CH4412  
Spring Semester 2011  

Instructor: Dr. Dallas K. Bates  
email: dbates@mtu.edu  
Office Hours: My schedule allows me to accommodate most students’ schedules. If you want to discuss class issues, just stop by my office or email for a meeting time.

Text(s): Organic Structure Analysis [2nd Edition]  
Phillip Crews, Jaime Rodriguez and Marcel Jaspars  
Hardback, 656 pages published Oct 2009  
(Good textbook, but class notes may be sufficient)

Software: NMRSIM (NMR spectrum simulator-freeware)  
ChemDraw (MTU site license)  
Aldrich/ACD NMR database

CH4412 is designed to make you proficient at interpretation of organic spectral data and, as such, is very problem-solving oriented. Little emphasis is placed on instrument theory, operation or design. This course is not a course to provide training for hands-on operation of chemistry instrumentation. The “laboratory” time is used primarily for group and individual problem-solving exercises. If you wish to learn to use any departmental equipment, please contact me to arrange training independent of class.

TOPICS
Lecture material, homework problems and in-class group problem assignments will cover the following topics (in this order):

- Introduction-Using Spectral and Analytical in Structural Analysis  
- $^1$H NMR  
- $^{13}$C NMR  
- Mass Spectroscopy  
- Infrared Spectroscopy  
- 2D NMR techniques

The Blue Book of Useful Spectroscopic Information

A hand-written (no exceptions) “Blue Book of Useful Spectroscopic Information” may be used on quizzes and the final exam. You may include any information in the blue book. This blue book is the ONLY source that may be used on tests and quizzes. All information in the blue book must be hand-written by the individual using it. You can add new material to your bluebook at anytime class is not in session.
GRADING

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes (8)</td>
<td>60%</td>
</tr>
<tr>
<td>Poster presentation/class participation*</td>
<td>5%</td>
</tr>
<tr>
<td>Final (comprehensive)</td>
<td>35%</td>
</tr>
</tbody>
</table>

* Class participation is required.

Typically, quizzes are given during the “Lab” session, but may be unannounced and given at any time.

Email me prior to missing a class stating the reason for your absence. Graded material is assigned “0” for unexcused absences.

Posters

Poster presentations will be in class during the last lab session of the term. The poster project involves solving an assigned problem, preparing a poster showing how the spectroscopic data from the problem supports the structure you propose as the answer, and orally discussing the poster with other students and attending faculty during the presentations. I will discuss in class the poster format and answer any questions you have later in the term. Some examples of student spectroscopy posters are posted outside my office.

CH4412 information will be posted on the course webpage (Go to the MTU Chemistry homepage, click on “Students” in the menu on the left side of the page, then click “courses” and select CH4412. This is a resource you should check periodically throughout the semester.

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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.
Assignments

<table>
<thead>
<tr>
<th>Week</th>
<th>reading</th>
<th>Problems*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chap 1 (19 pages)</td>
<td>1.5 - 1.7, 1.10</td>
</tr>
<tr>
<td>2</td>
<td>TBA</td>
<td>TBA</td>
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</tbody>
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* I will ask for volunteers to present solutions to problems on the blackboard

Curiosity – A scientist’s best friend