COURSE OUTLINE
Revision: Joan Stover, February 2008

DEPARTMENT: Academic Programs
CURRICULUM: The Natural World
COURSE TITLE: General Chemistry with Lab I
COURSE NUMBER: CHEM& 161
TYPE OF COURSE: Academic Transfer
   Special Requirement Met: Mathematics/Quantitative Reasoning
AREA(S) OF KNOWLEDGE: The Physical Universe
COURSE LENGTH: 1 quarter
CREDIT HOURS: 6
LECTURE HOURS: 44
LAB HOURS: 44
CLASS SIZE: 27
PREREQUISITES: CHEM& 139 (General Chemistry Prep) or passing score on chemistry placement exam, and MATH& 141 (Pre-Calculus I)

COURSE DESCRIPTION:

First of a three quarter sequence for science majors. Chemistry principles, structure of matter, atomic and molecular theory, the elements, quantitative relationships, nuclear chemistry, aqueous solutions, kinetics, chemical thermodynamics, oxidation and reduction, electrochemistry, periodicity, equilibrium systems, qualitative analysis and organic chemistry. Lab included.
CHEM& 161 General Chemistry with Lab I
February 2008

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Communication – Read and listen actively to learn and communicate. Speak and write effectively for personal, academic and career purposes.
2. Computation – Use arithmetic and other basic mathematical operations as required by program of study. Apply quantitative skills for personal, academic and career purposes. Identify, interpret, and utilize higher level mathematical and cognitive skills.
3. Human Relations – Use social interactive skills to work in groups effectively.
5. Technology – Select and use appropriate technological tools for personal, academic and career tasks.
6. Personal Responsibility - Be motivated and able to continue learning and adapt to change. Value one’s own skills, abilities, ideas and art. Take pride in one’s work. Manage personal health and safety. Be aware of civic and environmental issues.
7. Information Literacy – Access and evaluate information from a variety of sources and contexts, including technology.

GENERAL COURSE OBJECTIVES:

At the end of the course the student will:

1. Gain a clear, direct understanding of chemistry by applications of the scientific method.
2. Connect basic concepts with applications.
3. Use laboratory activities thoughtfully to gain knowledge of basic concepts from experience.
4. Develop problem solving and critical thinking skills in area of scientific interest and/or public concern.
5. Learn to organize, evaluate and report data and observations.
TOPICAL OUTLINE:

I. Matter and measurement 9
II. Atoms, molecules, and ions 10
III. Formulas, equations and moles 10
IV. Reactions in aqueous solutions 10
V. Periodicity and atomic structure 10
VI. Ionic bonds and some main-group chemistry 10
VII. Covalent bonds and molecular structure 10
VIII. Thermochemistry: Chemical energy 10
IX. Gasses: Their properties and behavior 9

Total hours 88
<table>
<thead>
<tr>
<th>SLO #</th>
<th>Included in Course Objective Number</th>
<th>SCC Student Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO 1.1</td>
<td></td>
<td>Communication - Read and listen actively</td>
</tr>
<tr>
<td>SLO 1.2</td>
<td>5</td>
<td>Communication - Speak and write effectively</td>
</tr>
<tr>
<td>SLO 2.1</td>
<td></td>
<td>Computation - Use mathematical operations</td>
</tr>
<tr>
<td>SLO 2.2</td>
<td></td>
<td>Computation - Apply quantitative skills</td>
</tr>
<tr>
<td>SLO 2.3</td>
<td>2</td>
<td>Computation - Identify, interpret, and utilize higher level mathematical and cognitive skills</td>
</tr>
<tr>
<td>SLO 3.1</td>
<td></td>
<td>Human Relations - Use social interactive skills to work in groups effectively</td>
</tr>
<tr>
<td>SLO 3.2</td>
<td></td>
<td>Human Relations - Recognize the diversity of cultural influences and values</td>
</tr>
<tr>
<td>SLO 4.1</td>
<td>1, 2</td>
<td>Critical Thinking and Problem Solving -</td>
</tr>
<tr>
<td>SLO 5.1</td>
<td>2, 3</td>
<td>Technology - Select and use appropriate technological tools</td>
</tr>
<tr>
<td>SLO 6.1</td>
<td></td>
<td>Personal Responsibility - Be motivated and able to continue learning and adapt to change</td>
</tr>
<tr>
<td>SLO 6.2</td>
<td></td>
<td>Personal Responsibility - Value one's own skills, abilities, ideas and art</td>
</tr>
<tr>
<td>SLO 6.3</td>
<td></td>
<td>Personal Responsibility - Take pride in one's work</td>
</tr>
<tr>
<td>SLO 6.4</td>
<td></td>
<td>Personal Responsibility - Manage personal health and safety</td>
</tr>
<tr>
<td>SLO 6.5</td>
<td>4</td>
<td>Personal Responsibility - Be aware of civic and environmental issues</td>
</tr>
<tr>
<td>SLO 7.1</td>
<td></td>
<td>Information Literacy - Access and evaluate information</td>
</tr>
<tr>
<td>SLO 7.2</td>
<td></td>
<td>Information Literacy - Use information to achieve personal, academic, and career goals, as well as to participate in a democratic society</td>
</tr>
</tbody>
</table>