2015

CHEM 104 105 Environment, Energy, Life and Health

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Lab Manual: Provided by Instructor on Canvas under Files and Syllabus

Schedule

<table>
<thead>
<tr>
<th>Start Date, 2015</th>
<th>Module Topic</th>
<th>Lab Experiment and due date for report</th>
<th>Due date for module or Project, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 30</td>
<td>1. Introductory Module</td>
<td></td>
<td>Saturday June 6</td>
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<tr>
<td>June 7</td>
<td>2. Air pollution Module</td>
<td>chromatography</td>
<td>Saturday June 13</td>
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<tr>
<td>June 14</td>
<td>3. Water pollution module</td>
<td>Rate of dissolution</td>
<td>Saturday June 20</td>
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<tr>
<td>June 21</td>
<td>Midterm Project</td>
<td>CO₂ production</td>
<td>Friday June 26</td>
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<tr>
<td>June 28</td>
<td>4. Fossil fuel and nuclear energy module</td>
<td>Density</td>
<td>Saturday July 4</td>
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<tr>
<td>July 5</td>
<td>5. Biochemistry Module</td>
<td>Oxygen production</td>
<td>Saturday July 11</td>
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<tr>
<td>July 12</td>
<td>6. Good nutrition and Medication module</td>
<td>pH using red cabbage juice</td>
<td>Saturday July 18</td>
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<tr>
<td>July 19</td>
<td>Final project</td>
<td></td>
<td>Friday July 24</td>
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Five main content areas of emphasis:
1. Overview of the importance of chemistry in society and basic tenets of scientific research.
2. Our environment- air and water; importance, and issues relating to pollution
3. Energy use and production – fossil fuels, nuclear energy, other/alternative sources of energy
4. Nutrition and foods/beverages in general – better health!
5. Medications – OTCs, prescription and “alternative” drugs
Student Learning Goals: Students will:

1. Identify the areas in which chemistry intersects our lives and how new discoveries are made.
2. Be able to recognize the basic chemical principles that have an impact on the quality of our air and water.
3. Identify specific sources and uses of energy and how they are used today.
4. Be able to read food and medication labels and interpret the information in terms of energy content and nutritional information.
5. Interpret recent developments in chemistry when they are presented to the public in the media and be able to articulate these developments rationally with others.
6. Interpret one’s own behavior and habits as they relate to five content areas and assess the effects of those behaviors and habits on one’s own self and others.
7. Think through real-life situations that involve a chemical principle and apply specific chemical principles when making decisions regarding those situations in light of the material that was assimilated in this course.

Two overall “post-course” Goals:

1. Develop a greater curiosity about the role of chemistry and science in your life and investigate issues that are interesting and important to you.
2. Develop an advocacy for better use of energy resources and wiser use of foods and medications and be able to discuss these issues with those around you.

Grading Policy: Grading Scale: A = 93-100%  A- = 90-92%;  B+ = 87-89%  B = 83-86%  
B- = 80-82%  C+ = 77-79%;  C = 73-76%;  C- = 70-72%;  D+ = 67-69%  
D = 63-66%  D- = 60-62%;  F = <60%

It should be noted that according to the Xavier University Catalog, a grade of “A” is earned for EXCEPTIONAL performance. This is the grading policy of the faculty of the Chemistry Department as well. The XU grading policy is found on the Chemistry webpage: http://www.xavier.edu/chemistry/Department-grading-policy.cfm

Grading Scheme:
* Homework – 6 assignments: 15 points each; due dates will be assigned on Canvas (listed on master Schedule).
* Midterm and Final Research Projects: 125 points each;
* 6 Module research projects: 25 points each;

Total possible points for CHEM 104 = 490 points
CHEM 105 points: 6 lab reports: 25 points each
Total points for chem 105 = 150 points

- Lab Reports are due as specified in the syllabus (generally on Wednesdays in weeks 2-7). Lab reports will be accepted only one week late, and then with a 10 point penalty. The report consists of the following components:
  o a statement of the lab objective, (5 pts)
  o a summary of the procedure you followed, (5 pts)
  o comments on what was observed, (5 pts)
  o completed data sheets, (5 pts)
  o And, answers to post-lab questions. (5 pts)

Please answer using complete sentences, not simply words or phrases.

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HW assignments (all under “Applying your Knowledge”)

Chapter 4: 1, 3, 4, 6, 8, 11, 13, 15, 16, 18, 19, 20, 23, 24, 28

Chapter 6: 1- 7, 9, 12, 13, 15, 17, 18, 20, 21, 25, 27, 28

Chapter 7: 1(a-d, f-h, j, k, m), 3 (a, c, d, e, g), 4, 6, 7, 9, 12, 16, 17, 20, 21, 22, 23, 24, 25, 26, 31 (a, c only)

Chapter 11: 1 -5, 7, 9, 10, 15, 16, 17, 19, 20, 22, 23, 25, 26, 28, 30, 32, 33, 34, 45

Chapter 12: 1-5, 21-29, 31, 32, 34, 37

Chapter 13: 1, 2, 5, 9, 13, 14, 16, 18, 21, 28, 31, 35

Chapter 15: 1, 5, 9-18, 21, 23-26, 28 34, 36, 54-57

Chapter 16: 1, 5-8, 10-12, 14-17, 19-21, 23, 24, 26, 30, 35, 37, 40, 49, 52

Chapter 17: 1-11, 14, 15, 17, 18, 21, 24, 28, 32, 33, 35, 37

Due dates are listed above and also under each module on Canvas.