CHEM-1030: FOUNDATIONS OF GENERAL, ORGANIC, AND BIOLOGICAL CHEMISTRY

Cuyahoga Community College

Viewing: CHEM-1030 : Foundations of General, Organic, and Biological Chemistry

Board of Trustees:
December 2025

Academic Term:
Summer 2026

Subject Code
CHEM - Chemistry

Course Number:
1030

Title:
Foundations of General, Organic, and Biological Chemistry

Catalog Description:
A one-semester introduction to the principles of general, organic, and biological chemistry. The fundamentals of general and organic chemistry are presented and applied to biologically relevant processes related to cellular function, medicine, nutrition, and health careers.

Credit Hour(s):
3

Lecture Hour(s):
3

Lab Hour(s):
0

Requisites

Prerequisite and Corequisite
Completion of MATH-0955 Beginning Algebra; or co-enrollment in a co-requisite pairing of MATH-0930 Essential Skills for Algebraic & Quantitative Reasoning and MATH-1190 Algebraic & Quantitative Reasoning; or co-enrollment in a co-requisite pairing of MATH-0970 Essential Skills for Elementary Probability and Statistics I and MATH-1410 Elementary Probability and Statistics; or qualified Math placement to enroll in College-level math.

Outcomes

Course Outcome(s):
Apply the core principles of chemistry to health careers, other scientific studies, and/or applications in daily life.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Information Literacy: Demonstrate contextual awareness of the research process through the reflective discovery of the production and value of information, the use of information in the creation of new knowledge, and ethical participation in the use of information in communities of learning.
Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):
1. Describe the fundamental principles of atomic theory and the atomic structure of the elements including principal energy levels, sub-energy levels, orbitals, and electronic configurations.
2. Classify and describe the states of matter and chemical and physical changes.
3. Differentiate between covalent and ionic compounds based on composition and chemical and physical properties.

4. Name ionic and covalent compounds and determine the chemical formulas.
5. Describe acid and base chemistry including pH and buffer solutions.
6. Define chemical equilibrium and equilibrium constants in acid and base reactions.
7. Explain the principles of nuclear chemistry including nuclear decay reactions and half-life.
8. Explain the medical applications of radioactive isotopes.
9. Discuss the properties of liquids including vapor pressure, viscosity, and surface tension.
10. Describe energy changes in endothermic and exothermic reactions, energy diagrams, and bond dissociation energies.

Course Outcome(s):

Apply problem solving skills in a career in the health sciences, advanced scientific studies, and/or applications in daily life.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):

1. Calculate density and specific gravity.
2. Convert between International System of Units (SI)/Metric system and English units and standard and scientific notation.
3. Solve problems by balancing chemical equations and using Avogadro's number, mole concept, stoichiometry, theoretical yield, and percent yield.
4. Examine the relationship between pressure, temperature, volume, and moles as defined by the gas laws.
5. Determine the concentrations of solutions and predict the effect of temperature and pressure on solubility.
6. Construct Lewis structures and valence shell electron pair repulsion (VSEPR) models.
7. Recognize the molecular formulas and explain the general differences between organic and inorganic compounds.
8. Identify functional groups in polyfunctional compounds including complex natural products and medicinal agents.
9. Explain the differences between inorganic and organic compounds.
10. Compare the key physical properties of organic compounds with a variety of functional groups, including hydrocarbons, alcohols, phenols, aldehydes, ketones, carboxylic acids, amines, and amides.
11. Discuss how the structure and polarity of molecules relates to chemical and biochemical reactivity.
12. Identify the different types of organic molecules.
13. Describe the structures of biologically important molecules like lipids, carbohydrates, and proteins.
14. Understand the building blocks of biological polymers like DNA, RNA, and proteins.
15. Describe the structure of biological polymers like DNA, RNA, and proteins, including the primary, secondary, tertiary, and quaternary structures.

