CHEM1105 Face-to-Face Laboratory
Introductory Chemistry Laboratory, Spring 2024
(Students must be enrolled in or have already passed CHEM 1305)

<table>
<thead>
<tr>
<th>Name</th>
<th>Ms. Catherine Kwiatkowski</th>
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<tbody>
<tr>
<td>Department</td>
<td>Chemistry &amp; Biochemistry</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:kwiatkowc@sfasu.edu">kwiatkowc@sfasu.edu</a></td>
</tr>
<tr>
<td>website</td>
<td>course information on D2L</td>
</tr>
<tr>
<td>Phone</td>
<td>936-468-2175</td>
</tr>
<tr>
<td>Office</td>
<td>Bush Building (Math Building) 110</td>
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<tr>
<td>Student Hours</td>
<td>Mornings: Monday, Wednesday, Friday 10:00-11:00 Tuesday, Thursday 9:30-10:30 Afternoons: Wednesday, Friday 1-2:30 Tuesday 1:00-3:00</td>
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</tbody>
</table>

**Course Description:** Introductory laboratory experiments.
**Number of Credit Hours:** 1 semester hour. This credit is not attached to CHEM1305.
**Course Prerequisites and Co-requisites:** Co-requisite: CHE 1305.

**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.

**Class location & time:**

<table>
<thead>
<tr>
<th>Lab section</th>
<th>pre-lab lecture location</th>
<th>lab location</th>
<th>Discussion + lab time</th>
</tr>
</thead>
<tbody>
<tr>
<td>-023</td>
<td>C-106</td>
<td>C-101</td>
<td>1:00-2:50 Thurs</td>
</tr>
<tr>
<td>-024</td>
<td>C-106</td>
<td>C-102</td>
<td>1:00-2:50 Thurs</td>
</tr>
<tr>
<td>-025</td>
<td>C-106</td>
<td>C-105</td>
<td>1:00-2:50 Thurs</td>
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**Text and Materials:** Introductory Chemistry Lab (CHEM1105) Face-to-Face Laboratory Manual 20th or 21st ed. This manual is available for sale in Ms. K’s office during office hours for $30. A non-programmable, scientific calculator is required for all exams and quizzes.

**Grading Policy:**

- Prelab Quizzes (A): 15% (Lowest prelab quiz is dropped.)
- Prelabs from Manual: 15% (No prelabs are dropped, even if not present for lab.)
- Lab Quizzes (B): 15% (Lowest quiz is dropped. Bring a calculator.)
- Lab Reports: 35% (8 Lab Reports + 1 assignment - Lowest grade is dropped.)
- Midterm Exam: 10%
- Final Exam: 10%
The grading scale for the lab is:

A = 89.5 and up    B = 79.5 – 89.4    C = 69.5 -79.4
D = 59.5-69.4     F= Below 59.5

Laboratory quizzes:
Nearly every lab has two quizzes: Quiz A needs to be taken before lab. It covers the content and instructions given in the introduction of the lab report. Quiz B is given after the lab lecture and contains mathematical problems, so make sure you bring a calculator.

Prelabs:
They are to be completed before lab and contain sample problems that you’ll encounter in the lab report. Turn them in as you enter the room.

Laboratory experiments:
Eight laboratory experiments will be performed, and one worksheet assigned. The lowest experiment/assignment will be dropped, and the best 8 will be kept. The report sheets will be turned in at the end of the laboratory period or in the box located outside Bush Building Room 110 by the following Tuesday. -20% off for late lab reports.

Midterm and Final Exam: The midterm and the final are each worth 10% of your grade.
A midterm exam will be given March 7 during the laboratory period. It will cover material from the safety video and rules, and labs #1 -#4.
The final exam will be given April 25 during the laboratory period. It will mostly cover material from Labs #5-8.

Make-up/Late Policy: NO make-up labs will be given. If you know beforehand of an unavoidable absence, try to attend the other lab section. (Labs are Mondays and Thursdays). Late lab reports will have 20% deducted from graded score. Lab 1-4 will not be accepted after midterms.
If a lab report is turned in, yet you did not attend lab (as evidenced by a missing quiz B), you will not receive credit for the lab.

