CHEMISTRY (CM-UY)

CM-UY 1001 General Chemistry for Engineers Laboratory (1 Credit)
Typically offered Fall, Spring, and Summer terms
This is a one-semester introductory laboratory course in general chemistry. It covers chemical equations, stoichiometry, thermodynamics, gases, atomic and molecular structure, periodic table, chemical bonding, states of matter, chemical equilibrium, organic, inorganic and polymeric materials and electrochemistry. It is a foundation course for most engineering and science majors. | Co-requisites: CM-UY 1003
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: Co-requisites: CM-UY 1003.

CM-UY 1003 General Chemistry for Engineers (3 Credits)
Typically offered Fall, Spring, and Summer terms
This is a one-semester introductory lecture course in general chemistry. It covers chemical equations, stoichiometry, thermodynamics, gases, atomic and molecular structure, periodic table, chemical bonding, states of matter, chemical equilibrium, organic, inorganic and polymeric materials and electrochemistry. It is a foundation course for most engineering and science majors. | Corequisite: EX-UY 1
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Corequisites: EX-UY 1.

CM-UY 1011 General Chemistry Laboratory I (1 Credit)
Typically offered Fall
First half of a two-semester general chemistry laboratory course, covering chemical equations, stoichiometry, thermochemistry, properties of gases, atomic structure, periodic table, chemical bonding and molecular structure. It is a required course for all Biomolecular Science (BMS) majors and for all pre-med students. | Corequisites: CM-UY 1013
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: Co-requisites: CM-UY 1013.

CM-UY 1013 General Chemistry I (3 Credits)
Typically offered Fall
First half of a two-semester general chemistry course, covering chemical equations, stoichiometry, thermochemistry, properties of gases, atomic structure, periodic table, chemical bonding and molecular structure. It is a required course for all Biomolecular Science (BMS) majors and for all pre-med students. | Corequisite: EX-UY 1.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Corequisites: EX-UY 1.

CM-UY 1021 General Chemistry Laboratory II (1 Credit)
Typically offered Spring
Second half of a two-semester general chemistry laboratory course, covering thermodynamics, kinetics, atomic and molecular structure, chemical bonding, states of matter, chemical equilibrium, acid-base chemistry, organic chemistry, polymeric materials and electrochemistry. It is a required course for all Biomolecular Science (BMS) majors and for all pre-med students. | Prerequisites: CM-UY 1001 or CM-UY 1011; Co-requisites: CM-UY 1023
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM-UY 1001 or CM-UY 1011; Co-requisites: CM-UY 1023.

CM-UY 1023 General Chemistry II (3 Credits)
Typically offered Spring
Second half of a two-semester general chemistry course, covering chemical equations, stoichiometry, thermochemistry, properties of gases, atomic structure, periodic table, chemical bonding and molecular structure. It is a required course for all Biomolecular Science (BMS) majors and for all pre-med students. | Prerequisite: CM-UY 1013 or CM-UY 1003. Corequisite: EX-UY 1.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM-UY 1013 or CM-UY 1003.
Corequisites: EX-UY 1.

CM-UY 1032 Introduction to Biomolecular Science (2 Credits)
Typically offered Spring
This is a one-semester overview course in chemistry, providing examples of important discoveries and important chemical innovators, with a strong emphasis on cutting-edge research. Field opportunities are developed to allow students to contribute to the discipline. | Prerequisite: Only first-year students are permitted to enroll in this introductory level course.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: Only first-year students are permitted to enroll in this introductory level course.

CM-UY 2211 Organic Chemistry Laboratory I (1 Credit)
Typically offered Fall
This Laboratory course teaches students how to prepare, isolate and purify typical organic compounds. Experiments illustrate basic techniques. Lab fee required. | Co/prerequisite CM-UY 2213.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No

CM-UY 2213 Organic Chemistry I (3 Credits)
Typically offered Fall
This course covers chemistry of organic molecules: structure, nomenclature, properties and reactions of carbon compounds with emphasis on aliphatic compounds. It also introduces reaction mechanisms and stereochemistry. | Prerequisite: CM-UY 1003 or CM-UY 1023. Co-Requisite: EX-UY 1
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM-UY 1003 or CM-UY 1023.
Corequisites: EX-UY 1.

CM-UY 2221 Organic Chemistry Laboratory II (1 Credit)
Typically offered Spring
This laboratory stresses complex preparation, purification, characterization and identification of organic compounds by chemical and physical means. It introduces instrumental methods of analysis and identification. Lab fee required. | Prerequisite: CM-UY 2211, Co/prerequisite: CM-UY 2223.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM-UY 2211 with a Minimum Grade of D AND Corequisite: CM-UY 2223.

