Course Descriptions

BA 4239  
**International Trade**  
A study of the theory and practice of international trade and its application to current problems and policies, including such topics as tariffs, quotas, international payments, economic unions of foreign states, and foreign exchange. Prerequisite: Microeconomics, Principles of Marketing, Finance and Senior status and completion of all Business core courses or with permission of instructor. 3 hours Lecture and Discussion—3 credits

BA 4241  
**Financing Sports Operations**  
A study of financial concepts and their application to the sports environment, including analysis of obtaining public funding through financing sports activities, selling and pricing of sports tickets, sale of licensed products and services, sale of concessions, and exploring types of sponsorship benefits. Prerequisites: Principles of Accounting I and II, Finance and Junior Status. 3 hours Lecture and Discussion—3 credits

BA 4242  
**Cost Accounting**  
A study of the various factors in cost relationships that effectively aid management in the efficient operation of business enterprises. Budgets and cost reports for various levels of management. Prerequisite: Junior Status, Accounting I, II. 3 hours Lecture and Discussion—3 credits

BA 4244  
**Management Seminar**  
Management Seminar is designed as an advanced capstone course for all business majors. This course represents an opportunity for all business majors to review, extend and apply all previous coursework completed in the business curriculum using strategic planning as a framework. This course will combine theory and practice, and will require active participation in a computer simulation game in which students will develop a cohesive strategy, formulate a business plan, “manage” a company, and report the results to a Board of Directors. Prerequisite: Senior Status. 3 hours Lecture and Discussion—3 credits

BA 4247  
**Advertising**  
Planning, implementing, and evaluating advertising and sales promotion activities. Determining advertising objectives, selection of campaign themes and media, evaluating advertisements and campaigns, controlling advertising and promotion expenditures, the client-agency relationship, regulations and the social and economic effects of advertising. Prerequisite: Principles of Marketing. 3 hours Lecture and Discussion—3 credits

BA 4145  
**Sports Marketing and Media Relations**  
A study of the basic principle of marketing and how it applies to sports, leisure and recreation. Provides the student an overview of the mass media industry as they interface with the sport industry. 3 hours Lecture and Discussion—3 credits

Specialized Methods and Techniques  
Each major department offers a series of courses designed to acquaint the student with various applications of his/her professional specialty. In the Business Administration Program this requirement is fulfilled by satisfactory completion of IT 1011 Information Technology Concepts, IT 1012 Computer Applications and IT 1031 Intermediate Computer Applications.

**Employment Program**

BA 2370  
**Employment Program**  
Each student in Business Administration is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.

**Chemistry**

CH 0011  
**Basic Chemistry**  
A non-credit lecture and laboratory course designed to prepare students for General Chemistry I and II. Energy, matter, and change with appropriate problem-solving applications will be emphasized. Formulas, equations, and descriptive chemistry will be covered in the laboratory. 3 hours Lecture and 3 hours Laboratory—0 credits
CH 1001
Chemistry Fundamentals
This course presents basic chemical concepts to non-scientists. Students will develop some familiarity with laboratory skills and techniques as well as the foundations of chemical knowledge so they can make informed personal and professional decisions. Lecture topics include structure, bonding and reactivity, water and solutions, and bio-organic and environmental chemistries. This course does not satisfy the requirement for General Chemistry I. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 1103
General Chemistry I
General Chemistry I, an introduction to principles of chemistry, covers atomic structure, chemical bonding, the mole concept, states of matter, periodic relationships, thermochemistry, acids and bases, and properties of solutions. Prerequisite: high school chemistry. 3 hours Lecture & 3 hours Laboratory—4 credits

CH 1203
General Chemistry II
General Chemistry II deals with kinetics, gaseous and ionic equilibria, metals and nonmetals, electrochemistry, environmental, and nuclear chemistry, and special topics. The laboratory’s experimental sequence is designed to enhance the student’s understanding of chemical concepts and to develop laboratory technique. A large part of General Chemistry II laboratory is devoted to qualitative analysis of cations and anions. Prerequisite: General Chemistry I. 3 hours Lecture & 3 hours Laboratory—4 credits

