



**BAKER COLLEGE**  
**STUDENT LEARNING OUTCOMES**

**PHY2150 Integrated Physics**  
**3 Semester Hours**

---

**Student Learning Outcomes & Enabling Objectives**

1. Define the fundamental units of the SI system and do unit conversions.
  - a. Work with units of length, mass, and time.
  - b. Convert within units of the SI system and between SI and English units.
2. Apply the principles of kinematics.
  - a. Apply vector and scalar analysis.
  - b. Demonstrate trigonometric and component methods, to displacement, velocity, and force problems.
3. Apply the equations of uniformly accelerated motion.
  - a. Describe initial velocity, final velocity, average velocity, acceleration, displacement, and time.
  - b. Calculate initial velocity, final velocity, average velocity, acceleration, displacement, and time.
4. Apply kinematic motion equations.
  - a. Apply free fall equations.
  - b. Apply projectile motion equations.
  - c. Apply uniformly circular motion equations.
5. Solve problems using Newton's Laws of Motion.
  - a. Describe Newton's three laws of motion.
  - b. Apply the appropriate law(s) of motion to static and kinematic problems as well as those where friction is involved.
  - c. Use free body diagrams and the 1st and 2nd condition of equilibrium to solve problems in dynamics and statics.
6. Apply conservation laws.
  - a. Apply the Conservation of Momentum to motion problems.
  - b. Calculate Work and Power and solve problems using the Conservation of Mechanical Energy.
7. Explore the laws that govern the behavior of fluids.
  - a. Describe the properties of fluids.
  - b. Solve problems dealing with density, specific gravity, pressure, and Archimedes' Principle.
  - c. Apply the concepts of fluid flow such as Bernoulli's Principle, drag, and turbulence.
8. Explore the laws of thermodynamics.

- a. Solve calorimetry problems that include phase changes, latent heats, and the Law of Heat Exchange.
  - b. Discuss the thermal properties: conduction, convection, radiation.
  - c. Solve problems of thermal expansion.
  - d. Differentiate between temperature and heat and solve problems involving temperature scales and thermal expansion.
9. Apply the concepts of Ohm's Law.
    - a. Calculate voltage, current, resistance, and electrical power.
    - b. Calculate parallel and series resistance.
  10. Apply the principles of scientific investigation within the context of a physical or natural science.
- 

These SLOs are not approved for experiential credit.

**Effective: Fall 2017**