INTRODUCTION TO CHEMICAL PRINCIPLES
FALL 2009

Instructor: Jennifer Tillinger, Ph.D.
Course: CHM 104
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Office Hours: MW 12:00 p.m. – 1:00 p.m.
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Day & Time: MWF 10:40 - 11:47 a.m.
Room: 195 HHS
Laboratory: 230/240 HHS
Phone: (248) 370-2883

REQUIRED:
1. Textbook: Fundamentals of General, Organic and Biological Chemistry
   John McMurry, Mary Castellion, David Ballantine, Carl Hoeger & Virginia Peterson - 6th Edition
3. Other: iClicker (handheld electronic device), Scientific Calculator (no graphing calculators), Safety Glasses, and Scantron forms 882


TENTATIVE SCHEDULE

Date       Chapter                                                  Attendance
9/11       Introduction, Ch. 1 Matter, Energy, and Life
9/18 or 9/21 Lab – Introduction and Safety Attendance Mandatory
9/11 – 9/21 Ch. 2 Measurements in Chemistry
9/21 – 9/28 Ch. 3 Atoms and the Periodic Table
10/2 or 10/5 Lab #1 (25 pt) Attendance Mandatory
9/30       Exam I (Chapter 1-3)
10/2 – 10/7 Ch. 4 Ionic Compounds
10/9 – 10/16 Ch. 5 Molecular Compounds
10/23 or 10/26 Lab#2 (25 pt) Attendance Mandatory
10/19 – 10/26 Ch. 6 Chemical Reactions: Classification and Mass Relationship
10/28       Exam II (Chapter 4-6)
10/30 – 11/4 Ch. 7 Chemical Reactions: Energy, Rates, and Equilibrium
11/6 – 11/16 Ch. 8 Gases, Liquids, and Solids
11/13 or 11/16 Lab #3 (25 pt) Attendance Mandatory
11/18       Exam III (Chapter 7-8)
11/20 – 11/25 Ch. 9 Solutions
11/30 – 12/2 Ch. 10 Acids and Bases
12/4        Ch. 11 Nuclear Chemistry/Review
12/7        Comprehensive Final Exam (Monday) 12 – 3 pm

September 17, 2009 last day of late registration
Nov. 5, 2009 is the last day for an Official Withdrawal.

Prerequisite – placement into MTH 012 or higher, 2.0 grade in MTH 011
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:
   Lecture: You are expected to attend each class. Attendance is recorded using your iClicker. A small portion of your grade is from graded questions given throughout the lecture period using your iClicker.
   Lab: 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 (Listed in the schedule of classes), 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. There are additional problems available through the MediaPak and/or Study Guide, and practice tests posted on Moodle. 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:
The lab will meet four (4) times during the semester. The dates are listed in the schedule of classes. Your laboratory grade is based off of the safety quiz and three submitted lab reports (25 point each) during the semester. **Attendance is mandatory and NO make-up lab time will be given.** You will be working with a lab partner for each of the labs. Each lab has a pre-lab. You are expected to have the pre-lab completed before entering the lab. **The pre-lab is due at the beginning of each lab period.** If the pre-lab is not done, you will get a zero for that portion of the lab. One lab report (grading sheet, pre-lab, data sheets, and post-lab) will be submitted per group. **Lab reports are due within 72 hours from the end of your lab period.** Labs turned in after that time will be considered late. **No late lab reports will be accepted.** No make-up labs will be given. Safety goggles MUST be worn at all times in the lab.

**Laboratory Dates:** The dates the laboratory meets are listed in the tentative schedule section of this document and in the schedule of classes. Please mark your calendars so that you do not miss your lab meetings.

4. In-Class Assessment & Exams:
**In-class Assessment:** Each student is required to purchase an iClicker which will be used during lecture. Throughout the lecture period graded multiple choice questions will be randomly given to the class. The students will respond to the question within the allotted time using their iClicker. Each student can receive up to two points per question asked. They will receive 1 point for answering the question, and 1 point for answering the question correctly. The questions asked can be from previously covered material, from material covered in lecture that day, or any definitions from the current chapter not yet discussed in lecture. Some questions may require you to do calculations, so you should bring your calculator and iClicker to class daily.

To receive any points you must be present in class and use your iClicker to answer the questions. No make-up questions for missed days will be given. The in-class assessments points will be worth 15.0% of your total grade.

Each student must register their iClicker online at [www.iclicker.com](http://www.iclicker.com) before September 16, 2009. Students that do not register their iClicker will not receive any in class assessment points.

**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. **Exam Dates listed in the schedule are tentative.** All exams will be given at the beginning of class. Please be prompt, or you may not have enough time.

Make-up exams will only be granted for students who have experienced **extreme** circumstances and notified the instructor within 12 hours of the missed exam. The instructor is the sole judge of the circumstances that qualify as a condition sufficient for a make-up. If the instructor is not notified within 12 hours of a missed exam, then the student will not be allowed to make-up the missed exam and will receive a zero grade for that exam.

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, 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.**

**No extra credit assignments will be given.**
5. Academic Conduct:
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 this course. For further details see Academic Conduct Policies section (p. 77 – 80) in the 2009 – 2010 Undergraduate Catalog or on line at http://www2.oakland.edu/catalog/undergrad/index.cfm.

6. 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.

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Three exams (100 pt each)</td>
<td>50.0%</td>
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<td>Three lab reports (25 pt each)</td>
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<td>In class assessment (approx 40 pt/unit)</td>
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<td>Comprehensive final exam (150 pt)</td>
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<td>Total Points</td>
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