

**CHEM 1406**  
**SYLLABUS HIGHLIGHTS**  
Full syllabus available on Blackboard  
**SUBJECT TO CHANGE! Changes will be announced as we go along.**

- Can NOT be substituted for CHEM 1411. Recommended course for students preparing for education, nursing and other allied health fields (NOT pre-professional fields).
- **Instructor:** Katheryn Townsend, Office S115, 716-2310, email: ktownsend@southplainscollege.edu
- **Materials:**
  - **To purchase:**
    - **Textbook – HIGHLY RECOMMENDED**, Chemistry – An Introduction to General, Organic, and Biological Chemistry by Timberlake, 12<sup>th</sup> Edition, obtained from bookstore
    - **Lab Manual – REQUIRED, CHEM 1406**, obtained from bookstore
    - **Safety Goggles – REQUIRED**, obtained from bookstore
    - **Calculator – REQUIRED**, must be scientific, **CELL PHONES NOT ALLOWED**
    - **Scantrons – REQUIRED, Apperson form 29240**, will need 5 or 6 total
    - **Will need extra materials to prepare a posterboard**
  - **To print from Blackboard:**
    - **Power Point Notes** – Optional but highly recommended
    - **In-Class Worksheets – REQUIRED**
    - **Practice Problems** – Optional but highly recommended
    - **Pre-Lab Exercises – REQUIRED**
    - **Periodic Table – REQUIRED**
- **Four Major Exams**
  - SCANTRON is required, available at the bookstore, Apperson Form 29240
  - NO MAKEUPS
  - All Multiple Choice questions
  - Each Exam is worth 100 points with the possibility of bonus points
  - Calculators will have their memory cleared and proof of memory clearing must be shown to the instructor before the Exam can be started
  - Cheating
    - If a student is caught cheating (see the full definition of cheating in the SPC catalog under Academic Integrity) on any of the Major Exams they will receive a 0 for that Exam **AND** be required to take the Final Exam regardless of absences or average. In the case of cheating, the Final Exam will NOT replace any Exam score.
- **Comprehensive Final Exam**
  - Possible Exemption
    - If you have 0 or 1 absence **OR** an 'A' average, then you may opt-out of the Final Exam. If you have 2 or more absences and less than an 'A' average, then the Final Exam is required of you.
  - Replacement Option
    - If the final exam is taken it can replace the lowest exam score (In this option the Final Exam ends up counting twice)
  - 50 Multiple Choice questions, 100points with the possibility of bonus points
  - Scantron is required, available at the bookstore

- **Notecard**
  - A small 3x5 notecard will be allowed on Exams 2, 3, 4, and the Final Exam. Both sides of the notecard may be used; it may be handwritten or typed. The notecard may contain formulas, definitions, and constants or any other information allowed by the instructor as announced in class but CANNOT contain any worked examples from class notes, in-class worksheets, practice problems or any example problems found in outside resources.
  - For each unauthorized example written on the notecard, points will be deducted from the Exam. The number of points deducted will be determined by the number of questions on the exam and the amount of unauthorized material on the notecard. Any unauthorized material on the notecard is classified as cheating, therefore the cheating policies in this syllabus will also be followed.
  
- **Pre-Lab Exercises, Lab Worksheets, Experiments**
  - **A student will NOT be able to enter the lab without the proper attire (closed toed shoes, long pants, shirts with sleeves, long hair pulled back, and safety goggles). A student that is not dressed appropriately for lab will not be able to perform the experiment and therefore will receive a 0 for that Lab Worksheet.**
  - Pre-Lab Exercises
    - Must be **TYPED on the form provided** on Blackboard and turned in **BEFORE** the Experiment can be done
    - Each Pre-Lab Exercise is worth 50 points.
  - Lab Worksheet
    - Each Lab Worksheet must be filled out during the Experiment and turned in before the student leaves the lab
    - Each lab group will turn in 1 Lab Worksheet with all group members name on it, all members will receive the same grade
    - Each Lab Worksheet is worth 50 points.
  - Experiments
    - The Pre-Lab Exercise plus the Lab Worksheet is what makes up the student's grade for that Experiment.
    - A missed Lab results in a **0** for the Lab Worksheet.
    - Make-Ups for missed Lab Experiments are **NOT** allowed.
  - Lowest Lab Grade Dropped
    - At the end of the semester the Instructor will automatically drop the lowest Lab Grade for each student.
  
