CH2400 (Revised)  
Fall Semester 2005  
Instructor: Dr. Dallas K. Bates  
email: dbates@mtu.edu - Use it! - an excellent way to get answers 'fast'.

Office Hrs: By arrangement: anytime (contact me before or after class or by email for an appointment); Fixed hours: MTWF: 10:30-11:00.

Office: 19 - 708A. If you are working hard (even if it seems to you like you're not getting anywhere), I am willing to help you succeed in this course. Please feel free to see me in class or in my office about any questions or difficulties you have with the material.

The Study Guide for this text is available in the bookstore. Other organic textbooks will contain problems over material similar to that covered in class. You may borrow other textbooks or use the resources of the Chemistry Learning Center to find additional problems to work on (~100 problems per chapter is reasonable)

Software: ChemSketch v.5.08 (ACDLabs.com/download- Freeware). This software is available on the Biology and ChemEngg networks and is used for drawing organic structures and converting drawn structures to IUPAC compound names. If you have an difficulties finding or executing it, let me know right away.

Help: There are many ways to ask questions about lecture and text material covered in CH2400. Immediately before and after lecture are excellent times to ask questions or to make an appointment. The Chemistry Learning Center (CLC) is able to provide assistance as well. Look for announcements of CLC hours in class.

Course Objective: To provide students with a foundation in organic chemistry. This course should provide a basis for further discovery in more advanced courses in materials science, polymer chemistry, unit operations, plant design, biochemistry, or molecular biology as well as provide basic information and "real-life" examples for students who (mistakenly) believe their only exposure to organic chemistry will be this course.

Internet Resources: ChemFinder.com; www.chem.uic.edu/web1/OCOL-II/WIN/HOME.HTM; www.jbpub.com/organic-online/;

MTU complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act. If you have a disability and need a reasonable accommodation for equal access to education or services at MTU, please call Gloria Melton at 72212. For other concerns you may contact your academic advisor, department chair, or the Affirmative Action Office.
TOPICS (Tentative schedule)

<table>
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<tr>
<th>Week</th>
<th>Reading Assignment by Chapter</th>
<th>Problem Assignment</th>
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<tr>
<td>2-3</td>
<td>2 (Alkanes)</td>
<td>Chap 2: 12, 18, 25-28, 30, 33, 36, 37, 45, 51.</td>
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<td>3-5</td>
<td>3 [Alkyl Halides (Haloalkanes)]</td>
<td>Chap 3: 6, 7, 9c, 10-18, 19a, 20a, 23, 25, 28, 29a, 32b, 35, 38a, 39, 42.</td>
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<td>5-6</td>
<td>4 and 5 (Alcohols and Ethers)</td>
<td>Chap 4: 6, 7, 9-12, 14, 15, 16-18, 24acfg, 26, 29, 31, 33, 35, 36, 38, 39, 41, 47, 51-53. Chap 5: 3-11, 13de, 18bc, 20-22, 28, 30, 33, 34, 35a,b.</td>
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<td>7-8</td>
<td>6 and 7 (Alkenes and Alkynes)</td>
<td>Chap 6: 1, 2, 5, 7-9, 11, 12, 13ae, 14, 15-19, 21, 23, 24d, 25a, 27, 32, 33, 39, 41bgh, 4 2a, 46, 47, 52ch, 60. Chap 7: 3, 5, 6abd, 10, 15c.</td>
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<td>9</td>
<td>8 and 9 (Conjugated Dienes and Aromatics)</td>
<td>Chap 8: 7-12, 13. Chap 9: 2, 5, 9, 11-14, 19, 20abc, 23, 26, 29, 30, 32, 33, 40, 41, 45.</td>
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<td>11-12</td>
<td>11 (Determination of Structure: Spectroscopy)</td>
<td>1, 4-8, 10, 11, 13, 14, 17-24, 25bc, 26b, 30, 31bc, 32b, 34, 37, 41, 43-45, 46abc, 49abc, 51a, 54, 58abc, 60-63, 65, 67, 68.</td>
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<tr>
<td>12</td>
<td>12 (Amines)</td>
<td>Download problem set from CH2400 website</td>
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<tr>
<td>13-14</td>
<td>13 (Carbonyl Compounds: Aldehydes and Ketones)</td>
<td>Download problem set from CH2400 website</td>
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A note about assigned problems: Working problems is essential to learning organic chemistry. You should work every problem assigned (a study guide is available, but please use it as a last resort after seriously attempting to work a problem). Keep up with the assigned homework problems! They will not be collected or graded, but they are critical to your success.

