CHEM 100. Introductory Chemistry. (3 Credits)
is a non-laboratory online course that introduces the student to the principles and concepts of chemistry. It also gives students practice with the mathematical techniques used in the sciences.
Prerequisite: None
Offered at: CUW, OL

CHEM 105. Elem of Gen & Biol Chem. (4 Credits)
introduces the student to elements of general, organic, and biological chemistry and is recommended for students seeking a career in nursing.
3 hours lecture, 2 hours lab.
Prerequisite: MAT 121: 4 credits.
Offered at: CUAA, CUW

CHEM 141. General Chemistry I. (4 Credits)
introduces the student to general concepts of chemistry including atomic and molecular structure, reaction stoichiometry, thermodynamics, periodic trends, and gas laws. 3 hours lecture, 1 hour discussion, 2 hours lab. 4 credits.
Prerequisites: Placement Exam or "C" or better in CHEM 100/105.
Offered at: CUAA, CUW

CHEM 142. General Chemistry II. (4 Credits)
is a continuation of CHEM 141 including intermolecular forces, reaction kinetics, acid-base theory, equilibrium, electrochemistry, and nuclear chemistry. 3 hours lecture, 1 hour discussion, 2 hours lab. 4 credits.
Prerequisites: "C" or better in CHEM 141.
Offered at: CUAA, CUW

CHEM 215. Survey of Organic Chemistry. (4 Credits)
is meant for the student whose program requires one semester of organic chemistry. This course introduces the student to organic synthesis and reaction mechanisms, focusing primarily on aspects of structure that will result in given, predictable reactivity. The course will cover acid-base chemistry, stereochemistry, and reactivity of functional groups including hydrocarbons, alcohols, amines, and carbonyls. 3 hours lecture, 3 hours lab. 4 credits.
Prerequisites: "C" or better in CHEM 142.

CHEM 225. Analytical Chemistry. (4 Credits)
introduces the student to the application of chemical principles for the purpose of chemical analysis as well as the many associated skills such as sampling, sample preparation, treatment of data, etc. necessary to obtain valid information on the chemical composition of matter. 2 hours lecture, 4 hours lab. 4 credits.
Prerequisites: "C" or better in CHEM 142.
Offered at: CUW

CHEM 235. Descriptive Inorganic Chemistry. (4 Credits)
introduces the student to the descriptive chemistry of the elements, with a focus on selected elements from within the representative or main groups. Topics to be covered include periodic trends, reactivity patterns, and structure as well as "real world" applications and some chemical history as it applies to the topics presented. 3 hours lecture, 3 hours lab. 4 credits.
Prerequisites: "C" or better in CHEM 142.
Offered at: CUW

CHEM 241. Organic Chemistry I. (4 Credits)
introduces the student to organic synthesis and reaction mechanisms, focusing specifically on the chemistry of alkanes, alkenes and alkynes. Substitution and elimination concepts are covered along with acid-base chemistry and stereochemistry. 3 hours lecture, 1 hour lab lecture, 3 hours lab. 4 credits.
Prerequisites: "C" or better in CHEM 142.
Offered at: CUAA, CUW

CHEM 242. Organic Chemistry II. (4 Credits)
is a continuation of CHEM 241, covering instrumental analysis of organic compounds, chemistry of aromatic systems, carbonyl chemistry, and the chemistry of amines. Laboratory consists of several multi-week projects including multi-step synthesis and unknown identification. 3 hours lecture, 1 hour lab lecture, 3 hours lab. 4 credits.
Prerequisites: "C" or better in CHEM 241.
Offered at: CUAA, CUW

CHEM 265. PHARMACOLOGY. (3 Credits)

CHEM 341. Physical Chemistry I. (4 Credits)
introduces the student to the study of the states of matter, equilibrium, thermodynamics, the properties of solutions, the rates of chemical and physical processes, and the concepts and equations of statistical thermodynamics. 3 hours lecture, 3 hours lab. 4 credits.
Prerequisites: MATH 202 (may be taken concurrently) and a "C" or better in CHEM 142.
Offered at: CUW

