Chemistry 1000 - Section 07
Foundations of Chemistry (Fall 2019)

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Websites: https://bb.csub.edu/

Lecture: T/Th 4:00-5:15 pm in BDC 153B (CRN 81066)

Office Hours: M/W 8:30-9:45 am, T/Th 2:30-3:45 pm & by appointment

Required Materials

- **Textbook:** SaplingPlus for Interactive General Chemistry for California State University – Bakersfield, ISBN:9781319318239 (this includes both the e-book and Sapling homework system)
  Link to purchase the textbook: https://store.macmillanlearning.com/us/storefront/201902133
  For a hard copy of the textbook, the ISBN: 9781319303280. However, the SaplingPlus already includes the e-book which has access for four years
- Scientific calculator (no programmable calculators allowed)
- Scantron Form 30423 (need four Scantron Forms in total, one for each exam)

Course Description

This course is designed to provide students with fundamental skills foundational to all areas of chemistry. Atomic and molecular structure, reactions and stoichiometry will be emphasized, along with the development of conceptual understanding and problem-solving skills. Completion of this course will enable students to progress to the next 1000-level and 2000-level introductory courses in chemistry. 150 minutes of lecture/discussion per week.

Course Student Learning Outcomes

By the end of this course, students should have a broad knowledge of the foundations of chemistry and be able to apply this understanding to solve problems. Specifically, students should be able to:

1. Apply the rules for naming molecules
2. Understand atomic theory and bonding
3. Use units of measurement, and convert between units
4. Solve problems involving stoichiometry, including limiting reactant
5. Identify and work with different types of chemical reactions
6. Draw Lewis structures
7. Describe molecule shape and predict polarity (VSEPR, VB theory)
8. Understand the basics of chemical equilibrium
9. Understand the fundamentals of gases, liquids, and solids
10. Calculate the molarity of solutions
Grading

The overall course grade is based on performance in the online homework system (Sapling) and on examinations (midterms and final). Each category will be weighted as shown in the table below.

A weighted percent will be used to determine the final course grade. The grading option will be A, B, C, D, or F (+/- grading is at the instructor’s discretion). Final letter grades will be assigned following the standard 90-80-70% (of the total) grading scheme. If necessary, grades may be curved at the discretion of the instructor. A record of student grades will be posted on Blackboard (the Gradebook) and updated periodically throughout the semester.

<table>
<thead>
<tr>
<th>Component:</th>
<th>Percentage</th>
<th>Breakdown</th>
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<tbody>
<tr>
<td>Online homework</td>
<td>30 %</td>
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<tr>
<td>Exams</td>
<td>70 %</td>
<td>Three midterms = 15% each</td>
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<td></td>
<td></td>
<td>Final exam = 25%</td>
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<td>Overall total</td>
<td>100 %</td>
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An overall course grade of C- is required to pass the class; a course grade of C is required before taking other chemistry courses. To pass this course with a grade of C- or better, we recommend studying at least two hours for each hour spent in the lecture. For this 3 credit, fifteen-week course, this means to study and preparation outside of class is a minimum of 6 hours per week. We recommend about 8 hours of studying time (including reading, studying, and SAPLING homework) per week for most students to successfully complete the course. Mastery of chemistry, like any other skill, requires practice.

It is the student’s responsibility to keep track of due dates announced in class, on the syllabus and on-line in Blackboard, and to get notes from another student for any missed class time. There is no make-up for iClicker questions. Make-up exams are at the discretion of the instructor; students must arrange for a make-up exam with the instructor before the scheduled in-class exam time.

Add/Drop: It is the responsibility of the student to take the necessary steps to add and drop the class by the university deadlines. The drop deadline is September 23rd. After this, a student may withdraw (W) for serious and compelling reasons until November 8th.

Blackboard

Be sure to have access to the Blackboard course site and to check blackboard regularly throughout the semester. In addition to grades, the syllabus and weekly lecture notes will be made available for download through the Blackboard interface. Practice questions for midterm exams and review material will be available. Instructor announcements may be posted, so check regularly. See the course schedule posted on Blackboard for specific details of content and important due dates.

Exams

There are three midterm exams and one cumulative final exam. Exam questions will reflect the material covered in the lecture, practice questions, and the SAPLING homework.
See the course schedule posted on Blackboard for exam dates specific to your lecture section. The date, time and location of the final exam will be confirmed in the last week of classes.