In addition to assigned problems, there are several websites with additional problems for your practice. A couple of those are listed on page 1 (Internet Resources)

GRADING

Point distribution of graded work:

There are 500 possible points in CH2400. These points are divided between tests, the final exam and “other” (in-class assignments, out of class assignments, and various other stuff I assign).

I have asked you to thoroughly read this document. I was serious: Your first assignment (which is worth 20 points just for handing it in) is to email me the following:
(i) subject line “CH2400 other credit”
(ii) a paragraph explaining why you are studying at Michigan Tech.
(iii) a paragraph indicating your major and why you chose that major and (iv) a paragraph on one of the following topics:
(a) What are your academic goals you hope to achieve within five years of graduation? or (b) what are your major academic concerns as you work to complete your degree at MTU?

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GRADING (continued)

Tests (3): 300 (60 %)
Group poster presentation *
Final 150 (30 %)
Other 50 (10 %)

* For use in the case of borderline grades to determine whether a “bump” is appropriate, participation is required.

Test dates: September 16, October 14, and November 18.

Test format: Tests are multiple choice with an occasional short answer question. Sample tests (with answer keys) are archived on the CH2400 web site.

Final Exam: The final exam is typically a larger version of previous tests and may include material from problems worked in class.

Grades: Histograms showing grade distributions for AY2002-2004 are posted on the CH2400 Bulletin Board on the 7th Floor of the ChemSci Building. These historical performance data are the basis for the points necessary to earn each grade level this year in CH2400:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum pts (out of 500)</th>
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<tbody>
<tr>
<td>A</td>
<td>400</td>
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<tr>
<td>B</td>
<td>350</td>
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<tr>
<td>C</td>
<td>300</td>
</tr>
<tr>
<td>D</td>
<td>250</td>
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*Based on the equation Pts = 3*(T1 + T2 + T3 + Final) + [“other” pts (max = 50)]
Where T1, T2, T3 and Final equal your scores on these exams (which will be approximately 33, 33, 34, and 50 questions, respectively.

Cautionary notes:

1. I will announce what materials may be used on tests and the final exam in class. **ONLY these materials may be used. Make sure you understand what is allowed: USE OF ‘UNAUTHORIZED’ MATERIALS ON A TEST OR THE FINAL WILL RESULT IN A GRADE OF ZERO (0) FOR THAT EXERCISE.**

2. If an exam can not be given during the assigned time due to unforeseen or unscheduled class cancellations, the exam will be given during the first regularly scheduled class period after classes resume.
Tips on how to do well in organic chemistry- D. Bates (8-18-02)

1. **Come to class.** The pace is fast for this class and a lot of material is covered. Coming to class keeps you connected to the material being covered and the lectures should serve simply as a skeleton, which you must flesh out in your reading and your work on problems. You should plan on significant work outside of class in order to produce an ‘anatomically correct’ body of knowledge from the skeleton I provide in class.

2. **Read the book.** Lectures will cover some of the material in the book, but not everything you will need to know.

3. **Participate in class.** I am very open to questions in class and I try to ask questions of the class during lecture. *You can influence the direction the discussion takes by participating (I love to talk about how organic chemistry explains events in everyday life and in industrial processes and I am easily distracted from my prepared notes!)*

4. **Work problems.** I assign problems from the text, provide web addresses for access to additional relevant problems and hand out sample exercises and tests. Be sure to try to solve problems I give in class. If you are not one already, become an active learner.

5. **Don’t get behind.** As assignments come due or as tests loom large in other classes, there will be temptation to put off studying organic. Don’t succumb! O-Chem is a cumulative subject; what is discussed today will most likely become the basis of material in subsequent lectures.

6. **Understand the chemistry.** Contrary to the way many students study O-Chem, science is NOT simply an immense array of more or less connected trivial facts. Science is a collection of a few basic concepts that can be used to make predictions. Although there are lots of new terms, conventions and ways of naming organic compounds that you will need to memorize, the students who do best in O-Chem become confident enough to take basic facts and extrapolate them to rationalize and explain ‘new’ material.

7. **Use practice tests only as directed.** These tests are designed to show you topics you need to study. Directions for use:
   i. Set aside 2 hours Tuesday night on the week of the test. Lock this time in stone for O-Chem and mark it in your calendar.
   ii. Use this time to work the test beginning to end, without notes or book.
   iii. Correct the test using your notes and textbook. At this point (not earlier) you may want to work with one or more classmates, but keep focused on O-Chem.
   iv. Bring any remaining questions to class on Wednesday to be answered.
   v. Review your sample test to identify any areas that still need study.

Extensive experience has shown this technique works! Cutting corners often leads to frustration and disappointment.

Thanks to Professor G. Buraly (UMN-TC) for the original ideas.