CHEMISTRY (CY)

CY 105 General Chemistry I (3)
Corequisite(s): CY 107.
Part I of a two-semester sequence. General chemistry for science majors, including basic principles and laws of chemistry. Topics include measurements, dimensional analysis, reaction and stoichiometry, periodicity, atomic structure, bonding and molecular structure, and an introduction to organic chemistry.

CY 106 General Chemistry II (3)
Prerequisite(s): CY 105.
Corequisite(s): CY 108.
Part II of a two-semester sequence. Continuation of CY 105. Topics include states of matter, solutions, kinetics, equilibrium, acid-base theory, thermodynamics, and electrochemistry.

CY 107 General Chemistry Laboratory I (1)
Corequisite(s): CY 105.
Basic principles of matter will be explored. Topics of experimentation include obtaining accurate measurements, identifying unknown substances from their physical and chemical properties, purifying matter, exploring gas laws, and performing an acid-base titration.

CY 108 General Chemistry Laboratory II (1)
Corequisite(s): CY 106.
Topics of experimentation include qualitative analysis, exploring reaction rates, ionic equilibria, and synthesis.

CY 115 Concepts of General Chemistry I (4)
Prerequisite(s): EdReady placement score of MS 112 or higher.
Part I of a two-semester sequence. General Chemistry for students who are not planning on taking any higher-level courses in chemistry. This course covers the basic principles and laws of chemistry is designed to cover a broad range of topics. Topics include measurements, the periodic table, ionic and covalent compounds, chemical reactions, energy changes, gases, liquids and solids, acids and bases and nuclear chemistry.

CY 116 Concepts of General Chemistry II (4)
Prerequisite(s): CY 115.
Lecture 3 hours; Lab 3 hours. Part II of a two-semester sequence. General chemistry for students who are not planning on taking any higher-level courses in chemistry. This course is the second semester in the basic principles and laws of chemistry. Topics include organic molecules, functional groups, molecular configurations, aldehydes and ketones, carboxylic acids and derivatives, neurotransmitters, and metabolism.

CY 231 Organic Chemistry I (4)
Prerequisite(s): CY 106.
Corequisite(s): CY 231 lab.
Part I of a two-semester sequence. Structure and properties of aliphatic hydrocarbons and their halo derivatives emphasizing nomenclature, isomerism, synthesis, reactions, mechanisms and applications.

CY 232 Organic Chemistry II (4)
Prerequisite(s): CY 231.
Corequisite(s): CY 232 lab.
Part II of a two-semester sequence. Structure and properties of aromatic compounds, halides, carbonyl compounds, alcohols, ethers and amines, their nomenclature, synthesis, reactions, mechanisms, spectroscopy and applications.

CY 321 Quantitative Analysis (5)
Prerequisite(s): CY 106.
Lecture 3 hours, Lab 6 hours. Theory and practice of gravimetric, volumetric, potentiometric, and colormetric methods of analysis.

CY 341 Physical Chemistry I (4)
Prerequisite(s): CY 106, MS 125, PHS 211 and 212.
Part I of a two-semester sequence. Chemical thermodynamics with emphasis on understanding physical properties of pure substances and mixtures. The course covers fundamentals of classical thermodynamics with applications to phase transitions, colligative properties, and chemical equilibria.

CY 342 Physical Chemistry II (4)
Prerequisite(s): CY 106, CY 341, MS 126, PHS 211 and 212.
Part II of a two-semester sequence. Fundamentals of quantum chemistry and spectroscopy. The course concentrates on fundamentals of quantum mechanics with applications to chemistry. The course also covers theoretical basis of spectroscopy, focusing on infrared, Raman, visible, and nuclear magnetic resonance techniques.

CY 347 Concepts of Physical Chemistry (4)
Prerequisite(s): MS 113, PHS 201, 202, CY 105 and 106.
This algebra-based course covers fundamentals of chemical thermodynamics and molecular structure with emphasis on life-science applications.

CY 362 Biochemistry I (4)
Prerequisite(s): CY 231.
Biochemical evolution, protein structure and function, flow of genetic information, enzymes, and enzyme kinetics.

CY 363 Biochemistry II (4)
Prerequisite(s): CY 232 and CY 362.
Metabolism, signal transduction, glycolysis and gluconeogenesis, citric acid cycle, oxidative phosphorylation, photosynthesis, glycogen and fatty acid metabolism.

CY 411 Intermediate Inorganic Chemistry (5)
Prerequisite(s): CY 106, CY 232 and PHS 202.
Lecture 3 hours, Lab 6 hours. Fundamental topics in inorganic chemistry including atomic structure, chemical bonding, periodic relationships, acid-base theories, non-aqueous solvents, and reaction mechanisms.

CY 421 Instrumental Analysis (5)
Prerequisite(s): CY 106, CY 321 and PHS 202.
Lecture/3 hours. Lab/6 hours. The operating principles and techniques involving the use of analytical instruments.

CY 430 Environmental Chemistry (4)
Prerequisite(s): CY 232 and 321.
Lecture/3 hours; Lab/3 hours. Introductions to water, air, and soil quality and their measurements. Introduction to the problems, regulations, treatment, and ultimate disposal of hazardous and toxic waste materials. Spill clean-up, groundwater transport, land disposal, incineration and treatment technologies discussed.

CY 435 Advanced Topics in Chemistry (3)
Prerequisite(s): CY 232.
Advanced study of various topics in chemistry and chemistry related fields. This course is intended to be offered once per year, and topic selections will vary from year to year. See instructor. May be duplicated for credit for a total of 12 semester hours.
CY 471 Toxicological Chemistry (3)
Prerequisite(s): CY 232.
Study of the principles of toxicology including identification of, characterization of, and risk from environmental exposures to toxic substances.

CY 490 Internship (1)
Prerequisite(s): Approval of instructor and availability of placement.
Student will gain on-the-job experience with a firm or government agency. Student is expected to devote a minimum of 20 hours/week to this course. Grades: Pass/Fail.

CY 497 Chemistry Research (1)
Prerequisite(s): Approval of department head.
The student is assigned a simple piece of fundamental research. May be duplicated for credit for a total of 3 semester hours. Grades: Pass/Fail.