- **Poster Board Project**
  - There will be a Poster Board Project due towards the end of the semester (exact date is determined by the instructor).
  - All supplies for the poster must be provided by the student. It may be as simple/basic or as detailed and complex as the student wishes.
  - Topic for the poster board may be any topic that was covered in lecture or lab during the semester.
  - More details will be provided towards the end of the semester.
  
- **Cell Phone and Laptop Computer Policy**
  - Cell Phones and Laptops may be taken up and kept during lecture and lab if they are a distraction to the student, the instructor or the class
  - The only exceptions will be due to Special Services recommendations and those will be handled on an individual student to student basis OR when authorized by the instructor during class.
  
- **Attendance**
  - 4 absences max and I drop you with an 'F'
  - Last Day to Drop is \_\_\_\_\_

- **Grading:**
  - Exams are 70%
  - Lab are 30%
- **Diversity Statement:** In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.
- **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, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.
- **Note to students with disabilities:** If you have a disability-related need for reasonable academic adjustments in this course, you must provide the instructor with a letter of accommodation from the Disability Services Office. If you need immediate accommodations or physical access, please arrange to meet with the Disability Services Office before the next class meeting.

CHEMISTRY 1406 (4:3:3)

INTRODUCTORY CHEMISTRY I

INSTRUCTIONAL AREA: CHEMISTRY

DEPARTMENT: SCIENCE

DIVISION: ARTS AND SCIENCES

SOUTH PLAINS COLLEGE

SPRING 2018

INSTRUCTOR: K. TOWNSEND

## Course Description

CHEM 1406: (4:3:3) Survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. Designed for allied health students and for students who are not science majors. Basic laboratory experiments supporting theoretical principles presented in lecture; introduction of the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports. This course may not be substituted for CHEM 1411. Semester Hours: 4 Lecture Hours: 3 Lab Hours: 3 Note: This course may **not** be substituted for CHEM 1411.

## Instructor:

Katheryn Townsend

Office: S115, Science building

Phone: 716-2310

Email: ktownsend@southplainscollege.edu

Office Hours:   MTWR     8:30 – 9:30AM  
                  MW        3:45 – 4:15PM  
                  FRI        9:00AM – 12:00PM  
                  ALSO BY APPOINTMENT

## Tutor:

Room S121

## Textbook:

### **HIGHLY RECOMMENDED**

Available at the Bookstore

Chemistry: An Introduction to General, Organic, & Biological Chemistry  
by Timberlake, 12<sup>th</sup> Edition

## Lab Manual:

### **REQUIRED**

CHEM 1406, Intro. to Chemistry

Lab manual is available for purchase only at the Levelland bookstore.

## Safety Goggles:

### **REQUIRED**

You must have your own safety glasses for wear in the laboratory, NO EXCEPTIONS. They may be purchased at the SPC bookstore or borrowed from the instructor.

Calculator:

**REQUIRED**

You will need a scientific calculator for this course. An inexpensive model will be just fine. You are responsible for learning how to use your calculator. Cell phones **CAN NOT** be used for calculators. Calculators WILL be cleared before an Exam can be taken! It is the student's responsibility to know how to clear the calculator's memory.

Scantrons:

**5 or 6 REQUIRED**

Apperson form 29240

Available at the Bookstore

Power Point Notes:

**OPTIONAL, BUT HIGHLY RECOMMENDED**

To be printed off Blackboard

In-Class Chapter Worksheets:

**REQUIRED**

These are worksheets that we work in groups in class. They must be printed off Blackboard.

Practice Problems:

**OPTIONAL, BUT RECOMMENDED**

These are problems that I have designed for further practice and study before every exam. Practice Problems can be turned in finished at the time of each exam and the student will receive 5 bonus points. These practice problems will **only** be accepted at the time of the test. They are available to print off Blackboard.

