CHEMISTRY (CHEM)

CHEM-1000 Everyday Chemistry
3 Credits
Intended for non-science majors. Basic survey of chemistry as related to environment, health and nutrition, and applications that effect everyday life. Includes basic concepts and applications of chemistry including consumer chemistry, acids and bases, medicines and drugs, pollution, and conservation. To fulfill laboratory science requirement, student should enroll in related laboratory course.
Lecture: 3 hours
Prerequisite(s): ENG-0980 Language Fundamentals I or appropriate score on English Placement Test; or departmental approval.
OAN Approved: TMNS.

CHEM-100L Everyday Chemistry Laboratory
1 Credit
Intended for non-science majors. Exercises on measurements, separation and synthesis methods, reaction rates, water analysis, household chemistry, forensic and environmental issues, and other related chemistry topics. Laboratory activities complement and enrich related lecture course.
Laboratory: 3 hours
Prerequisite(s): CHEM-1000 Everyday Chemistry or concurrent enrollment; or PSCI-1020 Chemistry or concurrent enrollment.
OAN Approved: TMNS.

CHEM-1010 Introduction to Inorganic Chemistry
4 Credits
Introduction to atomic structure and bonding as basis for understanding valence, formulas, compounds and chemical reactions. Measurement, stoichiometry, states of matter, solutions, ionization, equilibria, acids, bases and pH, and health careers, scientific studies, and applications in daily life.
Lecture: 3 hours. Laboratory: 3 hours
Prerequisite(s): MATH-0955 Beginning Algebra, or appropriate score on Math placement test.
OAN Approved: TMNS.

CHEM-101H Honors Introduction to Inorganic Chemistry
4 Credits
Introduction to the fundamental principles of chemistry including states of matter, atomic structure, bonding, chemical reactions, thermodynamics, ionization, equilibria, gas laws, solutions, acid-base chemistry, and nuclear chemistry. The principles of chemistry will be applied to medicine, nutrition, and the environment. Laboratory work will illustrate chemical theories.
Lecture: 3 hours. Laboratory: 3 hours
Prerequisite(s): ENG-101H Honors College Composition I; or ENG-1010 College Composition I with a grade of "B" or higher; and MATH-0955 Beginning Algebra or appropriate score on Math placement test; or departmental approval.
OAN Approved: TMNS.

CHEM-1020 Introduction to Organic Chemistry and Biochemistry
4 Credits
Lecture: 3 hours. Laboratory: 3 hours
Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry, or CHEM-101H Honors Introduction to Inorganic Chemistry, or sufficient score on Chemistry Assessment test.
OAN Approved: TMNS.

CHEM-102H Honors Introduction to Organic Chemistry and Biochemistry
4 Credits
Study of the structure, properties, and function of carbon-based compounds. Introduction to biochemistry including structure, properties, and metabolism of proteins, carbohydrates, and lipids. Roles and structures of enzymes, vitamins, chemical messengers, deoxyribonucleic acid (DNA), and ribonucleic acid (RNA) in cellular function. Principles of structure and function will be applied to medicine and nutrition.
Lecture: 3 hours. Laboratory: 3 hours
Prerequisite(s): CHEM-101H Honors Introduction to Inorganic Chemistry, or departmental approval.

CHEM-1080 Herbal Medicines and Natural Products
3 Credits
The course is designed for those interested in education in the areas of natural products and herbal remedies. Definition of the term "natural product", the regulatory dilemma and the marketing of herbal products, the use, risk and safety of herbal preparations, common herbs found in the market and their efficacy and interactions are covered. How to make and guide a rational decision regarding the choice and use of natural herbal products is covered.
Lecture: 3 hours
Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, or departmental approval.

CHEM-1300 General Chemistry I
4 Credits
Study of the structure, properties, and function of carbon compounds and relationship of nucleic acids to protein synthesis.
Lecture: 4 hours
Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry, or sufficient score on Chemistry assessment test; and MATH-0965 Intermediate Algebra* or sufficient score on Math Placement Test; or departmental approval: equivalent knowledge or skills. Note: MATH-1200 taken prior to Fall 2013, or MATH-1270 or MATH-1280 taken prior to Fall 2016 will also be accepted to fulfill prerequisite requirements.
OAN Approved: TMNS, OSC008 (Course 1 of 2, both must be taken), and OSC023 (Course 1 of 4, all must be taken).
CHEM-130H Honors General Chemistry I
5 Credits
Study of fundamental principles of chemistry emphasizing atomic theory, periodic trends, structure and bonding, chemical reaction and stoichiometry, energy, and the states of matter. Perform laboratory experiments designed to demonstrate chemical concepts and support theoretical phenomena. Honors General Chemistry I combines lecture and laboratory into one course.

