Course Syllabus
CH1000 – Preparatory Chemistry (R01)
MWF 10:05 am – 10:55 am
Dow 641, Fall 2011

Instructor Information
Instructor: Professor Thompson
Office Location: Rm 510 Chemical Sciences Bldg
E-mail: thompson@mtu.edu [put ‘CH1000’ in SUBJECT]
Office Hours: MWF 11:00am – 12:00pm or by appointment
Learning Center: Mrs. Lois Blau, 206A, Chemical Sciences Bldg, lablau@mtu.edu

Course Description and Objectives
This course is targeted at those who have not had high school chemistry, have not had a chemistry course for several years, or who struggled in prior chemistry courses. The goal is to provide students with an introduction to the chemical concepts that will be important to success in future science and engineering careers. This course should provide a basis for further discovery in more advanced chemistry courses and instill an appreciation of how important chemistry is to our daily lives. Ultimately, a student will build valuable critical thinking and problem solving skills, while developing an appreciation for the everyday relevance of chemistry.

Key student outcomes:
1. Apply chemical principles, vocabulary, and symbolism to explain physical and life science concepts.
2. Confidently choose and apply the appropriate mathematical method - unit analysis or formula manipulation - to solve numerical problems.
3. Develop study habits/approaches applicable to cumulative learning, especially as required for a science/health science career.
4. Obtain data from the periodic table as needed and use it to predict elemental properties.
5. Explain what a mole is and utilize it in explaining reactions and performing calculations.
6. Apply the rules of nomenclature to binary molecular, organic and ionic compounds.
7. Recognize compounds as covalent or ionic based on formula as well as physical and chemical properties, and explain the similarities and differences between them.
8. Indicate if ions or atoms make up a compound and if it is ions, state their identity.
9. Write balanced chemical equations and utilize them to perform stoichiometric calculations.
10. Explain the molecular differences and similarities between the states of matter.
**Course Resources**

**Required Items**
- Chemistry Textbook: Russo/Silver
- Scientific Calculator

**Electronic resources**
- Blackboard [http://www.courses.mtu.edu](http://www.courses.mtu.edu) will be used for access to supplemental materials (where applicable) and grades.
- prepchem-I will be used to communicate assignments, make announcements, etc.

**Grading System (tentative)**

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Grade points/credit</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>90% &amp; above</td>
<td>4.00</td>
</tr>
<tr>
<td>AB</td>
<td>85% – 90%</td>
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</tr>
<tr>
<td>B</td>
<td>75% – 85%</td>
<td>3.00</td>
</tr>
<tr>
<td>BC</td>
<td>70% – 75%</td>
<td>2.50</td>
</tr>
<tr>
<td>C</td>
<td>60% – 70%</td>
<td>2.00</td>
</tr>
<tr>
<td>D</td>
<td>50% - 60%</td>
<td>1.00</td>
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<tr>
<td>F</td>
<td>below 50%</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Grading Policy**

Grades will be based on the following:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Homework (13 x 10 pts ea)</td>
<td>130</td>
</tr>
<tr>
<td>*Quizzes (13 x 20 pts ea)</td>
<td>260</td>
</tr>
<tr>
<td>Office visit</td>
<td>10</td>
</tr>
<tr>
<td>Exams (3 exams x 100 points each)</td>
<td>300</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td><strong>900</strong></td>
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</table>
Homework and Quizzes

Homework and quizzes will be given via Blackboard on the indicated dates. If you have any complications with Blackboard’s function, please email Professor Thompson immediately after completion of the quiz.

Homework assignments will be available the weekend prior the week the material will be covered (usually before that). It will go chapter by chapter to coincide with the syllabus. At anytime between the assignment of each homework assignment and the due date, you can use CLC resources, study groups, or ask problems to be worked out in class. Friday between noon and midnight, there will be a brief online response to random HW assignments. This means the HW was completed during the week and you will be given 5 minutes to simply reply to the answers. There will be insufficient time to work through the homework once the Blackboard response begins.

