General Chemistry I

Course Description: Atomic and molecular structures, stoichiometry, gas laws and thermodynamics.

Course Prerequisites and Corequisites: Prerequisite: MTH 138. Corequisite: CHE 133L

Program Learning Outcomes: There are no specific program learning outcomes for this major addressed in this course. This course is a general education core curriculum course and a service course.

General Education Core Curriculum Objectives:
- To understand and apply method and appropriate technology to the study of natural sciences.
- To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.
- To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
- To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

Course Objective: To provide students with an explanation of the basic concepts of chemistry and to apply these concepts to problem solving involving critical thinking.

Student Learning Outcomes:
The student is expected to recognize and apply the following basic concepts to problem solving:
- Basic statistical methods used in chemistry such as significant figures, accuracy/precision, and uncertainty in measurements.
- Basic vocabulary used in chemistry such as nomenclature, notations for isotopes, and classification of matter.
- Basic calculations used in chemistry such as stoichiometry, gas laws, and thermochemistry.
- Basic structure of molecular and atomic systems used in chemistry such as Lewis structures, molecular geometry, bonding theories, and periodic trends.

Outline of Topics (approximate course time):
Chemistry and Measurement (5-15%)
Atoms, Elements, Molecules, Ions, and Compounds (5-15%)
Chemical Formulas and Equations (5-15%)
Chemical Reactions (5-15%)
Thermochemistry (5-15%)
Quantum Theory of the Atom (5-15%)
Periodic Properties of the Elements (5-15%)
Chemical Bonding – Lewis Structures (5-15%)
Molecular Geometry and Bonding Theory (5-15%)
Gases (5-15%)
Liquids, Solids, and Intermolecular Forces (5-15%)
Solutions (5-15%)
2 of 6

Lab and Lecture and separate grades

**FORMAT OF DELIVERY:**
This laboratory course will be taught face-to-face and LiveStream (in real time). The exams are in-person and required.

**TEXT AND MATERIALS:**
- OPENSTAX General Chemistry Text, 2nd Edition available (for free) at  
  https://openstax.org/details/books/chemistry-2e
- Note Cards (approximately 250)
- Scientific Calculator
METHOD OF EVALUATION:
Students must complete all of the electronic homework with a score of 5 or above in order to receive a passing grade for the course.
Students must attend at least 85% of the course (LiveStream or Face-to-Face) in order to pass the course.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Due Date</th>
<th>Time</th>
<th>Points</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>9/6</td>
<td>4:00-5:30 PM</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Exam 2</td>
<td>9/20</td>
<td>4:00-5:30 PM</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Exam 3</td>
<td>10/4</td>
<td>4:00-5:30 PM</td>
<td>100</td>
<td>take-home given during end of 1st 8-week term</td>
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<tr>
<td>Exam 4</td>
<td>10/18</td>
<td>4:00-5:30 PM</td>
<td>100</td>
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<tr>
<td>Exam 5</td>
<td>11/1</td>
<td>4:00-5:30 PM</td>
<td>100</td>
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<tr>
<td>Exam 6</td>
<td>11/15</td>
<td>4:00-5:30 PM</td>
<td>100</td>
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<tr>
<td>Exam 7</td>
<td>11/29</td>
<td>4:00-5:30 PM</td>
<td>100</td>
<td>during &quot;Dead Week&quot;</td>
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<tr>
<td>Homework</td>
<td></td>
<td>300 Due last day of class</td>
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The final exam period for this class is schedule (by the University) for Tuesday December 7th from 8-10 am. During this time, you can take a standardized multiple choice final over the entire semester’s content. This will replace your lowest (or missed) exam.

Grading scale - A= 90-100%, B= 80-89%, C= 70-79%; D= 60-69%; F= below 60%

Grades are kept in D2L and are always available for students to see. Announcements are always being posted, so please check D2L frequently.

COURSE HOUR JUSTIFICATION:
This lecture course is a 3-credit hour and will meet in person for 150 minutes a week for 15 weeks. In addition, students will have six 60-minute exam periods (which are required). Students are expected to prepare outside of class by reading and doing homework assignments. These activities, inclusive of the lecture expectations and outside work academic components, average a minimum of 600 minutes each week.

