CHEMISTRY (CH)

CH 1050 Laboratory Safety (1)
Principles of safety in chemistry, biology and physics lab field settings. Procedures of accident prevention, chemical storage and treatment of fires and spills. Designed for science majors and particularly science teachers. Open only to science, education, and forensic science majors. Springs and Falls.

CH 1200 Majoring and Working in Chemistry (1)
An introduction to the field of chemistry, the requirements of Chemistry and Biochemistry degrees, moral and professional ethical aspects, and the range of possible careers with these degrees. Intended for all chemistry and biochemistry majors, including first-year students or those interested in majoring in chemistry. Elective for transfer students entering with 24 or more credits. Pass/No Pass. Falls.

CH 2010 The Literature and Ethics of Chemistry (0.5)
An introduction to the literature of chemistry and the ethics of research. Topics include an overview of chemical literature, performing literature searches, finding chemical information in journals, an introduction to professional scientific/chemical writing, and professional ethics of researching and publishing. Required of all chemistry and biochemistry majors, typically taken in the sophomore year. Springs. Pass/No Pass.

CH 2255 Techniques in Laboratory (3)
Develops the technical skills which ensure the ability to carry out accurate and precise laboratory experiments, particularly those involving analysis. Some of the skills included are mass and volume measurements, solution preparation, titration, buffer preparation, spectrophotometry, chromatography, and statistical data treatment. An introduction to the literature of chemistry and forensic science and to professional scientific writing. Additional course fee required. Springs.
Prerequisite(s): General Chemistry I CH 2335 and Laboratory Safety CH 1050
Corequisite(s): Laboratory Safety CH 1050

CH 2335 General Chemistry I (4)
Fundamental principles and theories of chemistry including intermolecular forces, atomic and molecular structure, chemical reactions and thermochemistry. The laboratory component includes basic laboratory techniques and complements and reinforces classroom concepts. Not open to students who have earned credit for (CH 2130 and CH 2230) or CH 2330. Additional course fee required. Falls. (QRCO)
Prerequisite(s): Level 2 or 3 on the Mathematics Placement Assessment, or a minimum grade of C in MA 1800.
Corequisite(s): CH 1335 if student does not meet the prerequisite.

CH 2340 General Chemistry II (4)
Fundamental principles and theories of chemistry including equilibrium, thermodynamics, electrochemistry, and kinetics. The laboratory component introduces basic laboratory techniques and complements and reinforces classroom concepts. Not open to students who have earned credit for CH 2140 and CH 2240. Additional course fee required. Springs.
Prerequisite(s): CH 2330 or CH 2335.

CH 3030 Biochemistry I (4)
The major chemical compounds present in living things and the chemical reactions they undergo. Considers dynamic aspects of biochemistry as well as material features. Springs.
Prerequisite(s): Organic Chemistry I (CH 3370)

CH 3370 Organic Chemistry I (4)
Bonding principles, structure and nomenclature, synthesis and reactions of alkanes, alkenes, alkynes, alcohols, ethers and alkyl halides along with appropriate mechanism and stereochemistry, and spectroscopic methods, The laboratory component includes the preparation, purification, and identification of organic compounds, in most cases using microscale techniques. Both standard and instrumental methods are used. Not open to students who have earned credit for CH 3310 and CH 3330. Additional course fee required. Falls.
Prerequisite(s): (CH 2330 and CH 2340) or (CH 2335 and CH 2340).

CH 3380 Organic Chemistry II (4)
Continuation of CH 3370. Nomenclature, reactions and synthesis of conjugated dienes, aromatics, organometallics, phenols, aldehydes and ketones, carboxylic acids and derivatives, and amines. Mechanisms include electrophilic aromatic substitution and nucleophilic addition. The laboratory component involves synthesis, reactions and spectroscopic identification of compounds studied in the course. Not open to students who have earned credit for CH 3320 and CH 3350. Additional course fee required. Springs.
Prerequisite(s): CH 3370.

CH 3410 Physical Chemistry: Thermodynamics and Kinetics (4)
The field of physical chemistry and the behavior of matter interpreted by an understanding of physicochemical principles. Topics include properties of gases and solutions, thermodynamics, equilibria, and kinetics. Additional course fee required. Fall of even years. (WRCO)
Prerequisite(s): [(CH 2330 and CH 2340) or (CH 2335 and CH 2340)] and [(MA 2490 and MA 2500) or (MA 2550 and MA 2560) may be concurrent].