CH 2003
Principles of Organic Chemistry
This course surveys both aliphatic and aromatic classes of compounds with their traditional subclasses. Basic reaction mechanisms are introduced and special topics, such as fats, and oils, detergents, carbohydrates, proteins, heterocyclic compounds, vitamins, and hormones are covered briefly. Prerequisite: General Chemistry I and II. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 2007
Introduction to Forensic Science
This lecture/laboratory course is designed to acquaint the student with the principles of forensic science, to introduce the student to the different areas of forensic science, and to introduce the student to some applications of biological, chemical and physical methods in the forensic sciences. Proper evidence handling is also discussed. Prerequisites: successful completion of at least one semester of college chemistry. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 2120
Organic Chemistry I
An introduction to Organic Chemistry, this course reviews the basic concepts of bonding theory and acid-base theory as it applies to organic compounds. The structure, properties nomenclature and chemistry of the alkanes, alkyl halides, alkenes, alkynes and the alcohols are covered in depth. The development of reaction mechanisms is discussed and the mechanisms for substitutions, eliminations and additions are studied and applied to the reactions of the alkyl halides, the alkenes and the alcohols. The laboratory component introduces the common techniques used for the separation, purification and identification of organic compounds, including chromatographic techniques and infrared spectroscopy. The reactions of the functional groups covered in the lecture component are studied. Pre-requisite: General Chemistry II. Three hours of lecture and three hours of laboratory work per week - 4 credits.

CH 2220
Organic Chemistry II
A continuation of the study of Organic Chemistry, this course offers an introduction to the structure, properties, nomenclature and chemistry of the aromatic compounds, ketones, aldehydes, carboxylic acids and their derivatives and the amines. The mechanism of aromatic substitution, of additions, reductions and oxidations of the carbonyl compounds and the synthesis and reactions of the amines are studied. The role of organic compounds in biological systems is introduced throughout the course. The laboratory component is used to demonstrate the reactions and mechanisms discussed in the lecture portion and an introduction to Nuclear Magnetic Resonance spectroscopy as used in structure determination is included. Pre-requisite: Organic Chemistry I. Three hours of lecture and three hours of laboratory work per week – 4 credits.
Course Descriptions

CH 2155-CH 2256
Selected Topics I and II
A discussion and laboratory course dealing with modern chemical concepts. The student, with concurrence from the instructor, will investigate in depth a topic of his/her choice. Example topics include inorganic syntheses, glassblowing, radiochemistry, and symmetry. Elective for Chemistry sophomores, juniors or seniors with permission of Department Chairperson. 3 hours Laboratory and Instruction each—1 credit each

CH 2201
Chemical Literature
This course includes a discussion of the content and the usage of the various sources of chemical information. Emphasis is placed both on locating specific facts and on on-line literature searches. Regular library assignments are given, and the class as a whole visits a large chemical library in the area. Prerequisite: At least sophomore standing. 1 hour Lecture—1 credit

CH 2203
Biochemistry
A study of the chemistry and metabolism of proteins, carbohydrates, lipids, nucleic acids, and other biologically important compounds. Prerequisite: Principles of Organic Chemistry or Organic Chemistry I. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 3001
Introductory Biomedical Instrumental Methods
A survey, in both theory and practice, of the various types of instrumentation used in the biomedical and pharmaceutical research fields. Laboratory work includes gaining experience with various types of spectroscopic, chromatographic, colorimetric, radiochemical and radiographic equipment. Prerequisites: General Chemistry I and II. Organic Chemistry and Biochemistry are also desirable. 2 hours Lecture and 3 hours Laboratory—3 credits

CH 3122
Radioisotope Techniques
Introductory lecture course dealing with the properties of radiation, elementary radioisotope calculations, and chemical, medical and biological uses of radioisotopes. Prerequisite: Permission of Instructor. 3 hours Lecture and Discussion—3 credits