Course Outcome(s):

Apply fundamental knowledge of chemistry to analyze reactions and properties and develop critical thinking skills such as deducing, predicting, and determining the causes of physical observations and various chemical and biochemical reactions.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Information Literacy: Demonstrate contextual awareness of the research process through the reflective discovery of the production and value of information, the use of information in the creation of new knowledge, and ethical participation in the use of information in communities of learning.
Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):

1. Explain atomic size, structure, physical properties, chemical properties, and the bonding of elements using periodic trends.
2. Deduce the effects of concentration, temperature, and catalysts on reaction rates.
3. Apply LeChatelier's Principle to predict responses to stresses in equilibrium.
4. Determine the intermolecular forces for compounds and the effect of the forces on the melting point, boiling point, and solubility.

5. Identify addition, elimination, and substitution reactions in organic chemistry and biochemical reactions.
6. Classify lipids as water-soluble or fat-soluble based on their structure.
7. Describe enzyme activity and inhibition.
8. Explain the processes of replication, transcription, and translation.
9. Define catabolism, anabolism, and metabolism.
10. Explain the basic concepts of energy production in the cell, including the electron transport chain and citric acid cycle.
11. Explain the energy production pathway for proteins, carbohydrates, and lipids.

Course Outcome(s):

Utilize a basic knowledge of organic chemistry to analyze chemical reactions and associated properties.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Identify the general characteristics of organic molecules and recognize the differences between organic and inorganic compounds.
2. Describe the differences in the structural, condensed, and line formulas of organic compounds.
3. Describe the functional groups of organic compounds.
4. Describe the physical properties of organic compounds based on the functional groups present.
5. Understand the basic reactions of organic compounds based on the functional groups present.
6. Identify molecules possessing chiral centers including cyclic structures.
7. Identify the relationship between molecules, including constitutional isomers, enantiomers and diastereomers.
8. Compare the physical properties of enantiomers and diastereomers.

Course Outcome(s):

Apply a fundamental knowledge of biochemistry to health sciences, advanced scientific studies, and/or application in daily life.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Describe protein metabolism including the relationships to the citric acid cycle, the urea cycle, and gluconeogenesis.
2. Define the nature and properties of hormones and other chemical messengers.
3. List the nature and properties of lipids including simple and compound lipids and steroids along with the relationship to cell membranes.
4. Describe the nature of digestion including the related enzymes and the resultant blood sugar levels along with the processes of glycogenesis and glycogenolysis.
5. Describe the nature and properties of amino acids and proteins including zwitterion structure, amphoteric nature, isoelectric point, and the primary, secondary, tertiary, and quaternary structures of proteins.
6. Explain the nature and properties of enzymes including the composition, specificity, various functions, and inhibition.
7. Compare the composition and nature of DNA and RNA and explain the relationship of DNA and RNA to protein synthesis.
8. Describe the nature and properties of carbohydrates including monosaccharides, disaccharides and polysaccharides.
9. Explain carbohydrate metabolism including glycolysis, the citric acid cycle, and the electron transport chain with the resultant production of adenosine triphosphate (ATP) from adenosine diphosphate (ADP).
10. Relate lipid metabolism including the beta oxidation cycle of fatty acids with the citric acid cycle and the electron transport chain and the ATP calculation for a given fatty acid.

Course Outcome(s):

Apply the scientific method to solve a problem, develop experimental procedures, and explain the design of scientific studies.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Information Literacy: Demonstrate contextual awareness of the research process through the reflective discovery of the production and value of information, the use of information in the creation of new knowledge, and ethical participation in the use of information in communities of learning.
Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):

1. Describe the scientific method, including the basic steps of the process.
2. Apply the steps of the scientific method to solve a problem.
3. Explain the design of scientific studies to support a chemical concept or principle.

Methods of Evaluation:

1. Exams (including the American Chemical Society Standard Exam)
2. Lab Reports
3. Participation
4. Quizzes
5. Assignments
6. Research Paper and Reports
7. Case Studies

Course Content Outline:

1. Matter
    a. Mass
    b. Weight
    c. Physical Properties
    d. Physical Changes
    e. Chemical Properties
    f. Chemical Changes
    g. Phases of Matter and Physical Properties
        i. Gas
        ii. Liquid
        iii. Solid
2. Classifying Matter
    a. Pure Substances
        i. Elements
        ii. Compounds
    b. Mixtures
        i. Homogenous Mixture
        ii. Heterogeneous Mixture
3. Building Blocks of Matter
    a. Elements
    b. Atoms
    c. Molecules
4. Measurement and Units of Measurement
    a. Length
    b. Area
    c. Volume
    d. Pressure
    e. Mass
    f. Temperature
    g. Energy
    h. Time
5. Metric System

a. Units
b. Conversions between units
6. Scientific Notation
   a. Conversion between Scientific and Nonscientific or Standard Notation
   b. Calculations using Scientific Notation
7. Scientific Method
8. Dimensional Analysis
   a. Conversion Factors
   b. Calculations, including percentages
9. Density
   a. Formula and definition
   b. Calculations
10. Periodic Table
    a. Organization
       i. Periods
       ii. Groups
       iii. Metals
       iv. Nonmetals
       v. Metalloids
       vi. Alkali Metals
       vii. Alkaline Earth Metals
       viii. Halogens
       ix. Noble Gases
       x. Transition Metals
       xi. Inner Transition Metals
    b. Periodic Trends
       i. Valence Electrons
       ii. Atomic Size
       iii. Ionization Energy
       iv. Electronegativity
11. Structure of the Atom
    a. Subatomic Particles
       i. Electrons
       ii. Protons
       iii. Neutrons
    b. Arrangement of Subatomic Particles in Atoms
       i. J.J. Thomson and Rutherford Experiments
       ii. Electron Configurations
          1. Valence Electrons
          2. Noble Gas Configurations
       iii. Atomic Orbitals
    c. Isotopes
    d. Radioactive Nuclei
    e. Nuclear Radiation
       i. Alpha Particles
       ii. Beta Particles
       iii. Gamma Rays
       iv. Positron Particles
       v. Balancing Nuclear Equations
       vi. Half-Life
       vii. Biological Effects of Radiation
12. Atomic Symbols
    a. Mass number
    b. Atomic number
13. Applications to Health
    a. Radiation
    b. Use of Radioisotopes
14. Bonding

a. Ionic Compounds
    i. Anions
    ii. Cations
    iii. Formation of Ions as it Relates to Valence Electrons
    iv. Formula Unit
    v. Naming Ionic Compounds
    vi. Determining Formula of Ionic Compounds Using
        1. Name
        2. Charges on Ions
    vii. Polyatomic Ions in Ionic Compounds
b. Covalent Bonding
    i. Octet
    ii. Molecular Formula
    iii. Lewis Structure
        1. Lone Pairs
        2. Bonds
            a. Single
            b. Double
            c. Triple
            d. Resonance
        3. Shapes of Molecules
            a. Tetrahedral Electron Domain
                i. Bent
                ii. Trigonal Pyramidal
                iii. Tetrahedral
            b. Trigonal Planar Electron Domain
                i. Bent
                ii. Trigonal Planar
            c. Linear Electron Domain
        4. Polarity of Molecules
    iv. Naming Covalent Compounds

15. Mole Concept
    a. Definition of mole
    b. Avogadro's Number
        i. Definition
        ii. Calculations
    c. Molar Mass
        i. Definition
        ii. Calculations
        iii. Mass Percent
16. Chemical Equations
    a. Balancing Equations
    b. Ionic Equations
    c. Net Ionic Equations
    d. Law of Conservation of Matter
    e. Stoichiometry
    f. Reaction Yield'
        i. Percent Yield
        ii. Theoretical Yield
17. Chemical Reactions
    a. Redox Reactions
        i. Oxidation
        ii. Reduction
        iii. Oxidizing Agent
        iv. Reducing Agent
    b. Decomposition Reactions
    c. Combination Reactions
    d. Replacement Reactions

