

CHEM 1411
SYLLABUS HIGHLIGHTS
Full syllabus available on Blackboard
SUBJECT TO CHANGE! Changes will be announced as we go along.

- **PREREQUISITES:** High School Chemistry, CHEM 1301 or equivalent, or instructor approval.
- **Instructor:** Katheryn Townsend, Office S115, 716-2310, email: ktownsend@southplainscollege.edu
- **Materials:**
 - **To purchase:**
 - **Textbook – HIGHLY RECOMMENDED**, Principles of Chemistry by Tro, 3rd Edition
 - **Lab Manual – REQUIRED, CHEM 1411 Lab Manual**, 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
 - **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**
- **Five 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 need to 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 3, 4, 5, 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 is done
 - A Pre-Lab that is not typed will not be accepted!
 - 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 Grades Dropped
 - At the end of the semester the Instructor will automatically drop the two lowest Lab Grades for each student.

- **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%
 - Labs count 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 1411 (4:3:3)

GENERAL CHEMISTRY I

INSTRUCTIONAL AREA: CHEMISTRY

DEPARTMENT: SCIENCE

DIVISION: ARTS AND SCIENCES

SOUTH PLAINS COLLEGE

SPRING 2018

INSTRUCTOR: K. TOWNSEND

Course Description

CHEM 1411: (4:3:3) Fundamental principles of chemistry for majors in the sciences, health sciences, and engineering; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry. 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. Semester Hours: 4 Lecture Hours: 3 Lab Hours: 3 Pre-requisite: MATH 1314 (College Algebra) or equivalent academic preparation; high school chemistry is strongly recommended.

Instructor:

Katheryn Townsend

Office: S115, Science building

Phone: 716-2310

Email: ktownsend@southplainscollege.edu

Office Hours: MWTR 8:30 – 9:30AM

MW 3:45 – 4:15PM

Fri 9:00AM – 12:00PM

Tutor:

Room S121

Textbook:

HIGHLY RECOMMENDED

Available at the Bookstore

Principles of Chemistry, A Molecular Approach, 3rd Edition by Tro

Lab Manual:

REQUIRED

Available at the Bookstore

CHEM 1411 Lab Manual

Safety Goggles:

REQUIRED

Available at the Bookstore

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' memory **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 counter (they are not on the shelves)

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 at the end of each chapter. 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 the day of each exam and the student will receive 5 bonus points. These practice problems will **only** be accepted the day of the exam. 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. A Pre-Lab that is not typed will not be accepted. 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 the experiment is conducted. If a student is absent the day of the Experiment that student will receive a 0 for 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 two lowest lab grades 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.**

Periodic Table:

REQUIRED

One is available for print from Blackboard or you may purchase one if you wish.

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 five 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 3, 4, 5, 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.

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.

From the General Chemistry I Common Course Syllabus

Core Objectives Addressed:

- **Communication skills** - 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 conclusions
- **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: The purpose of the life and physical science component in the core curriculum is to enable the student to understand and apply relationships and theories of the natural sciences. Mastering general chemistry will enable the student to use the fundamentals to analyze, classify, and predict events based on chemical and physical properties.

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: Upon completion of the course, the student will show competence in the course objectives listed below:

From Lecture:

1. Define the fundamental properties of matter.
2. Classify matter, compounds, and chemical reactions.
3. Determine the basic nuclear and electronic structure of atoms.
4. Identify trends in chemical and physical properties of the elements using the Periodic Table.
5. Describe the bonding in and the shape of simple molecules and ions.

6. Solve stoichiometric problems.
7. Write chemical formulas.
8. Write and balance equations.
9. Use the rules of nomenclature to name chemical compounds.
10. Define the types and characteristics of chemical reactions.
11. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.
12. Determine the role of energy in physical changes and chemical reactions.
13. Convert units of measure and demonstrate dimensional analysis skills

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: Chemistry: The Study of Change

