

CHEMISTRY - BLOOMFIELD COLLEGE (CHM)

CHM 100 Chemistry for Everyone (4 credits)

Restriction(s): Science majors may not enroll in this course without the consent of the Instructor; not open to students who have received credit for another college chemistry course. This course is an introduction to the structure, properties, and behavior of materials and is intended for non-science majors. Principles of chemistry are illustrated through demonstrations, laboratory exercises, and applications to everyday life. Prior study of chemistry is not required.

CHM 111 General Chemistry I (4 credits)

Corequisite(s): CHM 111L. Prerequisite(s): MTH 161; may be taken concurrently. This is a comprehensive introduction to the principles of chemistry. The course is intended primarily for students who are majoring in the natural sciences or enrolled in science-based pre-professional programs. Topics include atomic structure, chemical bonding, stoichiometry, patterns of reactivity, gas laws, thermochemistry, and quantum theory. The course consists of lecture, recitation, and one three hour laboratory per week.

CHM 111L Lab - CHM 111 (0 credits)

Corequisite(s): CHM 111.

CHM 112 General Chemistry II (4 credits)

Prerequisite(s): CHM 111; MTH 160 or MTH 161. This course is a continuation of CHM 111. Topics covered include theories of covalent bonding, the liquid and solid states, physical properties of solutions, kinetics, equilibria, chemical thermodynamics, oxidation-reduction, and electrochemistry. The course consists of lecture, recitation, and one three-hour laboratory per week.

CHM 112L Lab - CHM 112 (0 credits)

Corequisite(s): CHM 112.

CHM 120 Fundamentals of Inorganic, Organic and Biochemistry (4 credits)

Corequisite(s): CHM 120L. Prerequisite(s): WRT 105, WRT 105A, WRT 106, WRT 106A, or WRT 102; may be taken concurrently. This course covers selected principles of inorganic, organic and biochemistry in application to living systems. The course includes lecture, one hour of recitation, and three hours of laboratory per week. This course cannot be used to help fulfill the chemistry requirement for science majors.

CHM 120L Lab - CHM 120 (0 credits)

Corequisite(s): CHM 120.

CHM 211 Chemical Analysis and Instrumentation (4 credits)

Corequisite(s): CHM 212. Prerequisite(s): CHM 122. The course covers the theoretical and experimental principles of chemical analysis and ionic equilibria. Gravimetric, volumetric, electrometric, and instrumental methods are covered from the quantitative point of view. The course consists of lecture and recitation.

CHM 212 Chemical Analysis and Instrumentation Lab (2 credits)

Corequisite(s): CHM 211. Prerequisite(s): CHM 112. This four-hour laboratory is associated with CHM211. The course emphasizes wet chemistry techniques, which include gravimetric and volumetric methods of analysis. Separation methods such as chromatography are also discussed along with some spectroscopy. Instrumental techniques of IR, UV-VIS, HPLC, and Atomic Absorption may also be explored.

CHM 301 Organic Chemistry I (3-4 credits)

Prerequisite(s): CHM 112. This course is intended to be a year long study of the structure and reactions of organic compounds. The course focuses on functional groups and reaction mechanisms. Applications to compounds of general public interest are discussed. The course consists of lecture and recitation.

CHM 302 Organic Chemistry II (3-4 credits)

Prerequisite(s): CHM 301. This course is a continuation of CHM 301.

CHM 303 Organic Chemistry I Laboratory (2 credits)

Prerequisite(s): CHM 301 or concurrent registration. This four hour laboratory is associated with CHM 301. The course can (but doesn't have to) be taken concurrently with CHM 301. The course includes basic organic chemical instrumentation, analysis, and techniques.

CHM 304 Organic Chemistry II - Lab (2 credits)

CHM 304 ORGANIC CHEMISTRY II LABORATORY*, WRITING INTENSIVE., , This four hour laboratory is associated with CHM, 302 and is a continuation of CHM 303. In addition, to wet chemistry, the course includes lectures, and laboratory exercises on the topics of nuclear, magnetic resonance and infrared spectroscopies. , 0.5 c.u. , Prerequisites: CHM 301, CHM 303, CHM 302 or, concurrent registration in CHM 302.

CHM 311 Physical Chemistry I (4 credits)

Corequisite(s): CHM 313. Prerequisite(s): PHY 105 and PHY 106; and CHM 301 may be taken concurrently. This course is a formal development of thermodynamic and equilibrium principles and their application to both chemical reactions and a variety of physical, biological, and engineering processes. The course includes lecture and recitation.

CHM 313 Physical Chemistry I Lab (2 credits)

Corequisite(s): CHM 311. Prerequisite(s): PHY 105 and PHY 106; and CHM 301 may be taken concurrently. This four-hour laboratory is associated with CHM 311. Laboratory work emphasizes measurement of thermodynamic data such as heats of combustion, heat capacities, enthalpies, and free energies. Physical properties of materials are also explored, and data are presented with construction of phase diagrams.

CHM 401 Biochemistry I (3 credits)

Prerequisite(s): CHM 301; CHM 302, CHM 303, and CHM 304 are strongly recommended. The course presents proteins, lipids, and carbohydrates from the perspective of organic functional group chemistry, physical chemistry, analytical chemistry, and biochemistry. The acid-base properties, kinetics, thermodynamics and reactions of these biomolecules will be covered. Structure correlated to function will be an integral component of the discussion. The course consists of lecture and recitation. Mutually Exclusive with BIO 401.

CHM 402 Biochemistry II (3 credits)

Prerequisite(s): BIO 213. This course covers the biochemistry of the nucleic acids and proteins. Topics include DNA replication, transcription, translation, gene regulation, and protein function. The overall regulation of metabolic pathways will also be addressed. Mutually Exclusive with BIO 402.

CHM 404 BIOCHEMISTRY I LAB (2 credits)

Corequisite(s): BIO 401 or CHM 401. Prerequisite(s): CHM 303. The course considers the qualitative and quantitative aspects of protein, lipid, and carbohydrate analyses. The laboratory includes applications of wet chemistry, as well as analytical techniques such as chromatography [column, thin layer, paper, and high performance liquid chromatography (HPLC)], colorimetric and spectrophotometric analyses, polarimetry, titrimetry and statistical data analysis. Writing Intensive. Mutually Exclusive with BIO 404.

CHM 405 Biochemistry II - Lab (2 credits)

Prerequisite(s): BIO 213. The course covers basic techniques for the extraction, purification, and characterization of DNA, RNA, and protein molecules. (Also BIO 405)