PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

GENERAL CHEMISTRY I
CHEM 1110

Class Hours: 3.0
Credit Hours: 4.0
Laboratory Hours: 3.0
Revised: Spring 09

Catalog Course Description:

Modern atomic theory, chemical bonding, stoichiometry, kinetics. Course includes 3 hours of lecture and 3 hours of laboratory applications each week.

Entry Level Standards:

Two years of high school algebra or one year of high school algebra and one year of high school geometry are necessary for entrance to the course. Students requiring DSPM courses must complete these before taking CHEM 1110.

Prerequisites:

Two years of high school algebra and completion of DSP math requirements

Textbook(s) and Other Course Materials:

CHEM 1110 Lab Notebook containing experiments (discussion, procedure, report sheets and homework sheets) and problem sets.
Programmable calculators may not be used on the tests in this course. A non-programmable scientific calculator is required (TI - 30X).

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Foundations of chemistry, ch. 1.1-1.3</td>
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<tr>
<td>2</td>
<td>Chemical formulas and composition stoichiometry, ch. 2.1-2.12, Oxidation numbers and nomenclature, ch. 4.4-4.6</td>
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<tr>
<td>3</td>
<td>Composition stoichiometry, chemical equations, and reaction stoichiometry, ch. 3.1-3.5, 3.6 (part)</td>
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<tr>
<td>4-5</td>
<td>Chemical reactions, periodic table, ch. 4.1-4.3, 4.8-4.12, ch. 6.7,6.8</td>
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<tr>
<td>6</td>
<td>Subatomic particles, electronic structure of atoms, ch. 5.1-5.19</td>
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<tr>
<td>7</td>
<td>Periodic trends of the elements, ch. 6.1-6.6</td>
</tr>
<tr>
<td>8</td>
<td>MIDTERM, Chemical bonding, ch. 7.1-7.6, 7.8-7.11</td>
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</table>
II. Course Objectives*:

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. Instructional Processes*:

Students will:

1. Use equipment (instruments, glassware and other tools) for obtaining measurements and observations. Technological Literacy Outcome, Natural Sciences Outcome

2. Collect data, generate graphs and tables of the data, summarize and draw conclusions. Natural Sciences Outcome

3. Participate in laboratory exercises which develop teamwork, problem solving and data analysis. Natural Sciences Outcome, Mathematics Outcome, Communication Outcome, Technological Literacy Outcome

4. Write summaries (in the form of conclusions) of the chemical concepts reinforced with the laboratory experiments. Natural Sciences Outcome, Communication Outcome

*Strategies and outcomes listed after instructional processes reference TBR’s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should 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

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures: 75% of grade

Chapter exams and comprehensive midterm--55 %
Comprehensive final examination--20 %

There will be 5 chapter(s) exams approximately every two weeks (equal points) and ONE may
be dropped. If absent, the missed exam is automatically dropped. The departmental midterm (week 8) and final (week 15) will be multiple choice. Midterm (55min.) will cover material from ch.1-part of ch.6. Final (110min.) will cover all material with emphasis on ch. 6 (part) - ch. 13 and equivalent weight.

B. Laboratory Expectations: 25% of grade

Pre-lab activities, lab reports, homework sheets, problem sets and lab final: 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. Safety eye wear must be worn during every lab involving an experiment. Closed toe/heel shoes required (no clogs/sandals). See lab schedule for order/dates of labs and problem sets.

C. Field Work:

N/A

D. Other Evaluation Methods:

Bonus points and/or extra credit given during the lecture portion of the course may not exceed 10% of the total grade earned in the course. This means that the total bonus points possible on tests or extra assignments should not exceed 20% of the total points earned in class (50% of 20% = 10%).

E. Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>90 - 100</td>
<td>A</td>
</tr>
<tr>
<td>80 - 89.9</td>
<td>B</td>
</tr>
<tr>
<td>70 - 79.9</td>
<td>C</td>
</tr>
<tr>
<td>60 - 69.9</td>
<td>D</td>
</tr>
<tr>
<td>&lt;60</td>
<td>F</td>
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VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course.

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, plagiarism, purchasing someone's work or paying someone to complete assignments to present as one's own, taking an exam for another student, providing others with information from exams or laboratory reports and problem sets.

C. Accommodations for disabilities:

If you need accommodation because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be
evacuated, please inform the instructor immediately. Privately after class or in the instructor's office.
To request accommodations students must register with Services for Students with Disabilities: Goins 127 or 131, Phone: (865) 539-7153 or (865) 694-6751 Voice/TDD.

D. Other Policies:

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