CH 3125
Physical Chemistry I
Covers the general areas of equations of state for real gases, the laws of thermodynamics and their applications, thermochemistry, homogeneous equilibria, phase equilibria, and electrochemistry. Prerequisites: Calculus II and Physics II or Permission of Instructor. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 3130
Analytical Chemistry
This course includes gravimetric and volumetric methods of analysis as well as an introduction to colorimetric, electro-analytical, and chromatographic techniques. Prerequisites: General Chemistry I and II. 3 hours Lecture and 6 hours Laboratory—5 credits

CH 3220
Advanced Organic Chemistry
Organic reaction mechanisms and their modification by inductive, resonance, and steric effects are covered in depth. Also discussed are methods of determining reaction mechanism, stereochemistry, orbital symmetry relationships, and selected topics in synthesis. Prerequisites: Organic Chemistry II and Physical Chemistry II. 3 hours Lecture—3 credits

CH 3223
Instrumental Analysis
A survey of the sources of chemical signals, and their detection and amplification by instrumental methods. Laboratory work includes visible-ultraviolet and infrared spectroscopy, gas chromatography, polarography, potentiometry, coulometry, and liquid chromatography. Prerequisites: Analytical Chemistry, and Physical Chemistry I or Permission of Instructor. 3 hours Lecture & 6 hours Lab—5 credits

CH 3224
Physical Chemistry II
This course covers kinetics, elementary quantum mechanics and its application to bonding theories. Basic theory of spectroscopy and diffraction and use in molecular structure determination including Fourier transforms, adsorption and heterogeneous catalysis, as well as transport mechanisms and dipole moments are also covered. Prerequisites: Physical Chemistry I and Ordinary Differential Equations or Permission of Instructor. 3 hours Lecture and 3 hours Laboratory—4 credits
**CH 4025**  
*Polymer Chemistry Introduction*  
This course provides a fundamental understanding of terms and procedures employed in the polymer section of industry. Topics to be covered include polymer structure, synthesis and behavior; processing; environmental effects; and special materials, such as composites and biopolymers. Prerequisites: Organic Chemistry I and II. 3 hours Lecture—3 credits

**CH 4041**  
*Senior Research*  
Selected seniors engage in supervised investigations involving library work and laboratory experiments related to chemistry. Requirement: Permission of Department Chairperson. 1-3 credits

**CH 4117**  
*Organic Analysis*  
This course teaches the identification of organic compounds through the use of physical properties, chemical tests, spectroscopic analysis, and preparation of known derivatives. Emphasis is placed on the modification of physical and chemical properties by steric and electronic effects. Infrared and ultraviolet spectrometers and a gas chromatograph are available for laboratory use. Computer simulations of compound identifications are an integral part of the program. Prerequisites: Instrumental Analysis and Organic Chemistry II or Permission of Instructor. 3 hours Lecture and 3 hours Laboratory—4 credits

**CH 4126**  
*Advanced Inorganic Chemistry*  
Present theories of chemical bonding are treated. These include electrostatic, valence bond, molecular orbital, and continuous solid models. From these the structures of inorganic substances are derived. Topics such as symmetry and Point Groups, nonaqueous solvent systems, secondary chemical forces, and structure and properties of transition metal complexes are treated. When time permits, a survey of organometallic chemistry is included. Prerequisite: Physical Chemistry II. 3 hours Lecture—3 credits

**CH 4201**  
*Seminar (Chemistry)*  
Student-led, in-depth discussions on specific chemical questions. 1 hour Lecture and Discussion—1 credit

**CH 4205**  
*Advanced Biochemistry*  
A presentation of modern biochemical topics, including the chemistry of cellular compounds, energy transformation in living organisms, and the synthesis and properties of macromolecules. Prerequisites: Organic Chemistry I and II and Physical Chemistry I and II or Permission of Instructor. 3 hours Lecture & 3 hours Lab—4 credits

**CH 4241**  
*Advanced Physical Chemistry*  
A study of the physical chemistry of polymers with emphasis on polymerization kinetics, structure of polymers, and their physical properties and characterization methods. Prerequisite: Physical Chemistry II or Permission of Instructor. 3 hours Lecture—3 credits

* Students may substitute courses of equal credits in the sciences, computers, mathematics, or Business Administration with permission of Advisor and Department Chairperson.

