INTRODUCTION TO CHEMICAL PRINCIPLES
FALL 2006

Instructor: Jennifer Tillinger, Ph.D.
Office: 347 HHS
Phone: (248) 370-2883
e-mail: jbulgare@oakland.edu
Office Hours: MW 2:15 p.m. – 3:00 p.m.
or by appointment

Course: CHM 104
CRN: 41451
Day & Time: MW 3:30 - 5:17 p.m.
Room: 172 SEB
Laboratory: 230/240 HHS

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

4. Recommended:

TENTATIVE SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/30</td>
<td>Introduction, Ch. 1 Matter, Energy, and Life</td>
</tr>
<tr>
<td>9/6 – 9/11</td>
<td>Ch. 2 Measurements in Chemistry</td>
</tr>
<tr>
<td>9/13</td>
<td>Ch. 3 Atoms and the Periodic Table</td>
</tr>
</tbody>
</table>
| 9/18   | Lab #3 An Introduction to Volume and Mass
   & Lab #4 A Lesson in Density Part 3 (25 pt)                            |
| 9/20   | Ch. 3 continued                                                        |
| 9/25   | Exam I (Chapter 1-3)                                                  |
| 9/27 – 10/4 | Ch. 4 Ionic Compounds                                                 |
| 10/9   | Lab Ionic Reactions: Precipitates, Solubility, and Metal Activity (25 pt) |
| 10/11-10/16 | Ch. 5 Molecular Compounds                                             |
| 10/18-10/25 | Ch. 6 Chemical Reactions: Classification and Mass Relationship       |
| 10/30  | Exam II (Chapter 4-6)                                                 |
| 11/1-11/6 | Ch. 7 Chemical Reactions: Energy, Rates, and Equilibrium            |
| 11/8   | Ch. 8 Gases, Liquids, and Solids                                       |
| 11/13  | Lab Properties of Liquids (25 pt)                                     |
| 11/15  | Ch. 8 continued                                                        |
| 11/20  | Exam III (Chapter 7-8)                                                |
| 11/22-11/27 | Ch. 9 Solutions                                                        |
| 11/29  | Ch. 10 Acids and Bases                                                |
| 12/4   | Ch. 11 Nuclear Chemistry                                              |
| 12/7 (Thursday) | Final Exam 12:00 – 3:00 p.m. (Comprehensive)                         |

Nov. 1, 2006 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 is 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. 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 18
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 25
- Exam II  October 30
- Exam III  November 20
- Final Exam  December 7

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 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:**
If you are suspected of cheating (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), your actions will be reported to the academic conduct committee. Students found guilty of academic misconduct face suspension or permanent dismissal from Oakland University. For further details see Academic Conduct Policies section (p. 80-81) in the 2005-2006 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 significant 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.

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