

**Unit 3:
The Chemistry
of Life**

How do Chemical processes underlie biological processes?

- ⚡ Fundamental life processes depend on the structure and the chemical activities of the cell.
- ⚡ Most of the chemical activities of the cell are catalyzed by enzymes that function only in a narrow range of temperature and acidity conditions.
- ⚡ Describe how atoms combine to form new substances by transferring electrons (ionic bonding) or sharing electrons (covalent bonding).

Key Vocabulary	Assignments	Due Date
Atom Atomic Mass Atomic Number Bond Carbohydrate Carbon Compound Covalent bond Electron Element Enzyme Glucose Hydrogen Inorganic compound Ionic bond Lipids Matter Monomer Neutron Nitrogen Nucleic acids Organic compound Oxidation Oxygen Photosynthesis Polymer Product Protein Proton Reactant Reduction	<p>#1 - Read pages 31 to 34</p> <ol style="list-style-type: none"> a. Draw and label a diagram of the atom that includes the following parts: nucleus, proton, neutron, electron, negative charge, neutral charge, positive charge. b. When atoms combine to form molecules what do the reactions (or bonds) depend on? c. Neon seldom, if ever, combines with other elements to form compounds. Why is this so? <p>#2 - Read pages 35 to 37</p> <ol style="list-style-type: none"> a. Create a one page outline of the section. Make sure to include all of the bold words. <p>#3 - Read pages 52 to 54</p> <ol style="list-style-type: none"> a. What is an organic compound? b. What makes carbon so special? c. What is the role of water molecules in forming and breaking down polymers? <p>Optional Assignment: (5 points)</p> <ol style="list-style-type: none"> a. Find five polymers that you encounter in your daily life. Lookup the chemical structure of the polymer and draw its chemical structure. 	



Matter and Molecules

Atoms are made of subatomic particles			The Periodic Table
Protons	Neutrons	Electrons	
	Have no charge found in nucleus		
Atomic Number	Electron Orbitals	Octet Rule	
	Path where e- are found. First orbital holds two e- and the second and third orbital each hold 8		
Covalent Bond	Ionic Bond	Hydrogen Bond	
	A bond where one atom gains and the other loses electrons Example: Na-CL	Created when H forms a second bond with another atom. Most often found in water (a polar molecule)	
Element	Atom	Compound	
Elements you need to know			
Hydrogen	Helium	Carbon	Oxygen
Has 1 Proton and 1 electron will form a single covalent bond			
Sodium	Chlorine	Nitrogen	Organic Molecules

Enzymes, pH and Carbon

To release chemical energy to perform work cells must have a way to break and form chemical bonds.			The Carbon Cycle
Enzymes	Activation Energy	Catalyst	
Substrate	Active Site	Product	
	Three dimensional space that has the right shape to fit and bond to the substrate(s)		
pH	How can the environment impact enzymes?		
pH is used to indicate the acidity of a solution. pH has values that usually range from 0 to 14			
Acid	Neutral	Base	
Carbon Cycle			
Decomposers	Green Plants	Animals	
Fossil Fuels	Greenhouse Effect	Carbon Sink	<p>Word bank: animals, bacteria, CO₂, decomposers, fungi, plants, sugars</p>