CHEM 162-02 General Chemistry II

Craig Davis
davisc@xavier.edu

Follow this and additional works at: http://www.exhibit.xavier.edu/chemistry_syllabi_spring_2015

Recommended Citation
http://www.exhibit.xavier.edu/chemistry_syllabi_spring_2015/7

This Restricted-Access Syllabus is brought to you for free and open access by the Chemistry Syllabi 2015 at Exhibit. It has been accepted for inclusion in Chemistry Syllabi Spring 2015 by an authorized administrator of Exhibit. For more information, please contact exhibit@xavier.edu.
Dr. Craig M. Davis (DavisC@xavier.edu)  Office: Logan 206A  Phone: (513) 745-2066
Office Hours: Mon, Tue., & Wed. 1:00-2:00; Tuesday 10:30-12:30; and by appointment.


Description: This is the second semester of a two-semester sequence in general chemistry. It is intended for students majoring in Chemistry, Biology, Natural Sciences, or those seeking entry into health professional programs. This course partially fulfills requirements for entry into medical, dental, and veterinary schools. Topics to be discussed: liquids, solids, and solutions; kinetics and equilibrium; acids and bases; thermodynamics; and electrochemistry.

Student Learning Outcomes: At the end of this course the student will be able to:
- predict the physical properties of liquids, solids, and solutions.
- calculate the rates of reactions, and understand the molecular basis for chemical kinetics.
- demonstrate both a qualitative and a quantitative understanding of chemical equilibrium.
- calculate the pH of solutions of strong/weak acids & bases, buffers, and titration curves.
- calculate the potentials of redox reactions and thermodynamic values for all reactions.

Supplemental Instruction: An SI instructor dedicated to this section will be teach a session corresponding to each lecture period. That instructor will announce meeting times and place.

Special Needs: Anyone who feels he/she may need an academic accommodation based on the impact of a disability (e.g.: sensory, learning, psychological, mobility) should contact the Disability Services Office as soon as possible. Appropriate consideration will be given.

Attendance: Regular attendance is strongly encouraged but not required.

Practice Problems: Questions from each chapter have been recommended (see back). Answering these questions is vital to the understanding of the material presented in the lecture. I cannot stress strongly enough the importance of these questions.

Homework: One assignment from Mastering Chemistry will be generated for each chapter.

Quizzes: Three quizzes will be given; dates will be announced two classes in advance.

Tests: Five tests will be given. Dates are: Feb. 4, Feb. 26, Mar. 18, Apr. 1, and Apr. 27. (Dates are tentative, and are subject to change, pending the pace of the course.) Tests will be given during regular class time in Logan 101. You are responsible for taking tests at the scheduled times. Make-up tests given only with proof of illness or conflicting university event.

Final Exam: Friday, May 8, 8:00 a.m., in Logan 101. This is a standardized examination constructed by the American Chemical Society covering both semesters.

Grade Distribution:  Homework/Quizzes: 15% (total).  Each Test: 14%.  Final Exam: 15%.

Academic Honesty: Cheating on any examination will result in a grade of “F” for the course.

Grading Scale:  A 94-100;  A- 91-93;  B+ 88-90;  B 84-87;  B- 80-83;  C+ 77-79;
C 73-76;  C- 70-72;  D+ 67-69;  D 63-66;  D- 60-62;  F 59 and below.
Upon review at the end of the semester, this scale may be adjusted downward.

NOTE:  University Catalog states a grade of “A” is earned for “Exceptional” performance.  This is also the grading policy of the Chemistry Department Faculty.  For details:  http://www.xu.edu/chemistry_dept/courses.htm
### TENTATIVE SCHEDULE