Pre-Lab Exercises:

**REQUIRED**

To be obtained from Blackboard

These Pre-Lab Exercises must be TYPED on the form provided on Blackboard and turned in BEFORE the Experiment can be performed. No make-ups will be allowed for the Pre-Lab Exercise. Each Pre-Lab Exercise is worth 50 points.

#### Lab Worksheets:

##### **REQUIRED**

Provided by Instructor at Lab

These worksheets will be completed in groups during the lab time and turned in before the student leaves. Every member of the group will put their name on the worksheet and all members will receive the same grade.

#### Labs/Experiments:

You will perform a series of experiments and exercises in the lab, which are designed to reinforce the classroom material and give you hands-on experience of a chemical nature. A missed lab CANNOT be made up. Pre-Lab Exercises must be completed and turned in before a student starts an Experiment. If a student is absent the day of the Experiment that student will receive a 0 for the Pre-Lab Exercise and the Lab Worksheet. The student is still responsible for collecting any material that was given during the Experiment in order to be prepared for questions on the Exam that come from the Experiments. At the end of the semester the Instructor will automatically drop the lowest lab grade for the student. **A student will NOT be able to enter the lab without the proper attire (closed toed shoes, long pants, shirts with sleeves, long hair pulled back, and safety goggles). A student that is not dressed appropriately for lab will not be able to perform the experiment and therefore will receive a 0 for that Lab Worksheet.**

#### Poster Board Project:

##### **REQUIRED**

A poster board project will be due towards the end of the semester with the exact date being determined by the instructor. The materials needed for poster board must be provided by the student and not the instructor of the course. The topic of the poster board may be any topic that was covered in lecture or lab during the semester. More details may be provided by the instructor in class.

#### Periodic Table:

##### **REQUIRED**

One is available for print from Blackboard

### Cell Phones/Laptop Computers:

Cell phones and Laptop Computers **CAN NOT** be used in Lecture or Lab unless authorized by the instructor. Cell phones **CAN NOT** be used for calculators. If you are caught using your cell phone during class or if the phone continuously rings during class the cell phone will be confiscated. Cell phones and Laptops **MUST NOT** be out on the desk or in your hands during class or lab, otherwise they may be taken up. If a cell phone or Laptop is confiscated it will be kept during Lecture and Lab. The only exceptions to this will be in the case of a Special Services recommendation, which will be handled on an individual student basis OR when authorized by the instructor during class.

### Major Exams:

There will be four major exams. Each exam is worth 100 points, with possibility of bonus points. Questions will be based on the material covered in class and lab. A missed exam will receive a score of zero. There will be **NO** make-ups. Each Major Exam will contain a portion of new material and a portion of comprehensive material. Reminder: Practice Problems can be turned in at the time of the major exam for 5 bonus points. Scantrons will be needed for the Exams. Calculators will have to have their memory cleared and proof shown to the instructor before the student can start the Exam. The student is responsible for knowing how to clear their calculator's memory.

### Final Exam:

The final exam is comprehensive and is worth 100 points. The final must be taken on the scheduled day. **NO** make up is available for the final since it is scheduled at the very end of the term. Extenuating circumstances will be handled on a case-by-case basis.

Possible Exemption – If you have 0 or 1 absence **OR** an 'A' average, then you may opt-out of the Final Exam. If you have 2 or more absences and less than an 'A' average, then the Final Exam is required of you.

Replacement Option – The Final Exam can be taken to replace the lowest exam score. In this option, the final ends up counting twice, by replacing one exam and counting as the final exam itself.

Cheating – If a student is caught cheating (see the full definition of cheating in the SPC catalog under Academic Integrity) on any of the Major



Exams they will receive a 0 for that Exam **AND** be required to take the Final Exam regardless of absences or average. In the case of cheating, the Final Exam will NOT replace any Exam score.

#### Notecards:

A small 3x5 notecard will be allowed on Exams 2, 3, 4, and the Final Exam. Both sides of the notecard may be used; it may be handwritten or typed. The notecard may contain formulas, definitions, and constants or any other information allowed by the instructor as announced in class but **CANNOT** contain any worked examples from class notes, in-class worksheets, practice problems or any example problems found in outside resources.

