DEPARTMENT: Academic Programs
CURRICULUM: The Natural World
COURSE TITLE: Organic Chemistry Lab I
COURSE NUMBER: CHEM& 251
TYPE OF COURSE: Academic Transfer
COURSE LENGTH: 1 quarter
CREDIT HOURS: 3
LECTURE HOURS: 0
LAB HOURS: 77
CLASS SIZE: 27
PREREQUISITES: CHEM& 241 with a 2.0 or better

COURSE DESCRIPTION: This course covers an introduction to organic laboratory techniques and preparation of representative compounds. Special emphasis is placed on useful laboratory practices for reactions, separations, synthesis, and analysis of organic compounds. Satisfies the organic chemistry requirements for science majors and also for those in pre-medical, pre-dental, and other pre-technical disciplines.

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Communication- Students will learn to communicate effectively using the language of chemistry and gain practice in technical writing through formal laboratory reports.
2. Human Relations - Students will use social interactive skills to collaborate with classmates on laboratory experiments.
3. Critical Thinking and Problem Solving Skills – Apply vocabulary, concepts and laboratory techniques to understand and solve problems pertaining to chemical theories and introductory organic chemistry. Develop skills to determine if conclusions or solutions are reasonable.
4. Technology- Students will use chemical instrumentation including melting point apparatuses and infrared spectrometers to evaluate organic compounds.

5. Personal Responsibility- Manage personal health and safety while working with chemicals in the laboratory.

6. Information Literacy- Students will learn to access and evaluate information from the chemical literature and the internet.

GENERAL COURSE OBJECTIVES:

At the end of the course the student will:

1. Use standard organic laboratory techniques including crystallization, extraction, chromatography and distillation to isolate and purify a sample.

2. Safely handle laboratory glassware, equipment, and chemical reagents using basic knowledge about the common hazards associated with operations performed in an organic chemistry laboratory and the proper techniques for disposal of waste products.

3. Maintain laboratory records and write reports using standard techniques and formats.

4. Effectively collaborate as part of a group.

TOPICAL OUTLINE: APPROX. HOURS: 77

The two quarter sequence in organic chemistry laboratory will address the topics below.

I. Physical properties of organic compounds
II. Microscale and semi-microscale laboratory techniques
III. Crystallization techniques
IV. Extraction techniques
V. Column and thin-layer chromatography
VI. Distillation techniques
VII. Synthesis of representative organic compounds
VIII. Systematic identification of organic compounds
IX. Infrared Spectroscopy
X. Nuclear Magnetic Resonance Spectroscopy
XI. Qualitative Analysis
   a. Functional group tests
   b. Preparation of derivatives

REVISED BY: Stephanie Endsley
DATE: May, 2008
Course Prefix and Number: CHEM& 251  
Course Title: Organic Chemistry Lab I

<table>
<thead>
<tr>
<th>SLO #</th>
<th>Included in Course Objective Number</th>
<th>SSCC Student Learning Outcomes</th>
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<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>3 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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<td>SLO 2.2</td>
<td>3 Computation - Apply quantitative skills</td>
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<tr>
<td>SLO 2.3</td>
<td>Computation - Identify, interpret, and utilize higher level mathematical and cognitive skills</td>
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<tr>
<td>SLO 3.1</td>
<td>4 Human Relations - Use social interactive skills to work in groups effectively</td>
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<td>SLO 3.2</td>
<td>Human Relations - Recognize the diversity of cultural influences and values</td>
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<td>SLO 4.1</td>
<td>Critical Thinking and Problem Solving -</td>
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<td>SLO 5.1</td>
<td>1 Technology - Select and use appropriate technological tools</td>
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<td>SLO 6.1</td>
<td>Personal Responsibility - Be motivated and able to continue learning and adapt to change</td>
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<tr>
<td>SLO 6.2</td>
<td>3 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>2 Personal Responsibility - Manage personal health and safety</td>
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<td>SLO 6.5</td>
<td>2 Personal Responsibility - Be aware of civic and environmental issues</td>
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<tr>
<td>SLO 7.1</td>
<td>2,3 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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