<table>
<thead>
<tr>
<th>CLASS</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>Chapter 10: Liquids, Solids, and Phase Changes (skip Sections 7-9)</td>
</tr>
<tr>
<td></td>
<td>Chapter 8: Entropy and Free Energy (Sections 12 &amp; 13 only)</td>
</tr>
<tr>
<td>6-9</td>
<td>Chapter 11: Solutions and Their Properties (skip Section 10)</td>
</tr>
<tr>
<td>10</td>
<td><strong>Test #1</strong></td>
</tr>
<tr>
<td>11-14</td>
<td>Chapter 12: Chemical Kinetics (skip Section 10)</td>
</tr>
<tr>
<td>15-18</td>
<td>Chapter 13: Chemical Equilibrium</td>
</tr>
<tr>
<td>19</td>
<td><strong>Test #2</strong></td>
</tr>
<tr>
<td>20-24</td>
<td>Chapter 14: Aqueous Equilibria: Acids and Bases</td>
</tr>
<tr>
<td>25</td>
<td><strong>Test #3</strong></td>
</tr>
<tr>
<td>26-30</td>
<td>Chapter 15: Applications of Aqueous Equilibria (skip Sections 14 &amp; 15)</td>
</tr>
<tr>
<td>31</td>
<td><strong>Test #4</strong></td>
</tr>
<tr>
<td>32-34</td>
<td>Chapter 16: Thermodynamics (skip Section 3)</td>
</tr>
<tr>
<td>35-37</td>
<td>Chapter 17: Electrochemistry</td>
</tr>
<tr>
<td>38-39</td>
<td>Chapter 20: Transition Elements and Coordination Chemistry (Start)</td>
</tr>
<tr>
<td>40</td>
<td><strong>Test #5</strong></td>
</tr>
<tr>
<td>41-42</td>
<td>Chapter 20: Transition Elements and Coordination Chemistry (Finish)</td>
</tr>
<tr>
<td>43</td>
<td><strong>FINAL EXAM</strong></td>
</tr>
</tbody>
</table>

### SUGGESTED PROBLEMS

- **Chapter 10**: 2, 4, 5, 6, 7, 8, 17, 18, 21, 26, 32, 34, 36, 42, 48, 50, 52, 54, 56, 58, 62, 76, 96, 98, 100, 116

- **Chapter 8**: 20, 21, 22, 23, 24, 25, 34, 92, 94, 96, 100, 108, 114

- **Chapter 11**: 2, 3, 4, 5, 8, 9, 10, 13, 14, 18, 19, 20, 21, 23, 24, 25, 26, 28, 30, 38, 39, 42, 46, 60, 62, 66, 76, 78, 80, 82, 84, 98, 102, 110, 134

- **Chapter 12**: 1, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 16(a), 20, 21, 24, 26, 38, 44, 46, 48, 50, 52, 54, 56, 64, 66, 72, 76(a,b), 80(a,c), 86, 90, 92, 96, 98, 120

- **Chapter 13**: 2, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 46, 48, 50, 54, 56, 58, 60, 62, 66, 68, 70, 76, 78, 80, 82, 84, 88, 90, 102, 116(a,b)

- **Chapter 14**: 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 21, 23, 24, 25, 26, 27, 28, 29, 30, 38, 40, 46, 50, 52, 58, 64, 66(c), 68, 70, 72, 74, 82, 86, 88, 90, 92, 94(b,c), 96, 98, 100(a-c), 102(a,b), 114 (Chap. 11, #104)

- **Chapter 15A**: 1, 2, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18(a), 19(a), 36, 42, 44, 46, 48, 52, 60, 64, 66, 70, 72, 76, 78, 80, 84, 86(a), 123, 124, 136(a,b)

- **Chapter 15B**: 20, 21, 22, 23, 25, 26, 28, 29, 88, 90, 92, 94, 96, 98, 100, 102, 108, 126

- **Chapter 16**: 1, 2, 5, 7, 8, 9, 10, 11, 13, 15, 16, 17, 18, 21, 22, 24, 30, 36, 38, 46, 54(a,c) 56, 68, 70, 72, 74, 76, 78, 80, 82, 88, 92, 94, 96, 98, 100, 102, 108, 112, 124

- **Chapter 17**: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 22, 23, 36, 38(a,b), 40(a,b), 44, 46(a), 48 56, 58, 60, 62, 64(a,b), 66, 68(a-c), 72, 74, 80, 84, 86(a,b), 96, 104, 106, 108

- **Chapter 20**: 2, 3, 6, 7, 11(a,b), 13, 15(d), 18(a,b,c), 34, 38, 50, 78(b,d), 88, 102, 106, 108