CHEM103
General, Organic and Biochemistry I
Fall 2017

Dr. Aimee L. Miller
871-7414
aimee.miller@millersville.edu
Lecture: Brossman 102
Mon & Wed: 10:00-10:50
Labs: Caputo 332 (Mr. Jack Sipe)
Thur: 10:00 - 11:50 or 1:10 - 3:00
Fri: 10:00 - 11:50
Office Hours: Caputo 325
Mon: 11:00 - 1:00
Tues: 9:30 - 10:30
Thur: 9:30 - 11:30
Alternate times by appointment

Course Description
Chem103 is the first semester course of General, Organic, and Biochemistry (followed by Chem104) for non-science majors. It serves as a G2 General Education course and satisfies the Lab requirement. Students in Chem103 will be introduced to basic theories relevant for general and organic chemistry, including nomenclature, reactions, and problem solving. (2 hrs lecture/2 hrs lab)

Necessary Background
Chemistry: High school chemistry or Chem110 is required
Math: Proficiency in algebra is essential

Course Objectives
The main goal is a solid understanding of the basics of chemistry. Students actively engaged in this course should be able to:

- Describe basic atomic components, use the periodic table and identify elements and chemical compounds by name and/or formula.
- Take accurate and precise measurements and do calculations using appropriate units and significant figures.
- Differentiate states of matter and their molecular interactions.
- Describe the role of valence electrons in chemical bonding and draw appropriate electron configurations for atoms and Lewis structures for compounds.
- Write balanced equations to describe chemical changes and do related calculations using mole and mass relationships.
- Describe acid-base and oxidation-reduction reactions, activation energy, and equilibrium.
- Work safely in a chemical laboratory using common laboratory equipment and materials.
- Accurately record and effectively evaluate lab experimentation and data.

Required Materials and Supplies
- General, Organic, and Biological Chemistry, J. Gorzynski Smith (3rd Ed. McGraw-Hill) hard or e-text
- D2L Course Access (Millersville University)
- Connect Access (McGraw-Hill)
- Calculator: Scientific calculator capable of performing logarithmic (log, ln) and exponential (10^x, e^x, y^x) functions (cell phones may NOT be used)
- Laboratory Notebook: permanently-bound composition book
- Laboratory Instructions: available via D2L
- Safety Eyewear
Course Policies

Class Participation: Students are responsible for material presented in class or distributed via D2L. Only graded work missed for an absence excused based on Millersville’s approved guidelines may be made up. Please contact me in advance or as soon as possible to reschedule. Any graded work conducted outside the scheduled time may differ significantly in form and exact content from the in-class version.

Academic Honesty: Students are expected to conduct all course work in an honest and ethical manner, consistent with Millersville’s policy. Cheating on coursework bypasses the learning process and will NOT be tolerated. Anyone caught cheating will be assigned a score of zero on the work.

Cooperative Environment: Students are expected to be actively engaged in the classroom, so questions and comments are encouraged. Repeated disruptive behavior (like tardiness, chatting, or cell phone noise/use) may be cause for dismissal from class and may affect final grade assignments. Students with special concerns are encouraged to speak with me or take advantage of student resources available on campus, including the Office of Learning Services, the Tutoring Center, or the Counseling Center. The safe and productive educational environment for this class includes compliance with Title IX as outlined in Millersville’s policy.

Homework & Activities: Practicing exercises related to the material we discuss in class is essential for mastering concepts and developing critical skills. There will be graded online assignments in Connect that must be completed for credit. Exercises may be worked multiple times if necessary to learn the concept and earn full credit. Graded in-class activities will be used to encourage interaction with concepts. Students are urged to work independently on a broader range of examples, problems, and exercises in the textbook as we cover material.

Elemental Chemistry Presentations: Each individual student will research a chemical element and give a 5-minute oral presentation during the lab sessions on Sep 29/30. Basic information, general properties, and life applications for the element will be assembled into a PowerPoint file. Files must be submitted to D2L at least 2 hrs BEFORE the lab period that day. Deductions will be made: 1 pt for late submissions online, 2 pts for files only brought to class in person, and 5 pts for an unexcused absence requiring presentation on another date. Detailed instructions, a template, and resources are available in D2L.

Recommendations for Success

- Read textbook sections matching class discussions to find additional explanations and example problems. Use LearnSmart/SmartBook to help guide your learning.
- Ask questions in class, by e-mail, or in person. Remember, if you don’t understand something, others probably don’t either.
- As we cover a topic in class, work practice exercises in the book and the related online problems. Starting early gives you time to review, learn, and earn full credit.
- Plan to spend time at the Chemistry Peer Learning sessions where you can work with others or get help from a chemistry tutor.
- Find a group of other students to study with so you can help each other.
- Take advantage of Dr. Miller’s office hours, review sessions, or connect electronically.
- Use extra help available in D2L that might help you understand difficult material.
- Use Study Sheets available in D2L to check that you are comfortable with all the concepts for each test.
- Review returned exams and correct any mistakes to make sure you learn all the concepts for future use. Early skills are used extensively for later work.
- Print out and read lab instructions in time to complete the online pre-lab questions before coming to lab.
- Record lab notes and data directly into your notebook, label all information clearly, and complete all post-lab questions and a summary.
Lecture Schedule (tentative)

