**Chemistry 237-2C**  
**Organic Chemistry II**

**Summer 2005**

Instructor: Dr. Craig McClure  
cmcclure@uab.edu  
(205) 975-2953

Office: 281 Chemistry Building  
Office Hours: 10:00 – 11:00, T-Th, or by appointment

Class Sessions: 12:45 – 2:45 pm Tuesday-Thursday, Chemistry Building, Room 101

June 2 – August 2, 2005  
**Final Exam:** Thursday, August 4, 10:45 a.m.-1:15 p.m.

Prerequisite: Chemistry 235
Corequisites: Chemistry 238 and one recitation section (CH 237R)

Recitation TA: Todd McCarty, steepler@uab.edu

**Course Goals:** This course is the second semester of a two-semester sequence. It is designed to continue the study of organic chemistry. Aromatic compounds, aldehydes, ketones, amines, carboxylic acids, amino acids, peptides, and proteins will be introduced. Spectroscopy, reaction mechanisms, and some molecular orbital theory will be covered in this course.

**Required Text(s):**
- Molecular Model Set for Organic Chemistry. ISBN 0-534-49465-x

**Important Dates:**
- June 1: Classes begin
- June 8: Last day to drop w/o paying tuition and fees
- June 10: Last day to add a class
- July 4: Independence Day Holiday (Monday)
- July 12: Last day to withdraw with a “W”
- August 3: Last day of classes for semester
- August 4: Final exam for TTH section 2C classes 10:45 am-1:15 pm

**Date of Exams (schedule around these dates NOW):**
- June 21: Chapters 12-14
- July 7: Chapters 15-17
- July 26: Chapters 19-21
- August 4: Comprehensive final, ACS Standardized exam, 10:45 am-1:15 pm

**Recitation:**
Recitation is a mandatory portion of the course. There will be 8 recitation sections, starting the first full week of classes, and ending the last full week of classes. The total points from recitations will make up approximately 14% of your final grade. A recitation problem set will be available 5-7 days prior to each session. It will be due at the end of each session. You will work in groups of 3 or 4, and it is in your best interest to attempt to work the problem set before coming to recitation. There will be teaching assistants available to answer questions. The teaching assistants are there to help, not do the work for you. Everyone in the group will be responsible for knowing the material covered in the recitation sections.
Mock Final Exam
In order to help you prepare for the final exam, you and your group will help prepare a mock final exam that will be administered during the final recitation of the semester. Each group will be responsible for submitting no fewer than five questions along with the correct answers to the TA during the recitation session meeting the week of July 18. No two groups can submit duplicate questions. The TA will then take these questions and write a mock exam that everyone in the section will take during the final recitation.
Possible material for questions could come from problems in the textbook, either assigned or unassigned, problems on hourly exams which the class had difficulty with, or concepts covered in recitation problem sets. Remember, the purpose of this exercise is to help you and your classmates prepare for the final. Therefore, the questions should be representative of the material covered during the semester, and should be at a level of difficulty comparable to those on hourly exams.

Online Homework
McMurray provides online homework. The OWL (Online Web-based Learning) system provides extra practice and reinforcement of topics covered in the text. When you purchase your textbook, you will receive an access code. Please log into the system immediately. This access code will expire 12 months from the initial date of registration. If you need to repeat the course, you can purchase a new access code.
The OWL system will be used as a way to earn extra credit points. The maximum number of points you can earn is 15 or about 3% of the total possible points for the course. Each week an assignment will be delivered, and you must complete it by the set due date. If you do not master the assignment the first time, you may repeat it until the set due date. If you achieve mastery of all the assignments, then you will receive all 15 points. If you achieve mastery of 2/3 of the assignments, then you will receive 2/3 of 15 or 10 points, and so on.
There are several downloads which are required for OWL. Marvin Sketch, which is a drawing program, requires two free JAVA plug-ins. They can be found at the following URLs: http://java.sun.com/products/plugin/autodl/newuser.html and http://java.sun.com/j2se/1.4.1/download.html. Also, Macromedia Flash Player 7 and Shockwave are required. Instructions for downloads will be available through OWL.

In Class Quizzes
There will be five 5 point quizzes given throughout the semester. They will be either announced or unannounced. The four best quiz grades will be averaged into the class grade.

Grading scale
3 Hourly exams @ 100 points each 300 pts
1 Final exam @ 150 points 150 pts
8 Recitations @ 10 points each 80 pts
5 Questions for Mock Final @ 10 pts 50 pts
Best 4 out of 5 quizzes @ 5 pts each 20 pts
Total Possible Points 560 pts

Grade Assignments
The following scale will be applied: 90-100% A, 80-89% B, 70-79% C, 60-65% D, and less than 60% F.

Course Homepage
There is a course homepage in the works. Lecture notes, as well as recitation sets will be available at this site. Links to OWL and Organic Chemistry Direct, the companion website for the textbook, will be also available on the course page.