Expectations:
Come to lab prepared and on time.
Bring a NON-programmable, scientific calculator. Cell phones and programmable calculators may NOT be used on quizzes.
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. If you want to work on a lab report, go to room C106.
One warning concerning safety glasses/goggles will be given. A person will be sent home for a second offense and 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.
Work with assigned lab partner unless otherwise instructed by the lab assistant.
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 class, sleeps in class, or consistently comes in late or leaves early. Any assigned absence will result in a zero for the day which can NOT be dropped.

**POINTS WILL BE DEDUCTED FROM YOUR GRADE FOR NOT FOLLOWING THE COURSE REQUIREMENTS OR THE LABORATORY BEHAVIOR POLICY**

**Outline of Topics:**
- Safety and Introduction to Chemistry Lab
- Significant Figures
- Density
- Spectrophotometry, Concentration
- Types of Reactions: Exothermic, Gas Evolution, Precipitation
- Acid-base Standardization, Titrations
- Buffers and pH

**Attendance Policy:**
Attendance of class is mandatory. There is one dropped lab report grade, but all prelabs need to be turned in, regardless of absence or presence.

**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. Chemistry core courses only develop the first four core-learning objectives: critical thinking, communication, empirical and quantitative, teamwork.

**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.

**Course Objective:** The student will develop an understanding of the basic concepts, laws and theories of chemistry and apply them to chemistry problems through a laboratory setting. The student should learn the skills needed to demonstrate competency in introductory chemistry laboratory techniques.

**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. (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)  

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.  

Academic Integrity:  
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.  

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.  

https://www.sfasu.edu/docs/policies/10.4.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/.  

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.  

On-campus Resources:  
SFASU Counseling Services  
www.sfasu.edu/counselingservices  
3rd Floor Rusk Building
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

**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.

**Course Calendar:**  
This lab course is for 1 credit and typically requires 120 minutes a week for 15 weeks. Students have weekly reading, prelabs, and prelab quizzes to prepare for lab each week and lab reports involving critical thinking and quantitative reasoning. Students are tested over the material via quizzes and exams. Students are expected to prepare prior to each lab (literature and concepts), conduct experiments, and report results (lab reports). Students have required academic components and deliverables: written work (pre-lab assessments, quizzes, and lab reports). These activities, inclusive of the lab expectations and academic components, average a minimum of 4 hours of work each week.

**Course Calendar on Next page:**
CHEM 1105 Laboratory - Course Calendar
All Lab Reports due by 2:00 the following Tuesday. Either turn the lab report in directly to the instructor or place it in the turn-it-in-box located outside Room 110, Bush Building

