Course Information Form (CIF)

Course Code: CHE 107

Course Title: Chemistry for the Health Professions II

Department: Natural Sciences
PCS Code: 1.1 - Baccalaureate/Transfer
CIP Code: 40.0501
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 3-3-4
Credit Hour Distribution:

Lecture: 3	Lab: 3	Clinical: 0	**Total: 4**

General Course Information

Catalog Description

Expanded coverage of general principles of chemistry, selected topics in organic and biochemistry. Topics drawn from the health fields. CHE 107 is not meant to replace CHE 142.

General Course Objectives

To introduce students in the health professions and their allied fields to the general principles and theories on chemistry in a manner consistent and highly correlated to their field of study.

Minimum Placement Levels

English	Reading	Math
None	Placement out of CCS 098	None

Prerequisites

Credit in CHE 106 with a grade of C or higher

Methods of Evaluation

12 objective quizzes, 1 comprehensive final exam, 10-12 laboratory write-ups, 1 semester-long project on primary literature involving 12 discussion forums, and 12 homework assignments.

Instructional Materials and Additional Supplies

General, Organic, and Biological Chemistry: Structures of Life, Karen Timberlake
CHE 107 Lab Kit
Sapling Homework System, Macmillan Learning

Course Content

General Learning Outcomes (GLOs)

- Critical Thinking and Information Literacy: Students will demonstrate the ability to evaluate perspectives, evidence, and implications, and to locate, assess, and use information effectively.
- 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
Measurement, Atoms, Molecules, Elements, Compounds, Mole Concept, Solutions/Molarity	1. Use the metric system and scientific notation to express measured quantities. 2. Convert between English and metric units. 3. Differentiate between mixtures, compounds, and elements. 4. Describe how and why elements and compounds combine to form mixtures. 5. Identify, write formulas for, and name ionic compounds. 6. Identify, write formulas for, and name covalent compounds. 7. Explain the role of valence electrons in bonding. 8. Express chemical quantities in grams, moles, or number of atoms (molecules) and be able to convert between them. 9. Calculate the molarity of a solution.	3	3	0
Lewis Structures, VSEPR, Isomers, Functional Groups	1. Draw simple Lewis structures. 2. Use VSEPR theory to determine the shapes of molecules. 3. Identify types of isomers, including stereoisomers. 4. Identify functional groups and relate functional groups and shapes to properties of compounds.	4	3	0
Polarity/Dipole Moments	1. Identify polar bonds within a molecule and determine if a molecule has an overall dipole moment.	2	3	0
Diffusion, Osmotic Pressure, Dialysis, Cell Membranes	1. Apply the principles of diffusion and osmotic pressure to cell membranes. 2. Compare and contrast diffusion, osmosis, and dialysis.	2	3	0
Chemical Reactions	1. Write, balance, and identify categories of chemical reactions. 2. Use stoichiometry in order to predict product amounts. 3. Determine the limiting reagent of a reaction. 4. Predict which atoms are being oxidized and reduced. 5. Use Le Chatelier's principle to predict how changes will affect a reaction in equilibrium.	4	3	0
Acids, Bases, and Buffers	1. Identify acids and bases, differentiate strong acids and bases, and be able to apply the pH scale. 2. Describe the relationships between concentration, pH, and acid and base strength. 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

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Nutrition/Food Chemistry	1. Recognize common organic functional groups on food compounds. 2. Describe the major enzymatic reactions involved in digestion of lipids, carbohydrates, and proteins. 3. Describe the difference between hydrolysis and synthesis reactions. 4. Recognize the environmental factors that affect reaction rates and enzyme activity. 5. Explain how heat affects the chemical structure of foods. 6. Describe the role of vitamins and antioxidants in the diet.	6	6	0
Metabolism of Carbohydrates and Fermentation	1. Predict the effect of various carbohydrate metabolic pathways on blood glucose levels. 2. Recognize and describe the chemical reactions underlying carbohydrate metabolism. 3. Describe the role of glucose in energy production via glycolysis. 4. Predict how the metabolism of glucose is altered during anaerobic conditions.	3	6	0
Aerobic Respiration/Energy Production	1. Describe the role of oxidation reactions in Kreb's and electron transport; recognize coordination bonds, and describe the role of coordination bonds and co-factors in respiration. 2. Describe how potential and kinetic energy apply to the phosphorylation and dephosphorylation of ATP.	6	3	0
Drug Chemistry	1. Recognize common organic functional groups on drugs and describe some of their roles in drug development and biological activity; identify new approaches to drug design and development. 2. Describe the mechanisms through which some common drugs affect body chemistry and homeostasis.	3	0	0
Molecular Genetics	1. Describe the role of electromagnetic radiation (EMR) and chemical substances in the development of cancers. 2. Recognize the energy relationships between various forms of EMR. 3. Describe the mechanism by which viruses can transport human genes into human cells. 4. Explain the chemistry behind antibiotic activity and new approaches to antibiotic development. 5. Describe how bacteria develop antibiotic resistance.	6	6	0
Nuclear Chemistry and Diagnostic Instruments	1. Define the nature of radioactivity and unstable atomic nuclei. 2. Describe how radioisotopes are created and how they are used for medical treatments and diagnostic procedures such as MRI and PET scans.	3	3	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	45	0