CHEM 342. Physical Chemistry II. (4 Credits)
is a study of quantum theory, electronic structure of atoms and molecules, group theory, computational chemistry, and spectroscopy. 3 hours lecture, 3 hours lab. 4 credits.
Prerequisites: "C" or better in CHEM 142, MATH 202.
Offered at: CUW

CHEM 361. Environmental Chemistry/Toxicology I. (3 Credits)
introduces the student to how natural environmental processes are driven by chemical reactions and how these processes are affected by toxicants—natural as well as anthropogenic. Specific areas of concentration include the atmosphere, hydrosphere, energy, toxicology, and disposal of dangerous wastes. 3 credits.
Prerequisites: "C" or better in CHEM 142 or consent of instructor.
Offered at: CUW

CHEM 399. Chemistry Internship. (1-4 Credits)
provides credit for chemistry majors who obtain laboratory or field experience outside of the typical academic environment. The experience must be approved in advance by the Department Chair. Students may enroll for credit more than once and may apply up to 4 credits of CHEM 399 to the requirements for the major. 1-4 credits per experience.
Prerequisite: 16 credit hours of chemistry.
CHEM 425. Biochemistry. (4 Credits)
introduces the student to the ways in which atoms and molecules function to produce life processes. Topics include aqueous interactions and bioenergetics; structure and function of nucleic acids, proteins, carbohydrates, and lipids; enzyme function and kinetics; and an overview of major metabolic pathways. Students will become familiar with and proficient using molecular visualization, data fitting, and kinetic simulation software. 3 hours lecture, 3 hours lab. 4 credits. 
Prerequisites: "C-" or better in CHEM 242 or CHEM 215, or consent of instructor.

Offered at: CUAA, CUW

CHEM 426. Advanced Biochemistry. (4 Credits)
deepens the student's appreciation of life processes and the chemical concepts that underlie them. Topics include metabolic pathways involving carbohydrates, lipids, proteins, and nucleic acids; photosynthesis; the flow of information in biological systems; and content that will be student chosen. Software programs will be utilized, including those introduced in CHEM 425. 3 hours lecture, 3 hours lab. 4 credits. 
Prerequisites: "C-" or better in CHEM 425.

Offered at: CUW

CHEM 435. Advanced Organic Chemistry. (4 Credits)
is an advanced survey of modern organic chemistry, focusing on synthesis using the retrosynthetic approach. Selected topics include classical organic syntheses in addition to pharmaceutical drug applications and synthesis. 3 hours lecture, 3 hours lab. 4 credits. 
Prerequisites: "C-" or better in CHEM 242.

CHEM 445. Advanced Inorganic Chemistry. (4 Credits)
provides advanced treatment of the chemistry of transition metal compounds and organometallic compounds, including discussions of symmetry and group theory, bonding theory, structure of solids, kinetics and mechanisms for reactions, Lewis acid/base chemistry, and others. 3 hours lecture, 3 hours lab 4 credits. 
Prerequisites: "C-" or better in CHEM 235.

Offered at: CUW

CHEM 455. Instrumental Analysis. (4 Credits)
is an in depth study of the use of instruments in chemical analysis. Topics include the basic theory and techniques of instrumental methods of analysis, with emphasis on spectrophotometry, NMR, and gas and liquid chromatography. 2 hours lecture, 4 hours lab. 4 credits. 
Prerequisites: "C-" or better in CHEM 225 or consent of the instructor.

Offered at: CUW

CHEM 490. Chemistry Senior Seminar. (1 Credit)
includes reports on and discussion of current chemical literature. Two semesters of Chemistry Senior Seminar are required for all chemistry majors. 1 credit. 
Prerequisites: Senior standing and 20 credits of chemistry.

Offered at: CUW

CHEM 499. Undergraduate Research. (1-3 Credits)
provides the student the opportunity to work on a research topic under the direction of a member of the chemistry faculty. The experience must be approved in advance by the Department Chair. Students may enroll for credit more than once and may apply up to 4 credits of CHEM 499 to the requirements for the major. 3-12 hours lab. 1 - 4 credits.
Prerequisites: 16 credits of chemistry and instructor’s approval.

Offered at: CUW