Quizzes will be administered after the homework responses. This will open up on Saturday at noon and be available until Sunday at midnight. This permits sufficient time over the weekend to set prepare and take the quiz. Once logged into Blackboard and you initiate the quiz, you will have a brief period of time (usually 15 minutes) to answer questions covering the key concepts and homework-like problems covered the previous week. It pays to work through any problem you do not completely understand in class and/or with a CLC tutor, as the quiz questions are often derived directly (or close to it) from the problem sets.

Exams

Regular Exams: There will be 3 regular tests (see Course Schedule for exact dates). Each test will focus on the topics covered since the previous test, but due to the nature of chemistry, concepts inherently build one upon the other over the course of the semester.

Final Exam: The final will be comprehensive and will test elements from the entire semester. Start preparing for this test today: study to internalize the material instead of simply memorizing for each test.

Late Assignments

Late assignments will not be accepted. If you know you will be missing an assignment, it is your responsibility to make other arrangements. 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, you are required to make arrangements as early as possible in advance of the exam date. 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.
**Keys to success**

Problem sets will be uploaded to Blackboard at the assigned date and turned in roughly a week later (see course schedule for exact dates). Work through each. The problems, like lectures, are to enhance what you have read. The ones that cause some struggle, should be brought up in class and discussed to ensure a complete understanding. Why? Because those are the same types of questions you will see on the quizzes (twice the points) and exams (10 times the points). Problems should be discussed with the instructor, or your coach. Although working through the problems provides no guarantee that you will get a grade A in the class, it certainly increases your chances.
Course Policies

Role of Instructor:

*Speak of the wonders of chemistry.*
*Work through problems.*

The role of the instructor will be to guide your studies by presenting material considered important, working through examples, performing demonstrations, and by providing other useful resources and assistance to help you with your studies. The instructor will assess your progress by providing challenges such as assigned homework, in-class quizzes, problem sets, and examinations that are designed to guide your learning. The instructor’s role is not to make you learn and understand material; I am simply a guide.

Role of Student:

*Do the homework.*
*Bring questions to class.*

Your role as a student is to participate in class, show respect for others, and accept responsibility for your own learning. It is up to you, as the student, to decide how hard you want to work, and therefore how well you will perform when challenged by your instructor. Although there are times when you may not agree, your performance in the class is a reflection of the amount of effort you make to learn and understand the material. It is quite easy to spend many hours looking at the textbook and not learn anything. Do not fall into the trap of thinking that time-on-task is a measure of learning. You may learn more by studying intensely for two fifteen or twenty-minute sessions each hour than by vaguely staring at your notes for several hours. If you do nothing else during your first few weeks, you should learn how to study independently, how to learn from that studying, and how to check that you have learned what you were studying.

Help:

*Ask questions in class.*

*Go to the Chemistry Learning Center.*

There are many ways to get help in CH1000. Immediately before and after lecture are excellent times to ask questions or to make an appointment to see me. The Chemistry Learning Center (CLC) provides walk-in assistance to organic chemistry students – please make use of this valuable resource (see below). Best of all is to work on the homework problems and bring your questions to class. At the beginning of each class I invite questions and go over problems.
Course Schedule

Even though this class is designed to provide you with most of what you need, you cannot learn everything in such a short period of time. This means you must use the classroom time to guide your private study. Expect to spend roughly 10 hours writing out your notes, solving problems, and making sure that you understand the theory behind problems you are solving. For some it will be half that – other twice that amount of time. You are encouraged to have the coaches review your progress.

The three keys to success in CH1000:

1. Attendance. Communicate with Professor Thompson and others.
2. Study (usually about 10 hrs per week) and bring homework questions to class.
3. Use (and overuse) the CLC.