CH 3465 Physical Chemistry: Quantum Mechanics and Spectroscopy (4)
Theory and applications of quantum mechanics to atomic and molecular structure, bonding, and spectroscopy. Introduction to statistical mechanics. Additional course fee required. Spring of odd years.
Prerequisite(s): [(CH 2330 and CH 2340) or (CH 2335 and CH 2340)] and [(MA 2490 and MA 2500) or (MA 2550 and MA 2560)].

CH 3500 Inorganic Chemistry (4)
Descriptive chemistry of the inorganic elements supported by the theories needed to understand it. Particular attention is given to bonding, acid-base theories, oxidation-reduction and coordination chemistry. Laboratory presents classical methods in inorganic synthesis and characterization. Additional course fee required. Fall of odd years.
Prerequisite(s): CH 2340.

CH 3550 Instrumental Analysis (4)
Modern chemical analysis in large part involves the use of instruments. Students gain insight into the theory and operation of such instruments. An understanding of the operating parameters which must be controlled in order to make results meaningful and the types of analyses to which each instrument can be applied, including environmental and biochemical systems is emphasized. Additional course fee required. Springs Even. (TECO) (WRCO)
Prerequisite(s): CH 2255.

CH 3600 Environmental Chemistry (4)
Studies the chemistry of air and water. Particular emphasis placed on the pollution problem and its solution. Topics include the ozone depletion problem, the greenhouse effect, acid rain, sewage and waste disposal, chlorinated chemicals and metals in the environment. Additional course fee required. Springs. (INCO) (INCP)
Prerequisite(s): (CH 2330 and CH 2340) or (CH 2335 and CH 2340); Junior status.

CH 3650 Environmental Chemistry (4)
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Prerequisite(s): (CH 2330 and CH 2340) or (CH 2335 and CH 2340); Junior status.

CH 4025 Biochemistry II (4)
A continuation of the study of the molecular basis of biological processes. Topics include photosynthesis, glycogen and fatty acid metabolism and protein turnover, and biosynthesis including nucleic acid and protein synthesis. Additional course fee required. Spring of even years.
Prerequisite(s): (BI 3020 or BI 3035) or (CH 3020 or CH 3035).

CH 4150 Air Quality (3)
Encompasses an extensive overview of the science of Air Quality. Topics include atmospheric chemistry, air quality meteorology and forecasting techniques, air pollution sources, sinks and effects (atmospheric, environmental), including an examination of historical and current policy issues relevant to each topic. Offered as MT or CH 4150. Springs Odd. (INCO) (INCP)
Prerequisite(s): MT 2000 or MT 2110, CH 2335, and Junior status.

CH 4400 Senior Seminar (1)
This course is to develop Professional oral communication skills. Students will present critiques and analyses of a recent peer-reviewed publication. Students who have internship or undergraduate research experience may present their own experiences and data. Springs.
Prerequisite(s): Junior status

CH 4531 Senior Research (1-4)
The capstone for Chemistry and Biochemistry majors is a laboratory-based research project as proposed in CH 3210. Students work independently a minimum of 3 hours per week for each credit, performing novel research, and participate in regular group meetings, providing updates on research and discussing literature articles. Concludes with an oral or posted presentation and a final report. Repeatable for a total of up to 8 credits. Additional course fee required. Not open to students who have earned credit for CH 4530. Prerequisite(s) to CH 3210 and permission of the instructor.

CH 4600 Internship (1-4)
Students engage in a work program to apply, in a practical manner, knowledge gained in major or minor coursework, under the supervision of a faculty sponsor, the Department Chair and a supervising agency. Students must obtain a faculty sponsor and submit a detailed written proposal prior to undertaking the internship. Students must also submit a written report to their faculty sponsor when the internship is completed. Final approval of the internship comes from the Department Chair. With permission.

CH 4910 Independent Study (1-4)
Ordinarily for Chemistry majors. Studies undertaken are defined by the students concerned, subject to approval of appropriate staff members. Work may involve reading, conferences, historical, experimental or theoretical projects, field investigations, statistical surveys or combinations of the foregoing. Consent required of the instructor who will supervise the independent study and the Department Chair.