Lecture: 4 hours, Laboratory: 3 hours
Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry, or CHEM-101H Honors Introduction to Inorganic Chemistry, or sufficient score on Chemistry assessment test; and MATH-1530 College Algebra and MATH-1540 Trigonometry, or MATH-1580 Precalculus, or sufficient score on Math assessment test; or departmental approval: equivalent knowledge or skills.
OAN Approved: TMNS, OSC009, OSC023 (1 of 2 courses, both must be taken).

CHEM-130L General Chemistry Laboratory I
1 Credit
Basic laboratory experiments which correlate with chemical concepts, principles and processes of General Chemistry I. Emphasis on techniques and procedures.
Laboratory: 3 hours
Prerequisite(s): CHEM-1300 General Chemistry I or concurrent enrollment; or departmental approval: equivalent knowledge or skills.
OAN Approved: TMNS, OSC008 (Course 2 of 2, both must be taken), OSC023 (course 2 of 4, all must be taken).

CHEM-1310 General Chemistry II
4 Credits
Emphasis on kinetics, equilibrium concepts, electrochemistry, thermodynamics, liquids and solids and phase transitions, solutions, and descriptive chemistry, including periodic patterns of chemical properties and reactivities. To fulfill laboratory science requirement, students should enroll in related laboratory course.
Lecture: 1-3 hours
Prerequisite(s): CHEM-1300 General Chemistry I, or CHEM-130H Honors General Chemistry I, or departmental approval: equivalent knowledge or skills.
OAN Approved: TMNS, OSC008 (Course 2 of 2, both must be taken), and OSC023 (Course 3 of 4, all must be taken).

CHEM-131H Honors General Chemistry II
5 Credits
Study of the fundamental principles of chemistry emphasizing chemical and nuclear kinetics, thermodynamics, and equilibrium. Introduction and study into the specific branches of chemistry: electrochemistry, coordination, organic, nuclear, and environmental chemistry. Perform laboratory experiments designed to demonstrate chemical principles and support theoretical phenomena. Honors General Chemistry II combines lecture and laboratory into one course.
Lecture: 4 hours, Laboratory: 3 hours
Prerequisite(s): CHEM-130H Honors General Chemistry I, or departmental approval: equivalent knowledge or skills.
OAN Approved: OSC009, OSC023, (2 of 2 courses, both must be taken)

CHEM-131L General Chemistry Laboratory II
1 Credit
Basic laboratory experiments which correlate with chemical concepts, principles and processes of General Chemistry II. Emphasis on technique and procedures.
Laboratory: 3 hours
Prerequisite(s): CHEM-130L General Chemistry Laboratory I, and CHEM-1310 General Chemistry II or concurrent enrollment; or departmental approval: equivalent knowledge or skills.
OAN Approved: TMNS, OSC009 (Course 2 of 2, both must be taken), OSC023 (4 of 4, all must be taken).

CHEM-179H Honors Contract in Chemistry
1 Credit
Honors Contract complements and exceeds requirements and expected outcomes for an existing 1000-level honors course through formulation of a contract with a faculty mentor. This independent study at the honors level may also be taken with a non-honors course. When taken with a non-honors course the Honors Contract adds an honor experience to that course. In conjunction with a faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. The student is required to meet on a regularly scheduled basis with the instructor for mentor-student tutorial sessions. A maximum of six Honor Contracts (six credit hours) may be taken at the college (includes 179H and 279H).
Lecture: 1 hours
Prerequisite(s): Must be taken concurrently with a 1000-level course whose instructor agrees to mentor the student in this contract. Departmental approval required.

CHEM-1820 Independent Study/Research in Chemistry
1-3 Credits
Directed individual study. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.
Lecture: 1-3 hours
Prerequisite(s): Departmental approval, and instructor approval, and ENG-0990 Language Fundamentals II or appropriate score on English Placement Test.

