

# CHEM 1406, INTRODUCTORY CHEMISTRY, SPRING 2020

## TTh Sections 007 and 009

**INSTRUCTOR: DR. HARMAN; [jharman@southplainscollege.edu](mailto:jharman@southplainscollege.edu); Levelland Campus, Science building room 114; 716-2327. If I am in my office, you are welcome to come in and talk with me at any time. My SCHEDULED OFFICE HOURS are:**

<b>MONDAY AND WEDNESDAY</b>	<b>1:00 PM – 2:30 PM.</b>
<b>TUESDAY AND THURSDAY</b>	<b>10:00 AM– 11:00 AM.</b>
<b>FRIDAY</b>	<b>9:30 AM-12:30 PM.</b>

- **TEXT:** Chemistry - An introduction to General, Organic, and Biological Chemistry. Karen Timberlake (13<sup>th</sup> Ed.). Lab Manual: Chemistry 1406.
- **REQUIRED MATERIALS.** The textbook and laboratory manual. A simple four-function calculator or scientific calculator, not a graphing calculator. You may not use your cell phone as a calculator during exams. The text comes with supplementary material (Mastering Chemistry) that you will find useful. Goggles (available at the bookstore) must be worn in the laboratory when we are working with chemicals – own a pair and have them with you when attending the lab.

**COURSE DESCRIPTION and PURPOSE.** This course is introductory to the principles and applications of inorganic chemistry, organic chemistry and biochemistry. The course fulfills the chemistry requirements for allied health professionals and the chemistry prerequisite for anatomy and physiology. (THIS COURSE IS NOT A SUBSTITUTE FOR CHEM 1411).

**COURSE OBJECTIVES.** CHEM 1406 provides basic chemical knowledge for people living in a world of advancing technology, an understanding of the basic chemical nature of our world, and a laboratory experience designed to enhance their appreciation of science and of the role of the clinical laboratory in the hospital.

**CLASS ATTENDANCE and PARTICIPATION.** Lecture and laboratory attendance is mandatory. You may accumulate 5 unexcused absences throughout the semester. If you miss 6 lectures you will be dropped from the course. If you miss 3 consecutive lectures you will be dropped from the course. Class participation in and of itself is not a grade requirement, however, you are encouraged to ask questions during class.

**CHEATING.** Students are expected to do their own work on all quizzes, laboratory assignments, examinations. Failure to comply with this policy will result in a zero for the assignment. Cheating violations include, but are not limited to, the following:

1. Obtaining an examination by stealing or collusion;
2. Discovering the content of an examination before it is given;
3. Using an unauthorized source of information (notes, textbook, text messaging, internet, apps) during an exam;
4. Entering an office or building to obtain unfair advantage;
5. Taking an examination for another;
6. Copying another's work during an examination or quiz;
7. Taking pictures of a test, test answers, or someone else's paper.

**STUDENT CODE OF CONDUCT POLICY.** Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, aggressive, or demeaning. Student conduct that disrupts the learning process or is deemed disrespectful or threatening will not be tolerated and may lead to disciplinary action and/or removal from class.

**DIVERSITY STATEMENT.** In this class, the teacher supports an environment that values individual and group differences and encourages interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others and about ourselves.

**DISABILITY STATEMENT.** Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577.

**NONDISCRIMINATION POLICY.** South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The Vice President for Student Affairs (South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336, 806-716-2360) has been designated to handle inquiries regarding the non-discrimination policies.

**TITLE IX PREGNANCY ACCOMMODATION.** If you are pregnant, or have given birth within the last six months, you have a right to reasonable accommodations to help continue your education. To activate accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact the Director of Health and Wellness at 806-716-2362 or [email cgilster@southplainscollege.edu](mailto:cgilster@southplainscollege.edu) for assistance.

**METHODS OF EVALUATION.** Grades will be assigned on the following basis: 89-100 A, 77-88 B, 62-76 C, 50-61 D, < 50 F.

Students will be evaluated by means of weekly quizzes, lecture tests and performance in the laboratory. There will be three hour-exams and one final exam. Each hour exam will cover  $\sim\frac{1}{4}$ th of the class material. The final will be semi-comprehensive covering the final  $\sim\frac{1}{4}$ th of class material and include questions from material presented earlier in the semester. Each exam will be in a multiple-choice format. Each hour exam will make up 15% of your grade; the final will make up 25% of your grade. The remaining 30% of your grade will be determined from your performance on in-class quizzes and in the laboratory. There will be no make-up labs. If you find that you cannot sit an exam for a valid reason you must let me know as soon as possible before the exam to arrange an exam make-up time. If you do not sit the exam without having first contacted me, you will receive a zero for that exam with no opportunity for make-up. It is imperative that you keep up with the material throughout the course of the semester and communicate with me in the event that something out of the ordinary happens.