    i. Double-replacement
    ii. Single-replacement
18. Intermolecular Forces
    a. Intramolecular vs Intermolecular Forces
    b. Intermolecular Force Types
        i. London Dispersion
        ii. Dipole-Dipole
        iii. Hydrogen Bond
    c. Relative Strengths of Intermolecular Forces
        i. Compared to other intermolecular forces
        ii. Compared to Covalent or Ionic Bonds
19. Energy
    a. Kinetic Energy
    b. Potential Energy
    c. Endothermic
    d. Exothermic
    e. Changes of State
        i. Evaporation/Vaporization and Condensation
        ii. Sublimation and Deposition
        iii. Fusion and Melting
        iv. Boiling Point
        v. Melting Point
    f. Specific Heat
    g. Heat of Fusion
    h. Heat of Vaporization
    i. Energy Diagrams
20. Gases
    a. The Kinetic Molecular Theory
    b. Gas Laws
        i. Charles's Law
        ii. Boyle's Law
        iii. Avogadro's Law
        iv. Combined Gas Law
        v. Ideal Gas Law
    c. Mixtures of Gases
        i. Dalton's Law
        ii. Partial Pressure
21. Solutions, Colloids, and Suspensions
    a. Solute
    b. Solvent
    c. Solution
    d. Solubility
    e. Colloid
    f. Suspension
    g. Types of Solutions
        i. Unsaturated
        ii. Saturated
        iii. Supersaturated
    h. Concentration Units and Calculations
        i. Molarity
        ii. w/w Percent
        iii. w/v Percent
        iv. v/v Percent
    i. Osmosis and Tonicity
        i. Hypertonic solutions and crenation
        ii. Hypotonic solutions and hemolysis
        iii. Isotonic solutions
    j. Dialysis

    i. Diffusion
    ii. Semipermeable membranes
    iii. Medical Applications
22. Thermodynamics
    a. Enthalpy
23. Kinetics
    a. Reaction collisions
    b. Reaction rates
    c. Catalysts
    d. Inhibitors
    e. Equilibrium
        i. Expression
        ii. Constant
        iii. Le Châtelier's Principle
        iv. Application of equilibrium and Le Châtelier's Principle to acid-base chemistry
24. Acid-Base Chemistry
    a. Bronsted-Lowry Definition
        i. Acid and conjugate base
        ii. Base and conjugate acid
    b. Strong Acids and Bases
    c. Ion-Product of water
    d. pH
        i. Scale
            1. Acidic
            2. Basic or Alkaline
            3. Neutral
        ii. Calculating pH
        iii. Acid Dissociation Constants
        iv. Definition
        v. Relative Acid Strengths and Ka
    e. Titrations
        i. Calculations
        ii. Neutralization Reactions
        iii. Equivalence Point
        iv. End Point
        v. Indicator
    f. Buffers
        i. Buffer capacity
        ii. Henderson-Hasselbach Equation
    g. Biological Applications of pH
25. Organic Chemistry
    a. Definition
    b. IUPAC and Common Names
    c. Oxidation and Reduction of Organic Molecules
    d. Representation of Molecules
        i. Expanded
        ii. Condensed
        iii. Skeletal
    e. Functional Groups
    f. Isomers
        i. Structural Isomers
        ii. Conformations
        iii. Chiral Carbons
        iv. Cis and Trans Isomers
26. Hydrocarbons
    a. Physical Properties
    b. Alkanes
    c. Cycloalkanes
    d. Alkenes

        i. Addition Reactions
            1. Markovnikov's Rule
            2. Polymer Formation
    e. Alkynes
    f. Aromatic Compounds
27. Alcohols
    a. Physical Properties
    b. Chemical Reactions
        i. Acid-base Chemistry
        ii. Dehydration
        iii. Oxidation
    c. Applications
        i. Fermentation
        ii. Medical Usage
        iii. Cosmetic Usage
28. Ethers
    a. Physical Properties
    b. Applications
29. Amines
    a. Physical Properties
    b. Acid-base Chemistry
    c. Biological Amines
        i. Neurotransmitters
        ii. Amphetamines
        iii. Alkaloids
30. Carbonyl and Carboxyl Compounds
    a. Aldehydes and Ketones
        i. Properties
        ii. Reaction Basics
            1. Hydrogenation
            2. Oxidation
            3. Reduction
            4. Addition of alcohols (Hemi formation)
    b. Carboxylic Acids
        i. Properties
        ii. Carboxylate Ions
        iii. Acid-base chemistry
    c. Esters
        i. Properties
        ii. Reaction Basics
            1. Formation reactions
            2. Hydrolysis Reactions
            3. Saponification
    d. Amides
        i. Properties
        ii. Formation and hydrolysis reactions
31. Carbohydrates
    a. Structure
    b. Function
    c. Chiral Carbons
        i. Enantiomers
        ii. Achiral
        iii. Stereoisomer
    d. Fischer Projections Basics
    e. Cyclic Forms
    f. Haworth Projections Basics
    g. Monosaccharides
        i. Classification
        ii. Properties