CHEM-182H Honors Independent Study/Research in Chemistry
1-3 Credits
Honors-level directed individual study. Must meet criteria set forth in the Honors Course Checklist used to approve regular honors courses. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.
Lecture: 1-3 hours
Prerequisite(s): Departmental approval and instructor approval, and ENG-0990 Language Fundamentals II or appropriate score on English Placement Test, and must have earned an A or B in at least 3 honors courses.

CHEM-182S Independent Laboratory Study/Research in Chemistry
1-3 Credits
Independent two-hour lab per credit. Directed individual study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Laboratory: 2-6 hours
Prerequisite(s): Departmental approval, and instructor approval, and ENG-0990 Language Fundamentals II or appropriate score on English Placement Test.
CHEM-182T Independent Laboratory Study/Research in Chemistry 1-3 Credits
Independent three-hour lab per credit. Directed individual study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Laboratory: 3-9 hours
Prerequisite(s): Departmental approval, and instructor approval, and ENG-0990 Language Fundamentals II.

CHEM-2000 Analytical Chemistry 5 Credits
An introduction to the theoretical principles of quantitative and instrumental analysis. Emphasis on experimental methods, sampling techniques, statistics, error theory, chemical equilibrium, stoichiometry, and volumetric and gravimetric procedures as applied to quantitative determinations. Provides an introduction to spectroscopic, electroanalytical, and chromatographic methods of analyses. Provides hands-on experience to students by completion of laboratory experiments related to these principles. Emphasis on development of laboratory techniques.
Lecture: 3 hours. Laboratory: 6 hours
Prerequisite(s): CHEM-1310 General Chemistry II and CHEM-131L General Chemistry Laboratory II, or CHEM-131H Honors General Chemistry II.

CHEM-2300 Organic Chemistry I 5 Credits
Functional group chemistry of aliphatic compounds covering nomenclature, structural-reactivity, and synthetic reactions. Theoretical concepts, structural bonding, stereochemistry and reaction mechanisms emphasized. Use of various spectrometric techniques for identification of compounds introduced.
Lecture: 3 hours. Laboratory: 6 hours
Prerequisite(s): CHEM-1310 General Chemistry II, and CHEM-131L General Chemistry Laboratory II, or CHEM-131H Honors General Chemistry II; or departmental approval: equivalent knowledge or skills.
OAN Approved: OSC010 (1 of 2 courses, both must be taken).

CHEM-2310 Organic Chemistry II 5 Credits
Continuation of Organic Chemistry I. Common functional groups with emphasis on aromatic and carbonyl containing molecules, and selected topics such as heterocyclic compounds, macromolecules, and biomolecules introduced.
Lecture: 3 hours. Laboratory: 6 hours
Prerequisite(s): CHEM-2300 Organic Chemistry I.
OAN Approved: OSC0010 (2 of 2 courses, both must be taken).

CHEM-279H Sophomore Honors Contract-ANTH
Sophomore Honors Contract-CHEM 1 Credit
Sophomore Honors Contract in Chemistry complements and exceeds requirements and expected outcomes for an existing Chemistry 2000-level course (not an honors course) through formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract that upon completion will result in distinctive scholarship appropriate to honors 2000-level. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. A maximum of six Honors Contracts (six credits) may be taken at the College (includes 179H and 279H).
Lecture: 1 hours
Prerequisite(s): Must be taken concurrently with a 2000-level course (not an honors course) in Chemistry, whose instructor agrees to mentor the student in the Sophomore Honors Contract. Departmental approval required.

CHEM-2820 Independent Advanced Study/Research in Chemistry 1-3 Credits
Directed individual advanced study. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.
Lecture: 1-3 hours
Prerequisite(s): Departmental approval, and instructor approval, and ENG-0990 Language Fundamentals II or appropriate score on English Placement Test.

CHEM-282H Advanced Honors Independent Study/Research in Chemistry 1-3 Credits
Advanced Honors-level directed individual study. Must meet criteria set forth in the Honors Course Checklist used to approve regular honors courses. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.
Lecture: 1-3 hours
Prerequisite(s): Departmental approval and instructor approval, and ENG-0990 Language Fundamentals II or appropriate score on English Placement Test, and must have earned an A or B in at least 3 honors courses.