COURSE OUTLINE
Revision: Joan Stover, February 2008

DEPARTMENT: Academic Programs
CURRICULUM: The Natural World
COURSE TITLE: General Chemistry with Lab II
COURSE NUMBER: CHEM& 162
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& 161 (General Chemistry with Lab I)

COURSE DESCRIPTION:
Second quarter 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, electro-chemistry, periodicity, equilibrium systems, qualitative analysis and organic chemistry. Lab included.
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. Have a clear and direct understanding of general chemistry.
2. Connect basic concepts with applications.
3. Understand the areas of chemistry that are currently of intense scientific and/or public concern.
CHEM& 162 General Chemistry with Lab II
February 2008

TOPICAL OUTLINE:

I. Liquids, solids and changes of states 11
II. Solutions and their properties 11
III. Chemical kinetics 11
IV. Chemical equilibrium 11
V. Hydrogen, oxygen and water 11
VI. Aqueous equilibria: acids and bases 11
VII. Applications of aqueous equilibria 11
VIII. Thermodynamics: entropy, free energy and equilibrium 11

Total hours 88

REVISED BY: Joan Stover
DATE: February 2008
## Included in Course Objective Number

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