Students with any exam conflict or exam absence must talk to the professor before the exam to make alternate arrangements; late tests will not be administered. If a student misses a test, it is that student’s responsibility to provide a doctor’s note or other documentation of a legitimate reason no later than 24 hours after the scheduled exam. If a student provides a documented excused absence after the exam then in order to get their missed exam grade replaced they will obtain a problem set from their professor. The student must submit the problem set to their professor no later than three days. As long as a score of at least 80% is received on the problem set then the student’s final exam grade will be used to replace that missed exam grade.

**COMPETENCY INFORMATION.** Each midterm will have three parts – a written Competency portion, an additional written portion (free response) and a multiple-choice portion. **Competency portion:** fundamental course concepts will be identified in the Student Learning Outcomes. A detailed outline of Competency questions will be given to students about a week before the exam, to study and practice. Every question’s answer must be perfect to receive credit for that question, that is, the grading is “all or nothing” for each question.

**Free response question portion:** a few questions seen for the first time on the exam and graded with a partial credit available (not “all or nothing” grading). **Multiple-choice portion:** typical MC questions with typical right/wrong grading by scanning the Scantron.

Student scores on exams will be calculated using this formula to weight the competency portion: \( C \times 30\% + FR \times 40\% + MC \times 30\% = F\% \) where \( C \) = competency portion (\( C \) has two possible scores: score 0 for any error in the section, or score 1 for all perfect answers), \( FR \) = free response section, \( MC \) = multiple choice section, and \( F\% \) = final percent for exam.

Every Competency portion on the three Midterms must be passed (score 1 = perfect) in order to pass the course. Therefore, a “second-chance” will be given as part of the Final Exam, where the student who missed the competency portion (score 0 = error) on any Midterm can repeat it to gain credit. The instructor will give more information about the Final exam competency structure at the end of the course.

**Sapling Homework**

The online homework system is called Sapling. There will be weekly homework assignments in Sapling that will be due every Sunday at 11:59 p.m. Be sure to keep track of each of the weekly homework assignments and their due dates by logging into Sapling.

Sapling may be paid for in one of two ways: by purchasing a subscription through the Runner Bookstore or by direct enrollment online with the use of a credit card (recommended as the cheaper option so see the link to the website above under required materials). Students that are unable to pay within the first week of classes must contact the instructor immediately to receive alternate instructions (a start-now, pay-later option).

In addition to the required weekly Sapling homework assignments, see the document on blackboard for recommended (nongraded) textbook practice problems.
It is strongly recommended that you read the chapter for the topic to be presented BEFORE coming to class (please observe the course schedule below carefully).

**Service for Students with Disabilities**

To request academic accommodations due to a disability, please contact the Office of Services for Students with Disabilities (SSD) as soon as possible. You must have an accommodations letter from the SSD office documenting that you have a disability; present the letter to the instructor as soon as possible during office hours or after the first lecture period. The SSD office is located in SA 140, and may be reached at 661-654-3360 (voice) or 661-654-6288 (TDD). Further information on the SSD office and support services available can be found at [http://www.csub.edu/UnivServices/SSD/](http://www.csub.edu/UnivServices/SSD/).

**Campus Policy on Academic Dishonesty** (derived from the CSUB academic integrity policy)

The principles of truth and honesty are recognized as fundamental to a community of teachers and scholars. The University expects that students will honor these principles and in so doing will protect the integrity of all academic work and grades. **Students are expected to do all work assigned to them without unauthorized assistance and not to give unauthorized assistance.**

There are certain forms of conduct that violate this community's principles. **Academic dishonesty** (cheating) is a broad category of actions that use fraud and deception to improve a grade or obtain course credit. Academic dishonesty arises whenever students attempt to gain an unearned academic advantage. **Plagiarism** is one specific form of academic dishonesty which consists of the misuse of any works of another by claiming them as one’s own. Other examples of academic dishonesty include falsification of data and the submission of essentially the same assignment for credit in two different courses.

Any student who asks another person to do any part of the SAPLING assessments or pie concepts commits academic dishonesty. Working on behalf of another person in SAPLING is also academic dishonesty. Using the textbook, lecture notes, and/or personal notes based on previous SAPLING questions to answer SAPLING questions in assessment or pie mode is NOT academic dishonesty; it is allowed and encouraged. Asking for help (instructor, tutor, or another student) on an individual question until the student is able do it alone is allowed and encouraged. Asking another person to simply answer the question is not permitted.

