PHYS110 - General Physics I
College of Sciences
Department of Astronomy and Physics
1st Semester 1445

Course Information

Course Description:

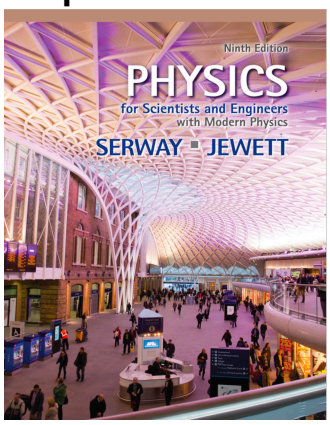
Units and dimensions, Introduction to vectors, Motion in straight line, Newton's Laws of moti on, work, energy and momentum, simple harmonic motion, elasticity, mechanics of non-viscous fluids, flow of viscous fluids, surface tension, temperature, quantity of heat, work, heat and Newton's law of Cooling .

Learning Outcomes:

After studying this course, the student is expected to be able to:

- basis of dynamical motion and the related general physics topics.
- Generic skills such as communication, tolls of solving physics problems

Required Textbook:



Instructor:

Dr. Nadyah Alanazi
Office # 218
Email: nalenazi@ksu.edu.sa
Office Hours: … (By email appointment)

Course Website:

We will be using Blackboard for our course website.

Attendance:

This course is taught for whole 15 weeks (3 credit hours).The instructor will drop the student from a class when the student has missed **25%** of the class meetings.

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Course Grading

Assignment Weights	Percent
1st Midterm Exam	15%
2nd Midterm Exam	15%
Lab	30%
Final Exam	40%
Total	100%

Materials to be Covered:

Chapter 1 Physics and Measurement
1.1 Standards of Length, Mass, and Time
1.3 Dimensional Analysis
1.4 Conversion of Units
1.5 Estimates and Order-of-Magnitude Calculations
1.6 Significant Figures
Chapter 2 Motion in One Dimension
2.1 Position, Velocity, and Speed
2.2 Instantaneous Velocity and Speed
2.3 Analysis Model: Particle Under Constant Velocity
2.4 Acceleration
2.6 Analysis Model: Particle Under Constant Acceleration
2.7 Freely Falling Objects
Chapter 3 Vectors
3.1 Coordinate Systems
3.2 Vector and Scalar Quantities
3.3 Some Properties of Vectors
3.4 Components of a Vector and Unit Vectors
Chapter 5 The Laws of Motion
5.1 The Concept of Force
5.2 Newton's First Law and Inertial Frames
5.3 Mass
5.4 Newton's Second Law
5.5 The Gravitational Force and Weight
5.6 Newton's Third Law
5.7 Analysis Models Using Newton's Second Law
Chapter 7 Energy of a System
7.1 Systems and Environments
7.2 Work Done by a Constant Force
7.3 The Scalar Product of Two Vectors
7.4 Work Done by a Varying Force
7.5 Kinetic Energy and the Work–Kinetic Energy Theorem
7.6 Potential Energy of a System

7.7 Conservative and Nonconservative Forces
7.8 Relationship Between Conservative Forces and Potential Energy
Chapter 8 Conservation of Energy
8.1 Analysis Model: Nonisolated System (Energy)
8.2 Analysis Model: Isolated System (Energy)
8.3 Situations Involving Kinetic Friction
8.4 Changes in Mechanical Energy for Nonconservative Forces
8.5 Power
Chapter 12 Static Equilibrium and Elasticity
12.4 Elastic Properties of Solids
Chapter 14 Fluid Mechanics
14.1 Pressure
14.2 Variation of Pressure with Depth
14.3 Pressure Measurements
14.5 Fluid Dynamics
14.6 Bernoulli's Equation
14.7 Other Applications of Fluid Dynamics
Chapter 19 Temperature
19.1 Temperature and the Zeroth Law of Thermodynamics
19.2 Thermometers and the Celsius Temperature Scale
19.3 The Constant-Volume Gas Thermometer and the Absolute Temperature Scale
19.4 Thermal Expansion of Solids and Liquids
Chapter 20 The First Law of Thermodynamics
20.1 Heat and Internal Energy
20.2 Specific Heat and Calorimetry
20.7 Energy Transfer Mechanisms in Thermal Processes