Syllabus for Chemistry I  Fall 2008

<table>
<thead>
<tr>
<th>Section</th>
<th>Meeting Days and Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>84.121.203</td>
<td>M,W,R,F: 10:30-11:20 am</td>
<td>OS 410</td>
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<tr>
<td>84.121.206</td>
<td>T,R: 8:30-10:20 am</td>
<td>OH 316</td>
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<tr>
<td>84.121.208</td>
<td>T,R: 12:30-2:20 pm</td>
<td>OS 408</td>
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Instructor: **Dr. David Cunningham**

Office Location: OH 502A

(978) 934-3659

Email address: David_Cunningham@uml.edu

Office Hours: M,W 11:30-12:30 or as arranged. Feel free to see if I’m in anytime.

Website: http://faculty.uml.edu/dcunningham

Educational Philosophy: Success in Chemistry requires persistent study and problem solving on topics before they are covered in lecture. Students learn best with a combination of reading, practice problems, homework, lecture, group problem solving and interactive discussion. Memorization does NOT work in chemistry, understanding fundamental principles and how they are related conceptually and mathematically is everything. Honesty and courtesy are essential elements of this course.

Course Description

Chemistry I provides an introduction to the basic concepts of chemistry through classroom discussions and demonstrations. Topics include chemical calculations, atomic structures, the periodic table, basic bonding theory, solutions, liquids, and gases. Registration is restricted to science, engineering, and engineering technology majors. Pre-Req or co-req: 84.123 Chemistry I Lab

This course prepares students in the fundamentals of chemistry that will be applied in all other chemistry courses. Mastery of the topics presented in this course will prepare you to excel in subsequent chemistry, biology, and engineering courses.
Required Work Products and their Associated Performance Criteria

1. Mastering Chemistry online homework
   a. Problem focused self teaching, review, and complementary problems
   b. Self grading, often with hints and helps
   c. Evaluation! The cumulative average less the lowest assignment grade will be applied to your course grade.

2. POGIL exercises (1 per team) collected at instructors request
   a. Accuracy and clarity of presentation
   b. Spot grading of key concepts, This may be used for extra credit at the discretion of the instructor!

3. Mini-Quizzes
   a. Short 1 to 3 question quizzes using the PRS clickers and generally given after a similar practice assessment
   b. Evaluation! The cumulative average will be applied to your course grade

4. Exams including Final Exam
   a. Generally short answer and multiple choice
   b. Extra credit questions are generally included
   c. Evaluation! This is a crucial part of your course grade

Ideas for Improved Understanding

1. Provide peer coaching or peer mentoring to a colleague to help him or her effectively solve interrelated chemistry problems.
2. Carefully read each chapter and section and write a summary of the key terms, concepts and problem solving approaches.

Resources and Materials (Required)


Interwrite PRS RF clicker
Tentative Agenda

<table>
<thead>
<tr>
<th>WEEK</th>
<th>LECTURE</th>
<th>Chapter(s)</th>
<th>NOTES.</th>
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</thead>
<tbody>
<tr>
<td>9/3</td>
<td>Matter, Measurement &amp; Problem Solving</td>
<td>1</td>
<td>M,T – No Class</td>
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<tr>
<td>9/8</td>
<td>Continued + Atoms and Elements</td>
<td>1, 2</td>
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<tr>
<td>9/15</td>
<td>Molecules, Compounds &amp; Chemical Equations</td>
<td>3</td>
<td></td>
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<tr>
<td>9/22</td>
<td>Exam I</td>
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<tr>
<td>9/29</td>
<td>Chemical Quantities &amp; Aqueous Reactions</td>
<td>4</td>
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<tr>
<td>10/6</td>
<td>Gasses</td>
<td>5</td>
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<tr>
<td>10/13</td>
<td>Thermo-chemistry</td>
<td>6</td>
<td>W is M schedule</td>
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<tr>
<td>10/20</td>
<td>Quantum-Mechanical Model of the Atom</td>
<td>7</td>
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<tr>
<td>10/27</td>
<td>Exam II</td>
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<tr>
<td>11/3</td>
<td>Periodic Properties of the Elements</td>
<td>8</td>
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<tr>
<td>11/10</td>
<td>Chemical Bonding – Lewis Theory</td>
<td>9</td>
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<tr>
<td>11/17</td>
<td>Chemical Bonding – VSEPR and MO theory</td>
<td>10</td>
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<tr>
<td>11/24</td>
<td>Intermolecular Forces</td>
<td>11</td>
<td>Thanksgiving</td>
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<tr>
<td>12/1</td>
<td>Exam III</td>
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<tr>
<td>12/8</td>
<td>Being Prepared for Chem II / Review</td>
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<tr>
<td>12/16</td>
<td>Finals</td>
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Evaluation System