Important Dates (Fall 2010):

- Monday, August 29 - Instruction begins
- Monday, September 5 - Labor Day recess
- Friday, November 18 - Thanksgiving recess begins at 10pm
- Monday, November 28 - Classes resume
- Friday, December 9 - Last day of regular classes
- Monday, December 12 - Friday, December 17 - Finals week

Recitation:

Recitation is built into the course. What this means is that during the usual class time you are encouraged to start the day by asking questions about homework problems, in-class concepts or anything else covered during the week. This can be viewed as a problem set discussion and help session. Bring problems to solve and go over.
Weekly schedule:

Week 1
M 8/29  Course introduction
        Chapter 1 – What is Chemistry?
W 8/31  Chapter 2 - Numerical Side of Chemistry
F 9/2   Chapter 3 – Atomic Theory
        Chapter 3 HW Assignment
        Weekend: Test Blackboard HW and Quiz

Week 2
M 9/5   Labor Day: No Class
W 9/7   Chapter 3 (cont.)
F 9/9   Chapter 3 (cont.)
        Chapter 3 HW Due (Blackboard)  Weekend Quiz (Blackboard)

Week 3
M 9/12  Chapter 4 – Model of an Atom
        Chapter 4 HW Assignment
W 9/14  Chapter 4 (cont.)
F 9/16  Chapter 4 (cont.)
        Chapter 4 HW Due (Blackboard)  Weekend Quiz (Blackboard)

Week 4
M 9/19  Chapter 5 – Chemical Bonding and Nomenclature
        Chapter 5 HW Assignment
W 9/21  Chapter 5 (cont.)
F 9/23  Chapter 5 (cont.)
        Chapter 5 HW Due (Blackboard)  Weekend Quiz (Blackboard)

Week 5
M 9/26  Review Chapters 1-5 for Exam 1
        Exam #1 (Chapters 1-5)
        * Exam 1 is held from 6:00 pm – 7:00 pm (location TBA)
Chapter 6 – Shapes of Molecules

Chapter 6 HW Assignment

Chapter 6 (cont.)

Chapter 6 HW Due (Blackboard)  Weekend Quiz (Blackboard)

Chapter 7 – Intermolecular Forces and Matter

Chapter 7 HW Assignment

Chapter 7 (cont.)

Chapter 7 HW Due (Blackboard)  Weekend Quiz (Blackboard)

Chapter 8 – Chemical Reactions

Chapter 8 HW Assignment

Chapter 8 (cont.)

Chapter 8 HW Due (Blackboard)  Weekend Quiz (Blackboard)

Chapter 9 – Stoichiometry and the Mole

Chapter 8 HW Due

Chapter 9 (cont.)

Chapter 9 HW Due (Blackboard)  Weekend Quiz (Blackboard)

Review Chapters 6-9 for Exam 2

Exam #2 (Chapters 6-9)

* Exam 2 is held from 6:00 pm – 7:00 pm (location TBA)

