Honors Biology – Chapter 2 Objectives

1. Vocabulary: chemical energy, free energy, nutrients, heterotroph, autotroph, first law of thermodynamics, second law of thermodynamics, entropy, catalyst, enzyme, active site, substrate, metabolism, synthesis, decomposition, ATP, ADP, P_i, physical digestion, chemical digestion, extracellular digestion, intracellular digestion, ingestion, saliva, peristalsis, esophagus, stomach, liver, bile, pancreas, pancreatic juice, amylase, gall bladder, duodenum, small intestine, large intestine, rectum, anus, gastrin, amylase, pepsin, pepsinogen, trypsin, lipase, villi, bolus, chyme, and capillaries.

2. In terms of energy conversions, order, dissipated energy, free energy, and entropy, describe how living systems are able to function despite the first and second laws of thermodynamics.

3. Diagram and describe ATP's role as a universal currency in energy transfer.

4. Explain the reason why enzymes are necessary for organisms, how they function, and why they work well/poorly under various conditions (temperature, salinity, and pH).

5. Analyze and draw meaningful conclusions from graphs depicting enzyme activity in various conditions.

6. Give the functions of and locate the following organs/structures in a drawing and/or dissection specimen: mouth, esophagus, cardiac sphincter, stomach, pyloric sphincter, duodenum, liver, pancreas, gall bladder, small intestine, large intestine, rectum, and anus.

7. List the path of food through your digestive system, indicating major digestion events along the way. (ex: mouth – physical digestion of all food, chemical digestion of starches into simple sugars by amylase, food shaped into a bolus for swallowing)

8. Explain the importance of surface area to chemical digestion and absorption.