

BIOL 212 Lecture Learning Outcomes

Course Learning Goals from Syllabus

Biology 212 deepens student understanding of core concepts in Biology, thereby supporting student success in advanced life science courses and providing a foundation for life-long learning. The course also advances student understanding of the nature of science and helps students to practice and improve critical thinking skills.

Upon completion of BIOL 212, students should be able to:

*Core Concept 1: Information flow (29%)**

- Diagram the processes by which genetic information is replicated and expressed in cells.
- Describe examples of signals that are relayed within cells, and of signals between cells.

*Core Concept 2: Structure and function (6%)***

- Describe the structural features of diverse cell types and tissues, and explain how these features enable function.

Core Concept 3: Transformations of energy and matter (25%)

- Diagram how energy is harvested, transferred, and stored within plant and animal cells.
- Compare different mechanisms involved in the movement of ions, molecules and other components within and between cells. Some mechanisms require energy inputs; others do not.

Core Concept 4: Systems (35%)

- Describe and explain examples in which coordinated activities and functions of cells, tissues, and organ systems enable responses to environmental signals/stimuli.
- Explain how disruptions in these processes can lead to disease.

Core Competencies / process of science skills (5) [5%]

- Demonstrate the ability to read and interpret data figures and tables within the context of examples from introductory biology.
- If given a hypothesis, evaluate whether the data supports or does not support the hypothesis.

*** Average from 3 sections of Biol 212 lecture (Spring 2019)**

****There is some overlap between Core concept 2 and 4, so this percentage has been underestimated for this specific core concept.**

BIOL 212 Laboratory Learning Outcomes

The BIOL 212 Laboratory is designed to reinforce and complement some of the outcomes of BIOL 212 Lecture plus provide additional experiential learning opportunities with science process skills such as hypothesis generation, hypothesis testing, observations of life systems, and expressing ideas both in text and with visual representations.

Upon completion of BIOL 212 laboratory, students should be able to:

*Core Concept 1: Information flow (5%)**

- Describe examples of how signals, electrical, chemical, and physical, are relayed within and between cells, tissues, and organ systems.

*Core Concept 2: Structure and function (35%)***

- Describe the main structural features and components of fundamental plant and animal systems, and explain how these features enable and constrain function.

Core Concept 3: Transformations of energy and matter (10%)

- Compare different mechanisms involved in the movement of ions, molecules and other components within and between cells, tissues, and organs. Some mechanisms require energy inputs; others do not.
- Describe how energy is captured, converted, and stored during photosynthesis.
- Describe how the energy stored in biomolecules is released and what some of the factors are that regulate these processes.

Core Concept 4: Systems (20%)

- Describe and explain examples in which coordinated activities and functions of cells, tissues, and organ systems enable responses to environmental stimuli.
- Explain how disruptions in these processes can lead to altered function and disease.

Core Competencies / process of science skills (30%)

- Demonstrate the ability to develop a research question, generate a hypothesis, design experiments to test that hypothesis, and draw conclusions based on quantitative and qualitative data.
- Express your experimental observations to others both in words and in figures.