Course Syllabus
CH6290 – Advanced Mass Spectrometry Methods
College of Science and Arts
Spring 2009

Instructor Information

Instructor: Lynn R. Mazzoleni, Ph.D., Assistant Professor
Office Location: 402d Chemical Sciences Building
Telephone: (906)487-1853
E-mail: lrmazzol@mtu.edu
Office Hours: MTWR 8:00-8:55 AM or by Appointment (Walk-ins are welcome too)

Course Identification

Course Number: CH6290-01
Course Name: Advanced Mass Spectrometry Methods
Course Location: Fisher Hall 101
Class Times: MWF 09:05 – 09:55
Prerequisite: CH4210 or CH4212 (strongly recommended)

Course Description/Overview

The focus of this special topics course is advanced mass spectrometry (MS) methods. We will learn about a wide variety of mass analyzers including: quadrupole MS, time of flight MS, ion trap MS, ion cyclotron resonance MS. Since MS analysis can only be performed on ionized molecules, a variety of analyte introduction techniques will be presented. Molecular identification methods including the use of tandem mass spectrometric analysis (aka MS/MS) and exact mass analysis will be covered. Students will then apply the fundamentals of these topics to identify unknown natural compounds from mass spectra. Finally, the course will include discussion of complementary analytical methods and/or advanced MS instrument designs. As an informal prerequisite, students should have taken instrumental analysis or a similar course.

Course Learning Objectives

- Describe the strengths and weaknesses of several mass analyzers in terms of the elements of the instrument design and intended applications.
- Compare and contrast the various ionization methods with respect to analyte structure and analytical application.
• Evaluate mass spectrometry data to elucidate molecular structures and/or empirical formulas.
• Design and evaluate analytical methods for various applications.
• Assimilate a short review paper and presentation of an advanced mass spectrometry method from peer reviewed literature.

**Course Resources**

**Required Course Textbook**


**Course Website**

- Blackboard [http://www.courses.mtu.edu](http://www.courses.mtu.edu)

**Course Supplies**

- Supplemental reading material will be provided in class or on Blackboard
- Additional textbooks will be on reserve in the library.

**Grading**

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<tr>
<th>Total Available Points</th>
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<tbody>
<tr>
<td>Midterm exam</td>
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<tr>
<td>Final Exam</td>
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<tr>
<td>Paper/Presentation</td>
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<tr>
<td>Homework</td>
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<td><strong>Total Points</strong></td>
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**Late Assignments**

No make-up exams will be given for unexcused absences. Official MTU excused absences are granted by the Office of Student Affairs (OSA). If you know that you will have an excusable absence on an exam day, you are required to make arrangements with me as soon as possible for an alternate exam date.

Late homework assignments will be penalized by 10% per day (5 pm).

**Exam Schedule**

- Midterm Exam: Friday, October 30th, 2009
- Final Exam: During Finals Week TBA

**Collaboration/Plagiarism**

Standards of academic conduct are set forth in the MTU Academic Integrity Code [http://www.studentaffairs.mtu.edu/dean/judicial/policies/academic_integrity.html](http://www.studentaffairs.mtu.edu/dean/judicial/policies/academic_integrity.html). When you registered for this course, you acknowledged your awareness of the Academic Integrity Code.
and you are obliged to become familiar with your rights and responsibilities as defined by this Code. Violations of the Code will result in disciplinary actions. Examples of violations include plagiarism or receiving inappropriate assistance on homework, quizzes, and/or exams. **Plagiarism is an act of theft of intellectual property and thus is a serious offense of the Academic Integrity Code.** Using or closely imitating the ideas/concepts of others without proper citation is a form of plagiarism. Another often misunderstood but important form of plagiarism is the use or incorporation of many of the words or concepts from a source(s) that it/they make(s) up the majority of your work, whether or not it/they are cited.

Cheating is a very serious academic offense. Therefore, allegations of cheating will be referred to the Dean of Student Affairs for appropriate action. Please see me if you have any questions about academic violations as described in the Code or as they relate to particular requirements in this course.

**Cell phones, Blackberries, iPods, PDAs, Laptops or any other electronic devices are not to be used in the classroom.** Please make sure to bring a standard calculator with you to class. Calculators on other electronic devices are strictly prohibited. Information exchanges on these devices during class are also prohibited and violate the Academic Integrity Code of Michigan Tech.

**University Policies**

If you have a disability that could affect your performance in this class or that requires an accommodation under the Americans with Disabilities Act, please see me as soon as possible so that we can make appropriate arrangements. The Affirmative Action Office has asked that you be made aware of the following:

*Michigan Tech complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. If you have a disability and need a reasonable accommodation for equal access to education or services at Michigan Tech, please call the Dean of Students Office, at 487-2212. For other concerns about discrimination, you may contact your advisor, department head or the Affirmative Action Office, at 487-3310*

**Academic Integrity:**
http://www.studentaffairs.mtu.edu/dean/judicial/policies/academic_integrity.html

**Affirmative Action:**
http://www.admin.mtu.edu/aaof

**Disability Services:**
http://www.admin.mtu.edu/urel/studenthandbook/student_services.html#disability

**Equal Opportunity Statement:**

**Course Schedule**

A course calendar will be maintained on Blackboard (see: http://www.courses.mtu.edu).