

# CHEM 1406, INTRODUCTORY CHEMISTRY, SPRING 2019

## M/W Sections 002 and 005

**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:**

**M 1:00 – 2:30 PM. IN LEVELLAND, SCIENCE BLDG. ROOM 114.  
T 5:00 – 6:00 PM. AT REESE, BLDG. 8 ROOM 830B.  
W 1:00 – 2:30 PM. IN LEVELLAND, SCIENCE BLDG. ROOM 114.  
Th 5:00 – 6:00 PM. AT REESE, BLDG. 8 ROOM 830B.  
F 9:30 AM-1:30 PM. IN LEVELLAND, SCIENCE BLDG. ROOM 114.**

- **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, you are encouraged to ask questions during class.**

**CHEATING AND CLASSROOM ETIQUITE. Cheating will not be tolerated. Turn your cell phone off before you enter the classroom for lecture. Lap-top computers are not allowed.**

**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, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611. IF YOU ARE PREGNANT, or have given birth within six months, Under Title IX 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 Crystal Gilster, Director of Health and Wellness at 806-716-2362.**

**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 (determined by me) you must let me know as soon as possible before the exam. If you do not sit the exam without having first contacted me, you will be scored 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.

There is a lot of chemistry to cover in the next 16 weeks. Come prepared to learn and put aside your unfounded concerns about chemistry. You will be amazed how doable this can be if you approach it with the right mind-set. Succeeding in Chem 1406 will allow you to move on to the things you most enjoy in your studies with a chemistry background that allows you to gain the most in those areas.

## Semester Schedule

Week of:	Projected coverage of material (+/-)	
January 14	Chapters 1/2	Measurements
January 21	Chapters 2/3	Energy and Matter
January 28	Chapters 3/4	Atoms and Elements
February 4		
February 11	Chapter 6	Ionic and Molecular Compounds
February 18	Chapter 7	Chemical Quantities and Reactions
February 25		
March 4		
March 11	SPRING BREAK	
March 18	Chapter 8	Gases
March 25	Chapter 9	Solutions
April 1		
April 8		
April 15	Chapter 10	Acids and Bases and Equilibrium
April 22	Chapter 11	Introduction to Organic Chemistry
April 29		
May 6	EXAMS	

## Exam Schedule

EXAM 1. February 11	(Ch 1, 2, 3 and 4)	Semi-cumulative Final:
EXAM 2. March 20	(Ch 4, 6, 7)	Section 002, May 6, 10:15 AM – 12:15 PM
EXAM 3. April 17	(Ch 8, 9, 10)	Section 005, May 8, 8:00 AM – 10:00 AM
(April 25, Last day to drop)		

# CHEM1406 Laboratory Schedule.

Week 1.	January	16	Mastering Chemistry and Laboratory Safety.
Week 2.	January	21 23	MLK day, no class, Quiz 1 posted on Blackboard. 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	LECTURE EXAM I; No quiz. No Lab.
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	04 06	Quiz 6 No Lab.
Week 9.	March	11 13	Spring Break Spring Break
Week 10.	March	18 20	Experiment 14. Chemical Reactions. LECTURE EXAM II. No Lab.
Week 11.	March	25 27	Quiz 7 Experiment 9. Boyle's Law.
Week 12.	April	01 03	Quiz 8 Experiment 10. Solutions.
Week 13.	April	08 10	Quiz 9 Exam Review, No Lab.
Week 14.	April	15 17	Quiz 10 LECTURE EXAM III; No Lab.
Week 15.	April	22 24	No Class Quiz 11 posted on Blackboard. Experiment 11. Acidity of Solutions.
Week 16.	April May	29 01	Quiz 12 Experiment 13. Organic Models.
FINALS	May	06 08	Section 005, May 6, 1:00 PM – 3:00 PM Section 002, May 8, 8:00 AM – 10:00 AM

## 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.**