CH1100 General Chemistry
Spring Semester, 2007

LECTURE: Dr. Paul Charlesworth
402C Chemical Sciences Bldg.
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LABORATORY: Ms. Lorri Reilly
508B Chemical Sciences Bldg.
Email: lareilly@mtu.edu

CLASS SCHEDULE: Is designed to provide you with a guide to the class material so that you may read the relevant chapters prior to the class and again after the class. The dates are approximate and do not represent an exact schedule.

Week 01: Chapter 03
Introduction and Balancing Chemical Equations (3.1 - 3.3)
The Mole and Stoichiometry, Yields, Limiting Reagents (3.4)
No Laboratory

Week 02: Chapter 03
Yields and Limiting Reagents (3.5 - 3.6)
Solution Concentration and Dilution (3.7 - 3.10)
LAB - Check-in/Safety Session

Week 03: Chapter 04 Aqueous Reactions and Net Ionic Equations (4.1 - 4.7)
Chapter 05 Energy Levels and Electron Configurations (5.10 - 5.15)
LAB - Techniques of Measurement and Observation

Week 04: Chapter 05
Properties of Ionic Compounds (6.1 - 6.6)
Bonding Theories (7.10 - 7.13)
LAB - Lewis Structure Take-Home Assignment

Winter Carnival - No Class on Friday February 9th.

Week 05: Chapter 08
Energy, Heat, and Calorimetry (8.1 - 8.8)
Enthalpy, Entropy, and Free Energy (8.9 - 8.14)
LAB - Valence Shell Electron Pair Repulsion (VSEPR) Assignment (7.1 - 7.12)

Week 06: Chapter 09 Gases and Gas Laws (9.1 - 9.5)
Chapter 10 Polar Molecules and Intermolecular Forces (10.1 - 10.5)
LAB - Calorimetry
Exam 01
Week 07: Chapter 10 Structures of Solids (10.6 - 10.11)
  Chapter 21 Metals, Metallurgy, and Metallic Bonding (21.1 - 21.4)
  LAB - \( H_2O_2 \) Determination of \( R \)

Spring Break - No Class on Friday before Spring Break.

Week 08: Chapter 11 Solutions, Solubility, and Concentration (11.1 - 11.4)
  Chapter 12 Colligative Properties (11.5 - 11.10)
  LAB - Phase Diagram of \( t \)-butyl Alcohol

Week 09: Chapter 12 Rates, Rate Laws and Reaction Order (12.1 - 12.3)
  Chapter 13 Integrated Rate Laws (12.4 - 12.7)
  LAB - Factors affecting reaction rates

Week 10: Chapter 13
  Equilibrium and Equilibrium Constants (13.1 - 13.5)
  Factors affecting an Equilibrium Mixture (13.6 - 13.11)
  LAB - Determination of the rate law of a reaction
  Exam 02

Week 11: Chapter 15
  Acid - Base Concepts, pH and Acid Strength (15.1 - 15.6, 15.15, 15.16)
  Calculation of pH in strong and weak acids (15.6 - 15.10)
  LAB - Acidity of Fruit Juice

Week 12: Chapter 16
  Buffers (16.1 - 16.9)
  Solubility Equilibria (16.10 - 16.14)
  LAB - Qualitative Analysis

Week 13: Chapter 04 Redox Reactions and Activity Series (4.6 - 4.8)
  Chapter 18 Galvanic Cells and Standard Reduction Potentials (18.1 - 18.5)
  LAB - Finish Qualitative Analysis
  Exam 03 - Negotiable!

Week 14: Chapter 18 Nernst Equation, Equilibrium, and Free Energy (18.6 - 18.13)
  Chapter 22 Radioactivity (22.1 - 20.10) - Time Permitting!
  LAB - Check-out

SUGGESTED TEXTBOOK PROBLEMS: It is expected that you will successfully complete the even numbered (red) end-of-chapter problems. Failure to do so could seriously impact your understanding of material in this class. If you have difficulties with these problems you should seek help from the coaches. Answers to
these problems may be obtained from the back of your book and solutions from the coaches.

