San José State University
Department of Chemistry
CHEM 112B Organic Chemistry II

Instructor: Dr. David Brook
Office location: SCI 166
Telephone: (408) 924-4994
Email: david.brook@sjsu.edu
Office hours: TuTh 0920-1020 and by appointment
Class days/time: TuTh 0800-0915
Final Exam: Monday Dec 15, 7:15 am
Classroom: SCI 142
Prerequisites: CHEM 112A with a grade of C or better

Faculty Web Page
Copies of the course syllabus and major assignment sheets may be found on my faculty web page accessible through the quick links/faculty web page links on the SJSU home page after the first week of classes.

Messages related to this class will be sent by email. You are responsible for making sure I have an accurate email address for you that you check regularly. Emails to me should use my sjsu email address: david.brook@sjsu.edu, for questions, etc. Please put CHEM112B in the subject line of any emails related to this class

Course Description and Goals
A continuation of Chem 112A. Several more classes of organic compounds will be studied in some detail. There will be an emphasis on thorough mechanistic understanding of reactions, this is not just a "memorization" course. Review of concepts from the first semester is strongly encouraged. We will ultimately apply our understanding of classes of organic compounds to develop an appreciation for more complex biological systems.

Organization: The sequence of topics in the text will be followed approximately, though time will be taken to review earlier material and place newer material in context. A tentative schedule is given below, but will be subject to change as regards to the topics and assigned reading. Because the course is built up in a cumulative manner, material from the first chapters will be important to understanding later chapters. It is therefore important not to fall behind. You should seek help with material you may be having trouble with as you go along rather than deferring it to right before an exam.
Course Learning Outcomes

Upon successful completion of this course students will be able to:

Show mastery of the topics covered in CHEM 112A (Ch 1-11, 14, 16 of McMurry)
Show mastery of the material covered inc CHEM 112B (Ch17-28 of McMurry)
Identify the main classes of organic compounds by functional group, provide IUPAC names for simple organic molecules and draw skeletal structures for given IUPAC names
Recall the main reactions of, and main synthetic routes for alkenes, alkyl halides, aromatic compounds, alcohols, ethers, thiols, thioethers, amines, aldehydes, ketones, carboxylic acids, esters, amides, acid chlorides, acid anhydrides and nitriles.
Suggest appropriate mechanisms for the above reactions using the curved arrow formalism, and be able to describe how the mechanism may change according to the structure of the molecule and/or the reaction conditions
Predict reaction products based on a knowledge of reaction mechanism
Suggest possible pathways for short (3-4 steps) multistep syntheses of organic compounds, accounting for functional group/reaction condition incompatibility and understanding and using the concept of protecting groups as necessary

Program Learning Objectives

This class contributes toward program learning objective 2, listed on the department website:
http://www.sjsu.edu/chemistry/Academic_Programs/undergraduate_program_learning_objectives.html

Required Items

Textbook
- McMurry, Organic Chemistry

Online Homework
- www.saplinglearning.com

Useful but not essential:
- McMurry, Study Guide and Solutions, Manual for Organic Chemistry (6th or 7th ed.)
- Weeks, Pushing Electrons
- Scudder, Electron Flow in Organic Chemistry
- Klein, Organic Chemistry as a Second Language

Other equipment requirements
- A set of molecular models.
- Student photo-ID card at all exams (see below).
Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-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.

Grades

Grades will be based on online homework (100 points), the best two of three mid-term exams (100 points each), and a final exam (200 points) (500 points total). Dates are given in the class schedule below.