Chapter 12 – Solutions

Chapter 12 HW Assignment
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignments</th>
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</thead>
<tbody>
<tr>
<td>F 10/28</td>
<td>Chapter 12 (cont.)</td>
<td>Chapter 12 HW Due (Blackboard)</td>
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<tr>
<td></td>
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<td>Weekend Quiz (Blackboard)</td>
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<tr>
<td><strong>Week 10</strong></td>
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<tr>
<td>M 10/31</td>
<td>Chapter 13 – Chemical Reactions</td>
<td>Chapter 13 HW Assignment</td>
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<tr>
<td>W 11/2</td>
<td>Chapter 13 (cont.)</td>
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<tr>
<td>F 11/4</td>
<td>Chapter 13 (cont.)</td>
<td>Chapter 12 HW Due (Blackboard)</td>
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<td>Weekend Quiz (Blackboard)</td>
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<tr>
<td><strong>Week 11</strong></td>
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<tr>
<td>M 11/7</td>
<td>Chapter 14 – Chemical Equilibrium</td>
<td>Chapter 14 HW Assignment</td>
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<td>W 11/9</td>
<td>Chapter 14 (cont.)</td>
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<tr>
<td>F 11/11</td>
<td>Chapter 14 (cont.)</td>
<td>Chapter 14 HW Due (Blackboard)</td>
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<td>Weekend Quiz (Blackboard)</td>
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<tr>
<td><strong>Week 12</strong></td>
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<tr>
<td>M 11/14</td>
<td>Chapter 15 (cont.)</td>
<td>Chapter 15 HW Assignment</td>
</tr>
<tr>
<td>W 11/16</td>
<td>Chapter 15 (cont.)</td>
<td></td>
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<tr>
<td>F 11/18</td>
<td>Chapter 15 – (cont.)</td>
<td>Chapter 15 HW Due (Blackboard)</td>
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<td>Weekend Quiz (Blackboard)</td>
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<tr>
<td><strong>THANKSGIVING BREAK (11/19–11/27)</strong></td>
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<tr>
<td><strong>Week 13</strong></td>
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<tr>
<td>M 11/28</td>
<td>Chapter 16 – Nuclear Chemistry</td>
<td>Chapter 16 HW Assignment</td>
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<td>W 11/30</td>
<td>Chapter 16 (cont.)</td>
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<tr>
<td>F 12/2</td>
<td>Chapter 16 (cont.)</td>
<td>Chapter 16 HW Due (Blackboard)</td>
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<td></td>
<td>Weekend Quiz (Blackboard)</td>
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**Week 14**

*M 12/5*  Review Chapters 12-16 for Exam 3

Exam #3 (Chapters 12-16)

* Exam 3 is held from 6:00 pm – 7:00 pm (location TBA)

W 12/7  Complete remaining material and/or review for Final Exam

F 12/9  Complete remaining material and/or review for Final Exam

**Finals Week**

Monday, December 12 from 10:15 am - 12:15 pm. *(location TBA)*


**General Course Rules**

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

**University Policies**

Academic regulations and procedures are governed by University policy. Academic dishonesty cases will be handled in accordance the University's 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/aaq/

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


**Feedback:**
In addition to the end of the year evaluations of your charming professor, feel free to communicate with me regarding any course procedure.
Chemistry Learning Center  
Room 208, Chemical Sciences Building

**CH0100, Chemistry Coaching**
CH0100 is associated with the Chemistry Learning Center. Students who would like an individual weekly appointment are encouraged to enroll in CH0100 or, if you sign up for a time, you will be automatically enrolled. *Note: there is no tuition charge for CH0100 as it is a zero credit course.*

Stop by the CLC between 10:00 am – 4:00 pm during the first week of class to sign up for an appointment time with a coach. You will meet your chemistry coach at your first appointment which begins the 2nd week of class. Plan to attend regularly. The grade for CH0100 is satisfactory/unsatisfactory based on your attendance record. You can miss 1 appointment in case of an emergency and still receive a satisfactory grade.

**Walk-in Hours**
In addition to CH0100, you are encouraged to make use of the Chemistry Learning Center for individual assistance during our walk-in hours.

Beginning on Tuesday, September 7, the Chemistry Learning Center walk-in hours for Fall Semester are:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>7:00 – 9:00 pm</td>
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<tr>
<td>Monday</td>
<td>10:00 am – 4:00 pm</td>
<td>7:00 – 9:00 pm</td>
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<tr>
<td>Tuesday</td>
<td>10:00 am – 4:00 pm</td>
<td>7:00 – 9:00 pm</td>
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<tr>
<td>Wednesday</td>
<td>10:00 am – 4:00 pm</td>
<td>7:00 – 9:00 pm</td>
</tr>
<tr>
<td>Thursday</td>
<td>10:00 am – 4:00 pm</td>
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There is no cost to the student 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  
Director, Chemistry Learning Center  
206/208 Chemical Sciences Building  
487-2297  
lablau@mtu.edu