

SYLLABUS  
PART I  
EDISON STATE COMMUNITY COLLEGE  
PHY 110S INTRODUCTION TO PHYSICS  
3 CREDIT HOURS

**COURSE DESCRIPTION**

Introductory physics course for students who have not previously taken physics in high school. Concepts of kinematics, force, torque, energy, and equilibrium are introduced as a basis for understanding basic kinesiology and biomechanics, and explaining the ways nature works. Additional topics of electricity, basic circuits, waves, light, sound, and electromagnetism are introduced. Prerequisite: MTH 099D or satisfactory placement scores.

**COURSE GOALS**

The student will:

Bloom's Level		Gen Ed Outcomes
2	1. Distinguish between velocity and acceleration.	1, 2
3	2. Determine the velocity and acceleration for a body from a distance-time graph.	1, 2
4	3. Breakdown up to three vectors using graphical and analytical techniques.	1, 2, 3
2	4. Interpret Newton's three laws and cite examples relevant to each law.	1, 2, 6
3	5. Apply Newton's laws to situations involving forces including friction.	1, 6
3	6. Demonstrate and apply the basic principles of electricity, sound, and electromagnetic energy to patient therapies.	1, 2
3	7. Apply the knowledge of relationships between forces and the biomechanical principles of joint movement to interventions.	1,3
2	8. Describe the motion of the line of gravity as the center of gravity moves.	1, 2, 3
3	9. Apply the principles of equilibrium to static conditions using torques.	1, 3
3	10. Demonstrate the use of levers and pulleys as simple machines.	1, 3
3	11. Relate energy and power to practical situations.	1, 3, 6
3	12. Calculate the amplitude, velocity, acceleration, frequency, and period of waves in motion and identify sound as a type of wave.	1, 3
3	13. Apply Hooke's Law, stress, and strain quantitatively.	1, 3
3	14. Calculate electric force.	1, 3
2	15. Cite the definitions of potential difference, current, and resistance and use the relations among these quantities to interpret simple AC and DC circuits.	1, 2, 3
2	16. Explain the concept of electromagnetic induction and describe eddy currents and how they are produced in the body.	1, 2, 3
1	17. Describe the electromagnetic spectrum including visible and infrared light.	1, 2
3	18. Demonstrate and apply the basic principles of electricity, sound, and electromagnetic energy to patient therapies.	1,2
3	19. Illustrate the reflection and refraction of light using ray diagrams, and the optical properties of various media.	1, 3
3	20. Calculate times and intensities related to radiation dosage.	1, 3

**CORE VALUES**

The Core Values are a set of principles that guide in creating educational programs and environments at Edison State. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

## TOPIC OUTLINE

1. Right angle trigonometry
2. Vectors
3. Kinematics including acceleration and velocity in one dimension
4. Forces, inertia and Newton's Laws
5. Center of gravity
6. Torque and equilibrium
7. Simple machines
8. Energy and power
9. Wave motion and waveforms
10. Electric charge and Coulomb's Law
11. Direct and alternating current
12. Ohm's Law
13. Circuits
14. Electromagnetic induction
15. Electromagnetic waves
16. Reflection and refraction of light