**EXAMINATIONS:** There will be three hand-graded "hour" exams worth 100 points each, and one multiple-choice final exam worth 200 points. The "hour" examinations will take place at during class on February 21st, March 28th, and April 18th (or in class on April 25th).

**IN-CLASS PROBLEMS:** Aside from the usual exams, we will have Friday quizzes that will be collected at the end of the class period and graded within one week. Although you can use your class notes and textbook in the quiz, you must work on your own. You can collect your graded quiz from the CLC. Students are encouraged to meet with a coach who will review your answers. On weeks when we have an examination, Carnival, or Spring Break, there will be no quiz.

Each Friday quiz will be worth 20 points. We expect to offer 9 of these quizzes and will drop the lowest score. The resulting 160 points will be scaled to 200 points. Should you miss a quiz for any reason, this will count as one of your dropped quizzes.

**GRADING:**

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<tbody>
<tr>
<td>Laboratory</td>
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<td>Friday Quiz</td>
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<td>Written Exams</td>
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The lab portion of CH1100 is worth about 22% of your final grade. **You must pass the lecture and the lab portion of CH1100.** Anyone who fails any portion of CH1100 automatically fails the entire class regardless of the exam scores.

Your grade will be based upon the percentage of the total points available that you accumulate. Improvements throughout the term will be taken into consideration when grades are assigned. The pass mark for this class is set at 55%, a grade C is set at 60%, a Grade B is set at 80%, a Grade A is set at 90%.

**REDSNOTES:** The class PowerPoint slides for week two onwards will be printed at a rate of four slides per page and available, at cost, from the Chemistry Learning Center. They will not be available on the web. These notes are NOT designed to replace taking good notes, but they will reduce your need to copy everything from the slides and so allow you to pay more attention to classroom discussion. **It is expected that all students will obtain a copy of the RediNotes and the lecture will be paced accordingly.**
CLASS SCHEDULE AND ABSENCE POLICY: The lecture meets three times per week on Monday, Wednesday and Friday in Fisher 135 at 11:05 AM. We will not have a class on the Friday of Winter Carnival, or on the Friday before Spring Break.

For exams, an UNexcused absence is an automatic zero for any exam that is missed. An excused absence may be granted by the Office of Student Affairs or your instructor. 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. Failure to provide at least one weeks notice will result in your final exam score being used as a missed exam score. Excused absences will not be given to travel home or to attend a social event. Plan to take your exam at the scheduled time. If you believe you are too sick to take an exam, you must 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 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.

IMPORTANT NOTICE ABOUT STUDYING: You have now been at Michigan Tech for at least one semester and should recognize the importance of study and planning your study schedule. You should spend a minimum of 9 hours per week studying for this three-lecture class. For many of you, this number of hours may be significantly higher.

Remember that you are entirely responsible for your grade in this class.

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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 2212.
Chemistry Learning Center
Room 208, Chemical Sciences Building

Supplemental Instruction
The Chemistry Learning Center will be offering Supplemental Instruction for CH1100, General Chemistry this semester.

CH1100 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 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 leaders will facilitate and encourage the group to process the material rather than acting as authority figures who lecture to participants.

The sessions are facilitated by trained SI leaders. The SI leader for CH1100 this semester is Jeremy Brown, an undergraduate student who has successfully completed first year chemistry courses with Dr. Charlesworth and mastered the material. Most of you already know Jeremy from Preparatory Chemistry. He is prepared to share with you what he has learned about how to study effectively for this course. He knows the course content and is anxious to help guide you through it. Jeremy will also be in class with you every day, taking notes and listening closely to the professor.

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. Kristen 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 Monday, January 22\textsuperscript{nd}, the Chemistry Learning Center walk-in hours for Spring Semester are:

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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: http://www.chemistry.mtu.edu/pages/clc/index.php.

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