CH4412
Spring Semester 2005

Instructor: Dr. Dallas K. Bates
email: dbates@mtu.edu
Dr. Shiyue Fang
Office Hours: 10:00-10:30 am MWF and by arrangement
Office: 19-708A


Software: Introduction to Spectroscopy-Mass Spec, IR, 1H and 13C NMR (10 licenses), MestRe-C (freeware), nmrsm (NMR spectrum simulator) (freeware), ChemSketch (ACD Labs) (freeware), VanPelt Library: 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 Professor Bates to arrange training independent of class. Those of you who are using, or will be using, the Varian 400 MHz NMR he can show how to process NMR data “at your desk.”

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

Infrared Spectroscopy
Mass Spectroscopy
1H NMR
13C NMR
2D NMR techniques
Comprehensive, combination problems

As time allows, computational chemistry and dynamic NMR (including line-shape analysis software) will be introduced to the class for use in problem solving.
GRADING

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>70%</td>
</tr>
<tr>
<td>Poster presentation</td>
<td>5%*</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
</tr>
</tbody>
</table>

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

Quizzes are typically given during the Lab session, but some may be unannounced and given at any time. The final exam is typically a larger version of problems worked in class and on quizzes.

If you must miss a class, email either Drs. Bates or Fang prior to class indicating the reason for your absence. Quizzes missed due to an unexcused absence are graded as 0.

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 (some potentially useful data is posted on the CH4412 bulletin board in the 7th floor corridor). The ONLY source that may be used on tests and quizzes is your blue book and 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 - plan ahead for expansion of each section during the semester.

The 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. Professor Bates will discuss in class the poster format and answer any questions you have later in the term. Some examples of previous year’s spectroscopy posters are posted on the walls on the north end of the 7th floor corridor.

CH4412 information will be posted on the CH4412 bulletin board (by the drinking fountain in the 7th floor corridor) AND to the course webpage (Go to the MTU Chemistry homepage, click on “course” in the menu on the left side of the page, then click on CH4412.).

F/N: CH4412SYL_05.doc

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 Melon at 72212. For other concerns you may contact your academic advisor, department chair, or the Affirmative Action Office.