Cheating on examinations will not be tolerated. Anyone found cheating (including but not limited to copying another exam, asking others for answers, or using a textbook or notes during exams) will receive a penalty such as a zero on the exam and/or an F in the course. To avoid any doubts during exams, do not talk to others and do not look at other exams.

When a faculty member discovers a violation of the university’s policy of academic integrity, the faculty member is required to notify the CSUB Office of Student Rights and Responsibilities. After meeting with the offending student, the Office may impose additional sanctions, such as suspension or expulsion from the university. For the complete policy, see the university catalog or go to [http://www.csub.edu/osrr/Academic%20Integrity%20/](http://www.csub.edu/osrr/Academic%20Integrity%20/).
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<tr>
<th>Week of</th>
<th>Topic</th>
<th>Reading (Chapter)</th>
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<tbody>
<tr>
<td>August 26 L 1,2</td>
<td>Syllabus, Introductory material&lt;br&gt;Math review, Matter, Dimensional Analysis, Density, SI conversions</td>
<td>0, 1</td>
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<tr>
<td>September 2 L3,4</td>
<td>SI conversions&lt;br&gt;Atomic Theory, Periodic Table</td>
<td>1, 2</td>
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<td>September 9 L5,6</td>
<td>Nomenclature (covalent and ionic)&lt;br&gt;Percent Composition, Empirical and Molecular Formulas</td>
<td>3</td>
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<td>September 16 L7,8</td>
<td>Quantum Theory and Electronic Structure of Atoms&lt;br&gt;Electron Configuration, Orbital Shape</td>
<td>8</td>
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<td>September 23 L9,10</td>
<td>Periodic Trends (atomic radius, ionization energy, electron affinity, electronegativity)&lt;br&gt;Chemical Bonding (covalent, polar covalent, and ionic)</td>
<td>9, 10</td>
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<td>September 30 L 11, 12</td>
<td>Exam 1 (Lectures 1 – 10)&lt;br&gt;Unit Conversions, Stoichiometry, Molarity, Dilution (Molarity)&lt;br&gt;Stoichiometry</td>
<td>5</td>
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<tr>
<td>October 7 L 13, 14</td>
<td>Unit Conversions, Stoichiometry, Molarity, Dilution (Molarity)&lt;br&gt;Stoichiometry (including limiting reagent and percent yield)</td>
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<td>October 14 L15,16</td>
<td>Chemical reactions and types of chemical equations</td>
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<td>October 21 L17, 18</td>
<td>Reaction Types (precipitation, acid base, redox)</td>
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<tr>
<td>October 28 L 19, 20</td>
<td>Reaction Types (precipitation, acid base, redox)</td>
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<td>November 4 L21, 22</td>
<td>Exam 2 (Lectures 11 – 20)&lt;br&gt;Chemical Bonding, Lewis Structures&lt;br&gt;Resonance, Formal charge, Expanded octet&lt;br&gt;Molecular Geometry, Hybridization of Atomic Orbitals, VSEPR</td>
<td>10</td>
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<tr>
<td>November 11 L 23, 24</td>
<td>Molecular Geometry, Hybridization of Atomic Orbitals, VSEPR, Polarity</td>
<td>10, 11</td>
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<td>November 18 L 25, 26</td>
<td>Valence Bond Theory, Hybridization&lt;br&gt;Chemical equilibrium&lt;br&gt;Le Chatelier’s Principle</td>
<td>11, 15</td>
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<td>November 25 L27</td>
<td>Chemical equilibrium (ICE tables)&lt;br&gt;Thursday – Friday 11/28 – 11/29/19: Thanksgiving Holiday, No Class</td>
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<td>December 2 L28, 29</td>
<td>Exam 3 (Lectures 21 – 26)&lt;br&gt;States of Matter, Phase Diagrams, Intermolecular Forces&lt;br&gt;Intermolecular Forces, Liquids</td>
<td>12</td>
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<td>December 9</td>
<td>Review</td>
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<tr>
<td>Final Exam</td>
<td>Tuesday December 17, 5:00 pm-7:30 pm (Cumulative)</td>
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The core topics of the fundamentals of chemistry class are covered in weeks 1-12 (lectures 1-25). “Chemical equilibrium” and “states of matter and solutions” are designed to serve as an introduction to these topics and will be covered in more detail in other classes.