INTRODUCTION AND LEARNING OBJECTIVES: This course covers the fundamental principles, laws and theories of chemistry for students who have not taken high school chemistry, but have one unit of high school algebra or equivalent. CH1000 provides an introduction to the chemical concepts and basic skill sets to aid you in future science and engineering classes. In addition to learning the fundamental principals and gaining the chemical skills that we cover in the course you should:

(1) Learn how to study actively and independently
(2) Learn to study effectively so you understand and can apply what you learn (not just rote memorization)
(3) Learn critical thinking and problem solving skills.

My Role as Instructor: I will try to
• Guide your studies by discussing important concepts, working through examples, and providing other useful resources or assistance with your studies.
• Help you assess your progress by giving you quizzes, homework, and practice problems
• Respond to your questions and requests for actions to help you learn and gain skills
• I cannot give you skills or knowledge, but I think you will gain skill and knowledge if you actively participate in class and actively engage with the material. I will try to help you study and learn. This is a large class, which makes it difficult for me to work with you other than in a “lecture mode”, but I welcome questions, class participation, requests to review problems, suggestions for changes in how the course content is presented to help you learn.

Your Role as Student: You must be responsible for your learning,
• attend all classes,
• find out how you learn best and what study methods work best for you, and use them. Some suggestions are: Study at least 1 hour every day but do not rely solely on reading and re-reading the chapters. But, you should read the chapters before each class and engage in active learning.

Other Recommendations for Doing Well in this Course:
• The course covers approximately one chapter a week, but we will spend more time on some chapters.
• The lectures provide you with a guide to the material, but you must read the relevant textbook chapters before the class and again after the class. Class attendance is mandatory.
• Make chapter notes BEFORE class and then just supplement these notes during class so you can come to class prepared and also pay attention in class instead of scrambling to write down everything.
• Work through textbook examples AND end-of-chapter problems after reading the chapter and before quizzes. Do Not Fall Behind. Suggested end-of-chapter problems are listed below. The questions with blue numbers in the text book have answers in the back of the book.
• Try making your own study cards (on 3x5 index cards) where you ask yourself questions, including questions that ask you to state step-by-step procedures for problem solving.
• Do not fall behind in class or rely on cramming for tests. Develop good study habits.
• Try the Chemistry Learning Center (Rm 208 Chem Sci) at the first sign of difficulty to see if that helps.
**CANVAS and ONLINE QUIZZES etc:** Michigan Tech uses the course management software known as Canvas to provide you with secure access to grades, class material, and other resources. To access Canvas, go to [https://mtu.instructure.com/login](https://mtu.instructure.com/login) and enter your Michigan Tech ISO username and password. Once logged in, select the course labeled “CH1000” to access class materials. Other online resources for study and practice quizzes are available at: [http://www.masteringchemistry.com/](http://www.masteringchemistry.com/). When the canvas page is fully set-up you can link to this site via canvas.

**EXPECTED BEHAVIOR DURING CLASS AND EXAMS, and ELECTRONIC DEVICES**

- **Please be courteous to your classmates.** While you are in class turn off and stow all electronic devices (Cell phones, iPods, and any other non-class related electronics). You should bring non-programmable calculators to class, and translation devices are allowed. Please do not carry on private conversations as voices can carry, but you are welcome to ask questions at any time, if I do not see your hand then just shout them out 😄, but otherwise please do not converse or behave in ways that distract those around you.

- **Only non-programmable calculators and pre-approved translation devices are allowed for Exams.** If you need other devices or assistive technology, just ask. Engaging in electronic communications or using unapproved electronic devices for assistance on exams violates the Academic Integrity Code of Michigan Tech and can result in expulsion or other punitive actions.

**ABSENCE POLICY:** Unexcused absences for exams and quizzes result in an automatic zero. 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, religious holiday, interview, or funeral), you are required to make arrangements as early as possible in advance of the exam date. **Failure to provide at least one week’s notice may result in a grade penalty.** I do not write make up exams, but other methods of dealing with excused absences are possible. Excused absences are not be given to travel home, attend “social” events such as weddings or missed flights, Plan to take your exam at the scheduled time. If you believe you are too sick to take an exam, you must contact the instructor, or Ms. Blau BEFORE the exam and then have a doctors note stating your illness prevents (or prevented) you from taking the exam, not simply that you visited the doctors office.

