Name: Dr. Brian Barngrover  
Department: Chemistry & Biochemistry  
Email: barngrovbm@sfasu.edu  
Phone: (936) 468-1568  
Office: M-124  
Student Hours: MWF 10:00 am – 11:00 am, M 2:00 – 4:00 pm; other times by appointment  

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

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

Course Prerequisites and Corequisites: Prerequisite: MATH 1314. Corequisite: CHEM 1111  

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. The chart below indicates the core objectives addressed by this course.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Topics</th>
<th>Chapters</th>
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<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></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 15 weeks and meets for 150 minutes a week. 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%)
Gases (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%)
Liquids, Solids, and Intermolecular Forces (5-15%)
Solutions (5-15%)

**Text and Materials:**
*Chemistry 6th ed.*, by Julie Burdge (The loose-leaf version of the book is available at the local bookstores that already contains access to ALEKS the required online homework – ISBN (campus bookstore): 9781265515072 or 9781265506759. The ALEKS homework will be accessed through Brightspace 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 (150 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 150 points (made up of ALEKS pie progress and objectives).

Online homework will be assigned, and due dates posted on Brightspace D2L. The due dates will be announced in class. In general, homework assignments will be due on Saturdays. Homework will **not be graded after the due date** without legitimate documentation (NO EXCEPTIONS).

**Method of Evaluation:**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>POINT VALUE</th>
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<tbody>
<tr>
<td>Exam I</td>
<td>100</td>
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<tr>
<td>Exam II</td>
<td>100</td>
</tr>
<tr>
<td>Exam III</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>150</td>
</tr>
<tr>
<td>Online Homework</td>
<td>150</td>
</tr>
<tr>
<td><strong>TOTAL POINTS</strong></td>
<td><strong>600</strong></td>
</tr>
</tbody>
</table>

**Grading Scale (General Grading Scale)**

600-540 = A; 539-480 = B; 479-420 = C; 419-360 = D; 359-0 = F

**Attendance Policy:**

Attendance of class is mandatory. Seven (7) unexcused absences or more will result in an ‘F’ for the course. Absences may be assigned to anyone that disrupts class, sleeps in class, or consistently comes in late or leaves early unless the professor is notified for any reason. **Six points will be added to the point total of anyone that has zero absences. Four points will be added to the point total of anyone that has only one absence. Two points will be added to the point total of anyone that has only two absences.** Anyone with three absences or fewer will have the option of the percentage of their final exam grade replacing their lowest exam grade. (For the purpose of the **bonus attendance points there is no distinction** between excused and unexcused absences.)

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

*The Code of Student Conduct and Academic Integrity* outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.
Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

**WITHHELD GRADES SEMESTER GRADES POLICY (5.5):**
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 coursework 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 to compute the grade point average. For additional information, go to [https://www.sfasu.edu/policies/course-grades-5.5.pdf](https://www.sfasu.edu/policies/course-grades-5.5.pdf).

**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/](http://www.sfasu.edu/disabilityservices/).

**EDUCATOR PREPARATION:**
This course meets educator preparation standards for one or more certification programs; a complete listing of all the educator preparation standards this course meets can be found at: [https://sfasu.edu/docs/jacksteach/jacksteach-standards-alignment-chart.xlsx](https://sfasu.edu/docs/jacksteach/jacksteach-standards-alignment-chart.xlsx)

**STUDENT WELLNESS AND WELL-BEING:**
SFA values students’ overall well-being, mental health, and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.
If you are experiencing concerns, seeking help, 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.

**On-campus Resources:**

**The Dean of Students Office** (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

**SFA Human Services Counseling Clinic** Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

**The Health and Wellness Hub** “The Hub”
Location: corner of E. College and Raguet St.
To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

www.sfasu.edu/thehub
936.468.4008
thehub@sfasu.edu

**Crisis Resources:**

- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention Text: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)

Crisis Text Line: Text HELLO to 741-741

Instructor reserves the right to change the syllabus at any time.
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<tr>
<th>Subject</th>
<th>Dates</th>
<th>Tentative Homework Deadlines by 11:59 PM</th>
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<td><strong>Math Review</strong></td>
<td><strong>September 9</strong></td>
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<tr>
<td>Chemistry and Measurement</td>
<td><strong>August 29</strong></td>
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<tr>
<td>Atoms, Molecules, and Ions</td>
<td><strong>August 31 – September 7</strong></td>
<td><strong>September 23</strong></td>
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<tr>
<td>Chemical Formulas and Equations</td>
<td><strong>September 12 – September 19</strong></td>
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<td><strong>Exam 1</strong></td>
<td><strong>September 21</strong></td>
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<tr>
<td>Reactions in Solutions</td>
<td><strong>September 26 – October 3</strong></td>
<td><strong>October 21</strong></td>
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<td>Gases</td>
<td><strong>October 5 – 12</strong></td>
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<tr>
<td>Thermochemistry</td>
<td><strong>October 17 – 26</strong></td>
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<tr>
<td><strong>Exam 2</strong></td>
<td><strong>October 19</strong></td>
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<tr>
<td>Electronic Structure of Atoms</td>
<td><strong>October 31 – November 7</strong></td>
<td><strong>December 2</strong></td>
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<tr>
<td>Periodic Properties</td>
<td>Videos on D2L</td>
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<tr>
<td>Basic Concepts of Bonding</td>
<td><strong>November 9 – 16</strong></td>
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<td>Molecular Geometries</td>
<td><strong>November 16 – 28</strong></td>
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<td><strong>Exam 3</strong></td>
<td><strong>November 30</strong></td>
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<tr>
<td>Liquids</td>
<td><strong>December 5</strong></td>
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<tr>
<td>Properties of Solutions</td>
<td><strong>December 7</strong></td>
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<tr>
<td><strong>Final Exam</strong></td>
<td><strong>December 14th 8:00 am – 10:30 am</strong></td>
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