Chemistry 121: General Chemistry I

Winter 2015

Maria C. Milletti

Class Meets: 11:00 am - 12:15 pm MW in 156 Science Complex

Course Description
In this course you will be introduced to some of the basic concepts of modern chemistry, including atomic structure and bonding, the periodic table, stoichiometry, and thermochemistry. The course has been designed as the first half of a two-semester sequence of General Chemistry and is to be taken concurrently with the laboratory companion course, CHEM 122. This lecture course emphasizes understanding the theoretical foundations of modern chemistry and problem solving.

Rationale for Inclusion in the General Education Program
General Chemistry I (CHEM 121) and its required companion laboratory course (CHEM 122) are the first half of a two-semester, introductory chemistry sequence aimed at students who will pursue science-related majors. The courses introduce some of the fundamental concepts in the chemical sciences, such as atomic structure and bonding, stoichiometry, the periodic table, chemical reactivity, and thermochemistry. In the laboratory portion of the course, students are exposed to basic techniques such as proper use of glassware, observations, simple syntheses, colorimetry, and titration. In addition, students are shown how mathematical models and error analysis can be used to analyze data and draw conclusions. The goal of the courses is to introduce the field of chemistry, its fundamental concepts and theories, and its basic experimental techniques to students who have an interest in science. As such, CHEM 121 and 122 meet the Natural Science requirements in the Knowledge of the Disciplines portion of the General Education program.

Prerequisites: High school chemistry or CHEM 117 and 118
MATH 104 or equivalent; or Level 3 math placement with concurrent registration in MATH 104

Corequisite: CHEM 122; General Chemistry I Laboratory
Textbook: Chemistry, by Gilbert, Kirss, Foster, Davies; 4th edition. All other materials can be found at http://people.emich.edu/mmilletti/teaching.html

You will need a calculator capable of performing log x and ln x and 10^x and e^x functions.

Office Hours: Mondays 12:30 – 1:30 pm; Tuesdays 9:00 – 10:00 am; Wednesdays 1:00 – 4:00 pm; Thursdays 1:00 – 3:00 pm; and by appointment.

Office hours will be held in 503A Science Complex. If you would like to see me at other times, please make an appointment. You are welcome to stop by at any time without an appointment, but in that case I cannot guarantee that I will be available. You are encouraged to stop in to talk about any problems or suggestions you may have concerning the course; about careers in chemistry, or just about things in general.

Ways to contact me

office phone 487-1183 (can leave a message)
email mmilletti@emich.edu
home phone (313) 861-1635 (no calls after 9 pm, please)

If you believe you may have trouble effectively demonstrating learning in this course because of a disability you should discuss this with me as soon as possible and no later than the end of the second week of classes. If you wish to be accommodated for your disability, EMU Board of Regents Policy 8.3 requires that you register with the Disability Resource Center (DRC) in 240K Student Center. You may contact the DRC by telephone (734.487.2470). Students with disabilities are encouraged to register with the DRC promptly as you will only be accommodated from the date you register with them forward. No retroactive accommodations are possible.

According to university policy, no student is allowed to attend class unless officially registered. If anyone who is not registered for this course takes an exam, the exam will not be graded.

Suggestions for a Successful Completion of the Course
Chemistry is a fascinating subject, but it can be confusing and difficult to master. To be successful in the course, three 'ingredients' are necessary:

1. TIME. You should budget for at least 6-9 hours of time outside of class every week to complete reading and homework assignments. It is also wise to budget time for office hour visits and meeting times with fellow students. If you are unable to make this type of time commitment this term, you should consider taking the course another semester.
2. SUPPORT. I am the first person in your support network. I can clarify goals and objectives for the course, assignment instructions, confusing concepts in the material we cover. Your fellow students (or a subset of them) are also part of your support group. You can discuss course material and assignments with them; while you share with others your approach to solving a problem you are also clarifying your own thinking. Family and friends are the last portion of your support group: they will listen and sympathize while you gripe about how hard and time consuming the course is.

3. COMMITMENT. Hopefully, you are taking this course because you are curious about chemistry and you want to learn. Taking the course just to satisfy a requirement is not motivating enough to guarantee that you won't get discouraged before the end. Make a commitment to yourself that you will complete all assignments by their deadline, that you will get any questions and doubts cleared up as they arise, and that you will be an active participant in class activities. Your learning will be more extensive and longer lasting if you use this approach to the course.

