PRINCIPLES OF CHEMISTRY I

Course Title: Principles of Chemistry I, (CHEM 211)
Semester: Fall 2019
Credits: 4 college credits, 1 high school credit
Instructor: Mrs. Julie Retza
Email: Retza@crivitz.k12.wi.us
Office Hours: 7:30 – 8:00 am, 3:00 - 3:24 pm M – F Room C-134
Building/Room: Room C-134 Crivitz High School
Dates: September 3, 2019 – June 4, 2020

COURSE DESCRIPTION:

Atoms, molecules, ions, mass relationships, chemical reactions, gases, thermochemistry, quantum theory, atomic structure, periodic relationships, ionic bonding, covalent bonding, molecular geometry, hybridization, intermolecular forces, and an introduction to organic chemistry will be topics covered during this course.

*Principles of Chemistry I* is designed to give the student a broad introduction to some of the central concepts of chemistry, such as bonding, atomic structure, chemical reactions, and the periodic table. The student will start by learning the ideas of the scientific method and the role it played in the development of modern chemistry. Since chemistry is a quantitative field, we must understand the concept of significant figures and uncertainty in measurements. Next, chemical nomenclature, how to write various chemical reactions, stoichiometry, and theoretical and percent yields will be discussed. Gas laws will be examined, leading to the ideal gas equation of state. Thermochemistry will highlight the role heat, work, and energy play in chemical reactions and the importance of state functions. The atomic structure will be detailed and related to the arrangement of the periodic table. Bonding will be discussed in terms of molecular orbital and valence bond theory. Molecular interactions will be discussed and related to various physical properties.

REQUIRED MATERIALS:

1. General Chemistry, 8th edition, Ebbing and Gammon, Houghton Mifflin Company Publisher
   a. May have the 9th, 10th, or 11th edition instead
2. Calculator with capabilities for exponents, square roots, trig functions, and logarithms

OPTIONAL MATERIALS: If students wish to use materials, they may purchase them (suggest Amazon), or borrow Mrs. Retza’s copy during ACP or Flex.

1. Study Guide to accompany text
2. Student solutions manual
3. 3” x 5” notecards
COURSE INFORMATION:

**Lecture and textbook:** During lecture, I will cover the topics in the reading using notes, discussion, and demonstrations. You will find it useful to have read the covered sections prior to coming to class. You are responsible for taking your own notes during class. The Summary at the end of the chapter will indicate the important concepts from the reading to help you study.

**WebAssign:** This is an online tool to help you learn the concepts.

**Suggested Problems:** These problems will not be graded. You will find it helpful to do these problems and make sure that you understand how to solve them. Similar types of problems will show up on the quizzes and tests throughout the year. The answers to the odd numbered problems are in the back of your textbook. If you are unsure on how to solve a problem please ask.

The best way to learn chemistry is by working problems while you are reading the text, and after lecture to make sure you understand a concept. In order to excel in this class, you must solve problems.

**Quizzes:** Quizzes will be given weekly, usually over a weekend on WebAssign ([www.webassign.net](http://www.webassign.net)), and count toward your final grade. These quizzes are used to measure your progress. They must be completed prior to class. You will be assigned a username and password for this website.

**Problem Day:** We will work problems in assigned groups. Usually if you can explain a concept to another person, you understand the concept. This will be our time in class to utilize each other’s knowledge and understanding.

**Demonstrations:** When possible, demonstrations will be used to illustrate a point during lecture. Make careful observations during demonstrations and ask questions if you do not understand what occurred. These concepts may show up during quizzes or tests.

**Exams:** There will be an exam after each chapter. Exams are written to be completed within the class period (48 minutes). If additional time is needed to finish a problem, ACP or Flex time may be used that same day. Exams will cover concepts from lecture, demonstrations, and labs. There may be objective questions (multiple choice and true/false), problem solving and essay questions.

You will have 90 minutes to complete the semester exams. There will be a semester exam in January covering chapters 1-6, and a comprehensive final exam in May covering chapters 1-11, 23. **You may not be exempt from the semester and final exams.** Seniors will take their final during the time period set aside for senior final exams. All other students will take their final exam at the end of May.
Grades: Your grade is determined by the work you do, not other students in the class. If a curve is utilized, it will benefit the students who understand the material. Students will receive quarterly and semester grades for Crivitz High School, and a grade for the 4 credit lecture from UW-Green Bay. The Grade for Crivitz High School is calculated differently than the UW-Green Bay grade. The grade breakdown for this course is as follows:

