Introductory Chemistry Laboratory
CHE 1105 Sections: 525, 526, 527
Time of Meeting: Online
Semester: Fall 2020
(Students must be enrolled in CHE 1105 Lecture)

<table>
<thead>
<tr>
<th>Name</th>
<th>Dr. J. Brannon Gary</th>
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<tbody>
<tr>
<td>Department</td>
<td>Chemistry and Biochemistry</td>
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<td>(936) 468-2189</td>
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<tr>
<td>Office</td>
<td>M-116</td>
</tr>
<tr>
<td>Office Hours</td>
<td>MWF 10:00-11:00 AM; Tues. 1:30-3:30 PM; Wed. 1:30 PM- 2:30 PM; other times by appointment</td>
</tr>
</tbody>
</table>

Course Description: Introductory laboratory experiments.

This lab course is for 1 credit and typically meets for 120 minutes a week for 15 weeks plus meets for a 2-hour final examination. Students have significant weekly reading to prepare for lab each week and lab reports involving critical thinking and quantitative reasoning. Students are tested over the material via quizzes and a comprehensive final exam. Students are expected to prepare prior to each lab (literature and concepts), attend lab hours (conduct experiments), and report results (lab reports). Students have required academic components and deliverables: written work (daily notebook, pre-lab assessments, and lab reports). These activities, inclusive of the lab expectations and academic components, average a minimum of 4 hours of work each week.

Number of Credit Hours: 1 semester hour. The grade is separate from the lecture grade.

Course Prerequisites and Co-requisites: Co-requisite: CHE 1305. Lab fee required.

Course Objective: To provide students with an explanation of the basic principles of chemistry as illustrated through laboratory experiments and to apply these principles to laboratory work involving critical thinking.

Text and Materials: A non-programmable, scientific calculator is required for all exams and quizzes. All required materials will be supplied via D2L.

COURSE CALENDAR: ON SEPARATE PAGE

GRADING POLICY: The possible point total for the requirements shown below is 195. Grades are based on the total number of points earned out of 175.

The grading scale for the lab is:

[A: 175-157; B: 156-140; C: 139-122; D: 121-105; F: 104-0]

Safety Quiz will be given at the beginning of the semester on D2L and is worth 25 points. The safety quiz cannot be dropped from the final grade.

Laboratory quizzes/experiments will be given each week as shown in the laboratory calendar. All assignments are due on the date specified at midnight. The lowest two grades will be dropped. The 7 best grades will be kept. Each laboratory experiment is worth 10 points. A total of 70 points from laboratory is possible.
Midterm and Final Exam:
- A midterm exam will be given October 5th via D2L. It will cover material from the first week of the semester through Lab #4.
- The final exam will be given November 16th via D2L. It will cover material from Labs #5-#9
- The midterm and the final are worth 40 points each.

Make-up Policy: NO make-up labs will be given since the lowest two experiments will be dropped.

ATTENDANCE POLICY:
This is an online class. All assignments will be available and turned in via D2L. No late assignments will be graded.

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.

Please read the complete policy at http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf
Any student found cheating will be subject to the penalties as stated in the Student Code of Conduct handbook; including but not limited to a score of zero on exam, expulsion from the class or expulsion from the University.

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/.

Masks and Social Distancing:
Masks (cloth face coverings) must be worn over the nose and mouth at all times in this class and appropriate physical distancing must be observed. Students not wearing a mask and/or not observing appropriate physical distancing will be asked to leave the class. All incidents of not wearing a mask and/or not observing appropriate physical distancing will be reported to the Office of Student Rights and Responsibilities. Students who are reported for multiple infractions of not wearing a mask and/or not observing appropriate physical distancing may be subject to disciplinary actions.


CLASSROOM BEHAVIOR POLICY:

Acceptable Student Behavior: Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed. Please review the entire code of conduct here: http://www.sfasu.edu/policies/student-code-of-conduct-10.4.pdf

General Education Core Curriculum

• This course has been selected to be part of Stephen F. Austin State University’s core curriculum. The Texas Higher Education Coordinating Board has identified six objectives for all core courses: 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.

• Assessment of these objectives at SFA will be based on student work from all core curriculum courses. This student work will be collected in D2L. 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 this semester.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
<th>Date Due in Dropbox</th>
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<tbody>
<tr>
<td>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>Teamwork rubrics</td>
<td></td>
</tr>
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</table>

Core Objective 1: Critical Thinking: to include creative thinking, innovation, inquiry and analysis, evaluation and synthesis of information.


Critical thinking involves the use of a group of interconnected skills. The skills needed can be broken down into six steps.

Six Steps of CRITICAL THINKING

1. **Knowledge** means a student must have basic knowledge about the subject.
2. **Comprehension** requires understanding of the subject. Students that comprehend the new knowledge are able to relate the new knowledge to what they already know. Comprehending goes beyond simply parroting material back.
3. **Application** requires both knowledge and comprehension. Students must be able to carry out a task or apply their knowledge and comprehension to an assigned task.
4. **Analysis** involves breaking the knowledge down into smaller parts so it become clear how the smaller parts are related to other ideas.
5. **Synthesis** involves the ability to put together the parts you analyzed with other information to create something original.
6. **Evaluation** occurs once we have understood and analyzed what is said or written and the reasons offered to support it. Then we can appraise this information in order to decide whether you can give or withhold belief, and whether or not to take a particular action.

