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:** Dr. Laci Alexander, Office S116, 716-2322, email: lalexander@southplainscollege.edu

- **Materials:**
  - **To purchase:**
    - **Textbook** – **Recommended**, Chemistry – An Introduction to General, Organic, and Biological Chemistry by Timberlake, 13th 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,** will need 5 or 6 total
    - **May need extra materials to prepare for mini lessons/labs/demonstrations etc.**
  - **To print from Blackboard:**
    - **Power Point Notes –** Optional but highly recommended
    - **Chapter 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 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 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 the lowest Exam score (the 0 stands and cannot be replaced)

- **Comprehensive Final Exam**
  - Possible Exemption
    - If you have 0 or 1 absence **AND** an 'A' or 'B' average, then you may opt-out of the Final Exam. If you have 2 or more absences or less than a 'B' 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

- **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.
- **Chapter Homework**
  - Each chapter will have a chapter worksheet available on blackboard. These will be turned in one to two class days after the chapter material has been finished. The date will be announced on the syllabus.
  - Lowest Homework Grade Dropped
    - At the end of the semester the Instructor will automatically drop the lowest homework grade 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 exception will be due to Special Services recommendations and those will be handled on an individual student to student basis

- **Attendance**
  - 4 absences max and I drop you with an '**F**'
  - Last Day to Drop is _____

- **Grading:**
  - Exams are 70%
  - Lab Reports 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 1406 (4:3:3)

INTRODUCTORY CHEMISTRY I

INSTRUCTIONAL AREA: CHEMISTRY

DEPARTMENT: SCIENCE

DIVISION: ARTS AND SCIENCES

SOUTH PLAINS COLLEGE

FALL 2017

INSTRUCTOR: L. ALEXANDER

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:

Dr. Laci Alexander
Office: S116, Science building
Phone: 716-2322
Email: lalexander@southplainscollege.edu
Office Hours: MW: 8:30 – 9:30 AM
TR: 2:30 – 4:00 PM
F: 9:00 AM – 12:00 PM

Office hours can also be made by appointment.

Tutor:

Room S121

Textbook:

REQUIRED

Available at the Bookstore
Chemistry: An Introduction to General, Organic, & Biological Chemistry by Timberlake, 13th Edition

Lab Manual:

REQUIRED

CHEM 1406 Lab Manual
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

Available at the Bookstore

Power Point Notes:

OPTIONAL, BUT HIGHLY RECOMMENDED

To be printed off Blackboard

Chapter Worksheets:

REQUIRED

These are worksheets that will have class time allotted to start them.
These worksheets will be turned in as a homework grade.
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.**

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. 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 exception to this will be in the case of a Special Services recommendation which will be handled on an individual student basis.

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.

<u>Possible Exemption</u> – If you have 0 or 1 absence **AND** an 'A' or 'B' 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.

<u>Replacement Option</u> – 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 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 the lowest Exam score (the 0 stands and cannot be replaced).

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 **November 16.** 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 2017-2018 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%
Lab Reports	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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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 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, Measurement, and Problem Solving
Learning Objectives Met: Lecture #1, #2
Chapter 2: Atoms, Molecules, Ions
Learning Objective 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: Mole Ratio
Learning Objectives Met: Lecture #7, Lab ALL
Experiment 8: Hydrates
Learning Objectives Met: Lecture #2, 4, 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 Objective Met: Lecture #9
Chapter 6: Gases
Experiment 9: Boyle's Law
Learning Objective 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 7: Energy
Learning Objective Met: Lecture #6
Chapter 8: Introduction to Organic Chemistry: Hydrocarbons
Learning Objectives Met: Lecture #10
Experiment 13: Organic Models
Learning Objectives Met: Lecture #10, Lab ALL

Exam 5
Chapter 9: Carbohydrates
Learning Objectives Met: Lecture #11
Chapter 10: Lipids
Learning Objectives Met: Lecture #11
Chapter 11: Proteins
Learning Objectives Met: Lecture #11

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	**Monday August 28**	Introduction	Lab Safety
	Wednesday August 30	Chapter 1	Chapter 1
2	**4-Sep**	**NO SCHOOL**	
	6-Sep	Chapter 1/ 1WS	Exp. 1
3	**11-Sep**	Chapter 2	Exp.2
	13-Sep	Chapter 2	Exp. 3
4	**18-Sep**	Chapter 2 WS	Exp. 5
	20-Sep	**EXAM 1**	
5	**25-Sep**	Chapter 3	Chapter 3
	27-Sep	Chapter 3 WS	Exp. 7
6	**2-Oct**	Chapter 4	Chapter 4
	4-Oct	Chapter 4/ 4WS	Exp. 9
7	**9-Oct**	**EXAM 2**	
	11-Oct	Chapter 5	Chapter 5
8	**16-Oct**	Chapter 5/ 5 WS	Exp. 10
	18-Oct	**NO CLASS**	

9	**23-Oct**	Chapter 6	Chapter 6
	25-Oct	Chapter 6 / 6 WS	Exp. 8
10	**30-Oct**	**EXAM 3**	
	1-Nov	**NO CLASS**	
11	**6-Nov**	Chapter 7	Chapter 7
	8-Nov	Chapter 7	Chapter 7 WS
12	**13-Nov**	Chapter 8	Chapter 8
	15-Nov	Chapter 8 WS	Exp. 11
13	**20-Nov**	**EXAM 4**	
	22-Nov	**NO SCHOOL**	
14	**27-Nov**	Chapter 9/ 9 WS	Exp. 12
	29-Nov	Chapter 10/10WS	Exp. 13
15	**4-Dec**	Chapter 11	Chapter 11 WS
	6-Dec	**Exam 5**	
16	**11-Dec Monday**	**FINAL EXAM 10:15 - 12:15 PM**	

Chapter	Due Date
Chapter 1	11-Sep
Chapter 2	20-Sep
Chapter 3	2-Oct
Chapter 4	9-Oct
Chapter 5	23-Oct
Chapter 6	30-Oct

Chapter	Due Date
Chapter 7	13-Nov
Chapter 8	20-Nov
Chapter 9	6-Dec
Chapter 10	6-Dec
Chapter 11	6-Dec