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-0985 Introduction to College Literacies or appropriate score on English Placement Test. Note: ENG-0980 Language Fundamentals I taken prior to Fall 2021 will also meet prerequisite requirements.
OAN Approved: Ohio Transfer 36 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.
OAN Approved: Ohio Transfer 36 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): Eligibility for College-level math.
OAN Approved: Ohio Transfer 36 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 eligibility for College-level math or departmental approval.
OAN Approved: Ohio Transfer 36 TMNS.

CHEM-1020 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-1010 Introduction to Inorganic Chemistry, or CHEM-101H Honors Introduction to Inorganic Chemistry, or sufficient score on Chemistry Assessment test.
OAN Approved: Ohio Transfer 36 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.
OAN Approved: Ohio Transfer 36 TMNS

CHEM-1081 Medicinal Plants Chemistry
3 Credits

The course aims to provide a scientific basis for the use of plants for medicinal purposes, and to describe the main characteristics of herbal medicines and their use. Definition of the term "natural product", the regulatory dilemma, the marketing of herbal products, the use, risk, safety and interactions of herbal preparations are covered. Important plant extracts, and plant-derived chemical compounds are discussed. The course also provides an overview of ethnobotany and ethnopharmacology.
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 fundamental principles of chemistry emphasizing atomic theory and structure, chemical bonding, periodic trends, thermochemistry, nuclear chemistry, aqueous solutions, stoichiometry, and the gaseous state of matter. To fulfill the laboratory science requirement, students should enroll in the related laboratory course.
Lecture: 4 hours
Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry, or sufficient score on Chemistry assessment test; and MATH-0965 Intermediate Algebra or qualified math placement; 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: Ohio Transfer 36 TMNS and Transfer Assurance Guide 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. Honors General Chemistry I combines lecture and laboratory into one course with laboratory experiments designed to demonstrate chemical concepts and support theoretical phenomena.
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 qualified math placement; or department approval: equivalent knowledge or skills.
OAN Approved: Ohio Transfer 36 TMNS and Transfer Assurance Guide OSC008 and 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 with an 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: Ohio Transfer 36 TMNS and Transfer Assurance Guide 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: 4 hours
Prerequisite(s): CHEM-1300 General Chemistry I, or CHEM-130H Honors General Chemistry I; or departmental approval: equivalent knowledge or skills.
OAN Approved: Ohio Transfer 36 TMNS and Transfer Assurance Guide OSC009 (Course 1 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: Ohio Transfer 36 TMNS and Transfer Assurance Guide OSC009 and 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 with an 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: Ohio Transfer 36 TMNS and Transfer Assurance Guide 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-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.

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-0995 Applied College Literacies, or appropriate score on English Placement Test; and must have earned an A or B in at least 3 honors courses. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.

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-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.

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 mazimum of six credits of different topics.
Laboratory: 3-9 hours
Prerequisite(s): Departmental approval, and instructor approval, and ENG-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.

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: Transfer Assurance Guide OSC010.

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: Transfer Assurance Guide OSC010.

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-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.

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-0995 Applied College Literacies, or appropriate score on English Placement Test; and must have earned an A or B in at least 3 honors courses. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.