ATTENDANCE POLICY:
Students must attend 85% of the lectures (either in person or LiveStream). All homework assignments must be completed. Exam attendance is required. (Students with a verified University approved excuse will be allowed to take the exams outside of the scheduled time.)
<table>
<thead>
<tr>
<th>Week start date</th>
<th>Content</th>
<th>Exam Information</th>
</tr>
</thead>
</table>
| Week 1 Aug 23  | Chapter 1: Essential Ideas  
Scientific Method; Factor Label, which is Largest; first 30 elements name to symbol, symbol to name; 1 mole = 6.022 x 10^23 entities |  |
| Week 2 Aug 30  | Chapter 2: Atoms, Molecules and Ions  
^p^, n, e, covalent and ionic nomenclature | Exam 1; Math-101 4-6:30pm |
| Week 3 Sept 6  | Chapter 3: Composition of Substances and Solutions  
Solution: solute + solvent; Molarity | Sept 6, 2021 |
| Week 4 Sept 13 | Chapter 3: Composition of Substances and Solutions  
solubility rules; molecular, ionic and net ionic equations | Exam 2; Math-101 4-6:30pm |
| Week 5 Sept 20 | Chapter 4: Stoichiometry of Chemical Reactions  
Grams to moles to moles to grams and variations | Sep 20, 2021 |
| Week 6 Sept 27 | Chapter 4: Stoichiometry of Chemical Reactions  
Grams to moles to moles to grams and variations | Exam 3; take-home |
| Week 7 Oct 4   | Chapter 4: Stoichiometry of Chemical Reactions  
Grams to moles to moles to grams and variations | Exam 4; Math-101 4-6:30pm |
| Week 8 Oct 11  | Chapter 9: Gases  
1 condition and 2 condition; Ideal Gases | Oct 18, 2021 |
| Week 9 Oct 18  | Chapter 5: Thermodynamics  
Exothermic, endothermic; reaction energy diagrams; enthalpy; Hess’s Law |  |
| Week 10 Oct 25 | Chapter 6: Electronic Structure & Periodic Properties of Elements  
Shell, subshell, etc… | Exam 5; Math-101 4-6:30pm |
| Week 11 Nov 1  | Chapter 6: Electronic Structure & Periodic Properties of Elements  
Periodic trends | Nov 11, 2021 |
| Week 12 Nov 8  | Chapter 7: Chemical Bonding & Molecular Geometry  
VSEPR theory and shapes | Exam 6; Math-101 4-6:30pm |
| Week 13 Nov 15 | Chapter 8: Advanced Theories of Covalent Bonding  
VSEPR theory and shapes | Nov 15, 2021 |
| Week 14 Nov 22 | Thanksgiving  
No Class |  |
| Week 15 Nov 29 | Time permitting  
Chapter 10: Liquids and Solids | Exam 7; Math-101 4-6:30pm |
| Week 16 Dec 6  | Final Exam Week, see final exam schedule for the date and location of the final exam. | Nov 29, 2021 |

MONDAY OF DEAD WEEK
ACADEMIC DISHONESTY
The full policy is available at: https://www.sfasu.edu/policies/student-academic-dishonesty-4.1.pdf

I expect you to do your own work. Do not ask another faculty member for assistance. While you should be discussing laboratory topics/concepts/activities with students registered for this lab, you are expected to write your own laboratory notebooks and formal reports. Copying other student (current or previous) notebooks or other work is academic dishonesty. Copying or communicating with other students during quizzes or exams is cheating. Using sources without correct documentation is plagiarism. Turning in work that is not your own is not acceptable. Making up data (for an assignment or the lab practical) is considered academic dishonesty. For any form of academic dishonesty, a student will receive a zero as the grade on the item. Depending on the severity of the cheating, a student may also receive an F in the course, and I will recommend suspension from the university when I submit the Report of Academic Dishonesty to the dean’s office. Additionally, I will send a letter of concern to department chair/unit head of a student’s major and/or attribute. (Fry modified Dr. Michele Harris statement 8/20/2021)

WITHHELD POLICY
The full policy is available at: https://www.sfasu.edu/policies/course-grades-5.5.pdf
At the discretion of the instructor of record and with the approval of the academic unit head, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work by the deadline set by the instructor of record, not to exceed one calendar year from the end of the semester in which they receive a WH, or the grade 5.5 Course Grades Page 2 of 3 automatically becomes an F, except as allowed through policy [i.e., Military Service Activation (6.14)]. If students register for the same course in future semesters, the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. If a student has been found guilty of academic dishonesty, a grade of “WP” or “WH” may be changed to “WF” at the discretion of the faculty member. In the case of a grade change to “WF”, the course will not count towards the six course drop limit since the student is incurring an academic penalty.

MENTAL HEALTH
SFASU values students’ mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

| SFASU Counseling Services | Burke 24-hour crisis line 1(800) 392-8343
| www.sfasu.edu/counselingservices | Suicide Prevention Lifeline 1(800) 273-TALK (8255)
| 3rd Floor Rusk Building | Crisis Text Line: Text HELLO to 741-741
| 936-468-2401 | |

| SFASU Human Services Counseling Clinic | |
| www.sfasu.edu/humanservices/139.asp | |
| Human Services Room 202 | |
| 936-468-1041 | |
COVID-19 INFORMATION
Please visit https://www.sfasu.edu/covid19 for detailed information about Covid-19 protocols on SFA campus.

The instructor reserves the right to modify any part of this syllabus as circumstances dictate. Changes will be communicated through e-mail.
Darrell R. Fry 8/20/2021