CHEMISTRY (CHM)

CHM 100 - Chemistry for the Health Sciences (4 Credits)
3 lecture, 3 lab, 6 total contact hours
Introduces basic concepts of inorganic and organic chemistry and biochemistry. Emphasizes chemical principles applied to biological systems. Laboratory exercises apply theory to biological and consumer products. Especially designed for students in allied health sciences. Meets the prerequisite of the Nursing program. IAI P1 902L
Typically offered: Fall, Spring, Summer

CHM 103 - The Chemistry Connection (4 Credits)
3 lecture, 3 lab, 6 total contact hours
Introduces chemical principles to illustrate the significance of chemistry in the world today. Practical applications and current issues related to general chemistry, organic chemistry, and biochemical topics will be integrated with chemical concepts. Recommended for non-science majors. IAI P1 903L
Typically offered: Fall, Spring

CHM 105 - Chemical World (4 Credits)
3 lecture, 3 lab, 6 total contact hours
Relates biological and physical systems to chemistry. Focuses on four major themes: the sociology of science, chemical composition and change, the chemistry of life, chemistry and society. Corresponding laboratory is inquiry based. Designed to provide a higher level of scientific literacy to non-science majors and to provide elementary education majors, in particular, with the content knowledge and disposition about science that is necessary in order to be able to teach science in engaging and meaningful ways to their students. Aligned with State of Illinois teacher preparation standards. IAI P1 903L Prerequisite: Placement into college-level mathematics without support. https://www.harpercollege.edu/testing/mathplacement.php
Typically offered: Fall

CHM 110 - Fundamentals of Chemistry (4 Credits)
3 lecture, 3 lab, 6 total contact hours
Introduces concepts of chemistry. Emphasizes the composition of matter, the periodic table, the chemistry of solutions and chemical calculations. The laboratory experiments utilize many common household materials to demonstrate applications of chemical concepts. For students whose preparation does not permit enrollment in CHM 121. IAI P1 902L Prerequisite: MTH 070 (Plane Geometry) with a grade of C or better or Geometry Waiver AND placement into college level mathematics without support. https://www.harpercollege.edu/testing/mathplacement.php
Typically offered: Fall, Spring, Summer

CHM 121 - General Chemistry I (5 Credits)
4 lecture, 3 lab, 7 total contact hours
Studies principles of atomic and molecular structure, bonding, stoichiometry, states of matter, kinetic molecular theory, and solutions. Corresponding laboratory experiments include volumetric and gravimetric analyses, a qualitative study of reactions, visible spectrophotometry, and problem-based analyses. Intended for all students whose majors require general chemistry, including science majors and pre-professionals. The course also satisfies a general education laboratory science requirement for students with previous chemistry experience. IAI P1 902L, IAI CHM 911 Prerequisite: Two semesters of high school chemistry or CHM 110 with a grade of C or better AND placement into college-level mathematics without support. https://www.harpercollege.edu/testing/mathplacement.php
Typically offered: Fall, Spring, Summer

CHM 122 - General Chemistry II (5 Credits)
4 lecture, 3 lab, 7 total contact hours
Continues CHM 121 as the second semester of a general chemistry sequence intended for all students whose major requires a full year of general chemistry, including science majors and pre-professionals. Includes the principles of chemical kinetics, equilibrium, acid-base reactions, electrochemistry, and thermodynamics. Also introduces topics in organic, nuclear, transition metal, and descriptive chemistry. Laboratory includes experiments related to lecture material. IAI CHM 912 Prerequisite: CHM 121 (General Chemistry I) with a grade of C or better, or consent of instructor.
Typically offered: Fall, Spring, Summer

CHM 201 - Basic Organic Chemistry (4 Credits)
3 lecture, 3 lab, 6 total contact hours
Surveys topics of organic chemistry covering nomenclature, structure, reactions and synthesis of the major classes of organic compounds, including hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids and amines. The laboratory includes experiments in distillation, crystallization, chromatography, extraction, synthesis and analysis. Prerequisite: CHM 100, CHM 110, or CHM 121 with a grade of C or better, or consent of instructor.
Typically offered: Spring

CHM 204 - Organic Chemistry I (5 Credits)
3 lecture, 6 lab, 9 total contact hours
Applies modern theories of electronic structures to the study of chemical and physical properties of alkanes, alkenes, alkynes, and alkyl halides. Students also study reaction mechanisms and stereochemistry as they apply to the above classes of organic compounds. Laboratory includes syntheses, qualitative organic analyses, IR and visible spectrophotometry, gas chromatography, thin layer chromatography, HPLC, polarimetry, and refractometry. Intended primarily for science majors and pre-professionals. IAI CHM 913 Prerequisite: CHM 122 with a grade of C or better, or consent of instructor.
Typically offered: Fall, Spring, Summer

CHM 205 - Organic Chemistry II (5 Credits)
3 lecture, 6 lab, 9 total contact hours
Continues CHM 204 with further study of nomenclature, stereochemistry, reactions, and mechanisms of the following functional groups: conjugated dienes, aromatics, alcohols, ethers, aldehydes, ketones, carboxylic acids and their derivatives, and nitrogen containing compounds. Laboratory includes syntheses, qualitative organic analyses, NMR, IR and UV-Vis spectrophotometry, gas chromatography, thin layer chromatography, HPLC, polarimetry, and refractometry. Intended primarily for science majors and pre-professionals. IAI CHM 914 Prerequisite: CHM 204 with a grade of C or better.
Typically offered: Fall, Spring, Summer

CHM 210 - Analytical Chemistry (5 Credits)
3 lecture, 6 lab, 9 total contact hours
Introduces theory and applications of sampling and quantitative chemical analysis with a focus on acid-base equilibria, complexation, extraction and chromatography, solubility, precipitation, redox reactions, and activity. Considerable emphasis is placed on extended equilibrium concepts and the fundamentals of spectroscopy. Laboratory experiments are related to lecture topics; they emphasize experimental precision and accuracy and include spreadsheet-based computer calculations. Prerequisite: CHM 122 or equivalent with a grade of C or better.
Typically offered: Fall, Summer

CHM 220 - Biochemistry (4 Credits)
3 lecture, 3 lab, 6 total contact hours
Introduces the chemical and physical properties of all classes of biological molecules and their assemblies including small molecules, macromolecules and processes found in living organisms. Includes structures of amino acids, nucleotides, lipids and sugars as well as their corresponding macromolecular structures, i.e., proteins, nucleic acids, membranes and polysaccharides as related to their biological functions; kinetics and mechanisms of enzymatic reactions, the central metabolic pathways and the genetic code. Introduces current biochemical techniques and the proper use of laboratory tools and equipment utilized in a biochemistry lab. Prerequisite: CHM 122 with a grade of C or better AND either CHM 201 or CHM 204 with a grade of C or better, or consent of the instructor.
Typically offered: Spring

CHM 295 - Independent Research in Chemistry I (1-3 Credits)
3 - 9 lab, 3 - 9 total contact hours
Provides experimental exploration of an authentic scientific research topic under the supervision of a faculty member. This laboratory course is designed to teach the principles and practice of modern experimental chemistry. Before registering, students must submit to the Chemistry Department a contract with the instructor for accomplishing a defined research task. Credit is contingent on the submission of a final report. Prerequisite: CHM 121 with a grade C or better, prior consultation with instructor, completed contract, and consent of Department Chair.
Typically offered: Fall, Spring