



National University of Computer & Emerging Sciences – FAST

FAST SCHOOL OF COMPUTING

Course Title: Applied Physics

(Course Code: NS 1001)

Fall Semester 2024



INTRODUCTION

Course Instructor: Dr. Muhammad Adeel
(Ph.D. ISST, University of Karachi)



Applied Physics

Credit Hours:	3
Pre-Requisites:	Nil (Physics taken at 12th year of Schooling)
Courses for which this can be pre-requisite:	Digital Logic Design, Computer Graphics, Modeling and Simulation
Recommended Textbook:	<ul style="list-style-type: none">• Fundamentals of Physics Extended, 10th Edition, Halliday, Resnick and Walker• Physics for Scientists and Engineers, 7th Edition Raymond A. Serway & John W. Jewett

Applied Physics

Course Learning Objectives

CLO 1	Obtain knowledge of various operators on Scalar and Vector Quantities
CLO 2	Understand how computer system components are physically realized
CLO 3	Understand how computer system operations are physically realized
CLO 4	Develop sufficient understanding of fundamental laws of physics such that they can be applied in computer graphics and games
CLO 5	Develop understanding of confluence of Physics, Mathematics, and Computer Science
CLO 6	Obtain sufficient understanding of circuits to assemble run-of-shelf hardware components

Applied Physics

Part A: Adding Vectors, Components of Vectors, Unit Vectors, Vector & Scalar Products, Position & Displacement (2/3 dimensions), Average/Instantaneous Velocity/Acceleration, Projectile Motion, Uniform Circular Motion, Newton Laws of Motion, Forces (1D/2D/3D): Gravitational, Friction, Tension, Weight.

Part B: Simple Harmonic Motion, the Force Law for SHM, Angular SHM, Simple Pendulum, Damped SHM, Circular Motion & SHM, Types of Waves, Sinusoidal Waves, Wavelength and Frequency

Part C: Electric Charge, Coulomb's Law, Electric Field, Electric Field Due To Point Charge, Due To Electric Dipole, Gauss' Law, Flux Of Electric Field, Cylindrical/Planar/Spherical Symmetries, Capacitance, Parallel Plate/Cylindrical/Spherical Capacitors, Capacitors In Parallel And In Series, Electric Current, Current Density, Drift Speed, Resistance & Resistivity, Ohm's Law, Magnetic Fields And Field Lines, Hall Effect, Circulating Charge Particles, Magnetic Force On Current Carrying Wire, Magnetic Field Due To Current, Ampere's Law, Magnetic Field Inside/Outside Wire/Between Parallel Wires

Applied Physics

Marks Distribution

Midterms	30%
Class Quizzes	10%
Assignments/ Project Presentation	10%
Final Exam	50%
Total	100%