Course Syllabus

Chemistry 2300 – Principles of Organic Chemistry – Fall 2012

Instructor: Prof. Bradley Davidson
Office: Widtsoe Hall 341
Phone: 797-1628
E-mail: brad.davidson@usu.edu

Meeting Time/Place: MWF 3:00 – 3:50 PM. Widtsoe Hall 007
Office Hours: MT 9:30 - 10:30 AM; F 10:30 - 11:30 AM

Support Staff:
SI: Adam Rasmussen (adamras2002@hotmail.com)
UTF: Jesse Spinner (jesse.spinner@aggiemail.usu.edu)

Materials:
- Study Guide and Solutions Manual by Bruice
- iClicker
- Model Kit – Available in Chem Stores (1st floor of Widtsoe Hall)

Tentative Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Quiz</th>
<th>Chapter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>one</td>
<td>8/27 – 8/31</td>
<td>Pre</td>
<td>Introduction, Chapter 1</td>
</tr>
<tr>
<td>two</td>
<td>9/5 – 9/7</td>
<td>1</td>
<td>Chapter 1, Chapter 2</td>
</tr>
<tr>
<td>three</td>
<td>9/10 – 9/14</td>
<td>2</td>
<td>Chapter 2, Chapter 3</td>
</tr>
<tr>
<td>four</td>
<td>9/17 – 9/21</td>
<td>3</td>
<td>Chapter 4</td>
</tr>
<tr>
<td>five</td>
<td>9/24 – 9/28</td>
<td></td>
<td>Exam 1 (9/24), Chapter 5</td>
</tr>
<tr>
<td>six</td>
<td>10/1 – 10/5</td>
<td>4</td>
<td>Chapter 5, Chapter 6</td>
</tr>
<tr>
<td>seven</td>
<td>10/8 – 10/12</td>
<td>5</td>
<td>Chapter 6, Chapter 7</td>
</tr>
<tr>
<td>eight</td>
<td>10/15 – 10/18*</td>
<td>6</td>
<td>Chapter 7, Chapter 8</td>
</tr>
<tr>
<td>nine</td>
<td>10/22 – 10/26</td>
<td>7</td>
<td>Chapter 8, Exam 2 (10/24), Chapter 9</td>
</tr>
<tr>
<td>ten</td>
<td>10/29 – 11/2</td>
<td>8</td>
<td>Chapter 9, Chapter 10</td>
</tr>
<tr>
<td>eleven</td>
<td>11/5 – 11/9</td>
<td>9</td>
<td>Chapter 10, Chapter 11</td>
</tr>
<tr>
<td>twelve</td>
<td>11/12 – 11/16</td>
<td>9</td>
<td>Chapter 11, Exam 3 (11/16)</td>
</tr>
<tr>
<td>thirteen</td>
<td>11/19**</td>
<td></td>
<td>Chapter 12</td>
</tr>
<tr>
<td>fourteen</td>
<td>11/26 – 11/30</td>
<td>10</td>
<td>Chapter 12, Chapter 15</td>
</tr>
<tr>
<td>fifteen</td>
<td>12/3 – 12/7</td>
<td>11</td>
<td>Chapter 19, Review (12/5 and 12/7)</td>
</tr>
<tr>
<td>sixteen</td>
<td>12/10 (M)</td>
<td></td>
<td>Final Exam (1:30 - 3:20 pm)</td>
</tr>
</tbody>
</table>

*Fall break is on 10/19. Friday’s class will be held on Thursday, 10/18.

Assessment: Assessment involves measuring student progress as well as teaching effectiveness. The following assessment strategies have been incorporated into this course.

- A pre-test/post-test approach will be used to measure comprehension and teaching of important concepts. The pre-test will be administered through Canvas and must be taken on your own time. The ten multiple choice questions of the pre-test will reappear in the final, in slightly altered form, to assess teaching and learning progress during the semester. If weaknesses are observed in specific subject areas, teaching methods will be reevaluated. Five points will be awarded simply for taking the pre-quiz.

- Student evaluations will be used to evaluate course/instructor strengths and weaknesses. In addition to the standard end-of-course evaluation, a midterm questionnaire will be used to assess teaching/learning strategies. Constructive suggestions are welcome anytime.
IDEA Objectives: A course evaluation system, wherein you will be able to self-access your progress in achieving the following general objectives.

1) Have you gained factual knowledge about Organic Chemistry, including terminology, methods, and trends, as further described in the Specific Learning Objectives, shown below?

2) Have you learned fundamental principles, generalizations, and theories that describe and explain chemical reactions and chemical properties?

3) Have you further developed your ability to analyze and critically evaluate ideas, arguments, and scientific models.

General Learning Objectives:

1. Apply electronegativity and VESPR to draw the Lewis structures and to predict the chemical properties for various functional groups.

2. Use electronegativity, the octet rule, and electron movements to write the resonance structures and to evaluate their relative stabilities.

3. Apply the concepts of acids/bases and nucleophiles/electrophiles to predict chemical reactions.

4. Recognize and differentiate constitutional isomers, configurational isomers, conformational isomers, and stereoisomers, with respect to their chemical and physical properties.