**Crivitz High School Grading Scale**

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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>93.0% - 100%</td>
<td>A</td>
<td>73.0% - 76.9%</td>
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<tr>
<td>90.0 – 92.9%</td>
<td>A-</td>
<td>70.0% - 72.9%</td>
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<tr>
<td>87.0% - 89.9%</td>
<td>B+</td>
<td>67.0% - 69.9%</td>
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<tr>
<td>83.0% - 86.9%</td>
<td>B</td>
<td>63.0% - 66.9%</td>
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<tr>
<td>80.0% - 82.9%</td>
<td>B-</td>
<td>60.0% - 62.9%</td>
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<tr>
<td>77.0% - 79.9%</td>
<td>C+</td>
<td>0.0% - 59.9%</td>
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Crivitz High School grade is calculated using the following percentages: 30% laboratory reports and results (see syllabus for Chem 213), 30% quiz grades, 40% exam grades. There will be 3 exams per quarter, a minimum of 6 quizzes per quarter, and at least 5 lab report grades per quarter. Semester exams make up 20% of the semester grade.

**UW – Green Bay Grading Scale**

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Text</th>
<th>Grade Points per Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4.0</td>
</tr>
<tr>
<td>AB</td>
<td>Very Good</td>
<td>3.5</td>
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<td>C</td>
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<tr>
<td>D</td>
<td>Poor</td>
<td>1.0</td>
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<tr>
<td>F</td>
<td>Unacceptable</td>
<td>0.0</td>
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UW-Green Bay grade is calculated using the following percentages: 60% exams and 40% quizzes. When calculating the grade the entire year is used. There will be at least 11 chapter exams for seniors (12 for the rest of the class). The semester exams each count as 2 chapter exams in the grade book.

Evaluations: Students will have the opportunity to evaluate the instructor and the class at the end of the school year.
### Schedule

<table>
<thead>
<tr>
<th>Topics</th>
<th>Suggested Problems (listed from 8th edition)**</th>
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<tbody>
<tr>
<td>Safety</td>
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<tr>
<td>Chapter 1 – Chemistry and Measurement</td>
<td><strong>Week 1</strong>: 31, 33, 87, 89</td>
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<td><strong>Week 2</strong>: 35, 37, 39, 41, 45, 47, 49, 51, 55, 63, 65, 95, 97</td>
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<td><strong>Week 3</strong>: 67, 69, 71, 73, 75, 77, 79, 81, 83, 99, 137, 141</td>
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<tr>
<td>Chapter 2 – Atoms, Molecules, and Ions</td>
<td><strong>Week 4</strong>: 35, 37, 39, 41, 43, 45, 47, 49, 97, 99</td>
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<td><strong>Week 5</strong>: 51, 53, 55, 59, 61, 65, 67, 69</td>
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<td><strong>Week 6</strong>: 71, 73, 75, 77, 79, 83, 85, 87, 89, 91, 93, 95, 129</td>
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<tr>
<td>Chapter 3 – Calculations with Chemical Formulas and Equations</td>
<td><strong>Week 7</strong>: 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 51, 53, 55</td>
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<td><strong>Week 8</strong>: 57, 59, 61, 63, 65, 67, 69, 93, 95, 97</td>
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<td><strong>Week 9</strong>: 77, 79, 81, 83, 85, 87, 91, 101, 103, 105, 107, 115</td>
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<tr>
<td>Chapter 4 – Chemical Reactions</td>
<td><strong>Week 10</strong>: 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47</td>
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<td><strong>Week 11</strong>: 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71</td>
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<td><strong>Week 12</strong>: 73, 75, 77, 79, 81, 83, 85, 87, 137, 139</td>
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<tr>
<td>Chapter 5 – The Gaseous State</td>
<td><strong>Week 13</strong>: 31, 33, 35, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63</td>
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<td><strong>Week 14</strong>: 67, 69, 71, 73, 75, 77, 79, 81</td>
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<td><strong>Week 15</strong>: 83, 85, 87, 89, 91, 93, 95, 123, 129, 133</td>
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<td>Chapter 6 – Thermochemistry</td>
<td><strong>Week 16</strong>: 37, 39, 41, 43</td>
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<td><strong>Week 17</strong>: 45, 47, 49, 51, 53, 55, 57, 59, 61, 63</td>
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<td><strong>Week 18</strong>: 65, 67, 69, 71, 73, 75, 77</td>
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<tr>
<td>Semester Exam</td>
<td>Chapters 1-6</td>
</tr>
<tr>
<td>Chapter 7 – Quantum Theory of the Atom</td>
<td><strong>Week 19</strong>: 29, 31, 33, 35, 37, 39</td>
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<td><strong>Week 20</strong>: 43, 45, 47, 49, 51, 53, 55, 63, 81, 83, 89, 91</td>
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<tr>
<td>Chapter 8 – Electron Configurations and Periodicity</td>
<td><strong>Week 22</strong>: 35, 37, 39, 41, 43, 45, 47, 49</td>
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<td><strong>Week 23</strong>: 51, 53</td>
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<td><strong>Week 24</strong>: 55, 57, 59, 61, 88</td>
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<tr>
<td>Chapter 9 – Ionic and Covalent Bonding</td>
<td><strong>Week 25</strong>: 33, 35, 37, 39, 41, 43</td>
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<td><strong>Week 26</strong>: 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67</td>
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<td><strong>Week 27</strong>: 71, 73, 75, 77, 79, 105, 113</td>
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<tr>
<td>Chapter 10 – Molecular Geometry and Chemical Bonding Theory</td>
<td><strong>Week 28</strong>: 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49</td>
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<td><strong>Week 29</strong>: 51, 53</td>
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<td><strong>Week 30</strong>: 55, 57</td>
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<tr>
<td>Chapter 11 – States of Matter; Liquids and Solids</td>
<td><strong>Week 31</strong>: 37, 39, 41, 43, 45, 47, 49, 51</td>
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<td><strong>Week 32</strong>: 53, 55, 57, 59, 61, 63, 67, 69, 71, 73, 75, 77</td>
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<td><strong>Week 33</strong>: 79, 81</td>
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<tr>
<td>Chapter 24* – Organic Compounds</td>
<td><strong>Week 34</strong>: 25, 27, 29, 31</td>
</tr>
<tr>
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<td><strong>Week 35</strong>: 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55</td>
</tr>
<tr>
<td>Chapter 24* – Organic Compounds</td>
<td><strong>Week 36</strong>: 57, 59, 61, 63, 65, 67</td>
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<tr>
<td>Senior Final Exam</td>
<td>Chapters 1 -11 and part of 24</td>
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<tr>
<td>Final Exam</td>
<td>Chapters 1-11, 24</td>
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</tbody>
</table>

