University Chemistry I  
Spring 2008

Instructor: Dr. Eugenijus Urnezius  
Office: 620B Chemical Sci. Building  
Phone: 487-2055  
e-mail: urnezius@mtu.edu

Office hours: Tuesday 3-4 PM, Thursday 2-3 PM; or by individual appointments.

Course Info: Syllabus, lecture slides, homework assignments, and other related info will be posted on the web at http://www.chemistry.mtu.edu/pages/courses/index.php, under CH1110-0A. Also, class mailing list will be used for announcements.


Recitation: Dr. Lanrong Bi (lanrong@mtu.edu; ChemSci Room 402C); Tuesday 10.00-11.00, 11.00-12.00, and 2.00-3.00, in Room 215, ChemSci Building.

Lab Supervisor: Lorri Reilly (508B Chemical Sci. Building, lareilly@mtu.edu; 487-2044)


Introduction
University Chemistry provides an overview of the chemical concepts that are important to your science and engineering careers. I hope that by the end of this course you will have both an appreciation of how important chemistry is to our daily lives, and a greater interest in the subject than when you arrived here. University Chemistry I is the first semester of a one-year course for majors requiring a full year of chemistry. This syllabus outlines the content of the course and contains the rules and regulations by which your performance will be assessed. It is important that you spend some time reading this in order to understand how the course is graded and when the assignments are due. Furthermore, by having this detailed description of the course you are in position to read the relevant chapters in advance of the discussion of material in the lectures. This is helpful for a thorough comprehension of the course and it also helps you to comprehend the material faster and not to be lost during the lectures.

Short Course Description
A major objective of this course is to help you to acquire knowledge of Chemistry as the central, experimental natural science, which deals with the composition of materials, their structures and properties, and related energy conversions in living and nonliving systems. This course will provide you with an informed understanding of the nature of scientific reasoning, discovery, and invention through a systematic exploration of the basic concepts and practices of Chemistry. In
addition, after taking this course you should be able to apply scientific concepts and thinking processes to significant current issues in science.

Textbook Problems and Assigned Homework:
Each Friday you will receive a set of suggested textbook problems to provide you with a good overview of the content areas you need to be familiar with. Although working through the problems provides no guarantee that you will get a grade “A” in the class, it certainly increases your chances. In addition to these suggested problems, periodically there will be some homework problems assigned that you will complete prior to or during your weekly recitation sessions with Dr. Bi. She will verify that you have completed the homework and you will receive 5 points for this. She may choose not to formally grade this homework, but will check that you have not simply copied the answer from someone, or somewhere. These homework problems will be a little more challenging than some of the suggested textbook problems; so don’t wait until the last minute to attempt them.

Recitations:
Recitations are scheduled for Tuesday each week and will be structured to provide you with opportunities to ask questions and improve your understanding of the material. The purpose of your recitation is for you, as students, to revise and recite the material you have been learning during previous weeks. Dr. Bi will answer questions about course content, assist you with the assigned homework, provide additional worksheets to study from, and help you prepare for exams. This will be an ideal opportunity for you to ask questions about anything you do not understand—just don’t be shy about it.
Attendance at all recitation sessions is mandatory. However, you will not receive any warnings or punishments for not attending recitation, but when it comes to exams and you do not understand the material, there will be no sympathy for you for not attending the recitations.

Assignments and Grading:
Grading will be based on a combination of recitation problems (50pts), three one-hour in-class exams (50pts each), and a comprehensive two-hour final exam (200pts). Your grade will be based upon the percentage of the total points available that you accumulate as shown below.
Improvements throughout the term may be taken into consideration when grades are assigned. All important equations and constants will be provided as a supplement sheet with the examination. You will not need to bring a notecard.

Exam 1 Wednesday, Feb. 13;
Exam 2 Wednesday, March 19;
Exam 3 Wednesday, April 23.
Final Exam Wednesday, April 30 from 12:45 - 2:45 pm

The Final exam will be cumulative, encompassing all the material covered in the class. It will be structured in such a way that you will have an opportunity to improve your score even if you performed relatively poorly on the midterms (aka Resurrection Points). The components in the grading of the Final Exam are the following:
1) your overall grade for the Final;
2) "portions" of the Final based on material covered in Exam 1, Exam 2, and Exam 3 will be looked at and graded separately.

