

Grading Policy

GRADING (see below for numerical breakdown and percentages)

There will be one final exam worth 200 points. This exam will take place during the final time slot, Tuesday May 22 from 5:15-7:30PM. It will consist of a written portion focusing on the brewing process and the chemistries that take place and a practical portion focusing on flavors and aromas. This will be an open note exam.

Another 300 points will be awarded for class participation. This will involve interacting with guest speakers, in-class problems, and discussion.

Your final grade will be based on:

300 (60%) points for class participation
200 (40%) Final Exam

TOTAL 500 points

Grades will be assigned on a "+/-" system. The course grades will be assigned according the following ranges:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>100-97%</td>
</tr>
<tr>
<td>A</td>
<td>96-93%</td>
</tr>
<tr>
<td>A-</td>
<td>92-90%</td>
</tr>
<tr>
<td>B+</td>
<td>89-87%</td>
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<tr>
<td>B</td>
<td>86-83%</td>
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<tr>
<td>B-</td>
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<tr>
<td>C+</td>
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<tr>
<td>C</td>
<td>76-73%</td>
</tr>
<tr>
<td>C-</td>
<td>72-70%</td>
</tr>
<tr>
<td>D+</td>
<td>69-67%</td>
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<tr>
<td>D</td>
<td>66-63%</td>
</tr>
<tr>
<td>D-</td>
<td>62-60%</td>
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<tr>
<td>F</td>
<td>&lt;59%</td>
</tr>
</tbody>
</table>

Any modifications will be in your favor, but you should not expect significant changes. Note that the "class average" for a given exam is not necessarily a "C" grade. Grades are assigned by these grade ranges, not by "curves."
It is possible to do poorly on one exam, but you may improve your overall grade by doing well in another exam. In assigning grades, only one set of criteria are applied equally to all students in the class - everyone has the same opportunity as everyone else to earn their grade.

Note that "incomplete" grades will only be considered if you have an unexpected situation or emergency that prevents you from finishing the semester. It is required that you have completed most of the course work with a passing grade until that point. A typical situation is a medical emergency that prevents you from taking the final exam - to be considered you must provide information and a means to verify the emergency. Poor performance in the class or inability to keep up with the material is not an acceptable reason for an incomplete or to drop the class.

In order to estimate your current grade in this course and progress towards your course grade, keep track of your hour exam and class participation scores as the semester progresses. Add the points you obtained and divide by the total points scored up until that time to determine your % of points to that date. Compare the % to the table to estimate your current grade standing.

When exams are returned to you, you will usually find written comments on incorrect answers. Read these carefully since they not only provide feedback on those exam questions, but are intended to guide you for future exams. The keys for every exam will be posted shortly after the exam is given. Use this information for a self-assessment of your progress in Chem 118. Ask me questions if something is not clear.

EXAM POLICIES:

• Roll will be taken during exams.
• IDs may be randomly checked so always bring a picture ID.
• Seats will be assigned at my discretion.
• Calculators, computers, cellphones, or any other electronic devices that can photograph, record, and/or transmit images of any kind are NOT allowed at your desk during exams. These must be left in the front of the room. No notes or other sources of information are allowed. Anyone found violating this rule will receive, at minimum, an automatic score of "0 points" for the exam and this exam will be counted as one of the 2 hour exam scores (the second highest score will be dropped). Additional judicial sanctions will apply. See Academic Integrity section below.

Other Class Policies:

Audio Recording: audio (only) recording is allowed. Note I do not allow video recording. See also University Policies below.
Cell Phones: Out of courtesy, turn these off during lectures and exams.
Computers: You may use your laptop only during class lectures, as long as you can do so in a way that is not distracting to other students. Computers or any web-enabled devices are not allowed during exams.
• Exam Makeup and Regrade Policy:
You are required to take both exams given. A makeup will only be considered if you miss an exam due to an unforeseen emergency and provide a documented and verifiable reason. In all cases, you must contact me as soon as reasonably possible. Before any action will be taken, you will be required to provide a verifiable document describing your emergency with the doctor's name and phone number.

Any request for a regrade or recalculation of any exam or quiz must be made within one week after the exam is returned in class (if you are not in class the day it is returned, it is your responsibility to obtain your exam from me). No regrades will be considered beyond this time. The exam must be left with me, and I will review the entire exam.

University Policies

As a student at SJSU, you should review these University Policies which apply to ALL university courses.

http://www.sjsu.edu/gup/syllabusinfo/#GeneralExpectations

The topics include the following:

- General Expectations, Rights and Responsibilities of the Student
- Dropping and Adding
- Consent for Recording of Class and Public Sharing of Instructor Material
- Academic integrity
- Campus Policy in Compliance with the American Disabilities Act
- Student Technology Resources
- SJSU Peer Connections
- SJSU Writing Center
- SJSU Counseling and Psychological Services

In addition to the university policies above, I have additional policies that apply specifically to Chem 118. Please note the following:

Consent for Recording of Class and Public Sharing of Instructor Material

Audio recording of lectures is allowed. I do not allow video recording of lectures. Much of the material I prepare for Canvas is prepared by me and is considered my personal property. It may not be shared with anyone who is not enrolled in Chem 8.

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have
submitted, or plan to submit for another class, please note that SJSU’s Academic Integrity Policy S07-2 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at http://www.sjsu.edu/drc/ to establish a record of their disability.

• Emergencies and Building Evacuations

If you hear a continuously sounding alarm, or are told to evacuate the building by an Emergency Coordinator, walk quickly to the nearest exit (out the door and turn left to exit the Science Building). Take your personal belongings as you may not be allowed to return. Follow the instructions of the Emergency Coordinators. Be quiet so you can hear instructions. Once outside, move away from the building. Do not return to the building unless the Police or the Emergency Coordinator announces that this is permissible.

CHEMISTRY 118: Special Topics in Organic Chemistry
Spring 2018

<table>
<thead>
<tr>
<th>Topics Covered</th>
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</thead>
<tbody>
<tr>
<td>Introduction (What is Beer?)</td>
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<tr>
<td>Water</td>
</tr>
<tr>
<td>Starches and Sugars</td>
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<tr>
<td>Milling and Mashing</td>
</tr>
<tr>
<td>Wort Separation and Boiling</td>
</tr>
<tr>
<td>Fermentation</td>
</tr>
<tr>
<td>Tests and Measurements</td>
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<tr>
<td>Chemistry of the Flavor and Beer Styles</td>
</tr>
<tr>
<td>Topics Covered</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Foam and Haze</td>
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<tr>
<td>Beer Packaging</td>
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<tr>
<td>Flavor Stability</td>
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</tbody>
</table>

**FINAL EXAM:** Tuesday May 22\textsuperscript{nd} 5:15PM – 7:30PM