CHEM 161: General Chemistry I – Winter 2012

Section 01: Daily 9:00-9:50am (in SAM-400); Lab: Tuesday: 12:00-2:25pm (in SAM-406)

I. General Information
   Instructor: Jasmine Bryant, Ph.D.
   Office: SAM-421
   Phone: (206) 934-3129 (You may leave messages at this number.)
   Email: Jasmine.Bryant@seattlecolleges.edu
   Web site: http://www.seattlecentral.edu/faculty/jrbryant
   Office Hours: Tuesday: 10-11am and by appointment

II. Course Description
   The first quarter of the three-quarter sequence of General Chemistry presents a detailed study of the qualitative and quantitative principles of chemistry for 4-year science-related degrees (Science, Engineering, Pre-Med, Pre-Dental, Pre-Pharmacy, Pre-Vet, etc.). This 6-credit course includes a laboratory component requiring up to 3 hours in lab during the assigned lab period (see above).

   Prerequisite: MATH 141 with 2.0 or better AND CHEM 139 with a 2.0 or better in the last 3 years OR proficiency in all 5 sections of the Chemistry Placement Exam.

   This course covers the following topics: the scientific method, measurements and the metric system, dimensional analysis and problem-solving, matter and energy, chemical nomenclature, chemical reactions (including precipitation, acid-base, and oxidation-reduction reactions), stoichiometry and limiting reactants, solutions and concentration, gases, atomic theory, thermochemistry, chemical bonding, and intermolecular forces.

III. Textbooks/Materials
   - The SCCC CHEM161 Winter 2011 Lab Manual (available at the SCCC Copy Center, BE 3105A)
   - A new, bound composition notebook (with no missing pages and at least 80 pages) to use as a laboratory notebook
   - A USB Flash/thumb-drive for saving laboratory data using a LabQuest system
   - A basic scientific, non-programmable calculator that can perform exponential and logarithmic (log and ln) functions, such as a Texas Instruments TI-30Xa. Graphing calculators will not be allowed during quizzes and exams!
IV. Student Learning Outcomes:
After successful completion of this course, students will be able to do the following:

1. GENERAL SCIENCE, LABORATORY SCIENCE, AND MICROSCALE
   - Apply the scientific method and use empirical data and observations to construct a sound scientific explanation.
   - Distinguish between macroscopic observables and the underlying microscopic properties of matter by interpreting and representing matter using molecular-level drawings.
   - Demonstrate effective laboratory practices in conducting experiments and reporting experimental results (including the proper application of significant figures, precision, and accuracy).

2. CHEMICAL PROBLEM SOLVING
   - Demonstrate strong problem-solving skills that are supported by basic algebraic and numeracy skills.
   - Demonstrate fluency in chemical vocabulary and symbolic representation.
   - Use measurable quantities of matter to determine physical and chemical properties.
   - Use stoichiometric calculations to predict quantities.

3. ATOMS, MOLECULES AND IONS
   - Describe the general structure of an atom.
   - Explain the historical development of the atomic theory and the evolution of the current modern atomic model.
   - Explain the relationship between the position of an element in the periodic table and its physical and chemical properties, including periodic trends.
     - Describe the differences in the structure and properties of substances based on different types and models of bonding.

4. STATES OF MATTER: GASES, LIQUIDS AND SOLIDS
   - Compare and contrast the properties of the three states of matter.
   - Use kinetic-molecular theory to explain gas behavior, including real versus ideal gases.
   - Describe intermolecular forces and chemical bonds and how they influence physical and chemical properties and phase transitions.

5. PHYSICAL AND CHEMICAL CHANGES AND REACTIONS
   - Classify and balance chemical reactions and predict products for different types of reactions.
   - Apply the properties of ionic and molecular substances in aqueous solution to describe systems and predict behavior.
   - Describe how a system and surroundings exchange energy at the microscopic and macroscopic levels.
V. Course Requirements/Attendance

**Attendance:** The lecture meets daily for 50 minutes each day. Attendance is extremely important and will be taken at every class meeting. Students who are not present to participate in more than 10 class meetings (or 2 weeks of class) may be dropped. Laboratory experiments require up to 3 hours in lab each week, and students missing more than two laboratory experiments will receive a failing grade in the course.

