

## **Biology 111 – Principles of Biology I**

### **Lecture Exam 2 Review Sheet**

Your exam will cover Chapters 7-12 from our Campbell Biology textbook.

#### **Module 5: Cell Membranes**

##### **Describe and explain the structure and function of membranes**

- Describe the structure and function of membranes, especially the phospholipid bilayer
- Distinguish between passive and active transport; explain how substances are directly transported across a membrane
- Describe the primary mechanisms by which cells import and export macromolecules

#### **Module 6: Metabolic Pathways**

##### **Explain the metabolic pathways involved in the capture and release of energy in cells**

- Understand the role movement of electrons plays in energy exchanges in cells
- Identify the basic components and steps of photosynthesis
- Identify the reactants and products of cellular respiration and where these reactions occur in a cell
- Illustrate the basic components and steps of fermentation

#### **Module 7: Cell Communication**

##### **Identify the main components of a signal transduction pathway**

- Differentiate between different types of signals
- Describe how a cell propagates a signal
- Describe how a cell responds to a signal
- Describe how a cell responds to a signal

#### **Module 8: Cell Division**

##### **Describe and explain the various stages of cell division**

- Understand chromosome structure and organization in eukaryotic cells
- Identify the stages of the cell cycle, by picture and by description of major milestones
- Identify and explain the important checkpoints that a cell passes through during the cell cycle
- Identify the stages of meiosis by picture and by description of major milestones; explain why meiosis involves two rounds of nuclear division
- Describe and explain a range of mechanisms for generating genetic diversity
- Examine karyotypes and identify the effects of significant changes in chromosome number