## Exam Schedule

EXAM 1. February 13	(Ch 1, 2, 3 and 4)	Semi-cumulative Final:
EXAM 2. March 13	(Ch 4, 6, 7)	Section 007, May 5, 10:15 AM – 12:15 PM
EXAM 3. April 15	(Ch 8, 9, 10)	Section 009, May 5, 1:00 PM – 3:00 PM
(April 23, Last day to drop)		

# Semester Schedule

January 13	Chapters 1/2	Measurements
January 20	Chapters 2/3	Energy and Matter
January 27	Chapters 3/4	Atoms and Elements
February 3		
February 10	Chapter 6	Ionic and Molecular Compounds
February 17		
February 24	Chapter 7	Chemical Quantities and Reactions
March 2		
March 9	Chapter 8	Gases SPRING BREAK
March 16		
March 23		
March 30	Chapter 9	Solutions
April 6	Chapter 10	Acids and Bases and Equilibrium
April 13		
April 20		
April 27	Chapter 11	Introduction to Organic Chemistry
May 4		

The text is “Chemistry - An introduction to General, Organic, and Biological Chemistry. Karen Timberlake (13<sup>th</sup> Ed.)”. You can purchase this from the bookstore. It is sold as a bundle with a program access code for Mastering Chemistry. The bundle is priced at \$200 new or \$150 used (with an unused access code for Mastering Chemistry). Do I think that you need a textbook? Yes. Can you pass the class without one? Maybe, but I don’t recommend you attempt it. You may use an earlier edition of the text (12<sup>th</sup> or 11<sup>th</sup>). However, an earlier edition will not come with an access code for Mastering Chemistry. So, you will need to be disciplined and work the problems at the end of each chapter.

Mastering Chemistry is an online problem-solving program that comes with the bookstore bundle or may be purchased online from Pearson. Mastering Chemistry costs about \$70 when purchased online and includes the e-book version of the text. I use Mastering Chemistry throughout the semester as the only opportunity for students to earn extra credit points added to their exam scores. Points earned range from 0 to 5 depending the percentage of correct answers scored in Mastering Chemistry. I don’t require that students use Mastering Chemistry. I do, however, recommend that students take the time to work the problems I assign throughout the semester. The choice is yours.

# CHEM1406 Laboratory Schedule.

Week 1.	January	14 16	Introduction to the syllabus. Mastering Chemistry and Laboratory safety.
Week 2.	January	21 23	Quiz 1. Experiment 2. Measurements.
Week 3.	January	28 30	Quiz 2 Experiment 3. Density.
Week 4.	February	04 06	Quiz 3 Exam Review.
Week 5.	February	11 13	No quiz. LECTURE EXAM I.
Week 6.	February	18 20	Quiz 4 Experiment 5. Atoms and Molecules.
Week 7.	February	25 27	Quiz 5 Experiment 6. VSEPR.
Week 8.	March	03 05	Quiz 6 Exam Review.
Week 9.	March	10 12	Quiz 7 LECTURE EXAM II.
Week 10.	March	17 19	SPRING BREAK SPRING BREAK
Week 11.	March	24 26	No quiz. Experiment 14. Chemical Reactions. Experiment 9. Boyle's Law.
Week 12.	March April	31 02	Quiz 8 No Lab. Experiment 10. Solutions.
Week 13.	April	07 09	Quiz 9 Exam Review.
Week 14.	April	14 16	No quiz. LECTURE EXAM III.
Week 15.	April	21 23	No quiz. Experiment 11. Acidity of Solutions.
Week 16.	April	28 30	Quiz 10 Experiment 13. Organic Models.
FINALS	May	05	Section 007, 10:15 AM – 12:15 PM Section 009, 1:00 PM – 3:00 PM

## LABORATORY SAFETY

Eye protection is required at all times that you are in the lab. No food or drink is to be taken into the lab. In any chemical laboratory there are chemicals and equipment which, if not properly used, can harm you. It should be everyone's objective to see that no harm comes to anyone in the lab. However, if there is an accident you must know what to do to render aid.

Avoid accidents.