Adapted from: [http://www.mhhe.com/socsicence/philosophy/reichenbach/m1_chap02studyguide.html](http://www.mhhe.com/socsicence/philosophy/reichenbach/m1_chap02studyguide.html)  
*(accessed May 23, 2013)*

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**Core Objective 2: Communication Skills: to include effective development, interpretation and expression of ideas through written, oral, and visual communication.**

**COMMUNICATION SKILLS in the sciences**

For an excellent resource in scientific communication from a highly reputable source see the information provided on the Nature website link shown below.

[http://www.nature.com/scitable/topic/scientific-communication-14121566](http://www.nature.com/scitable/topic/scientific-communication-14121566)  
*(accessed May 31, 2013)*

Three especially informative links within the link shown above are:

- Effective Communication
- Effective Writing
- Audience/Purpose

Scientific communication traditionally includes writing in third person, past tense, passive voice. In formal, scientific writing slang terms and contractions are avoided.

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**Core Object 3: Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.**

**EMPIRICAL AND QUANTITATIVE SKILLS**

Chemists rely on observations to explain the nature of the substances they study. There are two types of observations exist: qualitative and quantitative. A **qualitative observation** is an observation made with the senses and is usually expressed using words instead of numbers. Qualitative observations about a person sick in the hospital might include that the person is breathing rapidly, has a high temperature, and is very thin.

A **quantitative observation** is an observation that requires a numerical measurement and describes something in terms of "how much". The quantitative observation that a person has a temperature of 103.6 °F is much more useful information than just knowing that the person has a fever. Quantitative observations are preferred by scientists. Often quantitative data is acquired in lab.

One or more measurement is always a part of any quantitative observation. A **measurement** determines the dimensions, capacity, quantity, or extent of something. The most common types of measurements made in chemical laboratories are those of mass, volume, length, temperature, pressure, and concentration. Measurements always consist of two parts: a **number**, which tells the amount of the quantity measured, and a **unit**, which tells the nature or kind of quantity measured. A measured number without a unit is meaningless.

Once quantitative data is obtained, chemists then mathematically manipulate and analyze data.

*Adapted from saplinglearning.com; accessed May 31, 2013*

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**Core Objective 4: Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.**

Definition of **TEAMWORK**: work done by several associates with each doing a part but all subordinating personal prominence to the efficiency of the whole.

*(accessed May 23, 2013)*
TEAMWORK General Rules

Each team member needs:

- all ideas evaluated critically;
- treat others in the group with respect
- everyone needs to pull their weight, meet deadlines, and contribute equally;
- actions need to be followed through;
- reporting needs to be accurate and comprehensive;
- problems with under-performing team members need to be discussed openly and resolved quickly; and
- peer assessment should be given fairly

Every laboratory activity meets all 4 Core Objectives:

<table>
<thead>
<tr>
<th>Core Objective 1:</th>
<th>Every lab will require a collection of data in which you must analyze the information. Each lab has objectives that are achieved by manipulating chemicals and equipment which involves inquiry skills.</th>
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<tbody>
<tr>
<td>Core Objective 2: Communication Skills</td>
<td>Communication with your lab partner is absolutely essential in order to perform the experiment, take data, and analyze the results.</td>
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<tr>
<td>Core Objective 3: Empirical and Quantitative Skills</td>
<td>Each lab will include the manipulation and analysis of numerical data or observable facts from which an informed conclusion will be drawn.</td>
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<tr>
<td>Core Objective 4: Teamwork</td>
<td>When working with a partner in a lab setting, it is important to work as a team, considering different points of view and working effectively to meet the objectives set forth in the lab manual. This Core Objective is Strongly Emphasized in Lab.</td>
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<tr>
<td>Experiment/Assignment</td>
<td>Week of</td>
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<td>---------------------------------------</td>
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<tr>
<td>Safety Video</td>
<td>August 31</td>
</tr>
<tr>
<td>Significant Figures</td>
<td>September 7</td>
</tr>
<tr>
<td>VCL: Flame Test</td>
<td>September 14</td>
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<tr>
<td>VCL: Counting Particles</td>
<td>September 21</td>
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<tr>
<td>VCL: Precipitation Reactions</td>
<td>September 28</td>
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<tr>
<td><strong>Midterm</strong></td>
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<tr>
<td>VCL: Molarity</td>
<td>October 12</td>
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<tr>
<td>VCL: Endothermic/Exothermic Rxns</td>
<td>October 19</td>
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<tr>
<td>VCL: Heat of Reaction</td>
<td>October 26</td>
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<tr>
<td>VCL: Titrations</td>
<td>November 2</td>
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<tr>
<td>VCL Gas Laws</td>
<td>November 9</td>
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<tr>
<td><strong>Final Exam</strong></td>
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<tr>
<td>Thanksgiving</td>
<td>November 23</td>
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<tr>
<td>No Assignment</td>
<td>November 30</td>
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<tr>
<td>Finals Weak (No Assignment)</td>
<td>December 7</td>
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