Learning Objective Met: Lecture #1,#2, #13

Chapter 2: Atoms, Molecules, and Ions

Learning Objective Met: Lecture #2, #3, #5, #7, #9

Experiment 1: Introduction to Lab Equipment

Learning Objectives Met: all Lab LOs

Experiment 2: Measurements

Learning Objectives Met: Lecture #1, #13, all Lab LOs

Experiment 3: Density

Learning Objectives Met: Lecture #1, #13, all Lab LOs

Experiment 4: Atoms and Molecules

Learning Objectives Met: Lecture #3, #9, all Lab LOs

Exam 2

Chapter 3: Mass Relationships in Chemical Reactions

Learning Objective Met: Lecture #6, #7, #8, #10

Chapter 4: Reactions in Aqueous Solution

Learning Objective Met: Lecture #7, #8, #10, #12

Experiment 5: Determining the Mole Ratios in a Chemical Reaction

Learning Objectives Met: Lecture #7, #8, #12, all Lab LOs

Experiment 6: Hydrates

Learning Objectives Met: Lecture #2, #7, #12, all Lab LOs

Lab Worksheet 2: Precipitation Reactions

Learning Objectives Met: Lecture #7, #8, #9, #10, all Lab LOs

Experiment 8: Determine the Molar Mass by Titration

Learning Objectives Met: Lecture #6, #7, #8, all Lab LOs

Exam 3

Chapter 5: Gases

Learning Objective Met: Lecture #11

Chapter 6: Thermochemistry

Learning Objective Met: Lecture #10, #12

Experiment 9: Boyle's Law: Pressure-Volume Relationships in Gases

Learning Objectives Met: Lecture #11, all Lab LOs

Experiment 10: Calorimetry of Metals

Learning Objectives Met: Lecture #12, all Lab LOs

Experiment 11: Exothermic and Endothermic Reactions

Learning Objectives Met: Lecture #12, all Lab LOs

Exam 4

Chapter 7: Quantum Theory and the Electronic Structure of Atoms

Learning Objective Met: Lecture #3, #5

Chapter 8: Periodic Relationships Among the Elements

Learning Objective Met: Lecture #4

Exam 5

Chapter 9: Chemical Bonding I: Basic Concepts

Learning Objective Met: Lecture #5

Chapter 10: Chemical Bonding II: Molecular Geometry and Hybridization of Atomic Orbitals

Learning Objective Met: Lecture #5

Experiment 13: Models (VSEPR)

Learning Objective Met: Lecture #3, all Lab LOs

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	First Hour	Second Hour
1	Monday January 15	NO SCHOOL - MLK HOLIDAY	
	Wednesday January 17	Introduction	Lab Safety
2	22-Jan	Chapter 1	Chapter 1
	24-Jan	Chapter 1/ 1WS	Experiment 1
3	29-Jan	Chapter 2	Experiment 2
	31-Jan	Chapter 2	Experiment 3
4	5-Feb	Chapter 2	Chpt 2 WS/ Exp 4
	7-Feb	EXAM 1	
5	12-Feb	Chapter 3	Chapter 3
	14-Feb	Chapter 3	Experiment 6
6	19-Feb	Chapter 3	Chapter 3 WS
	21-Feb	Chapter 4	Experiment Lab WS2
7	26-Feb	Chapter 4	Chapter 4
	28-Feb	Chapter 4	Chapter 4
8	5-Mar	Chapter 4WS	Experiment 8
	7-Mar	EXAM 2	
★	12-Mar	NO SCHOOL	
	14-Mar	SPRING BREAK	
9	19-Mar	Chapter 5	Chapter 5

	21-Mar	Chapter 5	Experiment 9
10	26-Mar	Chapter 6	Chapter 5WS
	28-Mar	Chapter 6	Chapter 6
11	2-Apr	NO SCHOOL - EASTER BREAK	
	4-Apr	Chapter 6WS	Experiment 10
12	9-Apr	EXAM 3	
	11-Apr	Chapter 7	Chapter 7
13	16-Apr	Chapter 7	Chapter 7 WS
	18-Apr	Chapter 8	Chapter 8/8WS
14	23-Apr	EXAM 4	
	25-Apr	Chapters 9 & 10	Chapters 9/10 WS
15	30-Apr	EXAM 5	
	2-May	FINAL EXAM REVIEW	
	Monday 7-May	FINAL EXAM Section 002: 10:15am - 12:15pm Section 004: 1:00 - 3:00pm	