* Seniors who graduate early will not finish this chapter. The final exam will cover the portion of the chapter that is completed.

** If using a later edition of the text book, complete the odd problems relating to the sections covered. The sections are listed on the monthly calendar
University of Wisconsin – Green Bay
CHEMISTRY I LABORATORY

Course Title: Chemistry I Laboratory, (CHEM 213)
Semester: Fall 2019
Credits: 1 college credits, 0 high school credit
Instructor: Mrs. Julie Retza
Email: Retza@crivitz.k12.wi.us
Office Hours: 7:30 – 8:00 am and 3:00 - 3:24 pm M – F Room C-134
Building/Room: Room C-134 Crivitz High School
Dates: September 3, 2019 – June 4, 2020

COURSE DESCRIPTION:
Laboratories dealing with atoms, molecules, ions, mass relationships, chemical reactions, gases, thermochemistry, quantum theory, atomic structure, periodic relationships, ionic bonding, covalent bonding, molecular geometry, hybridization, intermolecular forces, and an introduction to organic chemistry will be performed during this course. This course is to be taken in conjunction with CHEM 211.

REQUIRED MATERIALS:
1. Safety Goggles
   a. May purchase through school
2. A carbonless, 100 page, duplicating laboratory notebook
   a. May purchase through school
3. Calculator with capabilities for exponents, square roots, trig functions, and logarithms

COURSE INFORMATION:
Laboratory: In the laboratory you will develop skills, and illustrate concepts studied in CHEM 211. There will usually be one lab per week.

You must wear your safety goggles at all times in the laboratory. Make sure you understand the procedure you will be performing before going into the lab. This means you should read and study the lab handout prior to performing the lab. All labs must be turned in to the instructor within one week of performing the lab. Late labs will have 20% of the points deducted per day they are late. All labs must be uploaded to D2L by midnight on the due date. Concepts from the lab may show up in quizzes and tests in CHEM 211. If you are absent for a lab, you must make arrangements to perform the lab on your own time. Mrs. Retza must approve all arrangements for making up labs.

By the due date, a brief synopsis of the objectives, procedure and observations, a data table, calculations, data analysis, post lab questions, and summary must be turned in to the instructor via D2L. Instructor feedback will occur through D2L. Grades will be listed in both the High School Skyward gradebook and the D2L grade book.
Grades: Your grade is determined by the work you do, not other students in the class. The grade is determined by the completion of the lab reports and the results obtained in lab. There will also be a grade given for a safety quiz. There will be no curves. The grade breakdown for this course is as follows:

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The lab grade will be incorporated into the Crivitz High school grade, making up 30% of the quarter grade for the student.

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The UW-Green Bay grade for Chem 213 is determined solely by the lab reports turned in and the lab safety quiz. This is determined by the accumulation of points over the entire school year. Grades will be input into D2L.