

Course Code: CHE 106 (IAI P1 902L)

Course Title: Chemistry for the Health Professions

Department: Natural Sciences

Effective Date: Summer 2026

PCS Code: 1.1 - Baccalaureate/Transfer

CIP Code: 40.0501

Repeatability: 0

Credit Hours

Catalog Notation: 3-3-4

Credit Hour Distribution:

Lecture: 3

Lab: 3

Clinical: 0

Total: 4

General Course Information

Catalog Description

General principles and theories of chemistry and selected topics in organic and biochemistry. Topics are drawn from the health fields. CHE 106 is not intended to replace CHE 141.

General Course Objectives

To introduce students in the health professions and their allied fields to the general principles and theories of chemistry in a manner consistent and highly correlated to their field of study. The second and third objectives of the course are to introduce students to both organic and biological chemistry respectively, and to illustrate their presence and application in the health professions.

Minimum Placement Levels

English	Reading	Math
None	Placement out of CCS 098	Placement out of MAT 072

Prerequisites

None

Methods of Evaluation

10-13 objective quizzes, 1 comprehensive final exam, 8-13 laboratory write-ups, 1 semester project, and graded homework.

Instructional Materials and Additional Supplies

- Chemistry: An Introduction to General Organic and Biological Chemistry (with Mastering Chemistry Access)
- Optional for ALL sections: Chemistry: An Introduction to General Organic and Biological Chemistry Study Guide and Selected Solution Manual
- Lab Kit for CHE 106, Patriotic Colors lab kit, Polarity of water lab kit. (Only required for online sections of CHE 106)
- Lab Manual and Classroom supplement, Duplicate page lab notebook. (Only required for on-campus sections of CHE 106)

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Scientific Method and Scientific Measurement	<ol style="list-style-type: none">1. Explain and apply the scientific method.2. Use the metric system and scientific notation to express measured quantities.3. Convert between English and metric units.4. Calculate densities and use density as a conversion factor.	3	5	0
Atoms and Elements	<ol style="list-style-type: none">1. Explain the organization of the periodic table and be able to extract information from it.2. Identify and describe the elementary particles of the atom.	2	0	0
Compounds and Their Bonds	<ol style="list-style-type: none">1. Identify, write formulas for, and name ionic compounds.2. Identify, write formulas for, and name covalent compounds.3. Explain the role of valence electrons in bonding.	3	2	0
Mixtures and Solutions	<ol style="list-style-type: none">1. Differentiate between mixtures, compounds, and elements.2. Describe how and why elements and compounds combine to form mixtures.3. Differentiate between solution, colloid, suspension, solvent, and solute.4. Differentiate between isotonic, hypotonic, and hypertonic solutions.5. Differentiate between osmosis, diffusion, and dialysis.6. Calculate the concentration of a solution and determine amounts needed for dilution.7. Apply solubility principles to determine if two compounds are soluble or insoluble.	3	5	0
Nuclear Radiation	<ol style="list-style-type: none">1. Identify and write equations for radioactive half-lives and for different types of radiation.2. Describe radiation detection, measurement, and protection techniques as well as medical applications of radioactivity.	3	3	0
Chemical Reactions	<ol style="list-style-type: none">1. Write, balance, and identify categories of chemical reactions.2. Express chemical quantities in grams, moles, or number of atoms (molecules) and be able to convert between them.3. Use stoichiometry in order to predict product amounts.	3	6	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Energy and Chemical Equilibrium	<ol style="list-style-type: none"> 1. Measure temperature in Celsius and convert between Fahrenheit, Celsius, and Kelvin. 2. Describe heat energy of foods. 3. Define and apply the terms solid, liquid, gas, freezing, melting, boiling, condensation, activation energy, and catalyst. 4. Explain the concept of chemical equilibrium and apply Le Chatelier's Principle. 	4	4	0
Gases	<ol style="list-style-type: none"> 1. Describe properties of ideal gases and be able to describe and apply Boyle's Law, Charles' Law, Gay-Lussac's Law, Avogadro's Law, the Combined Gas Law, and Dalton's Law with emphasis on medical applications such as blood pressure and hyperbaric chambers. 	3	2	0
Acids and Bases	<ol style="list-style-type: none"> 1. Identify acids and bases. 2. Differentiate strong acids and bases, and be able to apply the pH scale. 3. Compute data in order to properly dilute acid or base solutions. 4. Characterize the process of titration and the concept of a buffered solution and describe their presence and applications in the health fields. 	3	6	0
Organic Chemistry	<ol style="list-style-type: none"> 1. Identify, name, and describe the functionality of alkanes, haloalkanes, alkenes, alkynes, aromatics, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, esters, amines, and amides. 2. Analyze functional groups in order to determine the group's impact on polarity, solubility, and molecular interactions. 3. Differentiate between constitutional (structural), geometric, and stereoisomers. 	6	6	0
Carbohydrates	<ol style="list-style-type: none"> 1. Differentiate between monosaccharides, disaccharides, and polysaccharides and be able to identify several of each which are important to human life. 2. Describe carbohydrates in terms of their functional groups and structure as well as by biological function. 	3	6	0
Lipids	<ol style="list-style-type: none"> 1. Differentiate between waxes, fats, oils, phospholipids, glycolipids, and steroids, and be able to identify several of each which are important to human life. 2. Describe lipids in terms of their functional groups and structure, as well as by biological function. 	3	0	0
Amino Acids, Proteins, and Enzymes	<ol style="list-style-type: none"> 1. Identify several types of proteins. 2. Recognize the components of an amino acid, understand the importance of the peptide bond, and be able to differentiate and explain the characteristics of the primary, secondary, tertiary, and quaternary structure of proteins as well as explain the danger of protein hydrolysis and denaturation. 3. Identify enzymes and describe enzyme action factors that affect enzyme action and enzyme inhibition. 	3	0	0
Nucleic Acids	<ol style="list-style-type: none"> 1. Describe how the five nucleotides combine to form the nucleic acids DNA and RNA. 2. Describe the structure and function of DNA and RNA, as well as some of their important processes. 	3	0	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	45	0