**Lecture Notes:** Students may obtain lecture notes, exam study guides, and other resources from our class Website. *Students are required to download and print lecture notes for all chapters from the Website.*

**Homework:** Students are responsible for reading the assigned chapters and completing the assigned in-chapter exercises and end-of-chapter problems to prepare for quizzes and exams. While homework from the Gilbert text is not handed in or graded, it becomes clear on the exams and quizzes which students are or are not completing the homework assignments.

**Laboratory Work:** Check the CHEM 161 Schedule for the experiment to be carried out each week.

- To prepare for lab, read through the entire experiment, and prepare your laboratory notebook with the purpose, procedure, and data tables. **Pre-lab assignments are due at the start of each lab period.**
- Lab may take the entire 3-hour period each week. Each experiment is set up for one week only and must be completed during the scheduled lab period. **No make-up labs are allowed!**
- After each experiment, complete all calculations and answer all of the post-lab questions. **Completed lab reports are due by the start of lab the week after the completion of each experiment. Lab reports submitted during the lab will be penalized 10%, and lab reports submitted after the scheduled lab period will be penalized 10% per day.**

**Quizzes:** Short quizzes will be given in class to review previously covered material. *Please bring a basic scientific calculator to class each session.* Quizzes will be given on the Fridays when no exams are scheduled. No makeup quizzes will be given, but the lowest quiz score will be dropped.

**Exams:** Four exams will be given (see CHEM 161 Schedule for exam dates). Make-up exams will be allowed for excused absences (e.g. illness with a doctor’s note) as determined by the instructor. The instructor’s decision regarding make-up exams is final.

**Final Exam:** The final exam will be the American Chemical Society Exam for 1st Term General Chemistry, which is comprehensive and covers all material presented during the quarter.
Grading/Evaluation

The course grade will be determined from the following:

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Quizzes</td>
<td>10%</td>
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<tr>
<td>Exams</td>
<td>50%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>Lab Grade</td>
<td>20%</td>
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</tbody>
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using the following grade scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
<th>Grade Scale</th>
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<tbody>
<tr>
<td>A</td>
<td>≥95%</td>
<td>4.0</td>
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<tr>
<td>A-</td>
<td>90-94%</td>
<td>3.5-3.9</td>
</tr>
<tr>
<td>B+</td>
<td>87-89%</td>
<td>3.2-3.4</td>
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<tr>
<td>B</td>
<td>84-86%</td>
<td>2.9-3.1</td>
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<tr>
<td>B-</td>
<td>80-83%</td>
<td>2.5-2.8</td>
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<tr>
<td>C+</td>
<td>77-79%</td>
<td>2.2-2.4</td>
</tr>
<tr>
<td>C</td>
<td>74-76%</td>
<td>1.9-2.1</td>
</tr>
<tr>
<td>C-</td>
<td>70-73%</td>
<td>1.5-1.8</td>
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<tr>
<td>D</td>
<td>65-69%</td>
<td>1.0</td>
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<tr>
<td>D-</td>
<td>60-64%</td>
<td>0.7</td>
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<tr>
<td>F</td>
<td>&lt;60%</td>
<td>0.0</td>
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Students must withdraw from the class (“W” on transcript) or change to audit (“N”) or “No Credit” (NC) on or before November 18th. No NC’s will be granted after the 10th week. Note that while an NC will not affect your GPA here at Seattle Central, many universities consider the NC grade to be equivalent to an “F” or “0.0”.

VI. General Policies

Taping Policy: Audio-taping is allowed for personal use only.

Cell Phone Policy: Cellular phones must be off/silent during class.

Compliance with Honor Code: Students are expected to behave honorably in lecture and lab. Students caught cheating will be given a "0" for the exam/quiz involved. Students submitting lab data they did not collect or plagiarizing other students’ lab results will receive a “0” for the lab report involved. Repeat offenders will receive a failing grade for the class.

Americans with Disabilities Act (ADA): Any student with a documented disability requiring class accommodations or those requiring special arrangements in case of building evacuation should make an appointment with a Disability Support Counselor (934-4183) or visit the Disability Support Services (DSS) office on the campus (BE 1112). All contact and information will remain strictly confidential.

Tutoring and Study Skills: Improve your study habits and skills and get help from chemistry faculty at the Chemistry Learning Center and from tutors at the Science & Math Learning Center (SAM 100), the BE Learning Center (BE 2102), and the Student Academic Assistance Center (BE 1102 B1).

Disclaimer: Course content may vary from this outline to meet the class’ needs.