



Biology Placement Test

This test is for placement into **only** BIO 2331 and does not qualify as completion of a 1000-level course, which is the prerequisite for several other biology courses.

The Biology Placement Test was designed based on the objectives of the *Introduction to Biological Chemistry* (BIO 1100) course. Students who have completed High School Biology **and** Chemistry or a college-level Cell Biology course should be able to:

- Use the Periodic Chart of elements to locate atomic number and atomic mass, to determine the charge of an ion, to determine the molar mass of an element, and to calculate formula mass of a molecule or compound.
- Differentiate between the three states of matter.
- Relate the gas laws to human respiration.
- Explain the difference between ionic, covalent, and hydrogen bonding.
- Recognize and name ionic compounds.
- Compare and contrast the properties of molecules and compounds.
- Distinguish between polar and nonpolar covalent bonds and relate polarity to properties such as solubility and dissociation.
- Define radioactivity and identify medical uses of radioactive isotopes.
- Write and balance a chemical equation using appropriate symbols and recognize major types of chemical reactions.
- Discuss the role of energy in chemical reactions.
- Distinguish between solutions, colloids, and suspensions.
- Apply the concept of tonicity to osmosis and dialysis.
- Describe the properties of acids and bases; use the pH scale.
- Apply knowledge of buffers to physiological systems.
- Identify important physiological electrolytes.
- List the major classes of organic molecules.
- Identify major organic functional groups and explain the properties of each.
- Describe the cellular functions and physical properties of carbohydrates, lipids, proteins, and nucleic acids.
- Explain how enzymes work and relate the importance of enzymes to the chemistry of a living cell.
- Differentiate between digestion and metabolism.
- Identify the following metabolic pathways: glycolysis, gluconeogenesis, glycogenesis, glycogenolysis, lipogenesis, beta-oxidation, deamination, protein synthesis, TCA cycle, and electron transport.
- Use safe laboratory procedures.
- Make metric measurements using the following laboratory equipment: meter stick, graduated cylinder, pipette, and balance.
- Use a microscope and identify the structure of a cell.