CHEMISTRY (CHEM)

CHEM 001A GENERAL CHEMISTRY AND CHEMICAL ANALYSIS I
5 unit
Transfer Credit: CSU; UC credit limitations. See counselor.
C-ID: CHEM 110; CHEM SEQ 120S (with CHEM 001B)
Prerequisite(s): *(1) Intermediate Algebra or placement into any MATH course numbered 001-099 and (2) CHEM 022 or equivalent skills as demonstrated through placement based on the chemistry assessment process*

Standard general chemistry for science and engineering majors, with emphasis on quantitative methods and calculations. Atomic structure and chemical bonding, stoichiometry, gases, liquids, solids and solution chemistry. Introductions to equilibrium and organic chemistry. Quantitative analysis using analytical balances, gravimetric and volumetric procedures, spectrophotometry and calorimetry. Total of 54 hours lecture and 108 hours laboratory.
Grade Mode: *Letter Grade, Pass/No-Pass*

CHEM 001B GENERAL CHEMISTRY AND CHEMICAL ANALYSIS II
5 unit
Transfer Credit: CSU; UC credit limitations. See counselor.
C-ID: CHEM SEQ 120S
Prerequisite(s): *CHEM 001A*

This is the second course of a two course General Chemistry sequence. Standard general chemistry for science and engineering majors, with emphasis on quantitative methods and calculations. Kinetics, equilibrium, thermodynamics, introduction to electrochemistry, coordination compounds, nuclear chemistry, and the chemistry of selected metals and nonmetals, potentiometric titrations and electrochemical cells. Total of 54 hours lecture and 108 hours laboratory.
Grade Mode: *Letter Grade, Pass/No-Pass*

CHEM 002A CHEMISTRY – GENERAL, ORGANIC AND BIOCHEMISTRY I
4 unit
Transfer Credit: CSU; UC credit limitations. See counselor.
C-ID: CHEM 101
Prerequisite(s): *MATH 150*

Principles of chemistry for health science majors. Atomic and molecular structure, chemical bonding, nomenclature, chemical reactions and stoichiometry, gases, solutions, acids and bases, pH, buffers, nuclear and organic chemistry. No credit if taken after CHEM 001A. Total of 54 hours lecture and 72 hours laboratory.
Grade Mode: *Audit, Letter Grade, Pass/No-Pass*

CHEM 002B CHEMISTRY–GENERAL, ORGANIC AND BIOCHEMISTRY II
4 unit
Transfer Credit: CSU; UC credit limitations. See counselor.
C-ID: CHEM 102
Prerequisite(s): *CHEM 002A*

Principles of chemistry for health science majors. Organic and biochemistry: reaction mechanisms, kinetics, enzymes, protein synthesis and metabolism. Total of 54 hours lecture and 72 hours laboratory.
Grade Mode: *Audit, Letter Grade, Pass/No-Pass*

CHEM 008A ORGANIC CHEMISTRY I
5 unit
Transfer Credit: CSU; UC
C-ID: CHEM 150; CHEM SEQ 160S (with CHEM 008B)
Prerequisite(s): *CHEM 001B*

Fundamental principles and concepts of organic chemistry for science majors. Structure, bonding, nomenclature, isomerism, stereochemistry and physical properties of organic compounds. A mechanistic approach to the reactions of hydrocarbons, alkyl halides, alcohols, dienes, aromatic compounds, organometallics, IR and NMR spectroscopy and mass spectrometry. Introduction to organic laboratory techniques; preparation, isolation and identification of organic compounds. Total of 54 hours lecture and 108 hours laboratory.
Grade Mode: *Audit, Letter Grade, Pass/No-Pass*

CHEM 008B ORGANIC CHEMISTRY II
5 unit
Transfer Credit: CSU; UC
C-ID: CHEM SEQ 160S
Prerequisite(s): *CHEM 008A*

Second semester course in a 2-semester sequence covering organic chemistry for science majors. A mechanistic approach to the reactions of alcohols, phenols, ethers and epoxides, aldehydes, ketones, carboxylic acids and their derivatives and amines. Photochemistry, organic redox, polymerization, rearrangements, synthesis and an introduction to biochemical molecules. Qualitative analysis, natural products, multistep synthesis and kinetics. Total of 54 hours lecture and 108 hours laboratory.
Grade Mode: *Audit, Letter Grade, Pass/No-Pass*

CHEM 020 INDEPENDENT STUDY
1 unit
Transfer Credit: CSU
Recommended Preparation: *Enrollment in or completion of any college-level (1-99) course in the Natural Sciences*

Enrollment Limitation: *Permission of the Dean*

Independent, faculty-guided student inquiry, project, research, laboratory experiment and/or field investigation. Total of 54 hours laboratory.
Grade Mode: *Letter Grade, Pass/No-Pass*

CHEM 022 INTRODUCTORY CHEMISTRY
4 unit
Transfer Credit: CSU; UC credit limitations. See counselor.
C-ID: CHEM 101
Prerequisite(s): *Enrollment in or completion of MATH 131 or equivalent*

Introduction to the principles of chemistry with emphasis on quantitative methods and calculations. For science and engineering majors needing preparation for CHEM 001A, but open to all qualified students. Total of 54 hours lecture and 72 hours laboratory.
Grade Mode: *Audit, Letter Grade, Pass/No-Pass*

CHEM 108 PROBLEM SOLVING SKILLS FOR SUCCESS IN ORGANIC CHEMISTRY
1 unit
Corequisite(s): *CHEM 008B*

Development and rigorous practice of essential study techniques and course material for success in CHEM 008B. Integration of supplemental instruction, problem solving strategies and critical thinking skills. Pass/no pass grading. Total of 18 hours lecture.
Grade Mode: *Audit, Pass/No-Pass*

CHEM 240 FUNDAMENTALS OF NANOTECHNOLOGY
4 unit
Recommended Preparation: *TECH 107A*

Fundamental scientific principles of nanoscience and nanotechnology and introduces its many practical applications. Design of advanced materials for the next generation of medical treatments, air/water purification, flexible electronics, personalized healthcare, energy production devices, and energy storage units, and skin-rejuvenating cosmetics. Total of 54 hours lecture and 54 hours laboratory.
Grade Mode: *Letter Grade, Pass/No-Pass*

CHEM 241 APPLICATIONS OF NANOTECHNOLOGY
4 unit
Prerequisite(s): *CHEM 240*

Advanced materials and technologies of nanotechnology. Applications of these technologies to solve complex problems in medicine, electronics, energy production, and energy storage. Total of 54 hours lecture and 54 hours laboratory.
Grade Mode: *Letter Grade, Pass/No-Pass*

CHEM 242 ENVIRONMENTAL, HEALTH, & SAFETY OF NANOTECHNOLOGY
2 unit
Prerequisite(s): *CHEM 240*

Environmental, safety, and health (EHS) standards of nanoscale technologies. Quality control practices, proper documentation, and good practices for lab/manufacturing. Total of 36 hours lecture.
Grade Mode: *Letter Grade, Pass/No-Pass*