

Course Syllabus

**CHEM 1405**  
**Introductory Chemistry I (4005015103)**

**Course Description:** 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.

**Semester Hours Credit:** 4

**Lecture/Lab Hours:** 3-3

**Prerequisite:** 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.

**Textbook(s):** *Instructor-provided labs*

**Student Learning Outcomes:**

Upon successful completion of this course, students will:

1. Perform calculations related to solving problems using complete and thorough set-ups with metric and standard units, significant figures, and factor-label analysis.
2. Describe the fundamental particles of matter; relate basic laws and theories to their behavior, utilize a systematic method of naming compounds and polyatomic ions.
3. Write and balance different types of chemical equations and perform stoichiometric calculations using them.
4. Define energy and heats of reaction and perform related calculations. Recognize environmental issues related to energy.

5. Recognize the correlation between electronic structure and the organization of the periodic table. Be able to predict periodic trends.
6. Determine the relationship between pressure, volume, moles, and temperature of gasses and perform related calculations. Describe the characteristics and behavior of gasses, liquids and solids, and the intermolecular forces that are involved with these states of matter.
7. Investigate the quantum mechanical model of the atom. Write electronic configurations and show the correlation to chemical properties.
8. Be able to describe the differences between ionic and molecular compounds, and write Lewis structures. Utilize the VSEPR theory to predict the shapes and polarities (if any) of molecules from the Lewis structures.
9. Define radioactivity and write nuclear reactions. Recognize the environmental and medical impact of nuclear radiation.
10. Define solution and explain colligative properties and the process of osmosis. Describe the factors affecting solubility and perform calculations with concentration and dilution of solutions.
11. Describe dynamic equilibrium and apply Le Chatelier's principle. Describe the factors affecting reaction rates, including catalysts and enzymes.
12. Define acids, bases, and buffers. Differentiate between strong and weak acids and bases and identify conjugate acid/base pairs from Bronsted/Lowry Acid/Base theory. Perform pH calculations with acids, bases, and buffers.

#### Evaluation Methods:

The course grade is based upon four (4) exams (55%), a comprehensive final exam (20%), and the laboratory grade (25%). The average of about twelve (12) experiments determines the laboratory 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](mailto:sdalice@coastalbend.edu); Beeville at [sdbeeville@coastalbend.edu](mailto:sdbeeville@coastalbend.edu); Kingsville at [sdkingsville@coastalbend.edu](mailto:sdkingsville@coastalbend.edu); and Pleasanton at [sdpleasanton@coastalbend.edu](mailto: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](mailto:library@coastalbend.edu) or the Office of Marketing and Public Relations at: [socialmedia@coastalbend.edu](mailto:socialmedia@coastalbend.edu).

Coastal Bend College



**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 \(Local\)](#).

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

**NOTE:** The College website ([www.coastalbend.edu](http://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.