

South Plains College
Common Course Syllabus: CHEM 1412
Revised January 9, 2020

Department: Science

Discipline: Chemistry

Course Number: CHEM 1412.001

Course Title: General Chemistry II

Available Formats: conventional

Campus: Levelland

Course Description: 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: Grade of "C" or better in CHEM 1411.

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

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Office Hours: Tuesdays and Thursdays 9 AM to 11 AM and 1 PM to 2 PM
Fridays 8:30 AM – 11:30 AM
Other times by appointment

Textbooks:

1. Raymond Chang and Jason Overby, Chemistry. Thirteenth Edition.
2. CHEM 1412 Lab Manual

Supplies:

1. Safety glasses or safety goggles (required)
2. Scientific calculator [graphing calculators are allowed] (required)
Cell phones may not be used as a calculator
3. 4 Scantron Sheets: 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.
9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

Student Learning Outcomes Assessment: 1 to 4 questions from your exams will be used to assess the student learning outcomes. Data from all sections will be compiled for this assessment. This assessment is only used for institutional purposes.

Course Evaluation:

Lecture Exams: There will be three lecture exams covering the material that is discussed during the lecture portion of this course. The schedule for the lecture exams is given in this course information sheet. Each lecture exam will count 100 points. The lecture exams will be approximately 30 questions. The format will be multiple choice. A scantron is required for the lecture exams. No outside material may be used on the lecture exams. You may only reference what is provided to you on the lecture exams. You will have the 150 minute designated class and lab time to finish the exam. There will be no make-ups for lecture exams. A missed lecture exam will receive a grade of zero.

Exam 1 (Chapters 12, 13):	100 points
Exam 2 (Chapters 14, 15):	100 points
Exam 3 (Chapters 16, 17):	100 points

The material scheduled for each lecture exam is subject to change. Changes will be announced if necessary.

Homework: Homework will be assigned often. The homework will not be collected and graded. It is essential that the homework be completed, as the homework will be very similar to the types of problems encountered on the exams.

Lab Experiments: The laboratory portion of this class will be comprised of topic discussion, homework problems practice; and most commonly, lab experiments. The lab portion of this course will consist of group work. If a student is absent for a lab, the lab cannot be made up.

Lab Grade: The lab grade will come from lab reports. For most lab days, we will have a lab report that covers the material accomplished that day in lab. The lab reports will be completed in groups and the due date for the lab reports will be announced during lab. Most lab reports will be due the same day the lab is performed. The lab groups will consist of 2 to 4 students. The lab experiments must be completed on the day that they are scheduled. There will be no make-ups for the lab experiments or the lab reports. If a student misses a lab report, a grade of zero will be assigned for that lab report. The lab reports count 10 points each. There will be ONE lab report turned in per group. Make sure your name is placed on the lab report when it is turned in. If your name is not on the lab report, you will receive a grade of zero. There will be fourteen graded lab reports. The format will mostly be multiple choice. The lowest four lab report grades will be dropped. Therefore, 10 lab reports will count for a total of 100 points.

Lab Reports (10 points each)

100 points total

The material scheduled for each lab is subject to change. Changes will be announced if necessary.

Final Exam: The final exam will not be comprehensive. There will be no make-up exam for the final exam. A missed final exam will receive a grade of zero. The time of the final exam is given in this course information sheet. The final exam will count 100 points. The final exam will be approximately 25 questions. The format will be multiple choice. A scantron is required for the final exam. No outside material may be used on the final exam. You may only reference what is provided to you on the final exam. You will have the 120 minute designated final exam time to finish the final exam.

Final Exam (Chapters 18, 19 and Organic):

100 points

The material scheduled for the final exam is subject to change. Changes will be announced if necessary.

Final Exam Grade: If the final exam grade is higher than your lowest lecture exam grade, the final exam grade will replace that one lecture exam grade. In that case, the final exam will count twice: once for the final exam grade and once to replace that one lecture exam grade. (e.g. You miss a lecture exam and receive a zero. You later on make an 80 on the final exam. Then the 80 will replace the zero and the 80 will be the final exam grade as well.) This only applies to one lecture exam grade even if multiple lecture exam grades are tied for the lowest lecture exam grade. In all other cases, the final exam counts once and no lecture exam grades are dropped.

