CHM 1220L
General Chemistry Laboratory II

I. College of Science and Mathematics
   Department of Chemistry

II. Course Information
   Course Title: General Chemistry Laboratory II
   Course Abbreviation and Number: CHM 1220L
   Course Credit Hours: 2
   Course Cross Listing(s) Abbreviation and Number:
   Check (“x”) all applicable:
   General Education Course_____ Writing Intensive Course_____ Service Learning
   Course_____ Laboratory Course_____ Ohio TAG (Transfer Assurance Guide) Course ___X___
   Ohio Transfer Module Course_____ Others (specify)_____

III. Course Registration
   Prerequisites: CHM 1210, CHM 1210L
   Corequisites: CHM 1220
   Restrictions: Other:

IV. Student Learning Outcomes
   Students must be proficient in all of the following core competencies:

   1. Intermolecular forces and phase changes
   2. Solutions and colligative properties
   3. Chemical kinetics
   4. Chemical equilibrium
   5. Acid-base equilibria
   6. Thermodynamics (including entropy and free energy)
   7. Electrochemistry
   8. Descriptive chemistry, including chemical properties and classification of the
      elements, periodic patterns of reactivity
   9. Students should have been exposed to a variety of applications of chemistry in
      society
   10. Students must have continued to develop strong analytical and interpretive skills
       to effectively apply algebraic methods to solve chemical problems.
   11. In a general chemistry laboratory, the student should have been exposed to a
       broad range of chemical laboratory experiences which build on topics covered in
       the corresponding lecture course, and which develop (1) analytical and
       preparative skills (2) the ability to effectively collect, analyze and report data.
       Students should understand safe laboratory practice.

CHM 1210L is a Natural Science course for the Core Element program. Learning outcomes
are:

- Understand the nature of scientific inquiry
• Critically apply knowledge of scientific theory and methods of inquiry to evaluate information from a variety of sources
• Distinguish between science and technology and recognize their roles in society
• Demonstrate an awareness of theoretical, practical, creative and cultural dimensions of scientific inquiry
• Discuss fundamental theories underlying modern science

V. Suggested Course Materials (required and recommended)

VI. Suggested Method of Instruction
  Laboratory with recitation period

VII. Suggested Evaluation and Policy
  Laboratory experiments and reports, quizzes, and attendance policies may vary with instructor

VIII. Suggested Grading Policy
  A (≥90%), B(≥80%), C(≥70%), D(≥60%) – may vary with instructor

IX. Suggested Assignments and Course Outline

Most of the laboratory experiments support the lecture topics in CHM 1220. One or two experiments are included in order to provide an exposure to quantitative analytical chemistry. Laboratory experiments will not be conducted in weeks containing holidays, and some instructors may omit laboratory meetings in the first week of classes. Accordingly the 14-week semester may provide opportunities for ten to thirteen laboratory experiments chosen from the following list. Some instructors may choose different experiments than represented in this example syllabus.

<table>
<thead>
<tr>
<th>#</th>
<th>Experiment number &amp; title in Grossie &amp; Underwood text</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>#36-Solubility of KNO₃</td>
<td>221</td>
</tr>
<tr>
<td>2</td>
<td>#26-Mol. Wt. Determination from Freezing Point Depression</td>
<td>155</td>
</tr>
<tr>
<td>3</td>
<td>#34-Rate and Order of a Chemical Reaction</td>
<td>215</td>
</tr>
<tr>
<td>4</td>
<td>#1-Acid-Base Reactions</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>#44-Titration of an Antacid Tablet</td>
<td>293</td>
</tr>
<tr>
<td>6</td>
<td>#30-Acid Content of Vinegar by Titration</td>
<td>187</td>
</tr>
<tr>
<td>7</td>
<td>#17-Gravimetric Analysis (Chloride)</td>
<td>99</td>
</tr>
<tr>
<td>8</td>
<td>#5-Buffer Solutions</td>
<td>49</td>
</tr>
<tr>
<td>9</td>
<td>#43-Titrimetric Determination of Eq. Wgt. &amp; pKₐ</td>
<td>283</td>
</tr>
<tr>
<td>10</td>
<td>#31-Qualitative Analysis Scheme</td>
<td>189</td>
</tr>
</tbody>
</table>
X. Other Information

This is a sample course syllabus guideline. Course materials, method of instruction, evaluation and policy, grading policy, assignments, and other course matters can differ by specific course sections and individual professors. Additional information can be obtained by contacting the Department of Chemistry.

Approved:
Undergraduate Curriculum and Academic Policy Committee _______________________________
Faculty Senate _______________________________