- **Read your lab and have the procedure in your mind before coming to the lab. If you don't know what you are doing, you are dangerous.**
- **Be aware of precautions given in the lab manual and pay attention to directions given by the instructor.**
- **Wear safety glasses or goggles when glassware or heat is being used in the lab. Your eyes can be destroyed by chemicals or flying particles.**
- **Lab aprons are recommended. They protect your clothing and body. Know the location of safety equipment in the lab and how to use it.**

Safety Shower  
Eye wash Station  
Fire Blanket  
Fire Extinguishers  
Emergency Exits

- **Do not place books, coats, etc. on the lab bench or where someone may trip on them.**
- **Keep all walkways clear.**

The two most common injuries in the lab are burns and cuts from broken glass. Glass and metal look the same whether they are hot or cold. Before touching anything that may have recently been heated, sense for heat with the back of your hand.

- **Dress for Safety**  
Long hair should be tied back to avoid catching it on fire and getting it into chemicals. Rings and other jewelry should be removed to avoid getting chemicals trapped under it.  
Avoid loose fitting clothing and loose sleeves.  
No bare feet in the lab. Wear shoes that cover the toes. (preferably leather)  
Wear clothing which if splattered by acid would not be a great loss to you.

### 1. Laboratory Regulations

- **Do only those exercises that are authorized. Follow the directions exactly.**
- **Never work unsupervised in a chemical laboratory.**
- **For this course, WASTE WATER solutions are poured down the drain unless otherwise directed.**
- **Liquids that are insoluble in water are to be poured into the waste liquid containers located in the hood.**
- **Solid waste is to be disposed in the lined waste containers at the end of the lab table. NO SOLID WASTE goes in the drain.**
- **Broken glass goes in the Broken Glass Box.**
- **Keep your work area clean at all times.**
- **Before leaving the lab be certain that water and gas are turned off.**

### 2. Handling chemicals.

- **Never return any chemical to the reagent bottle. All used chemical is to be either used (by yourself or another group) or disposed in the prescribed safe manner.**
- **Always replace the lid immediately after use. This avoids switching lids and**

**contaminating the chemicals.**

- **Before using any chemical read the label three (3) times. (When you remove it from the shelf just before you open the lid, and just after you have removed the chemical.) Be certain that it is the correct chemical with the correct concentration.**

### **3. When working with liquid chemicals:**

- **Do not insert anything into the bottle unless it is supplied as part of the chemical setup. (e.g. a dropper set in the tube beside the bottle.)**
- **Pour approximately the amount you will need into a beaker then use your dropper, pipette or graduated cylinder to measure the amount required from the beaker**
- **When pouring, handle the cap appropriately and pour so that the label is toward your hand and you are pouring away from the label.**
  1. **If the bottle has a screw cap or rubber stopper, lay the stopper upside down on the counter top while removing chemical from the bottle. Always replace the lid immediately after you remove chemical from the bottle**
  2. **If the bottle has a coin top stopper, the stopper is removed by turning the back of your hand towards the bottle, nipping the stopper between two fingers and pulling the stopper. The stopper is kept between the two fingers, pointing away from the hand, until you replace it after removing the chemical.**
  3. **Never pour water into concentrated acid (do like you otta', add acid to wotta')**
  4. **When heating liquid (a) do not stopper, (b) do not point test tube towards anyone, (c) Use boiling chips in flasks.**

### **4. When working with solid chemicals**

- **Do not insert spoons or spatulas into the reagent unless it is one supplied with that reagent**
- **When weighing a reagent, take out on a weighing sheet approximately the amount you will need Tare another weighing sheet. Add to the tared weighing sheet the needed amount of chemical. Discard any unused chemical. Clean up any spilled chemical.**

### **5. In Case of Accident**

- **Burn: Wash area in cold water. Report to instructor.**
- **Fire:**
  1. **Turn burner or other source of fuel off.**
  2. **If a small fire in beaker or on desk top, extinguish by smothering with towel, lab apron, book, etc.**
  3. **If a large fire, warn the class and if extinguish with fire blanket or fire extinguisher.**
  4. **Clothing or hair fire: Extinguish with fire blanket or safety shower.**
  5. **Spilled chemical; Inform instructor and clean up as directed by instructor.**
- **Chemical contamination of skin:**
  1. **Small amounts on hands or arms, legs, etc. wash with copious amounts of water. Inform instructor.**
  2. **Large amounts on body and clothing: Use safety shower for at least 15 min., remove contaminated clothing immediately. Inform instructor.**
  3. **Chemical in eyes: Wash with water for at least 15 min. Inform instructor.**
- **Cuts: Clean with soap and water. Inform instructor.**