Topic Order:
Chap 1: Matter and Measurement
Chap 2: Atoms and the Periodic Table
Chap 10: Nuclear Chemistry (parts)
Chap 3: Ionic Compounds
Chap 4: Covalent Compounds
Chap 7: Gases, Liquids and Solids
Chap 5: Chemical Reactions
Chap 6: Energy Change, Rxn Rates, & Eqib (parts)
Chap 8: Solutions
Chap 9: Acids and Bases (parts)

Testing Schedule:
Exam 1: Wednesday, Sep 13
Exam 2: Wednesday, Oct 4
Exam 3: Wednesday, Oct 25
Exam 4: Wednesday, Nov 15
Exam 5: Wednesday, Dec 6
Final Exam: Thur, Dec 14; 8:00 - 10:00 (comprehensive content)

Grading

<table>
<thead>
<tr>
<th>Grade</th>
<th>Total %</th>
<th>A</th>
<th>93.0-100</th>
<th>A-</th>
<th>90.0-92.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>B+</td>
<td>87.0-89.9</td>
<td>B</td>
<td>83.0-86.9</td>
<td>B-</td>
<td>80.0-82.9</td>
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<tr>
<td>C+</td>
<td>77.0-79.9</td>
<td>C</td>
<td>73.0-76.9</td>
<td>C-</td>
<td>70.0-72.9</td>
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<tr>
<td>D+</td>
<td>67.0-69.9</td>
<td>D</td>
<td>63.0-66.9</td>
<td>D-</td>
<td>60.0-62.9</td>
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<tr>
<td>F</td>
<td>&lt;60.0</td>
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NOTE: You must earn at least 60% in the lecture portion to pass Chem103. Your final grade will be assigned based on the combined lecture and lab scores.
Laboratory Policies
The laboratory component of Chem103 is designed to give you a hands-on experience with concepts we cover in class. Students are required to prepare for, carry out, and report on all experiments or activities.

Attendance: Students MUST attend and complete every lab as scheduled. If you cannot attend a lab, please contact the instructor as soon as possible. Except for unavoidable, approved excuses, there will be a 5 pt penalty for making up lab work.

Safe & Cooperative Environment: Students are expected to follow all directions regarding safety precautions and lab attire. More complete lab safety rules are posted in D2L and should be taped into your lab notebook for quick reference. You must also keep your lab drawer and general lab areas clean and tidy. Failure to follow instructions or clean up may result in a penalty for the week. Please notify the instructor about any special concerns (allergies, pregnancy etc.) that might require alternate arrangements for you to work safely in lab.

Instructions & Pre-Labs: Students are expected to come to lab each week with an understanding of the planned experiment. You should print out experimental instructions posted on D2L and tape them into your notebook (1 pt penalty for starting work without printed instructions). After reading over the instructions, you should complete the 3 pt pre-lab quiz in D2L. This must be completed by at least 30 min before lab begins. (There is no pre-lab when a worksheet activity is scheduled for lab.)

Notebooks & Reports: Students must record ALL lab work directly into their notebook during lab. Calculations or analysis, a brief summary report, and answers to lab questions should also be written directly into the notebook. Failure to properly record data during lab may result in a 1 pt penalty. You should also maintain a table of contents listing titles and page numbers for each experiment. Notebooks are due before leaving the lab unless arrangements are made with the instructor.

Laboratory Schedule (tentative)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Aug 31 &amp; Sep 1</td>
<td>Check In, Lab Safety &amp; Chemical Hazards</td>
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<tr>
<td>Sep 7 &amp; 8</td>
<td>Measurements &amp; Density</td>
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<tr>
<td>Sep 14 &amp; 15</td>
<td>Separation of a Mixture</td>
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<tr>
<td>Sep 21 &amp; 22</td>
<td>Elements &amp; The Periodic Table (lab &amp; worksheet)</td>
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<tr>
<td>Sep 28 &amp; 29</td>
<td>Element Presentations</td>
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<tr>
<td>Oct 5 &amp; 6</td>
<td>Names &amp; Formulas of Compounds (worksheet)</td>
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<tr>
<td>Oct 12 &amp; 13</td>
<td>Molecular Models &amp; Naming Review (worksheet)</td>
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<tr>
<td>Oct 19 &amp; 20</td>
<td>Gas Law Relationships</td>
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<tr>
<td>Oct 26 &amp; 27</td>
<td>Formula of a Compound</td>
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<tr>
<td>Nov 2 &amp; 3</td>
<td>Stoichiometry Calculations (worksheet)</td>
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<tr>
<td>Nov 9 &amp; 10</td>
<td>Making a Battery &amp; pH Testing</td>
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<tr>
<td>Nov 16 &amp; 17</td>
<td>Chemical Equilibrium</td>
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<tr>
<td>Nov 23 &amp; 24</td>
<td>Thanksgiving break (no lab)</td>
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<tr>
<td>Nov 30 &amp; Dec 1</td>
<td>Solutions, Dilutions &amp; Titration, Check Out</td>
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<tr>
<td>Dec 7 &amp; 8</td>
<td>Lab Make Up (only as needed)</td>
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Lab Grading

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
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<tbody>
<tr>
<td>Lab Notebook Set-up (week 1)</td>
<td>5 pts</td>
</tr>
<tr>
<td>Weekly Lab</td>
<td>15 pts each (x13)</td>
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(generally a 3 pt Pre-Lab Quiz & 12 pt Notebook report)