PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

GENERAL CHEMISTRY I
CHEM 1110

Class Hours: 3.0                      Credit Hours: 4.0
Laboratory Hours: 3.0                       Revised: Spring 2016

Catalog Course Description:

Modern atomic theory, chemical bonding, stoichiometry, kinetics. Course includes three hours of lecture and three hours of laboratory applications each week.

Prerequisites:

ACT math score of at least 22 or MATH 1130 or MATH 1710 or MATH 1730

Textbook(s) and Other Course Materials:

Burdge and Overby, Chemistry: Atoms First, McGraw-Hill, 2012 SECOND EDITION. CHEM 1110 Lab Notebook containing experiments (discussion, procedure, report sheets and homework sheets) and problem sets.

Programmable/graphing calculators may not be used on the tests in this course. A non-programmable scientific calculator is required (ex. TI-30X).

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Science of Change, ch. 1.1-1.6, Calorimetry, ch. 10.4</td>
</tr>
<tr>
<td>2</td>
<td>Atoms and the Periodic Table, ch. 2.1-2.6</td>
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<tr>
<td>3</td>
<td>Quantum Theory and Electronic Structure, ch. 3.1-3.10, ch.5.4 (lab)</td>
</tr>
<tr>
<td>4</td>
<td>Periodic Trends, ch. 4.1-4.6: Ionic and Covalent Bonding, ch. 5.1-5.7, ch.5.6 (lab)</td>
</tr>
<tr>
<td>5</td>
<td>Composition Stoichiometry, ch. 5.8-5.10, ch. 5.7 (lab)</td>
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<tr>
<td>6</td>
<td>Lewis Structures, ch. 6.1-6.6</td>
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<tr>
<td>7</td>
<td>Molecular Structures, ch. 7.1-7.8</td>
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<tr>
<td>8</td>
<td><em>Spring Break, March 7-12</em></td>
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<tr>
<td>9</td>
<td>Reaction Stoichiometry, ch. 8.1-8.5</td>
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<tr>
<td>10</td>
<td>Stoichiometry (cont.) / Reactions for O₂ Lab</td>
</tr>
</tbody>
</table>
II. Course Goals*:

The course will:

A. Understand the fundamental concepts of atomic structure, molecular structure and bonding. V.3, V.4

B. Predict properties of elements from the periodic table based on an acquired knowledge of periodic law. V.3, V.4

C. Apply the laws of chemistry and utilize the necessary mathematics to solve problems in chemical relationships. VI.2, V.1, V.2, V.4

D. Understand the fundamental concepts of kinetic molecular theory. V.4

*Roman numerals after course objectives reference TBR’s general education goals.

III. Expected Student Learning Outcomes*:

The student will be able to:

1. Work problems with metric system units and convert units if necessary. C

2. Understand the concept of significant figures. C

3. Solve density, specific gravity and calorimetry problems. C

4. Understand the concepts of atoms, moles and molecules. A

5. Calculate atomic weights, formula weights and percent compositions. C

6. Derive chemical formulas from elemental composition. C

7. Write and balance chemical equations. A

8. Calculate percent purity and/or percent yield from a chemical reaction. C

9. Understand the concept of limiting reactant. C

10. List and describe the fundamental particles of an atom. A

11. Write the electronic structure of an atom. A, B

12. Write the quantum numbers for a specific electron. A

13. Predict properties of the elements using the periodic table. B
14. Draw Lewis structures for the elements and for compounds. A, B
15. Determine oxidation numbers. A, B
16. Name compounds and/or write their formulas. A, B
17. Label bond type(s) for an element or compound and describe molecular type. A
18. Determine if hybridization is occurring and if so describe. A
19. Classify chemical reactions. A
20. Understand the concept of electrolytes. A
21. Understand kinetic molecular theory and how it relates to gases, liquids, and solids. D
22. Understand and solve problems with gases. C, D
23. Calculate calorimetry problems involved in phase changes. C, D

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

**IV. Evaluation:** (1000 points): Note: The lecture portion of this course is worth 750 points of the total grade.

A. Testing Procedures: 6000 points

   Chapter exams and/or alternative assignments (400 points)
   Comprehensive final examination (200 points)

   The lecture portion of this course is worth 750 points of the total grade.
   There are 5 chapter exams (100 points each) and a comprehensive departmental final exam (200 points). If all chapter exams are attempted the lowest exam grade may be dropped. If an exam is missed, then this grade is dropped. There are no make-ups for scheduled exams.

B. Laboratory Expectations: 250 points

   Attendance is required for scheduled lab meetings. Labs may NOT be made up! Experiment report sheets are to be completed in ink. No "white-out" allowed! Problem sets and the Lab Final Exam may be completed in pencil. All purpose statements and conclusions must be typed and plagiarism will not be tolerated! Safety eye wear must be worn during every lab involving an experiment (code Z87). Shoes covering the entire foot required (no clogs/sandals/ballet flats) and legs must be fully covered (no tights/leggings) to enter the lab. See lab schedule for additional information and requirements.

   The Laboratory portion of the grade covers a total of 250 points for determining the letter grade, but a student must pass the lab with a 60% average (150 points) in order to pass the course. **If a student earns less than 60% in lab, he/she will fail the entire course!**

C. Field Work:

   N/A

D. Other Evaluation Methods:
Each instructor has the option to give an extra exam and/or alternative assignments (pop quizzes, online homework, etc) worth 150 points. Bonus points and/or extra credit given during the semester may not exceed 37.5 points (5% of lecture portion of grade).

E. Grading Scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 - 1000</td>
<td>A</td>
</tr>
<tr>
<td>875 - 899</td>
<td>B+</td>
</tr>
<tr>
<td>800 - 874</td>
<td>B</td>
</tr>
<tr>
<td>775 - 799</td>
<td>C+</td>
</tr>
<tr>
<td>700 - 774</td>
<td>C</td>
</tr>
<tr>
<td>600 - 699</td>
<td>D</td>
</tr>
<tr>
<td>&lt;600</td>
<td>F</td>
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</tbody>
</table>

V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

C. Accommodations for disabilities:

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated
should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course. Disability Services may be contacted by sending email to disabilityservices@pstec.edu, or by visiting Alexander 130. More information is available at http://www.pstec.edu/sswd/.

D. Other Policies:

Cell Phone Policy:
Cell phones may not be used during class. Emergency situations must be discussed with the instructor.