INTRODUCTION TO CHEMICAL PRINCIPLES
FALL 2007

Instructor: Jennifer Tillinger, Ph.D. 
Course: CHM 104
Office: 347 HHS 
CRN: 41451
Phone: (248) 370-2883 
Day & Time: MW 3:30 - 5:17 p.m.
e-mail: jbulgare@oakland.edu 
Room: 195 HHS 
Office Hours: MW 2:15 p.m. – 3:00 p.m.
Laboratory: 230/240 HHS
or by appointment

REQUIRED:
1. Textbook Fundamentals of General, Organic and Biological Chemistry,
John McMurry, Mary Castellion, and David Ballantine - 5th Edition
2. Lab Manual Catalyst Laboratory Manual, Compiled by Naomi Eliezer, Oakland University, Introduction to Chemical Principles
3. Other Scientific Calculator (no graphing calculators), Safety Glasses, and Scantron forms 882

TENTATIVE SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Chapter</th>
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<tbody>
<tr>
<td>9/5</td>
<td>Introduction, Ch. 1 Matter, Energy, and Life</td>
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<tr>
<td>9/10 – 9/17</td>
<td>Ch. 2 Measurements in Chemistry</td>
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<td>9/19 – 9/24</td>
<td>Ch. 3 Atoms and the Periodic Table</td>
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<tr>
<td>9/21 or 9/24</td>
<td>Lab #3 An Introduction to Volume and Mass &amp; Lab #4 A Lesson in Density Part 3 (25 pt)</td>
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<td>9/26</td>
<td>Exam I (Chapter 1-3)</td>
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<td>10/1 – 10/3</td>
<td>Ch. 4 Ionic Compounds</td>
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<td>10/8-10/15</td>
<td>Ch. 5 Molecular Compounds</td>
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<td>10/19 or 10/22</td>
<td>Lab Ionic Reactions: Precipitates, Solubility, and Metal Activity (25 pt)</td>
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<td>10/17-10/24</td>
<td>Ch. 6 Chemical Reactions: Classification and Mass Relationship</td>
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<td>10/29</td>
<td>Exam II (Chapter 4-6)</td>
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<td>10/31-11/5</td>
<td>Ch. 7 Chemical Reactions: Energy, Rates, and Equilibrium</td>
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<td>11/7 – 11/14</td>
<td>Ch. 8 Gases, Liquids, and Solids</td>
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<td>11/16 or 11/19</td>
<td>Lab Properties of Liquids (25 pt)</td>
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<td>11/19</td>
<td>Exam III (Chapter 7-8)</td>
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<td>11/14-11/26</td>
<td>Ch. 9 Solutions</td>
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<td>11/28 – 12/3</td>
<td>Ch. 10 Acids and Bases</td>
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<tr>
<td>12/5</td>
<td>Ch. 11 Nuclear Chemistry</td>
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<tr>
<td>12/13 (Thursday)</td>
<td>Final Exam 12:00 – 3:00 p.m. (Comprehensive)</td>
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Nov. 6, 2007 is the last day for an Official Withdrawal.
COURSE DESCRIPTION:

Chemistry 104 (CHM 104) is the first semester of a one year course in general, organic and biological chemistry. The topics covered are matter, energy, chemical formulas, measurements, metric system, periodic table, atomic theory and structure, bonding, chemical reactions and equations, stoichiometry, solutions, acid/base theories, equilibrium, gas laws, and nuclear chemistry. This course is intended for the student who need fundamental college chemistry, or those students who need preparation for CHM 201. This course in not intended for chemistry majors, premed etc. *This course satisfies the university General Education Requirement in Natural sciences and Technology.*

Prerequisite MTH 011 with a minimum grade of 2.0 or placement in MTH 012 or higher

LEARNING OUTCOMES:

1. Demonstrate the ability to solve problems involving direct proportionality.
2. Take measurements and evaluate given data using both English and Metric units of measure.
3. Apply the concepts learned about the periodic table to predict types of bonding and molecular geometry. Naming of ionic and molecular compounds and their properties.
4. Organize, balance and predict products for some chemical equations qualitatively and quantitatively.
5. Predict how various factors will affect reaction rates, equilibrium and pH.
6. Understand at a molecular level the difference between a solid, liquid, and gas; and the types of forces holding them together.
7. Apply the concepts learned about gases to solve gas law problems.
8. Apply the concepts learned about solutions to predict solubilities and solve problems that involve making various types of solutions.
9. Identify an acid or a base, and calculate the pH of a solution.
10. Predict the products of a nuclear reaction.
11. Demonstrate the capability of performing physical chemical experiments that apply the knowledge learned in the above outcomes.