5. Write correct electron-pushing mechanisms for the assigned reactions in each chapter.

6. Apply concepts of resonance and inductive effects to predict the chemical and physical properties for different functional groups and the molecules to which these functional groups are attached.

7. Explain the reaction mechanisms using the concepts of steric hindrance, carbocation stability, and leaving group capability.

8. Use $pK_a$ values to explain or define the roles of a molecule bearing a lone-pair of electrons (:Z) as base, nucleophile, or leaving group in a chemical reaction.

9. Explain aromaticity and recognize aromatic compounds.

10. Be able to perform all of the detailed learning objectives posted online.

Grading Scheme:

Point Distribution: Three one-hour exams (3 x 200 pt) 600 pt

Best ten out of eleven on-line quizzes (10 x 10 pts) 100 pt

In-class iClicker questions (drop lowest five) ~50 pt

Comprehensive Final (300 pts) 300 pt

Total Points: 1050 pt

Grade Breakdown:

The grade received in the course is based on your performance on the exams, quizzes, and homework. Grades are guaranteed as given below for overall percentage score on all exams. Actual grade ranges may be curved somewhat lower, depending on the overall class average.

A, A- 100 – 90%
B+, B, B- 89 – 80%
C+, C, C- 79 – 70%
D 69 – 60%
F 59% and below
Procedures:

1. The exams are meant to test your understanding of the topics covered in lecture, not your ability to repeat memorized problems. Expect some questions that require you to apply your understanding to new problems. Ultimately, because you are in this course to learn organic chemistry, exams are meant to offer learning opportunities.

2. The format of the exams is a combination of fill-in (50%), where you will be expected to draw chemical structures and explain your answers, and multiple choice (50%). A self-correcting approach to the multiple-choice questions will be used. You will have the opportunity, after consulting your notes, textbook, even classmates, to turn in a 2nd SCANTRON, at the beginning of the next class period, with your revised answers. Your final score will be the average of the two attempts.

3. There will be no make-up exams. It is possible to take an exam in advance, but only with a valid excuse and prearrangement with me. If you miss an exam without prearrangement, then you will receive a zero for the exam.

4. Addition mistakes or questions over exam grading should be discussed with me within one week following the return of the exam and posting of the answer key. No point adjustments will be made after this time.

5. Quizzes will be offered through Canvas (online.usu.edu) and must be taken on your own time. Each quiz will be available from Monday, 3:00 PM, until the following Monday, 3:00 PM. They will consist of ten multiple-choice questions, chosen randomly from a bank of questions. They will be open-book, with a time limit of 30 minutes, and can be taken as many times as you want, with only your highest score being recorded. You will benefit the most from the quizzes if you prepare and try to take them without help from the book or your notes.

6. A single question iClicker quiz will be given at the beginning of each class period, except exam days. These questions, which must be answered individually, without consulting notes, books, or neighbors, will be worth 2 pt for a correct answer and 1 pt for an incorrect answer. It is your responsibility to register your iClicker at iclicker.com and to remember to bring your iClicker, in working order, to class each day. At the end of the semester, everyone’s five lowest clicker scores will be dropped.

7. For each exam, a “Topic of Interest” will be posted on the course webpage. An extra credit question pertaining to the “Molecule of Interest” worth 5 pt will be offered on each exam.

8. All answer keys, practice tests, lists of assigned problems, etc. will be posted on the course Canvas site. Answer keys and practice tests will be available in pdf format, which will require you to have Adobe Acrobat Reader on your computer.

9. The main function of office hours is to discuss and solve problems that you may be having with the course materials, assigned problems, and concepts presented during lecture. Try to formulate questions in advance. Do not expect a mini review session.

10. The administration of Chemistry 2300 will adhere strictly to the academic regulations stipulated in the most recent USU General Catalog. The complete code of Policies and Procedures for Students can be viewed at: http://www.usu.edu/studentservices/studentcode/.

11. It is official University policy that unless you have three exams on the same day, you must take the final exam in this course at the officially scheduled time. Permission to take a final at any other time for any other reason can only be obtained from the course instructor.

12. The University add/drop schedule can be found at: www.usu.edu/registrar/. The University policy on giving a grade of Incomplete will be strictly followed.

13. Students with ADA-documented physical, sensory, emotional, or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435) 797-2444 voice, (435) 797-0740 TTY, or toll free at (800) 259-2966. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print or digital) are available with advance notice.

14. All individuals are responsible for understanding the contents of this document.

Suggestions:

1. Try not to simply memorize. You will be more successful if you strive to understand the underlying principles.


3. Make up flash cards with reagents on one side and products on the other and with organic and inorganic reagent on one side and organic reagent and product on the other. Drill yourself.

4. Keep up with lecture and reading materials.

5. Make sure to take the on-line quizzes! In addition to helping your overall comprehension and exam performance, do not miss easy-to-obtain points.

6. Work the problems! Work the problems! Work the problems! (practice makes perfect)

7. Use the web sites listed above.