Online Homework

Online homework will be completed using Sapling Learning (www.saplinglearning.com). You must enroll on the Sapling website (cost $29.99) and search for CHEM 112B. In addition to contributing to your grade, the online homework problems give you important practice and feedback in solving problems in organic chemistry. There is a set of problems for each chapter we will cover. You may complete the problems at your own pace, but I strongly recommend you complete the relevant assignments before each midterm. You may take repeated attempts to answer each question correctly, but each time you lose 5% of the possible credit. **ONLINE HOMEWORK IS AN IMPORTANT PART OF YOUR GRADE. IT MUST BE COMPLETED BY MIDNIGHT ON THE DAY OF THE FINAL. Even if the website accepts answers after this time they will not contribute toward your final grade.**

Midterms

Midterms will be part multiple choice, part short answers. Though they will focus on the most recently studied material, because of the way the based largely on material since the previous midterm.

Final Exam

The final exam will consist of an American Chemical Society standardized test in organic chemistry

Letter Grades

Letter grades will not be assigned to individual exams or homework. Final letter grades will be based on the point total of all graded work. To earn a grade of A students need to score 85% or greater over the whole semesters work. Lower grades (including +/-) will be assigned in 5% intervals below this, i.e. 80%-84% A–, 75%-79% B+, 70-74% B, 65-69% B– , 60-64% C+, 55-59% C, 50-55% C–, 45-50% D+, 40-45% D.

University Policies

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://
www.sjsu.edu/provost/services/academic_calendars/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latdrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

**Consent for Recording of Class and Public Sharing of Instructor Material**

University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor’s permission to record the course.

- “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”

- “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

**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/aec to establish a record of their disability.

In 2013, the Disability Resource Center changed its name to be known as the Accessible Education Center, to incorporate a philosophy of accessible education for students with disabilities. The new name change reflects the broad scope of attention and support to SJSU...
students with disabilities and the University's continued advocacy and commitment to increasing accessibility and inclusivity on campus.
<table>
<thead>
<tr>
<th>Days</th>
<th>Topics</th>
<th>Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/26, 8/28</td>
<td>Review 112A</td>
<td>1-15</td>
</tr>
<tr>
<td>9/2, 9/4</td>
<td>Aromatic Chemistry, Conjugation</td>
<td>15, 16</td>
</tr>
<tr>
<td>9/9, 9/11</td>
<td>Alcohols, Phenols</td>
<td>17</td>
</tr>
<tr>
<td>9/16, 9/18</td>
<td>Ethers, Epoxides, Sulfides</td>
<td>18</td>
</tr>
<tr>
<td>9/23, 9/25</td>
<td>Review, Exam 1</td>
<td></td>
</tr>
<tr>
<td>9/30, 10/2</td>
<td>Aldehydes and Ketones, Nucleophilic addition</td>
<td>19</td>
</tr>
<tr>
<td>10/7, 10/9</td>
<td>Carboxylic Acids and Nitriles</td>
<td>20</td>
</tr>
<tr>
<td>10/14, 10/16</td>
<td>Nucleophilic Acyl Substitution</td>
<td>21</td>
</tr>
<tr>
<td>10/21, 10/23</td>
<td>Review, Exam 2</td>
<td></td>
</tr>
<tr>
<td>10/28, 10/30</td>
<td>Carbonyl alpha substitution</td>
<td>22</td>
</tr>
<tr>
<td>11/4, 11/6</td>
<td>Carbonyl condensation</td>
<td>23</td>
</tr>
<tr>
<td>11/11, 11/13</td>
<td>Carbonyl Condensation</td>
<td>23</td>
</tr>
<tr>
<td>11/18, 11/20</td>
<td>Review, Exam 3</td>
<td></td>
</tr>
<tr>
<td>11/25, 11/26</td>
<td>Carbohydrates, THANKSGIVING</td>
<td>24, 25</td>
</tr>
<tr>
<td>12/2, 12/4</td>
<td>Amino Acids, Proteins</td>
<td>26</td>
</tr>
<tr>
<td>12/9, 12/11</td>
<td>Lipids, Nucleic Acids</td>
<td>27, 28</td>
</tr>
<tr>
<td>12/15</td>
<td>Final Exam</td>
<td></td>
</tr>
</tbody>
</table>