Physics I PHYS 2425A
Course Calendar

Week 1

Chapter 1. Introduction, Measurements, Uncertainty.

Historical Background, Scientific Discovery (Hypotheses, Models, Theories, Laws), Measurements (Accuracy and Precision, Random and Systematic Error and Uncertainty), Reporting and Calculating Quantities (Significant Figures, Scientific Notation, Order of Magnitude).

Chapter 2. Kinematics in One Dimension (How objects move along a line).

Reference Frames, Distance and Displacement, Speed and Velocity, Equations of Motion (Displacement, Velocity, Acceleration), Free Fall and Acceleration by Gravity, Graphical Analysis of Motion)

Week 2

Chapter 3. Kinematics in Two Dimensions.

Mathematical Calculations with Vectors and Scalars, Vector Component Application to Projectile Motion Problems, Relative Velocity

Exam 1 Chapters 1, 2, 3.

Week 3

Chapter 4. Dynamics and Newton's Laws of Motion

Newton's Three Laws of Motion, Mass and Weight, Force of Gravity and Normal Force, Force of Friction, Free Body Problems, Motion along an Incline.

Week 4

Chapter 5. Circular Motion and Gravitation

Kinematics and Dynamics of Circular Motion, Banked and Unbanked curves, Centrifugation, Newton's Law of Universal Gravitational, Satellites

Chapter 6. Work and Energy.

Work, Kinetic and Potential energy, Law of Conservation of Mechanical Energy, Dissipative Forces and Transformation of Energy

Exam 2 Chapters 4, 5,6

Week 5

Chapter 7. Linear Momentum.

Law of Conservation of momentum, Collisions and Impulse, Elastic and Inelastic Collision, Collisions in Two Dimensions, Center of Mass and Translational Motion

Week 6

Chapter 8. Rotational Motion.

Angular Quantities, Equations of Motion (Angular: Displacement, Velocity, Acceleration), Dynamics of Rolling Motion, Torque, Moment of Inertia, Rotational Kinetic Energy, Angular Momentum and Conservation

Chapter 9. Static Equilibrium: Elasticity and Fracture

Conditions of Static Equilibrium, Applications to muscles and Joints, Elasticity (Stress, Strain, Fracture), Arches and Domes

Exam 3 Chapters 7, 8,9

Week 7

Final Exam: Comprehensive (Standardized Exam)