Structure of the Course

I will lead you through the material in the first nine chapters of the textbook. Major concepts in each chapter will be introduced in class through either lecture or group work. Concepts and problem-solving skills will be reinforced through sample problems I will show on the board, exercises you will do in class, end-of-chapter problems in the textbook and other homework problems I will assign.

You will be expected to:

(1) read the chapter to be discussed before coming to class. You do not need to understand every word you read, at this point, but you should have a general idea about what we will be talking about in class.
(2) attend class regularly, take notes on lectures, participate in class discussions and collaborate with your classmates in solving in-class problems. During class, I will lecture on the points I consider confusing and/or complicated, show examples of problems related to the material, and answer your questions. You will also have an opportunity to collaborate with your classmates in solving problems and answering questions. Class meetings will be a time to clarify concepts and develop problem-solving strategies.
(3) read and organize your class notes and re-read the appropriate section(s) of the chapter covered in class. At this point you should be deepening and expanding your understanding of the material and clarifying any confusion still lingering from class.
(4) complete problems and writing assignments as homework. These will be more sophisticated than the ones done in class and are designed to prepare you for exams and the final. Practice problems can be found in the text at the end of each chapter. I suggest that you do as many of these problems as possible.
To reinforce the concepts and problem-solving skills acquired during the previous class meeting, there will be a short, **one-question quiz at the beginning of each class**. In addition, there will be **3 exams** and a **cumulative final** during the term (see **Semester Schedule**). The quizzes are designed to be a brief check on your progress in the course and to make sure you don't fall behind. Exams are designed to test your knowledge and understanding of the material covered in the current chapters. In addition, there will be frequent **homework assignments** such as solving chemistry-related problems, answering essay questions, preparing for class discussion, and others.

**Criteria for Evaluation**

Your grade for the course will be based on the scores for **3 exams**, a **cumulative final**, quizzes, homework and in-class assignments.

**Grade distribution:**

- 15% quizzes
- 45% 15% @hour exam x 3
- 15% assignments
- 25% final exam

100%

**Grade assignment:**

- A: 85-100%
- B: 70-85%
- C: 60-70%
- D: 50-60%
- E: 0-50%

The grade you will earn will depend solely on your performance in the course and not on that of the class as a whole. In other words, the grades will not be 'curved'.

During the semester, there may be a need to reschedule exams or homework due dates. Not attending will not be an excuse for missing any such announcements.

**Missed Exams of Quizzes and Late Homework**

No late homework assignments will be accepted; it is therefore better to hand in an incomplete assignment than a late assignment. If by necessity you miss an exam or a quiz, you need to **contact me as soon as possible**, and certainly before the next class meeting. In order for such an absence to be considered excused, it is necessary to have **written documentation on official stationary with the telephone number of the appropriate contact person**. Absences on major religious holidays are excused if I am given at least one week of advanced notice. Tardiness will not be considered a valid reason for missing quizzes.
## Semester Schedule

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<th>Chapter</th>
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<tr>
<td>January 5, 7</td>
<td>ch. 1</td>
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<td>January 12, 14</td>
<td>ch. 2</td>
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<td><strong>January 19</strong></td>
<td><strong>MLK Day</strong></td>
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<td>January 21 – February 9</td>
<td>ch. 3</td>
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<td><strong>February 4</strong></td>
<td><em><strong>EXAM I</strong></em></td>
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<td>February 11-18</td>
<td>ch. 4</td>
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<td><strong>February 24-26</strong></td>
<td><strong>Winter Break</strong></td>
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<td>March 2-9</td>
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<td><strong>March 11</strong></td>
<td><em><strong>EXAM II</strong></em></td>
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<td>March 16-30</td>
<td>ch. 7</td>
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<td>April 1, 6</td>
<td>ch. 8</td>
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<td><strong>April 15</strong></td>
<td><em><strong>EXAM III</strong></em></td>
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<td>April 8-20</td>
<td>ch. 9</td>
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<td>April 27</td>
<td>FINAL EXAM (11:00 am-12:30 pm)</td>
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