**ACADEMIC INTEGRITY:** Both students and faculty are responsible for insuring the academic integrity of the University according to the procedures in “Academic Integrity at Michigan Tech - 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. Peer-to-peer learning is encouraged in this class. However, assignments must be completed individually—you can talk with whomever you want to about an assignment, but the work should be your own.

**FINANCIAL AID SATISFACTORY ACADEMIC PROGRESS POLICY:** Federal financial aid regulations now require students make satisfactory academic progress towards their degree to remain eligible for financial aid, which means we must report whether you failed a class “with effort” or “without effort.” For the purpose of this class, I have decided that anyone who does not complete ALL exams and 75% of the quizzes will be considered to have failed “without effort.” The definition of “complete” requires that a student provide gradable answers to at least 75% of the questions on an exam.

**LEARNING ACCOMMODATIONS:** If you require accommodations, a quiet place to take exams, recorded textbooks etc., please see the Coordinator of Student Disability Services in the Dean of Students Office, Room 170 Administration, 487-2212. If we do not know about you, we cannot help you. So, please do not wait until you are failing your classes to ask for help.
ADA Statement: Michigan Tech 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 Michigan Tech, please call Christy Oslund, Student Disability Services (cmoslund@mtu.edu), or Dr. Bonnie Gorman, Dean of Students (7-2212).

QUIZZES: Aside from the usual exams, we will have a Friday quiz to test your knowledge and understanding of the material presented that week. They will be collected at the end of the class period for grading. Each Friday quiz will be worth 25 points. I expect to offer 11 or more of these quizzes and will record the 10 best scores for your grade. Should you miss a Friday quiz for any unexcused reason, this will count as one of your dropped quizzes.

NOTEBOOK REVIEWS: Five times during the semester you will submit a notebook for review. The notebook at the time of the review will contain each of the following: (1) On page 1 your name and M number (2) Your course notes from the lecture with the start and end of each chapter clearly identified (e.g. paper clip or dog eared); (3) at the end of each chapter you will clearly identify the part(s) of the chapter that you are still unclear about; (4) what you consider to be a good test question that you made up yourself and answered with all work shown to get that answer, and (5) You must include a bubble sheet that is also filled out with your name and M number already filled out.

Notebook Review due dates are:
- Wednesday September 18 at end of class
- Friday October 4 at end of class
- Friday October 18 at end of class
- Friday November 1 at end of class
- Wednesday November 15 at end of class

EXAMS: Hour exams will cover material up to the Friday before each examination. Plan to take your exam at the scheduled time:
- Exam 1—September 30, 2013 6:00 – 7:00 pm
- Exam 2—October 28, 2013 6:00 – 7:00 pm
- Exam 3—December 9, 2013 6:00 – 7:00 pm
- Final Exam—TBD

There will be **NO MAKE-UPS** for missed exams. Take the exams at the assigned times. Unexcused absences result in a 0. **Electronic devices are not permitted** except for non-programmable calculators and pre-approved basic translation devices.

GRADING:

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<tbody>
<tr>
<td>Friday Quizzes</td>
<td>250 pts</td>
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<tr>
<td>Notebook Reviews</td>
<td>50 pts</td>
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<tr>
<td>Hour Exams</td>
<td>300 pts</td>
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<tr>
<td>Final Exam</td>
<td>200 pts</td>
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<td><strong>TOTAL</strong></td>
<td><strong>800 pts</strong></td>
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CHEMISTRY LEARNING CENTER (CLC): is a free service provided by the Department of Chemistry and the University to provide support for students enrolled in first year chemistry lecture courses. The CLC is located in room 208 of the chemical sciences building and staffed by upper level undergraduate ‘coaches’ who are familiar with this course. Services offered include weekly appointments, walk-in assistance, reference library, computer-assisted learning and a comfortable place to study chemistry. You are encouraged to make use of this resource at the first sign of difficulty or sign up for a regular appointment to help you stay on track. Stop by the CLC for more information. The CLC director is Ms. Lois Blau (lablau@mtu.edu).