<table>
<thead>
<tr>
<th>Date</th>
<th>Lab Exercise/Assignment/Activity</th>
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| Before Jan 25 | • Review the syllabus and the safety rules.  
  • Watch the Safety Video by the American Chemical Society (https://www.youtube.com/watch?v=MARP5Ti33II). Recommend take notes on the video.  
  • Watch Lab 1 video, located under content.  
  • Read lab 1 and do the prelab.  
  • Complete Quiz 1A under Course Tools → Quizzes  
  • Come to class with prelab and ready to take quiz 1B.                                                                                                          |
| Jan 25        | **Lab #1: Measurement Laboratory– Please have entire lab instructions already read. Quiz 1A and the prelab should be completed before arrival.**  
  **Instruction:** Syllabus, Measurements, Significant Figures. Quiz 1B will be given.  
  **Assignment:** Meet in Lehmann Chemistry building Room 106 for room, TA, and lab drawer assignments. Groups 1 and 2 are assigned for the next two labs.  
  Complete measurement laboratory and perform all calculations and graphs.  
  Evaluate data, discuss findings, and provide a written summary and conclusion of your results.  
  Turn in Laboratory Report before or on due date. Where? Either to the instructor before leaving lab or in box outside Bush Building room 110.  
  **Due Tuesday, Jan 30, by 2:00 pm.**                                                                                                                                |
| Feb 1 GROUP 1 | **Lab #2: Density Laboratory– watch the Lab 2 video, read lab, complete prelab and Quiz 2A before coming to lab.**  
  **Instruction:** Density, graphing, and calculations. Quiz 2B will be given.  
  **Assignment:** Complete density laboratory and perform all calculations.  
  Graph data appropriately. Evaluate data, discuss findings, and provide a written summary and conclusion of your results.  
  Turn in Laboratory Report before or on due date Tuesday: Feb 6 for Group 1, and Feb 13 for Group 2.                                                                     |
| Feb 8 GROUP 2 |                                                                                                                                                                                                                                   |
| Feb 15 GROUP 1| **Lab #3: Concentration and Dilution Laboratory – watch the Lab 3 video, read lab, complete prelab and Quiz 3A before coming to lab.**  
  **Instruction:** Concentration units, dilution and solution calculations, how to make a solution, information about spectrophotometers. Quiz 3B will be given.  
  **Assignment:** Complete concentration and dilution lab  
  **Due Tuesday: Feb 20 for Group 1, Feb 27 for Group 2.**                                                                                                               |
| Feb 22 GROUP 2|                                                                                                                                                                                                                                   |
| Feb 29 ALL STUDENTS | **Lab #4: Chemical Reactions ALL STUDENTS – watch video, read lab, complete prelab and Quiz 4A before coming to lab**  
  **Instruction:** Types of chemical equations, balancing chemical equations. Read syllabus about empirical and quantitative skills. *Chemical Equations homework assignment given. Due with the Prelab 5 (in 3 weeks)*  
  There is no Quiz B since there are no calculations.  
  **Assignment:** Carry out assigned chemical reaction in lab  
  **Due Tuesday: March 5.**                                                                                                                                       |
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<tr>
<th>Date</th>
<th>Activity</th>
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<tr>
<td>Mar 7</td>
<td>Midterm Exam (10% of your grade) – Bring Calculator and ruler. Covers Labs 1-4 + Safety. See study guide provided under Content on your D2L page.</td>
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<tr>
<td>Mar 21</td>
<td>Lab #5: Acid-Base Titration – watch video, read lab, complete prelab and Quiz 5A before coming to lab. Turn in Balancing Equations worksheet. Instruction: Review of chemical concepts needed for titration, empirical/quantitative skills, emphasize good communication among group members to accomplish task, analyze data so conclusion(s) can be made. Demonstrate how to perform titrations. Assignment: Perform titration using NaOH and HCl with indicator to determine endpoint quantitatively. Have each team member take turns on performing the titrations. Due Tuesday: Mar 26.</td>
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<td>March 28</td>
<td>Easter Holiday</td>
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<td>Apr 4</td>
<td>Lab #6: Titration II: Antacid Titration – watch video, read lab, complete pre-lab and Quiz 6A before coming to lab. Instruction: Stomach acid and calcium carbonate reaction. Calculating amounts of HCl neutralized by CaCO3 and NaOH in the titration. Quiz 6B will be given. Assignment: Perform simple titrations using pH indicator to determine endpoint qualitatively. Use data to perform titration calculations. Due Tuesday: Apr 9</td>
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<td>Apr 11</td>
<td>Lab #7: Titration III: Comparison of Name Brand and Generic – watch video, read lab, complete pre-lab and Quiz 7A before coming to lab. Instruction: Expectations of graph and evaluation. % active ingredient calculations. Assignment: Perform titration using generic brand and name brand antacids. Calculate % active ingredient and evaluate effectiveness. Due Tuesday: Apr 16</td>
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<tr>
<td>Apr 18</td>
<td>Lab #8: Buffers and pH – no prelab, but still need to watch video, read the lab, take Quiz 8A before coming to lab. Instruction: Acids/Bases, pH, Buffers, and checkout instructions. Take Quiz 8B. Assignment: Determine which sample acts as a buffer; Compare reaction rate of O₂ production at different pH/buffers. Check out of lab drawer before leaving. Due Tuesday: Apr 23</td>
</tr>
<tr>
<td>Apr 25</td>
<td>Laboratory Final (10% of grade) – covers titration labs, buffer lab, and a few older review problems. Please see the study guide. Bring a calculator.</td>
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<tr>
<td>Chem106</td>
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