If your grade (%) on the Exam 1 portion in the Final is better than the grade you got on the original Exam 1, the original Exam 1 grade gets substituted by the grade you get on the on that portion of the Final; if not - it stays the same. Same thing then applies to your Exam 2 and Exam 3 grades.

For example, student X has 53% on the Exam 1, 62% on Exam 2, and 66% on Exam 3. He/she takes the Final (lets say, 44 questions), and gets 70%. Out of these 44 questions, 12 were on the material covered for Exam 1, and student X gets 72% on this portion. Then in his/her overall grade calculation for the class the 72% would substitute the original 53% for the Exam 1. Same comparisons/substitutions would be done for Exams 2 and 3.

The grading scale: we do not grade on a curve. Therefore in theory, it is possible for everyone to obtain a grade "A" in this class if you work hard enough! The pass mark for this class is set at 55%, a grade "C" is set at 65%, a grade "B" is set at 75%, a grade "A" is set at 85%.

Chemistry Learning Center
Room 208, Chemical Sciences Building

Supplemental Instruction
The Chemistry Learning Center will be offering Supplemental Instruction sessions for CH1110, University Chemistry 1 this semester.

CH1110 has been targeted for Supplemental Instruction because it is a historically challenging course requiring large amounts of reading from a difficult text and examinations that will focus on application and analysis.

The sessions are facilitated by a trained SI leader. Your SI leader is Amanda Jones, an undergraduate student who successfully completed CH1110 with Dr. Urnezius three years ago and was the SI leader for the class last year, too. Amanda is prepared to share with you what she has learned about how to study effectively for this course. She knows the course content and is anxious to help guide you through it. She will also be in class with you every day, taking notes and listening closely to the professor.

The SI sessions are regularly-scheduled, informal review sessions that provide a chance for you to get together with people in your class to compare notes, discuss important concepts, develop strategies for studying the subject, and to test yourselves before your professor does, so that when he does, you'll be ready. Your SI leader will facilitate and encourage the group to process the material rather than acting as authority figures who lecture to participants.
SI is provided for all students who want to improve their understanding of course material and improve their grades. Research indicates that students who attend the SI sessions regularly do better than those students who attend periodically or not at all. Participation in SI is voluntary, free-of-charge, and open to all students in this course.

The sessions are offered at times and locations convenient for students. Amanda will let the class know when and where the sessions will be held.

*Students who are interested in participating in Supplemental Instruction do not need to enroll in CH0011.*

**CH0011, Development of Chemistry Skills**
CH0011 is associated with the Chemistry Learning Center. Students who would like an individual, weekly appointment are encouraged to enroll in CH0011. Stop by the CLC between 8:00 am – 5:00 pm during the first week of class to sign up for an appointment time with a coach. You must attend your first weekly appointment which begins the second week of class. Grades in CH0011 are satisfactory/unsatisfactory based on attendance. You are expected to attend every appointment. However, you are allowed to miss 1 appointment in case of an emergency and still receive a satisfactory grade. *Note: there is no tuition charge for CH0011 as it is a zero credit course.*

**A proven formula for success:**

**CLC appointment + regular attendance at SI sessions**

**Walk-in Hours**

In addition to CH0011 and Supplemental Instruction, you are encouraged to make use of the Chemistry Learning Center for individual assistance during our walk-in hours.

Beginning on Tuesday, January 22nd, the Chemistry Learning Center walk-in hours for Spring Semester are:

<table>
<thead>
<tr>
<th>Day</th>
<th>10:00 am – 4:00 pm</th>
<th>7:00 – 9:00 pm</th>
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<tbody>
<tr>
<td>Monday</td>
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There is no cost for using the walk-in hours. The Center is staffed by friendly, upper level undergraduate students who have a good background in chemistry and are familiar with the courses. The CLC is a relaxed, comfortable place to get help or to use as a study place. There are additional books and other resources available.