1. Mastering Chemistry HW 15%
2. Mini Quizes 15%
3. Hour Exams (3 exams) 40%
4. Final Exam 30%

Note: Exams will generally have 1 or 2 extra credit problems for a potential 103% to 105%
Assessment System

Assessment feedback will be provided according to the following:

1. Self and peer review of your performance and understanding of individual in-class problems
2. Self evaluation of problems from your text book
3. Group and peer evaluation of group and POGIL activities
4. Self and peer evaluation of practice exams

Policies and Procedures

1. You must be a positive contributor to the community of learners (increasing the learning of the group).
2. You must come to the class properly prepared (with readings and assignments completed)
3. Full participation is required. This includes two evening sessions where additional content will be covered.
4. Your work products must be at the highest quality, and submitted on time.
5. **Your right to a fair learning environment and cheating:**
   If you have ever been in a class where you knew that students were cheating, you know how unfair that was to the other students and how uncomfortable it made you. You have the right to learn and be tested in an environment free of cheating! While the professor will work to discourage and punish cheaters, you must do your part. If you know someone is cheating get them to stop or turn them in. When you are part of the solution, you will all have a fair and comfortable learning environment.
6. According to the official College policy:
   "The following definitions are provided for the information of all students and constitute official notice of prohibited academic practice and behavior.
   1. **Cheating** is defined as 1) misrepresenting academic work done by another as one’s own efforts, whether such misrepresentation has been accomplished with or without the permission of the other individual, 2) providing or utilizing prohibited assistance (whether in the nature of a person or a resource) in the performance of assignments and examinations, 3) copying another person’s work or giving or receiving information or answers by any means of communication during an examination, 4) utilization of the services of a commercial term paper company, and 5) the unauthorized or fraudulent acquisition and/or use of another’s academic property.
   2. **Plagiarism** is defined as 1) direct quotation or word-for-word copying of all or part of the work of another without identification or acknowledgment of the quoted work, 2) extensive use of acknowledged quotation from the work of others which is joined together by a few words or lines of one’s own text, and 3) an abbreviated restatement of someone else’s analysis or conclusion, however skillfully paraphrased, without acknowledgment that another person’s text has been the basis for the recapitulation."
The consequences of academic dishonesty can include grade reductions, public apology, course failure, and even expulsion from the University. Cheating is highly disruptive, I expect students to report any instances of cheating or plagiarism that they observe. I take cheating and plagiarism very seriously!!! I sincerely hope that this is the last time this subject comes up this semester.

Course Culture and Processes

The class will include student-centered, learning environment of Process Education which requires the learner to take ownership of his or her own learning. The facilitator will be providing constant challenges to improve learner performance. Key processes are not just “covered” but extensively used throughout the course. These processes include various forms of assessment (self-assessment, peer assessment, structured reflections, instructor assessment, mid-term assessment, etc.) and specific learning processes such as information processing, critical thinking, and problem solving.

Language development is critical and students will be accountable for new terminology and vocabulary introduced during the class. Students should be able to rephrase definitions to key terms in their own words, and relate concepts to each other.

There will be numerous time-pressured learning activities. In addition, there will be cooperative learning activities that require participants to perform in front of team members and the class as a whole. There will also be situations for role-playing, articulating understanding to others, and working with others to solve problems. Communication is critical and you will be required to work to consensus and be able to summarize group discoveries.

Personal Benefits

By studying and solving problems in small groups you will learn to work cooperatively and effectively in a team environment, while enhancing the scope and perspective of your understanding of chemistry. By studying and working problems individually, you will assess your own performance and determine where to focus your study to prepare for exams, and for your own individual educational goals. This course is designed to maximize your understanding of the fundamental concepts of chemistry and their interrelationships. When you are successful at this, you will be able to apply these understandings to your other areas of study and professional work at a more expert and creative level.

Notes: