Name: Dr. J. Brannon Gary  
Department: Chemistry & Biochemistry  
Email (preferred): garyjb@sfasu.edu  
Phone: (936) 468-2189  
Office: M-116  
Student Hours: times by appointment  

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

Number of Credit Hours: 3 semester hours - 7 hours lecture per week

Corequisite: CHEM 1111, MATH 1314 or MATH 1324

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.

General Education Core Curriculum Objectives: The Texas Higher Education Coordinating Board has identified six core learning objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives. General Chemistry is a general education core curriculum course and fulfills the Teamwork general education core curriculum requirement. Another, “shell” course has been created to collect student artifacts to meet this state requirement. You will see this course on your D2L list. During this semester, you will receive an assignment in the laboratory portion of the course that fulfills both the requirements of the lab and the needs of Stephen F. Austin State University’s Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board. When you complete this one assignment, you need to upload the assignment to both the General Chemistry dropbox and the Teamwork dropbox. Please note that this only applies to the specific assignment listed in the matrix below. All other assignments should be submitted according to regular class operations. If you have any questions, please
see your instructor or contact the University Assessment Specialist at (936) 468-1267 or jstringfield@sfasu.edu.

The chart below indicates the core objectives addressed by this course, the assignment(s) that will be used to assess the objectives in this course and uploaded to the D2L Teamwork dropbox this semester, and the date the assignment(s) should be uploaded to the D2L Teamwork dropbox. Not every assignment will be submitted for core assessment every semester. Your instructor will notify you which assignment(s) must be submitted for assessment in the D2L Teamwork dropbox.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Topics</th>
<th>Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 1 -- Critical Thinking Skills</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>Classification of Reactions, Solubility Rules, Limiting Reactant, Lewis Diagrams, Valence Shell Electron Pair Repulsion Theory</td>
<td>3, 4, 8, 9</td>
</tr>
<tr>
<td>CO 2 -- Communication Skills</td>
<td>To include effective development, interpretation and expression of ideas though written, oral, and visual communication.</td>
<td>Developed in Laboratory</td>
<td></td>
</tr>
<tr>
<td>CO 3 -- Empirical and Quantitative Skills</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>Stoichiometry, Significant Figures, Thermodynamics, Gas Laws</td>
<td>1, 3, 5, 10</td>
</tr>
<tr>
<td>CO 4 -- Teamwork</td>
<td>To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.</td>
<td>Developed in Laboratory</td>
<td>See lab syllabus</td>
</tr>
</tbody>
</table>

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: Upon completion of this course, the students are expected to:

- apply chemistry concepts using critical thinking skills and the scientific method to analyze and evaluate information to reach conclusions within problem sets and lab experiments. (COs 1 & 3)
- use communication skills to demonstrate their interpretation and analysis of scientific data and express their ideas and thoughts to team members. (CO 2)
• apply logic, quantitative reasoning, and pattern recognition to analyze and evaluate numerical data/observable facts to reach conclusions within problem sets and lab experiments. (COs 1 & 3)
• demonstrate the ability to cooperate within groups to gather results of an experiment, analyze data, and draw conclusions using communication skills. (COs 2 & 4)

Hour Justification: This course is for 3 credits and spans 7 weeks. The course contains extensive content requiring students to prepare by completing the assigned weekly reading, homework, online content, etc. Students have significant weekly reading and homework assignments involving critical thinking and quantitative reasoning. Students are tested over the material via several exams during the semester including a comprehensive final exam. These activities average at a minimum 6 hours of work each week to prepare outside of time spent engaging with the content.

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%)

Text and Materials:
Chemistry 5th ed., by Burdge (McGraw-Hill) ISBN (campus bookstore): 9781265515072 or 9781265506759. These options will include access to the required ALEKS online homework platform. Access can also be purchased directly from the manufacturer via the ALEKS homework link in D2L. A non-programmable, scientific calculator is required for all exams and quizzes. Cell phones, laptops, or tablets are not substitutes for a calculator.

Grading Policy:
There will be three semester exams (100 pts each), and a comprehensive Final (100 points). The exams are cumulative with emphasis on the material covered since the last exam. These exams will consist of problems that must be set up and solved, discussion questions, and/or multiple choice, true/false, math problems, fill-in-blanks or essay type questions. Partial credit will be given for short answer problems worked partially correct; therefore, it is crucial to show your solutions to the problems, not just the answer. In general, the final will be used as the substitute exam for missing an exam with an excused absence (note exceptions may be made for university related absences with prior approval of the professor). Students have one week from the day any graded item is returned to notify professor of a possible grading error or ask questions about the grade of an item. After one week no points will be returned. The professor has the prerogative of also re-grading the entire item. Credit will not be given for
**correct answers** unless you show how you arrived at the answer. Multiple choice questions will have no partial credit. In addition, homework problems will be assigned.

**Homework**—Homework will total 100 points. 50 points are awarded for completing objectives by the posted due date and 50 points is awarded via a percentage of the completed objectives at the conclusion of the course.

Online homeworks will be assigned and due dates posted on the ALEKS Website. The due dates will be announced in class. Missing due dates portion of the homework will **not be graded after the due date** without legitimate documentation (NO EXCEPTIONS). Overall objective completion will be assessed at the conclusion of the class.

**Method of Evaluation:**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>POINT VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam I</td>
<td>100</td>
</tr>
<tr>
<td>Exam II</td>
<td>100</td>
</tr>
<tr>
<td>Exam III</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>Online Homework</td>
<td>100</td>
</tr>
<tr>
<td><strong>TOTAL POINTS</strong></td>
<td><strong>500</strong></td>
</tr>
</tbody>
</table>

**Grading Scale (General Grading Scale)**

500-4500 = A; 449-400 = B; 399-350 = C; 349-300 = D; 299-0 = F

**Attendance Policy:**

Homework and exams will have deadlines to complete. All lectures are recorded and posted to D2L and can be viewed at any time to stay on pace with the course schedule.

**COVID-19 INFORMATION**

Please visit [https://www.sfasu.edu/covid19](https://www.sfasu.edu/covid19) for detailed information about Covid-19 protocols on SFA campus.

**Academic Integrity (A-9.1):**

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

**Definition of Academic Dishonesty**

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1)
submitting an assignment as if it were one’s own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one’s paper without giving the author due credit.


WITHHELD GRADES SEMESTER GRADES POLICY (A-54):
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, 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 within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

STUDENTS WITH DISABILITIES:
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

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

On-campus Resources:
SF ASU Counseling Services
www.sfasu.edu/counselingservices
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
www.sfasu.edu/humanservices/139.asp
Human Services Room 202
936-468-1041
Crisis Resources:
Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741
Tentative Course Calendar

<table>
<thead>
<tr>
<th>Subject</th>
<th>Dates</th>
<th>HW Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Check and Prerequisite Review</td>
<td></td>
<td>August 25</td>
</tr>
<tr>
<td>CH 1: Chemistry and Measurement</td>
<td>August 23, 24, 25</td>
<td>September 5</td>
</tr>
<tr>
<td>CH 2: Atoms, Molecules, and Ions</td>
<td>August 26, 27</td>
<td>September 5</td>
</tr>
<tr>
<td>CH 3: Chemical Formulas and Equations</td>
<td>August 30, 31, and September 1</td>
<td>September 5</td>
</tr>
<tr>
<td><strong>Exam 1</strong></td>
<td><strong>September 3</strong></td>
<td></td>
</tr>
<tr>
<td>CH 4: Reactions in Solutions</td>
<td>September 2, 3, 6</td>
<td>September 19</td>
</tr>
<tr>
<td>CH 10: Gases</td>
<td>September 7, 8, 9</td>
<td>September 19</td>
</tr>
<tr>
<td>CH 5: Thermochemistry</td>
<td>September 10, 13, 14</td>
<td>September 19</td>
</tr>
<tr>
<td><strong>Exam 2</strong></td>
<td><strong>September 17</strong></td>
<td></td>
</tr>
<tr>
<td>CH 6: Electronic Structure of Atoms</td>
<td>September 15, 16, 17</td>
<td>September 30</td>
</tr>
<tr>
<td>CH 7: Periodic Properties</td>
<td>September 20, 21</td>
<td>September 30</td>
</tr>
<tr>
<td>CH 8: Basic Concepts of Bonding</td>
<td>September 22, 23, 24</td>
<td>September 30</td>
</tr>
<tr>
<td><strong>Exam 3</strong></td>
<td><strong>October 1</strong></td>
<td></td>
</tr>
<tr>
<td>CH 9: Molecular Geometries</td>
<td>September 27, 28, 29</td>
<td>October 8</td>
</tr>
<tr>
<td>CH 11: Liquids</td>
<td>September 30, October 1</td>
<td>October 8</td>
</tr>
<tr>
<td>CH 13: Properties of Solutions</td>
<td>October 4, 5, 6</td>
<td>October 8</td>
</tr>
<tr>
<td><strong>Final Exam</strong></td>
<td><strong>October 8</strong></td>
<td></td>
</tr>
</tbody>
</table>