CLASS EXPECTATIONS:

1. Attendance:
   You are expected to attend each class although attendance is not taken. **The lab sessions listed in the schedule are mandatory.** You are expected to attend your scheduled lab section. There will be no make-ups for missed laboratory periods. These are as scheduled (see tentative class schedule), so please do not miss and please be on time.

2. Homework:
   Homework assignments will be ALL the even problems at the end of each chapter, including Applications and General Questions and Problems, unless otherwise indicated. Homework will not be collected, but I strongly recommend for you to do all the homework. This is one of the best ways to become proficient in the material.

3. Laboratory:
   There will be three (3) labs (25 point each) during the semester. You will be working with a lab partner for each of the labs. Each lab has a prelab. You are expected to have the prelab completed before entering the lab. **The prelab is due at the beginning of each lab period.** If the prelab is not done, you will get a zero for that portion of the lab. One lab report (cover sheet, pre-lab, data sheets, and post-lab) will be submitted per group. **Lab reports are due by the end of the following lecture period.** Labs turned in after that time will be considered late. A late lab report will lose 10% of the total points for every day it is late. No make-up labs will be given. Safety goggles MUST be worn at all times in the lab.

   **Laboratory Dates:** All Mondays
September 21\textsuperscript{st} and September 24\textsuperscript{th}
October 19\textsuperscript{th} and October 22\textsuperscript{nd}
November 16\textsuperscript{th} and November 19\textsuperscript{th}

4. Exams:
There will be three exams (100 points each) during the semester and a comprehensive final exam (150 points). You will need scantron form 882 for all exams. All exams will be given at the beginning of class. Please be prompt, or you may not have enough time. **No make-up exams** and **no extra credit assignments** will be given.

**Exam Dates:**
- Exam I: September 26
- Exam II: October 29
- Exam III: November 19
- Final Exam: December 13

**During exams the only electron device that is can be used is a non-graphing calculator.** The use of cellular phones, radio/MP3 players with headsets, graphing calculators, or any other electronic device not approved by the instructor will not be allowed. Also, please no hats and turn off cellular phones during exams.

Once an exam begins, you will not be allowed to leave the room and return to complete your exam.

**Cheating:**
Students are expected to uphold the academic standards set by Oakland University. The work submitted by any student should be their own work. Students suspected of academic misconduct (Examples of academic misconduct are looking off another students exam, plagiarism, changing answers on your exam sheet after grading or lab reports, the use of materials not authorized by the instructor, obtaining copies of exam questions prior to the exam date, or another student taking an exam for you), will be reported to the academic conduct committee. Students found guilty of academic misconduct will receive a zero grade for the this course. For further details see Academic Conduct Policies section (p. 93 – 94) in the 2007 – 2008 Undergraduate Catalog.

5. Grading:
Final numeric grades will be determined as follows: A 90\% of the maximum points will be assigned a 4.0 grade. A 50\% score of the maximum points will be assigned a 1.0 grade, with a linear grade scale between. Students with points totaling less than 50\% of the total points possible will receive a 0.0 grade.

- **Your lowest exam grade may be replaced by your final exam percentage grade from the comprehensive final exam given at the end of the semester if you have shown improvement throughout the semester.**

- **No make-up tests will be given without advanced notice. If you know in the beginning of the semester that you have a conflict, you can make arrangements to take the exam early. ALL tests missed will be recorded as a zero.**

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<tr>
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<th>Points</th>
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<tbody>
<tr>
<td>Three exams (100 pt each)</td>
<td>300</td>
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<tr>
<td>Three lab reports (25 pt each)</td>
<td>75</td>
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<tr>
<td>Comprehensive final exam</td>
<td>150</td>
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<tr>
<td>Total Points</td>
<td>525</td>
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