

# CHEMISTRY (CHEM)

**CHEM 110-CN Quantitative Problem Solving in Chemistry (1 Unit)**

Solution strategies for traditional word problems and their application to basic chemistry quantitative problems: dimensional analysis, chemical equations, stoichiometry, limiting reagents.

**CHEM 131-CN Fundamentals of Chemistry I (1 Unit)**

Quantum mechanics, electronic structure, periodic properties of the elements, chemical bonding, thermodynamics, intermolecular forces, properties of solids and liquids, special topics in modern chemistry. Must be taken concurrently with CHEM 141-CN.

**Prerequisite:** grade of C- or higher in CHEM 110-CN.

**CHEM 132-CN Fundamentals of Chemistry II (1 Unit)**

Solutions and colligative properties, chemical equilibrium, aqueous solution equilibria, chemical kinetics, metals in chemistry and biology, oxidation-reduction reactions and electrochemistry, special topics in modern chemistry. Must be taken concurrently with CHEM 142-CN.

**Prerequisite:** grade of C- or higher in CHEM 131-CN and CHEM 141-CN.

**CHEM 141-CN Fundamentals of Chemistry Laboratory I (0.34 Unit)**

Chemical analysis of real samples using basic laboratory techniques including titration, colorimetric analysis, density measurements, and atomic spectroscopy. Planning, data collection, interpretation, and reporting on experiments. Credit for this course is 0.34 units. Must be taken concurrently with CHEM 131-CN.

**Prerequisite:** grade of C- or higher in CHEM 110-CN.

**CHEM 142-CN Fundamentals of Chemistry Laboratory II (0.34 Unit)**

Chemistry laboratory techniques applied to materials science and nanotechnology, acid-base chemistry, and chemical kinetics. Planning, data collection, interpretation, and reporting on experiments. The course must be taken concurrently with CHEM 132-CN. Credit for this course is 0.34 units.

**Prerequisite:** grade of C- or higher in CHEM 131-CN.

**CHEM 201-CN Chemistry of Nature and Culture (1 Unit)**

NPEP course.

**CHEM 210-A Organic Chemistry (1 Unit)**

Basic concepts of structure, stereochemistry, and reactivity of organic compounds. The chemistry of hydrocarbons and alcohols.

**Prerequisite:** completion of General Chemistry Sequence with grade of C- or better, or equivalent transfer credit with qualifying score on the Chemistry Placement Exam.

**CHEM 215-A Organic Chemistry I (1 Unit)**

Foundational concepts in organic chemistry will be introduced. Topics include structure and properties of common functional groups, acidity/basicity, conformational analysis, stereochemistry, and reactivity of organic compounds. The chemistry of hydrocarbons, alkyl halides, and alcohols, ethers, and carbonyl compounds included.

**Prerequisite:** CHEM 132-CN and CHEM 142-CN (C- or better in all listed courses) or permission of department by placement exam. Must be taken concurrently with CHEM 235-A.

**CHEM 215-B Organic Chemistry II (1 Unit)**

Fundamental concepts in organic chemistry will be covered. Topics include important functional groups: nomenclature, structure, properties, and multi-step synthesis. Reaction mechanisms for organic transformations presented, and synthesis strategies covered. The chemistry of pi systems and aromatic ring system, amines, and carboxylic acids and their derivatives, and enol/enolate species included.

**Prerequisite:** CHEM 215-A and CHEM 235-A (C- or better). Must be taken concurrently with CHEM 235-B.

**CHEM 215-C Organic Chemistry III (1 Unit)**

Advanced concepts in modern organic chemistry introduced. Focus on recent developments in synthetic organic chemistry, including concerted/pericyclic reactions, catalysis, green/environmental chemistry, automated synthesis, and combinatorial/screening methods. Additional topics include an introduction to materials and polymer chemistry.

**Prerequisite:** CHEM 215-B and CHEM 235-B (C- or better). Must be taken concurrently with CHEM 235-C.

**CHEM 235-A Organic Chemistry Lab I (0.34 Unit)**

Standard laboratory techniques in organic chemistry will be covered.

Techniques will focus on the isolation and purification of organic compounds as well as the use of spectroscopic methods to determine identity and purity.

**Prerequisite:** CHEM 132-CN and CHEM 142-CN (C- or better in all listed courses) or permission of department by placement exam. Must be taken concurrently with CHEM 215-A.

**CHEM 235-B Organic Chemistry Lab II (0.34 Unit)**

Complete laboratory experiments focusing on standard synthetic organic chemistry conducted each week. Students complete prelab worksheet including stoichiometric calculations, prediction of reaction outcome, and identification of safety protocols.

**Prerequisite:** CHEM 215-A and CHEM 235-A (C- or better). Must be taken concurrently with CHEM 215-B.

**CHEM 235-C Organic Chemistry Lab III (0.34 Unit)**

Advanced concepts in modern organic chemistry introduced. Focus on recent developments in synthetic organic chemistry, including: concerted/pericyclic reactions, catalysis, green/environmental chemistry, automated synthesis, and combinatorial/screening methods. Additional topics include an introduction to materials and polymer chemistry.

**Prerequisite:** CHEM 215-B and CHEM 235-B (C- or better). Must be taken concurrently with CHEM 215-C.

**CHEM 242-CN Thermodynamics (1 Unit)**

NPEP course.