More information is available on the CLC web site:
If you have questions about first year chemistry lecture courses, contact:

Lois Blau  
Coordinator of the Chemistry Learning Center  
206/208 Chemical Sciences Building  
487-2297, lablau@mtu.edu

Absence Policy and Academic Integrity:
For exams, an UNexcused absence is an automatic zero for any exam that is missed. The Office of Student Affairs or your instructor may grant an excused absence. If you know that you will have an official university excused absence on a day that an exam is scheduled (university athletic event or religious holiday), you are required to make arrangements as early as possible in advance of the exam date. Other examples of excused absences granted in the past are serious illness or a death (including your own). Please note that studies have shown that poor performance of students in classes often leads to the unexplained deaths of grandparents around exam time and we suggest you work hard to protect the life of your loved ones. Excused absences will not be given to travel home or to attend a social event. Plan to take your exam at the scheduled time.

Both students and faculty are responsible for insuring the academic integrity of the University according to the procedures in “Academic Integrity at MTU - A Guide for Students and Faculty.” Specific violations in this course would be the intentional use of any unauthorized study aids, equipment, or another’s work during an examination (cheating) or allowing/helping another individual to cheat (facilitating academic dishonesty). Possible sanctions include an academic integrity warning, an “F*” grade indicating failure due to academic dishonesty, suspension or expulsion.

MTU complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990 (ADA). If you have a disability and need a reasonable accommodation for equal access to education or services at MTU, please call Dr. Gloria Melton, Associate Dean of Students at 487-2212.
<table>
<thead>
<tr>
<th>Semester progress (tentative)</th>
<th>Material covered</th>
<th>Homework</th>
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<tbody>
<tr>
<td>Week 1 Jan 14, 16 &amp; 18</td>
<td>Introductions to matter and measurements.</td>
<td>No homework</td>
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<tr>
<td>Week 2 Jan 21 (no class; MLK day), 23; 25</td>
<td>Matter and its composition: concepts of atoms, molecules and ions (Chapters 1-2).</td>
<td>TBA</td>
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<tr>
<td>Week 3 Jan 28, 30, Feb 1</td>
<td>Stoichiometry: concept of a mole, balanced equations, molecular formulas (Chapter 3).</td>
<td>TBA</td>
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<tr>
<td>Week 4 Feb 4, 6 (Winter Carnival; no lecture on Feb 8)</td>
<td>Chemical reactions: precipitation, acid-base, ox-red. Concentrations; titrations (Chapter 4).</td>
<td>TBA</td>
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<tr>
<td>Week 5 Feb 11, 13, 15 Exam 1 Feb 13</td>
<td>Feb 11 - Review for Exam 1 - Chapters 1-4. Feb 15 – exam overview/start of Chapter 5</td>
<td>No homework</td>
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<td>Week 6 Feb 18, 20, 22</td>
<td>Thermochemistry. Enthalpy and energy; thermodynamics (Chapter 5).</td>
<td>TBA</td>
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<td>Week 7 Feb 25, 27, 29</td>
<td>Electronic structure of atoms. (Chapter 6).</td>
<td>TBA</td>
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<td>Week 8 Mar 3, 5, 7</td>
<td>Periodicity, periodic table of elements (Chapter 7)</td>
<td>TBA</td>
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<td>Mar 08 – Mar 16 – Spring Break</td>
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<td>No homework</td>
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<td>Week 9 Mar 17, 19, 21 Exam 2 Mar 19</td>
<td>Mar 17 Review for Exam 2 (Chapters 5-7)</td>
<td>No homework</td>
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<tr>
<td>Week 10 Mar 24, 26, 28</td>
<td>Chemical Bonding – basic concepts (Chapter 8)</td>
<td>TBA</td>
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<tr>
<td>Week 11 Mar 31, Apr 2, 4</td>
<td>Chemical Bonding – theories explaining molecular geometries (Chapter 9)</td>
<td>TBA</td>
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<tr>
<td>Week 12 Apr 7, 9, 11</td>
<td>Gases (Chapter 10)</td>
<td>TBA</td>
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<tr>
<td>Week 13 Apr 14, 16, 18</td>
<td>Intermolecular forces (Chapter 11).</td>
<td>TBA</td>
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<tr>
<td>Week 14 Apr 21, 23, 25 Exam 3 Apr 23</td>
<td>Apr 21 Review for Exam 3 – Chapters 8-11 Apr 25 Cumulative course review, prep. for Final Exam</td>
<td>No homework</td>
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<tr>
<td>Finals Week Apr 28 Final Exam:</td>
<td>Final Exam Wednesday, April 30 from 12:45 - 2:45 pm</td>
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