

Chemistry (CHE)

CHE 1000 Introductory Chemistry4 Credit Hours

English/ESL Placement: Placement into ENG 1510 or ESL 2520.

Prerequisite: MAT 1100 or higher with a grade of 'C' or better within the last three years or placement into MAT 1150 or higher within the past two years.

This course introduces the language and central concepts of chemistry. Included are the meaning and use of the mole, atomic theory and structure, the periodic table, chemical nomenclature, bonding, chemical reactions and equations, stoichiometry and solution chemistry. These concepts are illustrated in the laboratory section of the course, in which experiments are done to observe the behavior of matter under controlled conditions. This course provides skills required for subsequent chemistry courses. **BILLABLE CONTACT HOURS: 5**

GE Outcomes: Critical Thinking, Quantitative Literacy

CHE 1320 Survey of Organic and Biochemistry 4 Credit Hours

English/ESL Placement: Placement into ENG 1510 or ESL 2520.

This course introduces the nomenclature, functional groups and skeletal structure of organic and biochemical compounds with particular emphasis on compounds of biological interest such as carbohydrates, lipids, proteins, nucleic acids and enzymes. The laboratory section of the course illustrates the characteristic properties and reactions of compounds of biological interest. This course builds on skills acquired in introductory chemistry. Satisfactory completion of high school chemistry or equivalent or completion of CHE 1000 or equivalent is recommended. **BILLABLE CONTACT HOURS: 5**

GE Outcomes: Critical Thinking, Scientific Literacy

CHE 1510 General Chemistry I 4 Credit Hours

English/ESL Placement: Placement into ENG 1510 or ESL 2520.

Prerequisite: MAT 1150 or higher with a 'C' or better within the last three years or placement into MAT 1540 or higher within the past two years.

Completion of secondary school chemistry or CHE 1000 or equivalent is recommended. This course explores the principles of atomic structure, chemical nomenclature, valence shell electron pair repulsion theory, chemical bonding, stoichiometry, acids and bases, thermo chemistry, gas laws and kinetic molecular theory. Both conceptual development and problem solving are emphasized. The laboratory section of the course involves application and amplification of the concepts developed in the course. This course provides skills required for subsequent chemistry courses. **BILLABLE CONTACT HOURS: 6**

GE Outcomes: Critical Thinking, Quantitative Literacy

CHE 1520 General Chemistry II 4 Credit Hours

English/ESL Placement: Placement into ENG 1510 or ESL 2520.

Prerequisite: CHE 1510 with a 'C' or better within the last five years.

This course explores the principles of solution chemistry, kinetics, chemical equilibria, thermodynamics, acid-base theory and electrochemistry. Other topics such as nuclear chemistry, coordination chemistry, transition metal chemistry and other timely topics may be included. Both conceptual development and problem solving are emphasized. The laboratory section of the course involves application and amplification of the concepts developed in the course, including qualitative analysis to illustrate equilibria concepts. This course provides skills required for Organic Chemistry. **BILLABLE CONTACT HOURS: 6**

GE Outcomes: Critical Thinking, Quantitative Literacy

CHE 2610 Organic Chemistry I 4 Credit Hours

English/ESL Placement: Placement into ENG 1510 or ESL 2520.

Prerequisite: CHE 1520 with a 'C' or better within the last five years.

This course builds on skills acquired in general chemistry. This course is the systematic study of the chemistry of carbon compounds. Topics include structure and properties of carbon containing compounds, nomenclature, acid-base theory, stereochemistry, nucleophilic substitution and elimination reactions, addition reactions involving alkenes and alkynes, radical chemistry, alcohols and ethers, reaction mechanisms, and an introduction to synthesis. This course provides skills required for subsequent chemistry courses. **BILLABLE CONTACT HOURS: 4**

CHE 2620 Organic Chemistry II 4 Credit Hours

English/ESL Placement: Placement into ENG 1510 or ESL 2520.

Prerequisite: CHE 2610 with a 'C' or better within the last five years.

Topics include the study of alcohols, carboxylic acids, aldehydes and ketones, amines, carboxylic acid derivatives, carbohydrates, amino acids and proteins, functional group transformations, electrophilic aromatic substitution and nucleophilic aromatic addition chemistry, nuclear magnetic resonance and infrared spectroscopy theories are introduced and structures are examined spectroscopically. **BILLABLE CONTACT HOURS: 4**

CHE 2650 Organic Chemistry Lab3 Credit Hours

English/ESL Placement: Placement into ENG 1510 or ESL 2520.

Prerequisite: CHE 2610 with a 'C' or better within the last five years.

Pre- or Corequisite: CHE 2620 with a 'C' or better within the last five years if taken as a prerequisite.

This course provides the student with the basic microscale or macroscale laboratory skills in organic chemistry including techniques in recrystallization, melting point determination, distillation and chromatography. Organic compounds are synthesized and examined using the methods and principles learned in CHE 2610 and CHE 2620, such as Grignard reactions, substitution and elimination reactions, Aldol condensations and IR theory. This course may be taken concurrently with CHE 2620. **BILLABLE CONTACT HOURS: 5**