CH4412
Spring Semester 2007

Instructor: Dr. Dallas K. Bates
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Office Hours: 10:30-11:00 am MWF and almost anytime by arrangement
Office: 19-708A

Text(s):


Software:
Introduction to Spectroscopy-Mass Spec, IR, $^1$H and $^{13}$C NMR (10 licenses), MestRe-C (freeware), nmrsms (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. I assign reading in the textbook and I expect students to read the textbook and use it extensively in their in-class and out-of-class problem solving.

TOPICS

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

- Infrared Spectroscopy
- Mass Spectroscopy
- $^1$H NMR
- $^{13}$C 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>
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<tbody>
<tr>
<td>Quizzes</td>
<td>70%</td>
</tr>
<tr>
<td>Poster presentation</td>
<td>*</td>
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<tr>
<td>Final</td>
<td>30%</td>
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* 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 Dr. Bates 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 (and a "blue book" - available in the MTU Bookstore - must be used). 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 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.

F/N: CH4412SYL_07.doc

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