

South Plains College
Common Course Syllabus: CHEM 1412
Revised 01/10/2020

Department: Science

Discipline: Chemistry

Course Number: CHEM 1412

Course Section: 002

Course Title: General Chemistry II

Available Formats: Conventional

Campuses: Levelland

Instructor: Dr. Bangshing Wang, office S109

Office Hours: *M/W* 12:00 – 1:00 PM & 4:00 – 5:30 PM
F 8:30 – 11:30 AM

Course Description: CHEM1412: General Chemistry II. (4:3:3) Pre-requisites: A grade of C or better in General Chemistry I (CHEM1411). Chemical equilibrium; phase diagrams and spectrometry; acid-base concepts; thermodynamics; kinetics; electrochemistry; nuclear chemistry; an introduction to organic chemistry and descriptive inorganic chemistry. Basic laboratory experiments supporting theoretical principles presented in lecture; introduction of the scientific method, experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports.

Prerequisite: A grade “C or better” from CHEM1411 (General Chemistry I)

Credit: 4 **Lecture:** 3 **Lab:** 3

Textbook: Raymond Chang & Jason Overby, Chemistry 13th Edition. (ISBN 978-1-259-91115-6) (Recommended)

Supplies: Required

- Lab manual: CHEM1412 Lab Manual.
- Safety glasses/goggles.
- Scientific calculator. Usage of cell phones *WILL NOT BE* allow on exam!
- Four maroon colored scantrons-*Apperson Form 29240*

This course partially satisfies a Core Curriculum Requirement:

- Life and Physical Sciences Foundational Component Area (030)

Core Curriculum Objectives addressed:

- **Communications 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 competency skills**—to manipulate and analyze numerical data or observable facts resulting in informed conclusions
- **Teamwork**—to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Student Learning Outcomes:

From Lecture:

1. State the characteristics of liquids and solids, including phase diagrams and spectrometry.
2. Articulate the importance of intermolecular interactions and predict trends in physical properties.
3. Identify the characteristics of acids, bases, and salts, and solve problems based on their quantitative relationships.
4. Identify and balance oxidation-reduction equations, and solve redox titration problems.
5. Determine the rate of a reaction and its dependence on concentration, time, and temperature.
6. Apply the principles of equilibrium to aqueous systems using LeChatelier's Principle to predict the effects of concentration, pressure, and temperature changes on equilibrium mixtures.
7. Analyze and perform calculations with the thermodynamic functions, enthalpy, entropy, and free energy.
8. Discuss the construction and operation of galvanic and electrolytic electrochemical cells, and determine standard and non-standard cell potentials.
9. Define nuclear decay processes.
10. Describe basic principles of organic chemistry and descriptive inorganic chemistry.

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 and chemical instrumentation.
9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

Student Learning Outcomes Assessment:

Few topics/questions from the exams will be selected to assess the students learning outcomes at the end of semester.

Course Evaluation/Grading Policy:

LECTURE EXAMS: There will be THREE lecture exams; these exams will cover the materials discussed in the lectures, and the schedule of the lecture exams are on the course schedule along with lecture information. Lecture exams will be in a multiple-choice format. A maroon colored scantron is required for each lecture exam. Only the materials discussed in the lectures will be on the exam and you will have designated class time to finish the exam. There will be NO make-up exam allowed! If a student misses an exam, the student will receive a grade of ZERO for the exam missed.

- Lecture exam 1 (Chapters 12 and 13) 100 points
- Lecture exam 2 (Chapters 14 and 15) 100 points
- Lecture exam 3 (Chapters 16 and 17) 100 points

The materials scheduled for each lecture exam by subject to change, this change will be announced in advance if necessary.

EXAM PRACTICE/WORKSHEET (EP): There will be FOUR exam practice assignments, which are due on the day of each exam. Sole purpose of exam practice is the help prepare for the exam, it does not count towards the total grade. However, completed EP assignment turned in at the beginning of each lecture exam will gain additional FIVE extra points towards the exam taken on the same day. No late EP assignments will be accepted.

LAB EXPERIMENTS/PRACTICES: Lab reports/practices will be collected for grading at the end of each lab experiment day. Students will complete the lab assignments for grading before leaving the lab. Each lab assignment will be worth 10 points, which will add up to 130 points of your final grade. The laboratory portion of this class will be comprised of topic discussion, practice worksheets and lab experiments. The lab portion of this course will consist of group work to perform lab experiments. There will be no make-up labs for the missed lab; students will receive ZERO for the lab section if missed.

FINAL EXAM: The final exam will cover chapter 18, 19 and 24. There will be no make-up exam for the final exam. The final exam will count 100 points. The format will be multiple-choice, and a maroon scantron is required for the exam. Only the materials covered in the lectures will be on the exam and you will have designated class time to finish the exam. There will be no makeup for final exams; missed final exam will result in a grade of ZERO.

NOTE: At the end of the semester, one of lowest lecture exam grade can be replaced with the final exam grade (granted final exam grade is higher than lecture exam grade it will replace). If final exam grade is the lowest grade among all exams, than no grade will be replaced.

Grading based on percentage:

A = 90 – 100%
B = 80 – 89%
C = 70 – 79%
D = 60 – 69%
F = below 60%

The grade distribution:

Lecture Exam 1: 100 points
Lecture Exam 2: 100 points
Lecture Exam 3: 100 points
Final Exam: 100 points
Lab Reports: 130 points
Total Possible point: 530 points

Attendance Policy:

It is vitally important that you attend all lectures and labs in order to do well in this course. If you reach SEVEN absences or miss FOUR classes in a role, I will drop you from the course with a grade of X, F, or U. This is in accordance with the policies set forth in the SPC General Catalog. Attendance will be taken during the lecture period, and lab attendance will be determined by the lab assignments submitted at the end of lab experiment. This class information sheet contains the schedule of lectures and labs. If you are unable to finish this course, complete a withdrawal slip at the registrar’s office. Absences caused by official South Plains College activities will be excused

Students are expected to attend all classes in order to be successful in a course. The student may be administratively withdrawn from the course when absences become excessive as defined in the course syllabus.