Final Course Grade: At the end of the semester, all of your points earned will be added together. Your final course grade will come from your point total. The point totals and their corresponding final course grades are listed below:

Point total:	Final Course Grade:
445 and above	A
395 – 444	B
345 – 394	C
295 – 344	D
0 – 294	F

Attendance Policy: Students are expected to attend all classes in order to be successful in this course. A student will be administratively withdrawn from this course when absences become excessive. Attendance will usually be taken at the end of the lab period. If you reach a total of 7 absences, you will be dropped from the course with a grade of X. Absences caused by official South Plains College activities will be excused. No other absences will be excused. 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. This is in accordance with the policies set forth in the SPC General Catalog. 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. This course 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.

Plagiarism and Cheating: Students are expected to do their own work on all projects, quizzes, assignments, examinations, and papers. Cheating will not be tolerated. If a student is caught cheating on an exam, a grade of zero will be given for that exam.

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](mailto:cgilster@southplainscollege.edu) for assistance.

Campus Concealed Carry: Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: <http://www.southplainscollege.edu/campuscarry.php>
Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

Lab Safety: The chemistry laboratory is a potentially hazardous environment. Therefore, all students must follow all of the safety rules passed out to you during the safety presentation. The students must also follow any specific safety rules listed in the lab manual and any that the instructor may announce during a lab period. A student not following the safety rules may be asked to leave the laboratory.

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.

Course Schedule: The following table contains the tentative course schedule. *All material (including lecture material, experiment material, and material scheduled for the lecture exams) is subject to change. Also, all dates are subject to change. Changes will be announced if necessary.*

COURSE SCHEDULE				
WEEK	DAY 1 - LECTURE	DAY 1 - LAB	DAY 2 - LECTURE	DAY 2 - LAB
1	CHAP 12: SOLUTIONS	NO LAB	CHAP 12: SOLUTIONS	NO LAB
2	NO CLASS	NO LAB	CHAP 12: SOLUTIONS	SAFETY RULES
3	CHAP 13: CHEMICAL KINETICS	LR 1 - Calculations Involving Solutions	CHAP 13: CHEMICAL KINETICS	LR 2 - Determination of Molar Mass Using BP Elevation
4	CHAP 13: CHEMICAL KINETICS	LR 3 - Kinetics of a Bromine/Formic Acid RXN	CHAP 13 & 14: CHEMICAL KINETICS AND CHEMICAL EQUILIBRIUM	LR 4 - Graphing Using Excel
5	CHAP 14: CHEMICAL EQUILIBRIUM	LR 5 - Determining the Concentration: Beer's Law	EXAM 1 (CHAP 12, 13)	NO LAB
6	CHAP 14 & 15: CHEMICAL EQUILIBRIUM AND ACIDS AND BASES	Intro to Wednesday's EXP	CHAP 15: ACIDS AND BASES	LR 6 - Timed-Release Vitamin C Tablets
7	CHAP 15: ACIDS AND BASES	Acids and Bases	CHAP 15: ACIDS AND BASES	LR 7 - Acids and Bases
8	CHAP 15 & 16: ACIDS AND BASES, AQUEOUS IONIC EQUILIBRIUM	LR 8 - Acid-Base Titration	EXAM 2 (CHAP 14, 15)	NO LAB
9	CHAP 16: AQUEOUS IONIC EQUILIBRIUM	Intro to Wednesday's EXP	CHAP 16: AQUEOUS IONIC EQUILIBRIUM	LR 9 - Half-Titration of a Weak Acid
10	CHAP 16 & 17: AQUEOUS IONIC EQUILIBRIUM, THERMODYNAMICS	LR 10 - Intro to Wednesday's EXP	CHAP 17: FREE ENERGY AND THERMODYNAMICS	LR 11 - Buffers
11	CHAP 17: FREE ENERGY AND THERMODYNAMICS	NO LAB	CHAP 17 & 18: THERMODYNAMICS AND ELECTROCHEMISTRY	LR 12 - The Buffer in Lemonade
12	CHAP 18: ELECTROCHEMISTRY	LR 13 - Ksp of Sodium Chloride	EXAM 3 (CHAP 16, 17)	NO LAB
13	NO CLASS	NO LAB	CHAP 18: ELECTROCHEMISTRY	LR 14 - Heat of Fusion for Ice
14	CHAP 19: NUCLEAR CHEMISTRY	NO LAB	CHAP 19: NUCLEAR CHEMISTRY	NO LAB
15	CHAP 19 & Organic: NUCLEAR CHEMISTRY AND ORGANIC CHEMISTRY	NO LAB	REVIEW	NO LAB
16	FINAL EXAM (CHAP 18, 19, Organic) - Monday May 4, 8:00 AM - 10:00 AM			