Introductory Chemistry II Laboratory
CHE 1107 Section-020
Meeting times for in-person labs: 2:30-5:20 Mondays

Deadlines:
- Prelab quizzes to in-person labs due by 2:30 Monday (lab start time)
- Prelab quizzes to online labs due Monday, 11:59 pm
- Lab Reports due Thursday following lab, 2:30 pm.
- Post lab quizzes due Thursday following lab, 11:59 pm.

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Email</th>
<th>Phone</th>
<th>Office</th>
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<tbody>
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<td></td>
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<td><a href="mailto:kwiatkowc@sfasu.edu">kwiatkowc@sfasu.edu</a></td>
<td>936-468-2175</td>
<td>Bush Bldg 110 (Math Bldg)</td>
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Student Hours

<table>
<thead>
<tr>
<th>Location: Bush Building (Math Building) Room 110</th>
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<tr>
<td><strong>Mornings:</strong> Monday, Wednesday, Friday 10:00-11:00</td>
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<td>Tuesday, Thursday 9:30-10:30</td>
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<td><strong>Afternoons:</strong> Wednesday, Friday 1-2:30</td>
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<td>Tuesday 1:00-3:00</td>
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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 midterm and final exam. Students are expected to prepare prior to each lab (literature and concepts), attend lab hours (conduct experiments), perform online experiments, and report results (lab reports). Students have required academic components and deliverables, such as 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: CHEM1307.

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:

CHEM1107 Lab Manual
Face-to-Face and Online Labs
1st Edition

Manuals are sold out of my office during my office hours. $20 cash or check to SFA Chemistry or Biochemistry Department.
All prelab quizzes, post-lab quizzes and lab explanation videos are found on the main D2L page.
GRADING POLICY:

Laboratory Prelabs (25% of the total grade)
Prelabs are on D2L (Course Tools → Quizzes) and should be completed Monday at 2:30 on the lab day. No prelabs are dropped. Some of the labs do not have a prelab.

Lab Reports (30% of the total grade)
Ten laboratory experiments will be assigned. The lowest experiment/assignment will be dropped, and the best 9 experimental grades will be kept. Lab reports are due the following Thursday at 2:30. If it’s not turned into a box located in the hallway of the 1st floor of the Bush building, it needs to be submitted into the appropriate dropbox. If turning in a paper copy, take a picture of your work in case there’s a question about the lab on the Post Lab quiz.

Post Lab quizzes (30% of the total grade)
There is a post lab quiz to many labs, but not all, located under Course Tools → Quizzes. These are always due by Thursday 11:59 pm. One quiz will be dropped.

Final Exam (15% of the total grade):
- The final exam will be open during the week before finals. The final will be on D2L and will cover ALL labs from the semester.

Make-up Policy: NO make-up labs will be given. Late online labs will have 20% deducted from the graded report. If you know beforehand of an absence, speak to instructor about attending lab with the other group.

ATTENDANCE POLICY:
Attendance is mandatory.

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/.

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

➢ Come to lab prepared (spend at least ONE HOUR reading over entire lab before lab period AND reviewing the previous week’s lab) and on time.
➢ Bring a NON-programmable, scientific calculator.
➢ Turn off and put away cell phones; NO texting during lab.
➢ Come dressed as described in the safety rules that will be given: (Clothes to the ankles, no mid-drift shirts, closed-toe shoes. Shoes MUST completely cover feet. Anyone not dressed appropriately for lab will be sent home.)
➢ Follow all safety rules and good laboratory practices at all time:
➢ Wear safety glasses/goggles when anyone in the lab is working on an experiment.
➢ Wear face mask and social distance whenever possible.
➢ One warning concerning safety glasses/goggles will be given. A person will be sent home for a second offense and be will earn a zero that may NOT be dropped.
➢ NO horseplay in laboratory
➢ Be courteous and respectful of other students, laboratory assistants, and stockroom personnel.
➢ Learn your section number and your laboratory assistant's name.
➢ Students are responsible for any answer they report on a lab, assignment, or quiz. Laboratory teaching assistants are students and sometimes may make an error or misunderstand a question. You can NOT claim the lab assistant told you the wrong answer and get points back.
➢ Significant figures are required on all answers given in lab on laboratory report sheets, assignments, quizzes, and exams.
➢ Absences may be assigned to anyone that disrupts lab or is participating in dangerous behavior. This includes not wearing a mask (which is a matter of life and death). Any assigned absence will result in a zero for the day which can NOT be dropped.

General Education Core Curriculum

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](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*
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.


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: Critical Thinking Skills</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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<tr>
<td>Core Objective 2: Communication Skills</td>
<td>Communication with your classmates is important to performing the experiment, taking data, and analyzing 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.</td>
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Class Schedule is on the next page. Schedule depends upon whether you’re assigned 020A or 020B section:
Lab Schedule for CHEM1107-020A
Jan 22: Safety Video (Quiz)
Jan 29 & Feb 5: Face-to-Face (F2F) Qualitative Analysis (Prelab & Post-lab Quiz)
Feb 12: Online VCL 8-4 (Post lab Quiz)
Feb 19: Online Specific Heat and Heat of Fusion (Prelab)
Feb 26: F2F Le Chatelier’s Experiment (Prelab and Post-lab quiz)
Mar 4: Online VCL 6-9 and 6-14 (Prelab)
Mar 25: F2F Vinegar Analysis Lab (Post-lab Quiz)
Apr 1: Online Hess’s Law (Post-lab Quiz)
Apr 8: F2F Iodine Clock (Prelab)
Apr 15: Online Hands-on Organic Polymer Lab (Post-lab Quiz)
Apr 22: F2F: pH of Soil (return Organic polymer kit)(Post-lab Quiz)
Apr 29: Final Exam

Lab Schedule for CHEM1107-020B
Jan 22: Safety Video (Quiz)
Jan 29: Online Specific Heat and Heat of Fusion (Prelab)
Feb 5: Online VCL 8-4 (Post lab Quiz)
Feb 12 and 19: Face-to-Face (F2F) Qualitative Analysis (Prelab and Post-lab quiz)
Feb 26: Online Hands-on Organic Polymer Lab (Post-lab Quiz)
Mar 4: F2F Le Chatelier’s Experiment (Prelab and Post-lab Quiz) (return Organic polymer kit)
Mar 25: Online VCL 6-9 and 6-14 (Prelab)
Apr 1: F2F Vinegar Analysis Lab (Post-lab Quiz)
Apr 8: Online Hess’s Law (Post-lab Quiz)
Apr 15: F2F Iodine Clock (Prelab)
Apr 22: F2F pH of Soil) (Post-lab Quiz)
Apr 29: Final Exam