- iii. Examples
- iv. Oxidation
  1. Reducing Sugars
  2. Benedict's Reagent
- v. Phosphate Esters
- vi. Glycoside Formation

h. Disaccharides (maltose, lactose and glucose)

i. Polysaccharides
- i. Starch
- ii. Glycogen
- iii. Cellulose

32. Amino Acids, Proteins, and Enzymes

a. Amino Acid
- i. Structure
- ii. Stereochemistry
- iii. Side chain classification
  1. Nonpolar
  2. Neutral Polar
  3. Acidic Polar
  4. Basic Polar
- iv. Zwitterion Formation
- v. Peptide Bond Formation
- vi. Oxidation of Cysteine

b. Protein Structure
- i. Primary
- ii. Secondary
  1. α-helix
  2. β-pleated sheet
- iii. Tertiary
  1. Disulfide Bridges/Bonds
  2. Salt Bridges
  3. Hydrogen Bonds
  4. Hydrophobic Interactions
- iv. Quaternary
- v. Terminology
  1. Globular
  2. Fibrous
  3. Subunit

c. Protein Functions
- i. Catalyst (Enzymes)
- ii. Structure
- iii. Storage
- iv. Protective
- v. Regulatory
- vi. Nerve impulse transmission
- vii. Movement
- viii. Transport

d. Enzymes
- i. Oxidoreductase
- ii. Transferase
- iii. Hydrolase
- iv. Lyase
- v. Isomerase
- vi. Ligase

e. Enzyme Activity
- i. Turnover number
- ii. .Mechanism
  1. Lock-and-key
  2. Induced-fit

- iii. Active Site
- iv. Coenzyme and Cofactor
  1. ATP/ADP
  2. FADH2/FAD
  3. NADH/NAD
  4. Coenzyme Q
- v. Apoenzyme
- vi. Factors affecting activity
  1. Concentration
  2. Substrate Concentration
  3. Temperature
  4. pH
- vii. Inhibition and Regulation
  1. Irreversible Inhibition
  2. Reversible Inhibition
  3. Allosteric Regulation
  4. Feedback Inhibition
  5. Noncompetitive inhibitor

f. Application of enzymes in medicine

33. Lipids
    a. Fatty Acids
    b. Triglycerides: Fats and Oils
       i. Structures
       ii. Reactions
    c. Waxes
    d. Phosphoglycerides
    e. Sphingolipids
    f. Glycolipids
    g. Steroids
       i. Cholesterol
       ii. Bile Salts
       iii. Steroid Hormones
            1. Adrenocorticoid Hormones
            2. Sex Hormones
    h. Prostaglandins
    i. Applications
       i. Membranes and lipid bilayer
       ii. Blood Types
       iii. Saponification
            1. Soaps
            2. Micelles
34. Nucleic Acids and Protein Synthesis
    a. Terminology
       i. RNA
       ii. DNA
       iii. Nucleic Acids
       iv. Gene
       v. Transcription
       vi. mRNA
       vii. Nucleotides
       viii. Chromosomes
    b. DNA
       i. Structure
            1. Primary Structure
            2. Double-helix
       ii. Replication
            1. Semiconservative replication
            2. Unwinding DNA
            3. Synthesis of DNA segments

        a. DNA polymerase
        b. Okazaki fragments
      4. Closing segments
        a. DNA ligase
    iii. PCR
      1. Polymerase Chain Reaction
      2. Denaturing
      3. Annealing
      4. Extension
  c. RNA
    i. mRNA
    ii. rRNA
    iii. tRNA
  d. Transcription
    i. RNA polymerase
    ii. Exons
    iii. Introns
    iv. hnRNA
  e. Translation and Protein Synthesis
    i. Genetic Code
      1. Codon
      2. Initiation
      3. Anticodon
      4. Termination
      5. Ribosomes
    ii. Mutations
  f. Recombinant DNA
    i. Restriction Enzymes
    ii. Plasmids
    iii. Formation of recombinant DNA
  g. Viruses
    i. RNA viruses
    ii. DNA viruses
    iii. Vaccines
35. Nutrition
  a. Macronutrients
    i. Carbohydrates
    ii. Lipids
    iii. Proteins
      1. Essential Amino Acids
      2. Complete Proteins
  b. Micronutrients
    i. Vitamins
      1. Water soluble
      2. Fat soluble
    ii. Minerals
      1. Major
      2. Trace
  c. Metabolism
    i. Catabolism
    ii. Anabolism
    iii. Metabolic Pathways
  d. Role of ATP in Cellular Energy
    i. Structure of ATP
    ii. Thermodynamics of ATP reactions
    iii. ATP-ADP Cycle
    iv. Mitochondria Role
  e. Coenzymes in Metabolism