CH0100: Students who would like to have a weekly individual or team learning group should stop by the CLC during the first week of class to sign up for a time. Weekly appointments begin the second week of classes. Students with regular appointments should be enrolled in CH0100. If you are not enrolled when you sign up for a time, you will be automatically enrolled. There is no cost for CH0100. Plan to attend every appointment. However, you are allowed to miss one appointment if an emergency comes up and still receive a satisfactory grade. Walk-in hours are also available in-between appointments or team meetings.

Chemistry Learning Center Walk-In Hours

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Monday 7:00 – 9:00 pm</th>
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<tr>
<td>Monday</td>
<td>10:00 – 4:00 pm</td>
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<tr>
<td>Tuesday</td>
<td>10:00 – 4:00 pm</td>
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<tr>
<td>Wednesday</td>
<td>10:00 – 4:00 pm</td>
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<tr>
<td>Thursday</td>
<td>10:00 – 4:00 pm</td>
<td>Closed</td>
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<tr>
<td>Sunday</td>
<td>Closed</td>
<td>7:00 – 9:00 pm</td>
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</tbody>
</table>
COURSE SCHEDULE: We will cover approximately one chapter each week, though we may spend more time on some topics.

Chapter 01: What Is Chemistry?
Matter (Sections 1.2)  Suggested Problems—22, 24, 27, 30, 32, 34, 38, 40, 46, 48, 53, 54, 56, 57, 68, 80, 82, 96.
Chemical/Physical Transformations (Sections 1.3 & 1.4)

Chapter 03: The Evolution of Atomic Theory
Atomic structure (Sections 3.1-3.4)  Suggested Problems—35, 36, 38, 39, 62, 64, 74, 75, 78.
The periodic table (Sections 3.5 & 3.6)
Ions (Section 3.7)

Chapter 04: The Modern Model of the Atom
Quantum numbers, orbital shapes, and electron configurations (Sections 4.5 & 4.6)
Compounds (Section 4.7)

Chapter 05: Chemical Bonding and Nomenclature
Lewis structures (Sections 5.4-5.6)
Inorganic nomenclature (Section 5.7)

Chapter 06: The Shape of Molecules

Chapter 07: The Chemistry of Carbon
Organic nomenclature (handouts)  Suggested Problems—To Be Assigned in Class

Chapter 08: Chemical Reactions
Chemical reactions & equations (Section 8.1-8.3)  Suggested Problems—21, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 45, 46, 48, 55, 58, 61, 62.
Types of Chemical reactions (Sections 8.4-8.5)

Chapter 02: The Numerical Side of Chemistry
Numbers/measurements/calculations (Sections 2.1-2.6)  Suggested Problems—55, 62, 63, 64, 71, 80, 82, 85, 86, 87, 88, 93, 98, 100, 102, 104, 110, 111, 115, 120, 126, 128.
Dimensional analysis (Sections 2.7-2.9)

Chapter 09: Stoichiometry and the Mole
The mole and molar mass (Section 9.2)  Suggested Problems—37, 38, 42, 44, 46, 54, 57, 61, 62, 69, 73, 77, 78, 81, 82, 83, 88, 90, 96, 98, 100, 102.
Stoichiometric relationships (Sections 9.1 & 9.3)
Limiting reagents (Sections 9.4 & 9.5)
Percent composition, empirical & molecular formulas (Section 9.6)

Chapter 10: Electron Transfer in Chemical Reactions
Oxidation numbers (Sections 10.1 & 10.2)  Suggested Problems—28, 34, 35, 43, 55, 58, 59, 64, 77, 79, 85.
Redox reactions (Sections 10.3-10.6)

Holidays and Last Class Day
November 22 – December 1: Thanksgiving Break  December 13: Last Class Day