For each unauthorized example written on the notecard, points will be deducted from the Exam. The number of points deducted will be determined by the number of questions on the exam and the amount of unauthorized material on the notecard. Any unauthorized material on the notecard is classified as cheating, therefore the cheating policies in this syllabus will also be followed.

#### Lectures:

Classroom and laboratory lectures are intended to help you to better understand the subject matter. Lecture topics (classroom and lab) will serve as the basis for exam questions.

#### Attendance:

Class attendance is very important. Make every effort to be present. If you must miss a class or must leave early, please let me know about it **BEFORE** class begins or an unexcused absence will be given. You must attend the **FULL** time of class in order to be considered present. You will be counted absent if you leave during the scheduled class time.

If you are unable to complete this course, you must initiate a withdrawal (W) through the Registrar's Office before **April 26**. If you simply stop attending class without withdrawing, I will administratively drop you for excessive absences, and you will receive a grade of "**F**" at the end of the term, in accordance with policies set forth in the SPC General Catalog.

You are a candidate for an excess absence drop (**F**) if you miss 4 class days **total**, without clearing your absences with me. Two excused

absences equal one unexcused absence and will count towards the 4 excess absences.

Grading Policy:

Exams	70%
Labs	30%

Grades will be assigned on the following basis:

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
< 60	F

**Diversity Statement:** In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

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## **From the Introductory Chemistry I Common Course Syllabus**

### **Core Objectives Addressed:**

- **Communication** – to include effective written, oral and visual communication
- **Critical Thinking Skills** – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Empirical and Quantitative Skills** – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusion.
- **Teamwork Skills** – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

**Course Purpose:** To provide basic chemical knowledge for persons living in a world of technology that is always changing. To provide an understanding of the basic chemical functioning of the human body. To provide the student with a laboratory experience which will enhance their appreciation of the advances of Science and of the role of the Clinical laboratory in the hospital.

### **Course Requirements:**

1. The student should do each of the following:
  - a. Read the assigned chapters in the textbook and laboratory manual.
  - b. Attend all lectures and laboratory classes.
  - c. Take notes in class.
  - d. Participate in class discussions.
  - e. Complete assigned outside reading material and homework.
  - f. View audiovisual materials on selected topics.
  - g. Use the computer software in the lab and/ or classroom as it is assigned.
  - h. Complete the exams on the assigned dates; the exams may include essay questions.
2. For laboratory the student should:
  - a. Complete the prelab assignment before going into lab.
  - b. Read and Comprehend each experiment assigned in the laboratory manual.
  - c. Successfully complete each experiment.
  - d. Learn to use and/or analyze data from instruments or equipment needed to complete the experiments. (e.g. balance, pH meters, volumetric glassware)
  - e. Complete the laboratory reports, including post lab calculations and discussion questions.

**Student Learning Outcomes/Competencies:** Upon completion of the course, the student will show competence in the course objectives listed below:

### **From Lecture:**

1. Convert units of measure and demonstrate dimensional analysis skills

2. Define the fundamental properties of matter and classify matter, compounds, and chemical reactions.
3. Determine the basic nuclear and electronic structure of atoms.
4. Distinguish between ionic and covalent compounds and name the different compounds.
5. Identify trends in chemical and physical properties of the elements using the periodic table.
6. Determine the role of energy in physical and chemical reactions.
7. Use the mole concept to determine the number of atoms, moles, grams, and solve elementary stoichiometry-based calculations.
8. Determine the concentrations of solutions using percentage and molarity designations.
9. Use various characteristics of a solution to identify it as an acid or base.
10. Identify and name various organic compounds.
11. Identify and explain the functions of carbohydrates, lipids, and proteins.

**From Lab:**

1. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
2. Demonstrate safe and proper handling of laboratory equipment and chemicals.
3. Conduct basic laboratory experiments with proper laboratory techniques.
4. Make careful and accurate experimental observations.
5. Relate physical observations and measurements to theoretical principles.
6. Interpret laboratory results and experimental data, and reach logical conclusions.
7. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
8. Design fundamental experiments involving principles of chemistry.
9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