        i. Coenzyme A
        ii. NAD+/NADH
        iii. FAD/FADH2
36. Carbohydrate Metabolism
    a. Digestion of Carbohydrates
    b. Blood Glucose
    c. Glycolysis and its Regulation
    d. Pyruvate
        i. Oxidation and reduction of pyruvate
        ii. Acetyl CoA
        iii. Lactate
        iv. Ethanol
    e. Citric Acid Cycle
        i. Reactions
            1. NADH production
            2. FADH2 production
        ii. Output
        iii. Regulation
    f. Electron Transport Chain
    g. Oxidative Phosphorylation
    h. Overall Summary of the Output of Glucose Oxidation
    i. Glycogen Metabolism
        i. Glycogenesis (synthesis)
        ii. Glycogenolysis (breakdown)
        iii. Gluconeogenesis
    j. Role of Hormones
37. Lipid Metabolism
    a. Lipids in the Bloodstream
    b. Glycerol Metabolism
    c. Oxidation of Fatty Acids
        i. β-oxidation
        ii. Acetyl CoA formation
        iii. Production of FADH2 and NADH
        iv. ATP Production
    d. Ketone Bodies
        i. Ketonemia
        ii. Ketonuria
        iii. Ketosis
        iv. Acidosis
        v. Ketoacidosis
    e. Fatty Acid Synthesis and Storage
38. Amino Acid Metabolism
    a. Protein Turnover
    b. Amino Acid Uses in Cell
        i. Protein Synthesis
        ii. Production of nitrogen-containing biomolecules
    c. Amino Acid Catabolism
        i. Transamination
        ii. Deamination
        iii. Urea Formation
        iv. Carbon Skeleton
    d. Amino Acid Synthesis
        i. Essential vs Nonessential Amino Acids
        ii. Synthesis Pathways for Nonessential Amino Acids

Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: https://portal2.tri-c.edu/ReligiousAccommodation/ Religious Accommodation Form. Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at legal@tri-c.edu.

Other Required Instructional Policies:

https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf

Weekly Schedule

	Topics
Week 1	Chemistry Basics-Matter and Measurement
Week 2	Atoms and Radioactivity
Week 3	Compounds
Week 4	Organic Compounds
Week 5	Chemical Reactions
Week 6	Chemical Reactions
Week 7	Carbohydrates
Week 8	Review of material and Midterm Exam
Week 9	States of Matter and Intermolecular Forces
Week 10	Solution Chemistry
Week 11	Acids/Bases/Buffers
Week 12	Proteins
Week 13	Nucleic Acids
Week 14	Metabolism
Week 15	Metabolism
Week 16	Review of Material and Final Exam

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Required/Recommended Readings

Readings will be from one of the below recommended textbooks, as selected by the individual instuctors.

1. Frost, L.; Deal, T. *General, Organic, and Biological Chemistry.*
2. Armstrong, J. *General, Organic, and Biochemistry: An Applied Approach.*
3. Ball, D.W.; Hill, J.W.; Scott, R.J. . *The Basics of General, Organic, and Biological Chemistry.*

Resources for the Instructor

Frost, L. & Deal, T. (2020). *General, organic, and biological chemistry*, Pearson.

Armstrong, J. (2024). *General, organic, and biochemistry: An applied approach.*, Cengage.

Ball, D.W., Hill, J.W., & Scott, R.J. (2011). *The basics of general, organic, and biological chemistry*. FlatWorld,

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Instructional Services

OAN Number:

Ohio Transfer 36 TMNS

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