When an unavoidable reason for class absence arises, such as illness, an official trip authorized by the college or an official activity, the instructor may permit the student to make up work missed. It is the student’s responsibility to complete work missed within a reasonable period of time as determined by the instructor. Students are officially enrolled in all courses for which they pay tuition and fees at the time of registration. Should a student, for any reason, delay in reporting to a class after official enrollment, absences will be attributed to the student from the first class meeting.

Students who enroll in a course but have “Never Attended” by the official census date, as reported by the faculty member, will be administratively dropped by the Office of Admissions and Records. A student who does not meet the attendance requirements of

a class as stated in the course syllabus and does not officially withdraw from that course by the official census date of the semester, may be administratively withdrawn from that course and receive a grade of "X" or "F" as determined by the instructor. Instructors are responsible for clearly stating their administrative drop policy in the course syllabus, and it is the student's responsibility to be aware of that policy. It is the student's responsibility to verify administrative drops for excessive absences through MySPC using his or her student online account. If it is determined that a student is awarded financial aid for a class or classes in which the student never attended or participated, the financial aid award will be adjusted in accordance with the classes in which the student did attend/participate and the student will owe any balance resulting from the adjustment.

Plagiarism and Cheating: Students are expected to do their own work on all projects, quizzes, assignments, examinations, and papers. Failure to comply with this policy will result in a grade of ZERO for the assignment and can result in an F for the course if circumstances warrant. **This ZERO will not be replaced at the end of semester.**

Plagiarism violations include, but are not limited to, the following:

1. Turning in a paper that has been purchased, borrowed, or downloaded from another student, an online term paper site, or a mail order term paper mill;
2. Cutting and pasting together information from books, articles, other papers, or online sites without providing proper documentation;
3. Using direct quotations (three or more words) from a source without showing them to be direct quotations and citing them; or
4. Missing in-text citations.

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 examination, quiz, or homework assignment;
4. Entering an office or building to obtain unfair advantage;
5. Taking an examination for another;
6. Altering grade records;
7. Copying another's work during an examination or on a homework assignment;
8. Rewriting another student's work in Peer Editing so that the writing is no longer the original student's;
9. 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 shall not be tolerated and may lead to disciplinary action and/or removal from class.

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.

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 following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

Title IX Pregnancy Accommodations Statement: 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 the Director of Health and Wellness at 806-716-2362 or email cgilster@southplainscollege.edu for assistance.

SAFETY RULES: These safety rules will be passed out in lab. The safety rules must be followed. Failure to do so can result in you being asked to leave the laboratory. You will be required to sign a sheet indicating you have read and agreed to follow the safety rules before being allowed to perform an experiment.

As a faculty member, I am deeply invested in the well-being of each student I teach. I am here to assist you with your work in this course. If you come to me with other non-course-related concerns, I will do my best to help. It is important for you to know that all faculty members are mandated reporters of sexual misconduct. That

means that I cannot keep information about sexual misconduct confidential if you share that information with me. Dr. Lynne Cleavinger, the Director of Health & Wellness, can advise you confidentially as can any counselor in the Health & Wellness Center. They can also help you access other resources on campus and in the local community. You can reach Dr. Cleavinger at 716-2563 or lclevinger@southplainscollege.edu or go by the Health and Wellness Center. You can schedule an appointment with a counselor by calling 716-2529

Course Schedule: CHEM 1412.002

Week #	M-LECTURE	M-LAB	W-LECTURE	W-LAB
Week 1	Introduction	<i>Lab Safety</i>	Chapter 12	<i>No lab</i>
Week 2	<i>MLK Holiday</i>		Chapter 12	<i>No lab</i>
Week 3	Chapter 12	<i>Lab WS 1: Solutions</i>	Chapter 13	<i>Exp 1: Boiling Point Elevation</i>
Week 4	Chapter 13	<i>TBD</i>	Chapter 13	<i>Lab WS 2: Kinetics of Br₂</i>
Week 5	Exam 1		Chapter 14	<i>Exam Correction</i>
Week 6	Chapter 14	<i>Exp 2: Beer's Law</i>	Chapter 14	<i>Exp 3: Vitamin C Tablets</i>
Week 7	Chapter 15	<i>Lab WS 3: Equilibrium</i>	Chapter 15	<i>TBD</i>
Week 8	Chapter 15	<i>Lab WS 4: Acids and Bases</i>	Exam 2	
Week 9	Chapter 16	<i>Exam Correction</i>	Chapter 16	<i>Exp 5: Deter. Ka</i>
<i>Spring Break</i>				
Week 10	Chapter 16	<i>Lab WS 5: Common Ion & Strong-strong titration</i>	Chapter 16	<i>Exp 6: Buffers</i>
Week 11	Chapter 17	<i>Lab WS 6: Weak-strong titration</i>	Chapter 17	<i>Exp 7: Buffer in Lemonade</i>
Week 12	Chapter 17	<i>Exp 8: K_{sp} Determination</i>	Exam 3	
Week 13	<i>Easter Holiday</i>		Chapter 18	<i>Exam Correction</i>
Week 14	Chapter 18	<i>TBD</i>	Chapter 18 & 19	<i>TBD</i>
Week 15	Chapter 19	<i>TBD</i>	Chapter 20	<i>TBD</i>
Week 16	Final Exam <i>May 4th (Monday)</i> <i>1:00 pm – 3:00 pm</i> <i>Lecture room (S-101)</i>			