**Unit 2: Biochemistry – Understanding the Molecules of Life**

|  |  |  |  |
| --- | --- | --- | --- |
| **A. Chemical Bonding and its role in molecular biology    *“I can . . .”*** | **Mastery Quiz Results** | **Mastery Reflection: What do I still need to master before the exam?** | **Resources for Mastery** |
| * Distinguish between **Ionic**, **Covalent**, and **Hydrogen** bonds and identify examples of each * Illustrate and explain how the bonds mentioned above form * Explain **Polarity** and its effect on bonding * Contrast hydrophobic and hydrophilic molecules * Explain the function of chemical bonds in the processes of energy storage and energy release |  |  | ***Textbook Sections:***   * 3.1-3.2 * 3.4-3.5   ***Video Lessons:*** <http://www.bozemanscience.com/chemistry/>  4 good videos to watch  1) Atoms and the periodic table  2) Drawing Lewis diagrams  3) Chemical bonds: covalent & ionic  4) Water: a polar molecule ***Edline:*** *(PPTs, Links, Labs, Wrkshts)* |

|  |  |  |  |
| --- | --- | --- | --- |
| **B. The Structure and Function of the major biomolecules    *“I can . . .”*** | **Mastery Quiz Results** | **Mastery Reflection: What do I still need to master before the exam?** | **Resources for Mastery** |
| * Describe the **functions** and **dietary source** of the following  biomolecules: * **Carbohydrates** * **Lipids** * **Proteins** * Construct models or illustrate the **molecular structures** of the  biomolecules mentioned above * Describe the difference between a **monomer** and a   **macromolecule** * Identify and distinguish between the **monomers** of each of the  biomolecules listed above * Use a model to illustrate the processes of  **dehydration synthesis** and **hydrolysis** |  |  | ***Textbook Sections:***   * 3.7-3.10   ***Video Lessons:***  <http://www.bozemanscience.com/biology-main-page/>  4 good videos to watch  1) Molecules of Life  2) Carbohydrates  3) Lipids  4) Proteins  ***Edline:*** *(PPTs, Links, Labs, Wrkshts)* |

|  |  |  |  |
| --- | --- | --- | --- |
| **C. The importance of Enzymes & their role in biochemical reactions     *“I can . . .”*** | **Mastery Quiz Results** | **Mastery Reflection: What do I still need to master before the exam?** | **Resources for Mastery** |
| * Interpret **chemical reaction equations** and distinguish the **reactants** from the **products** * Describe the characteristics of **Endothermic** and **Exothermic** reactions and identify each from graphical energy data * Explain how an **enzyme** acts as a biochemical **catalyst** * Create a model or make an analogy to illustrate the connection between an **enzyme** and the **energy of activation** for an enzymatic chemical reaction * Conduct an experiment to investigate how changes to the **environmental conditions** (*like temperature or pH*) or enzyme inhibitors can affect the efficiency of an enzyme. * Analyze graphical data to determine optimal enzyme conditions |  |  | ***Textbook Sections:***   * 3.10 * 5.1-5.4   ***Video Lessons:*** <http://www.bozemanscience.com/biology-main-page/>  1 Good video to watch  1) Enzymes  ***Edline:*** *(PPTs, Links, Labs, Wrkshts)* |