## EXAM OVERVIEW

### Exam 1

Lab Safety

Chapter 1: Matter, Measurements, and Problem Solving

*Learning Objectives Met: Lecture #1, #2*

Chapter 2: Atoms, Molecules, and Ions

*Learning Objectives Met: Lecture #3, #4, #5*

Experiment 1: Introduction to Laboratory Equipment

*Learning Objectives Met: Lecture #1, Lab ALL*

Experiment 2: Measurements

*Learning Objectives Met: Lecture #1, 2, Lab ALL*

Experiment 3: Density

*Learning Objectives Met: Lecture #1, #2, Lab ALL*

Experiment 5: Atoms and Molecules

*Learning Objectives Met: Lecture #4, 5, Lab ALL*

### Exam 2

Chapter 3: Mass Relationships in Chemical Reactions

*Learning Objective Met: Lecture #7*

Chapter 4: Solutions

*Learning Objective Met: Lecture #8*

Experiment 7: Determining the Mole Ratios in a Chemical Reaction

*Learning Objectives Met: Lecture #7, Lab ALL*

Experiment 10: Properties of Solutions: Electrolytes and Non-electrolytes

*Learning Objectives Met: Lecture #9, Lab ALL*

### Exam 3

Chapter 5: Acids and Bases

*Learning Objectives Met: Lecture #9*

Chapter 6: Gases

Chapter 7: Energy

*Learning Objective Met: Lecture #6*

Experiment 9: Boyle's Law

*Learning Objectives Met: Lab ALL*

Experiment 11: Household Acids and Bases

*Learning Objectives Met: Lecture #9, Lab ALL*

Experiment 12: Titration of Household Items

*Learning Objectives Met: Lecture #9, Lab ALL*

### Exam 4

Chapter 8: Introduction to Organic Chemistry: Hydrocarbons

*Learning Objectives Met: Lecture #10*

Chapter 9: Carbohydrates

*Learning Objectives Met: Lecture #11*

Chapter 10: Lipids

*Learning Objectives Met: Lecture #11*

Chapter 11: Proteins

*Learning Objectives Met: Lecture #11*

Experiment 13: Organic Models

*Learning Objectives Met: Lecture #10, Lab ALL*

### Final Exam

Comprehensive

## COURSE SYLLABUS

We will follow this schedule as closely as possible; any changes will be announced as we go along.

Week	Day	Lecture	Lab
1	Tuesday January 16	Introduction	Lab Safety
	Thursday January 18	Chapter 1	
2	23-Jan	Chapter 1	Experiment 1
	25-Jan	Chapter 1	Experiment 2
3	30-Jan	Chapter 1 WS	Experiment 3
	1-Feb	Chapter 2	Chapter 2
4	6-Feb	Chapter 2	Experiment 5
	8-Feb	Chapter 2	Chapter 2WS
5	13-Feb	<b>EXAM 1</b>	
	15-Feb	Chapter 3	Chapter 3
6	20-Feb	Chapter 3	Experiment 7
	22-Feb	<b>NO CLASS</b>	
7	27-Feb	Chapter 4	Chapter 3WS
	1-Mar	Chapter 4	Chapter 4
8	6-Mar	Chapter 4 WS	Experiment 10
	8-Mar	<b>EXAM 2</b>	

★	13-Mar	<b>SPRING BREAK</b>	
	15-Mar		
9	20-Mar	Chapter 5	
	22-Mar	Chapter 5	Experiment 11
10	27-Mar	Chapter 5	Chapter 5WS
	29-Mar	Chapter 6	Experiment 12
11	3-Apr	Chapter 6	Experiment 9
	5-Apr	Chapter 6	Chapter 6 WS
12	10-Apr	Chapter 7	Chapter 7WS
	12-Apr	<b>EXAM 3</b>	
13	17-Apr	Chapter 8	Chapter 8WS/ Exp. 13
	19-Apr	Chapter 9	Chapter 9WS
14	24-Apr	Chapter 10	Chapter 10 WS
	26-Apr	Chapter 11	Chapter 11 WS
15	1-May	<b>EXAM 4</b>	
	3-May	<b>FINAL EXAM REVIEW</b>	
16	8-May Tuesday	<b>FINAL EXAM</b> <b>Section 006: 10:15AM - 12:15PM</b> <b>Section 007: 1:00 - 3:00PM</b> <b>Section 008: 5:30 - 7:30PM</b>	