CM-UY 2223 Organic Chemistry II (3 Credits)
Typically offered Spring
This course continues CM-UY 2213 and emphasizes finding the principles of organic chemistry in industrial practice and biochemical mechanisms. It introduces instrumental methods of analysis and identification. | Prerequisite: CM-UY 2213. Co-requisite EX-UY 1
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: (CM-UY 2213 with a Minimum Grade of D OR CM-UY 2214 with a Minimum Grade of D).

CM-UY 3314 Biochemistry I (4 Credits)
Typically offered Fall
This course surveys modern biochemistry and emphasizes current areas of research. Also covered are structure-function relationships in proteins; enzymes and their mechanisms of action; bioenergetics principles and energy production; and biochemical theories and techniques. | Prerequisites: CM-UY 2213 or CM-UY 2214 or CM-UY 2234 or instructor's permission.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM-UY 2213 or CM-UY 2214 or CM-UY 2234 or instructor's permission.

CM-UY 3323 Biochemistry II (3 Credits)
Typically offered Spring
This course is a continuation of Biochemistry I, focusing on cellular metabolism, including metabolism of proteins/amino acids, lipids and carbohydrates. We will also cover the basic principle of hormone regulation and biochemistry of nutrition. | Prerequisites: CM-UY 3314 or instructor's/advisor's permission
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No

CM-UY 3324 Biochemistry II (4 Credits)
Typically offered Spring
This course continues Biochemistry I. It covers principles of intermediary metabolism: energetic membrane structure and transport; structure and function of DNA and RNA; principles of molecular biology; the immune system; and hormonal regulation and cancer. | Prerequisite: CM-UY 3314 or instructor's permission.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM-UY 3314 with a Minimum Grade of D.

CM-UY 3334 Biochemistry for Engineers (4 Credits)
Typically offered Fall
This course is aimed at familiarizing engineering students with basic principles of biochemistry with emphasis placed on the relationship between chemical structure and function of major classes of biomolecules in the living cell. The chemistry underlying a number of key cellular processes will be covered in some detail. Also, some industrial and/or biomedical applications of, for example, enzymes will be briefly discussed. | Prerequisite: CM-UY 2213 and CM-UY 2614 or instructor's/advisor's permission
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM-UY 2213 or instructor's/advisor's permission.

CM-UY 3714 Physical Chemistry I (4 Credits)
Typically offered Spring
This course provides a molecular approach to physical chemistry. The course covers quantum mechanics and its applications to atomic and molecular structure and to molecular spectroscopy. An introduction to statistical thermodynamics is also covered. | Prerequisites: (CM-UY 1003 or CM-UY 1023) and (MA-UY 1124 or MA-UY 1154) and PH-UY 1013.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM 1004 or CM 1024 and MA 1124 or MA 1154 and PH 1013.

CM-UY 3714G Physical Chemistry I (4 Credits)
This course provides a molecular approach to physical chemistry. The course covers quantum mechanics and its applications to atomic and molecular structure and to molecular spectroscopy. An introduction to statistical thermodynamics is also covered. | Prerequisites: (CM-UY 1003 or CM-UY 1023) and (MA-UY 1124 or MA-UY 1154) and PH-UY 1013.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No
Prerequisites: CM 1004 or CM 1024 and MA 1124 or MA 1154 and PH 1013.

CM-UY 4011 Information Sources for the Chemical Sciences (1 Credit)
Typically offered Spring
This hands-on course introduces methods and tools for searching. It includes both electronic (CD-ROM and online) and print databases. Students may emphasize topics related to their research. Required of all BS students in biomolecular science.
Grading: Ugrd Tandon Graded
Repeatable for additional credit: No

CM-UY 4812 Special Topics in Chemistry (2 Credits)
Typically offered Spring
This course covers topics of special interest in Chemistry to promote students' exposure to new and emerging technologies that are not covered in the regular program's course offerings. | Prerequisite: Advisor's Approval
Grading: Ugrd Tandon Graded
Repeatable for additional credit: Yes

CM-UY 4813 Special Topics in Chemistry (3 Credits)
Typically offered Spring
This course covers topics of special interest in Chemistry to promote students' exposure to new and emerging technologies that are not covered in the regular program's course offerings. | Prerequisite: Advisor's Approval
Grading: Ugrd Tandon Graded
Repeatable for additional credit: Yes