Course Syllabus

CHEM 1412
General Chemistry II (4005015703)

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 CHEM 1411; introduction of the scientific method, experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports.

Semester Hours Credit: 4

Lecture/Lab Hours: 3-3

Prerequisite: CHEM 1411

To enroll in any science course, students must demonstrate readiness to perform college level academic coursework in reading and writing according to Coastal Bend College academic skills assessment guidelines. Basic computer skills are also required.


Student Learning Outcomes:

Upon successful completion of this course, students will:

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.

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At all times, in all ways, the student is at the heart of all we do.
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 LeChateliers 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.


10. Describe basic principles of organic chemistry and descriptive inorganic chemistry.

11. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.

12. Demonstrate safe and proper handling of laboratory equipment and chemicals.

13. Conduct basic laboratory experiments with proper laboratory techniques.

14. Make careful and accurate experimental observations.

15. Relate physical observations and measurements to theoretical principles.

16. Interpret laboratory results and experimental data, and reach logical conclusions.

17. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.

18. Design fundamental experiments involving principles of chemistry and chemical instrumentation.

19. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.
Evaluation Methods:

During the semester, points will be assigned for each exam, quiz, homework assignment, etc. All regular exams will be worth 100 points but the final exam will be worth 150 points. Homework, quizzes and other assignments may be given during the semester and will be averaged along with the exam grades to determine the number of total points. Students who score, on average, 95% or higher in the lecture portion of the course without dropping an exam will be exempted from taking the final exam.

Five (5) major exams will be given in the lecture portion of this course; of these exams, students may drop one (1) exam if no exams are missed. The student may not drop the final exam unless student is exempt. The final exam will be up to 100% comprehensive, depending on the amount of untested material remaining before the final exam. A small portion of any exam (up to 10%) may be material not specifically covered in lecture but which is well presented in the text and listed on the review sheet. Students are responsible for reading text chapters and becoming familiar with the concepts listed on the review sheets.

The final grade will be determined by the number of points the student has earned, divided by the total points possible and multiplied by 100, as a percent. Lab policies and grades are explained in a separate handout. Lecture will count 75% and lab 25% of the total grade.

ADA Statement: No qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the College District, or be subjected to discrimination by the College District. Nor shall the College District exclude or otherwise deny equal services, programs, or activities to an individual because of the known disability of an individual with whom the individual is known to have a relationship or association. 42 U.S.C. 12132; 28 CFR 35.130(g).

See at: GL (Legal)

Special Needs Services: Students with special needs, including physical and learning disabilities, who wish to request accommodations in this course should contact the Student Development Office as soon as possible to make arrangements; this should occur no later than the second week of class or as soon as the student has the documentation on the disability and requested accommodation per a certified medical or psychological professional. In accordance with federal law, a student requesting accommodations must provide documentation of disability to the Student Development Advisor.

For more information, contact: in Alice at sdalice@coastalbend.edu; Beeville at sdbeeville@coastalbend.edu; Kingsville at sdkingsville@coastalbend.edu; and Pleasanton at sdpleasanton@coastalbend.edu.
Academic Dishonesty: Each student is charged with notice and knowledge of the contents and provisions of Coastal Bend College’s rules and regulations concerning student conduct. All students shall obey the law, show respect for properly constituted authority, and observe correct standards of conduct. Scholastic dishonesty shall constitute a violation of these rules and regulations and is punishable as prescribed by Coastal Bend College Policies FLB (Local) and FM (Local). Scholastic dishonesty shall include, but not be limited to, cheating on a test, plagiarism, and collusion.

See at: FLB (Local) and FM (Local).

See the Student Handbook for further explanation of Scholastic Dishonesty.

Copyright Law and Intellectual Property Rights Policy: Copyright is the right of an author, artist, composer or other creator of a work of authorship to control the use of his or her work by others. Protection extends to literary works, musical works, dramatic works, pantomimes and choreographic works, pictorial and graphic works, sculpture, motion pictures and other audiovisual works, sound recordings and architectural works. Generally speaking, a copyrighted work may not be reproduced by others without the copyright owner’s permission. The public display or performance of copyrighted works is similarly restricted. Generally, the unauthorized reproduction, performance or distribution of a copyrighted work is copyright infringement and may subject the infringer to civil and criminal penalties. The Fair Use Doctrine outlines exceptions to this Law and is outlined in Coastal Bend College Policy, CT (Legal).

Coastal Bend College, its faculty, students and employees must comply with Copyright Law. Detailed information on Copyright Law and Intellectual Property Rights is available in Coastal Bend College Policy CT (Legal) and CT (Local).

Questions regarding this information should be directed to the Director of Library Services at: library@coastalbend.edu or the Office of Marketing and Public Relations at: socialmedia@coastalbend.edu.

Intellectual Property: Student/Third Party Works: Rights to copyrightable or patentable works created by a student or a third party, that is, not a College District employee, shall reside with the author/creator. Detailed information on Copyright Law and Intellectual Property Rights is available in Coastal Bend College Policy CT (Legal) and CT (Local).

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NOTE: The College website (www.coastalbend.edu) serves as the main source with the most current version of the Coastal Bend College Board Policies and the Coastal Bend College Catalog.