E-mail Communication
I will use the University e-mail system when I need to communicate with the students in the class en masse. Therefore, it is in your best interest to regularly check your e-mail address that is listed with the University. Also, I will try to keep my database updated with approximate grades for each student as the semester progresses. However, due to security concerns, grade estimates will not be given out via e-mail, that information may only be obtained in person.
<table>
<thead>
<tr>
<th>Week</th>
<th>Day/ Topic</th>
<th>Problem Set</th>
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<tbody>
<tr>
<td>1</td>
<td>TH: Chapter 12 Theory of Mass Spectroscopy, interpretation of mass spectra, theory of IR, characteristic bands, interpretation of IR spectra</td>
<td>Chapter 12: 3, 4, 5, 7, 10, 11, 13, 15, 16, 21, 25, 29, 30, 31, 34, 35, 36, 38, 39, 40 a,b, 41, 42 a,d,e, 44, 45, 51</td>
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<td>2</td>
<td>T: Chapter 13 Introduction to NMR, theory of nuclear magnetic resonance, chemical shift values</td>
<td>Chapter 13: 2, 3, 4, 6, 9, 11, 12, 13, 14, 17, 21, 23, 24b, 26, 31, 32d,f, 33d,f, 36, 37c,e, 38, 41, 42, 43c,d, 46, 48, 51, 52c,d, 53, 56, 57b,c, 59, 60, 61, 64</td>
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<td>TH: ^1H NMR, proton equivalence, integration, spin-spin splitting, complex splitting</td>
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<td>3</td>
<td>T: Chapter 14 Conjugated dienes, 1,4 vs.1,2 addition</td>
<td>Chapter 14: 2, 3, 5, 6, 7, 8, 9, 16, 17, 19, 20, 22, 24, 25, 27, 32, 33, 34, 36, 38, 40, 45, 46, 48, 50, 52, 55, 56, 57</td>
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<td>TH: Diels-Alder reaction, UV-VIS spectroscopy, Chapter 15 Aromatic compounds, nomenclature, stability</td>
<td>Chapter 15: 2b,d,f, 4, 5, 6, 9, 10, 11, 14, 15, 16, 17, 18a,e,e, 20b,c, 24, 26, 27, 30, 31, 33, 35, 38, 39, 42, 44, 45, 47</td>
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<td>4</td>
<td>T: Test I (June 21)</td>
<td>Chapters 12-14</td>
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<td>TH: MO theory, Hückel’s rule, spectroscopy</td>
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<td>5</td>
<td>T: Chapter 16 Electrophilic aromatic substitution, Friedel-Crafts reactions</td>
<td>Chapter 16: 2, 4, 6, 7, 8, 10a,e, 11, 13, 14, 15, 18, 19, 21, 23b,c, 24b, 26, 29a,e,f, 30b,d, 31b,c,e,h, 32a,c, 33b,d, 35, 37, 39, 40, 41, 43, 44, 47, 50b,d, 51a, 52c, 53, 54, 58, 59, 62, 64, 69b, 70, 73</td>
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<td>TH: Ring activation, deactivation, ortho, para, meta directors, nucleophilic aromatic substitution, synthesis of aromatic compounds</td>
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<td>6</td>
<td>T: Chapter 17 Introduction to alcohols and phenols, synthesis of alcohols, reactions of alcohols and phenols</td>
<td>Chapter 17: 1b,d,e, 3, 4, 6, 7, 8a, 10, 12, 15, 18, 19, 20, 22, 24, 25, 26d,f, 31, 32, 33b,d, 37, 38, 40, 42, 44, 46, 49, 50, 52, 54, 57, 60, 61, 62, 63, 64, 65</td>
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<td>TH: Test II (July 7)</td>
<td>Chapters 15-17</td>
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<td>7</td>
<td>T: Chapter 19 Preparation of aldehydes and ketones</td>
<td>Chapter 19: 1b,d,f,h, 3, 4, 6, 9, 11, 13, 14, 16, 20, 21, 23, 25, 29, 32, 33c,d, 34, 36, 38, 39, 40a, 41a,c,d,f, 43, 44, 45, 46, 52, 55, 57, 59b,d, 60, 63, 64, 65c, 67c, 68b, 70</td>
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<td>TH: Reactions of aldehydes and ketones, conjugate addition to unsaturated carbenyls, spectroscopy</td>
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<td>8</td>
<td>T: Chapter 20 Properties and preparation of carboxylic acids, nitriles, Chapter 21 Nucleophilic acyl substitution</td>
<td>Chapter 20: 1b,d,e, 3, 4, 6, 8, 9, 11, 12, 15, 16d, 17, 18, 19, 20c,d,h, 23, 24, 25b,c, 26c,e, 27c, 28c, 32, 33, 35, 36a,c, 40, 42, 44, 45, 46a, 48, 49, 52, 55, 57b</td>
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<td>Chapter 21: 1a,c,d,g, 3, 5, 6, 9, 11, 12, 15, 17, 20, 22, 24, 25, 31, 32u,b,g,h, 35d,g, 36a,b,d,g, 37, 38, 39, 41b,c, 42, 43, 45, 49, 50, 52, 55, 59, 62, 63, 65b, 66c, 67</td>
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<td>TH: Reactivity of acid derivatives, reactions of derivatives</td>
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<td>9</td>
<td>T: Test III (July 26)</td>
<td>Chapters 19-21</td>
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<td>TH: Chapter 24 Properties of amines, synthesis of amines</td>
<td>Chapter 24: 1a,c,e,f, 4, 5, 6, 8, 10, 13, 14, 17, 18, 20, 22, 24, 25c, 27a,c,e,f, 30, 31a,c,e, 33c, 34, 36c,e,g, 37b, 38b,d, 40, 42, 47, 50, 54, 57, 58, 59c, 60, 62, 68</td>
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<td>10</td>
<td>T: Reactions of amines, spectroscopy</td>
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<td>TH: August 4</td>
<td>Final Exam, ACS Standardized Exam, 10:45 am-1:15 pm</td>
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