CHEMISTRY (CHEM)

CHEM 111 ~INTRO TO GENERAL CHEMISTRY **4 Credit Hours**
Elementary introduction to concepts of chemistry, including metric measurement, periodic properties, atomic and molecular structure, bonding, formulas and nomenclature, redox chemistry, stoichiometry, states of matter and gas laws, solutions, equilibria, and acid-base chemistry. Designed for students with no background in chemistry. Co-requisite laboratory coordinates exercises with lecture topics. (3 lecture hours and 2 lab hours per week)
Corequisite(s): CHEM 111L

CHEM 111L INTRO TO GEN CHEM LAB **0 Credit Hours**
Co-requisite lab for CHEM 111. (2 lab)
Corequisite(s): CHEM 111

CHEM 112 ~INTRO ORGANIC & BIOL CHEM **4 Credit Hours**
Introductory survey of organic and biological chemistry for students in health sciences as well as those desiring a laboratory science elective to satisfy general education requirements or as a preparation for CHEM 223. Includes nomenclature and the basic physical and chemical properties of the major classes of aliphatic and aromatic organic compounds as well as the major classes of biomolecules. The major metabolic pathways of carbohydrate, lipid and protein metabolism of eukaryotes will also be discussed. (3 lecture, 1 lab)
Prerequisite(s): CHEM 111 or CHEM 115
Corequisite(s): CHEM 112L

CHEM 112L INTRO ORGANIC & BIOL CHEM LAB **0 Credit Hours**
(2 lab)
Corequisite(s): CHEM 112

CHEM 115 ~FUNDAMENTALS OF CHEMISTRY 1 **4 Credit Hours**
Terminology and quantitative relationships; atomic structure, periodic law, chemical bonding, states of matter, and solutions.
Corequisite(s): CHEM 115L
Pre/Corequisite(s): MATH 126

CHEM 115L FUND OF CHEMISTRY 1 LAB **0 Credit Hours**
Co-requisite lab of CHEM 115. (2 lab)
Corequisite(s): CHEM 115

CHEM 116 ~FUNDAMENTALS OF CHEMISTRY 2 **4 Credit Hours**
Continuation of CHEM 115. Chemical equilibrium, ionic equilibrium, electrochemistry, and organic chemistry. (3 lecture, 2 lab)
Prerequisite(s): CHEM 115
Corequisite(s): CHEM 116L

CHEM 116L FUND OF CHEMISTRY 2 LAB **0 Credit Hours**
Co-requisite lab of CHEM 116. (2 lab)
Corequisite(s): CHEM 116

CHEM 231 ORGANIC CHEMISTRY **4 Credit Hours**
An overview of organic chemistry with emphasis on biological applications for students in medical technology, agriculture & nutrition. Nomenclature, structure, reactivity and stereochemistry will be covered. (3 lecture, 2 lab)
Prerequisite(s): CHEM 112 and CHEM 115
Corequisite(s): CHEM 231L

CHEM 231L ORGANIC CHEMISTRY LAB **0 Credit Hours**
(2 lab)
Corequisite(s): CHEM 231

CHEM 233 ORGANIC CHEMISTRY 1 **3 Credit Hours**
Study of characteristic reactions, synthesis, and stereochemistry of major classes of organic compounds using a mechanistic approach. Classes of compounds studied include alkanes, alkyl halides, alkenes, and alcohols. Mechanisms studied include: free radical halogenation, nucleophilic substitution, nucleophilic addition, and electrophilic addition. (3 lecture)
Prerequisite(s): CHEM 115 and CHEM 116
Corequisite(s): CHEM 235

CHEM 234 ORGANIC CHEMISTRY 2 **3 Credit Hours**
Continuation of CHEM 233 to include spectroscopic methods, theory and interpretation. Classes of compounds studied include alkynes, aromatics, carbonyls, amides, amines, and synthetic polymers. Mechanisms studied include electrophilic aromatic substitution, Aldol condensation, esterification, and polymerization. Lab work includes some computer simulation, unknown analysis and individual work. (3 lecture)
Prerequisite(s): CHEM 115 and CHEM 116 and CHEM 233 and CHEM 235
Corequisite(s): CHEM 236

CHEM 235 ORGANIC CHEMISTRY 1 LAB **1 Credit Hour**
An introduction to microscale techniques of organic chemistry preparation and purification, this lab is designed to be taken concurrently with CHEM 233. Techniques studied will be re-crystallization, distillation, extraction and preparation of simple aliphatic compounds. (1 lab)
Corequisite(s): CHEM 233

CHEM 236 ORGANIC CHEMISTRY 2 LAB **1 Credit Hour**
This lab is designed to be taken concurrently with CHEM 234. Techniques studied will include multi-step synthesis, qualitative analysis and instrumental analysis. Some compute simulation and individualized experiments will be involved. (1 lab)
Corequisite(s): CHEM 234

CHEM 293 COOPERATIVE WORK EXPERIENCE **1-8 Credit Hours**
(1-8 lecture)

CHEM 297 SPECIAL TOPICS **1-4 Credit Hours**
(1-4 lab)

CHEM 297L SPECIAL TOPICS: LAB **0 Credit Hours**

CHEM 305 SURVEY OF CHEMICAL ANALYSIS **3 Credit Hours**
Survey of analytical methods in chemistry, including volumetric analysis, gravimetric analysis, solution equilibria, spectrophotometry, separations and electrochemical methods. Chromatographic and spectroscopic methods of instrumental analysis may also be included. (3 lecture)
Prerequisite(s): CHEM 116

CHEM 393 COOPERATIVE EDUCATION **1-9 Credit Hours**
(1-9 lecture)

CHEM 397 SPECIAL TOPICS **1-6 Credit Hours**
Special topics in Chemistry. (1-6 lecture)

CHEM 399 INDEPENDENT STUDY **1-3 Credit Hours**
(1-3 lecture)

CHEM 410 INTRODUCTORY BIOCHEMISTRY **3 Credit Hours**
Introduction to chemistry of cellular constituents (proteins, amino acids, carbohydrates, lipids, nucleic acids, enzymes and coenzymes) and their metabolism in animals and plants. (3 lecture)
Prerequisite(s): CHEM 115 and CHEM 116 and CHEM 233
Corequisite(s): CHEM 412

CHEM 412 INTRO BIOCHEMISTRY LAB **1 Credit Hour**
Classic and modern laboratory techniques in biochemistry. (1 lab)
Prerequisite(s): CHEM 115 and CHEM 116 and CHEM 233
Corequisite(s): CHEM 410