**Specialized Methods and Techniques**  
Each major department offers a series of courses designed to acquaint the student with various applications of the professional specialty.

**CH 2004**  
*Fire Protection Chemistry*  
This course provides the student with the knowledge of the chemistry of materials and their physical properties as these subjects relate to fire. 1 hour Lecture and Discussion—1 credit

**CH 2005**  
*Chemistry of Hazardous Materials*  
This course covers the unique requirements in handling hazardous materials when they are encountered in a chemical emergency. 1 hour Lecture and Discussion—1 credit

**CH 2006**  
*Safety in the Laboratory*  
This course deals with the hazards associated with handling chemicals that have acute or chronic toxicities and/or physical hazards in the research laboratory setting. Prudent practices will be emphasized. 1 hour Lecture and Discussion—1 credit
Course Descriptions

CH 2131  
**Descriptive Environmental Chemistry**
Surveys inorganic chemistry with an environmental emphasis, geochemical cycles, aqueous equilibria, redox, bacterial processes, heavy metals, and atmospheric chemistry. Prerequisites: General Chemistry I and II. 1 hour Lecture & 2 hours Laboratory—2 credits

CH 3157  
**Inorganic Synthesis Laboratory**
Inorganic and organometallic compounds are prepared using a variety of synthetic techniques and apparatus not encountered in the lower division laboratory courses. Students may select syntheses from the course collection or may suggest new ones from other sources such as the current literature. The course emphasizes the writing of a legal laboratory notebook. Prerequisites: Organic Chemistry I and II. Weekly individual laboratory conference and 3 hours Laboratory—2 credits

CH 4150  
**Separation Methods**
The course will focus on the development of methods for laboratory scale separations which are driven by distribution equilibria or by external fields. The fundamental principles that govern separation at the molecular level will be discussed. The theory of chromatographic retention will be covered, followed by the study of the instrumentation required for gas, liquid and supercritical fluid chromatography and electroforetic techniques. The application of theory and instrumentation to the development of methods will be stressed. Prerequisites: Biomedical Instrumentation or Instrumental Analysis. 1 hour lecture and 2 hours laboratory – 2 credits

Employment Program

CH 2370  
**Employment Program**
Each student in Chemistry and Biochemistry is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from Career Services, located in Segal Hall. 500 hours of On-the-Job Training—4 credits

**COMPUTER AND BUSINESS INFORMATION SYSTEMS**

IT 1011  
**Information Technology Concepts**
This course introduces many fundamental concepts of computers and information technology. Lectures and discussions include computer hardware and software, Internet and World Wide Web, data file and database, telecommunications and networks, and future technology trends. 1.5 hours Lecture and Discussion—1.5 credits. Prerequisites: None. It is strongly recommended that it be taken with IT 1012 Computer Applications.

IT 1012  
**Computer Applications**
This course introduces the basics of popular and useful computer applications. Emphasis is placed on a working knowledge of windows operating system, word processing, spreadsheet, and presentation software at the introductory level. MS Windows and Office software are used for hands-on exercises. 1.5 hours Lecture and Hands-on – 1.5 credits. Prerequisites: None. It is strongly recommended that it be taken with IT 1011 Information Technology Concepts.

IT 1031  
**Intermediate Computer Applications**
This course extends computer applications into real world projects. Emphasis is placed on a working knowledge of word processing, spreadsheet, and database management software at the intermediate level. MS Office software is used for hands-on exercises. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and successful performance on CBIS departmental diagnostic exam for CBIS students

IT 2118  
**Web Design**
This course introduces the generally accepted web design principles that underlie the construction of Web pages and applets. Students will create a variety of web pages using HTML, JavaScript, and web design application software. Students will also learn the fundamentals of XML data and integration. 3 hours Lecture and Hands-on – 3 credits Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students