PHY 241 General Physics I is the first course in the calculus-based PHY 241/242 sequence. It provides an introduction to mechanics, heat, and sound. It is designed for majors in physics, chemistry, mathematics and engineering. There are four 1-hour lectures, one 1-hour tutorial and one 3-hour lab each week. Prerequisite: MAT 241. Co-requisite: MAT 242.

The syllabus below is a general guide and will vary from semester to semester.

Week 1
Units, Uncertainty and Significant Figures, Vectors, and Vectors Products, Displacement, Average and Instantaneous Velocity and Acceleration, Constant Acceleration motion, Freely Falling Bodies, Velocity and Position by Integration

Week 2
Position, Velocity and Acceleration Vectors, Projectile Motion, Motion in a Circle, and Relative Velocity, Newton's Laws of Motion, Mass and Weight, Free-Body Diagrams

Week 3
Applying Newton's Laws - Particles in Equilibrium and Dynamics of Particles
Frictional Forces, Dynamics of Circular Motion

Week 4
Work, Kinetic Energy and the Work-Energy Theorem, Work and Energy with Varying Forces, Power

Week 5

Week 8
Momentum and Impulse, Conservation of Momentum, Momentum Conservation and Collisions, Elastic Collisions, Center of Mass

Week 7
Angular Velocity and Acceleration, Constant Angular Acceleration, Linear and Angular Kinematics, Energy in Rotational Motion, Parallel-Axis Theorem, Moment-of-Inertia, Dynamics of Rotational Motion, Torque and Angular Acceleration for a Rigid Bodies, Work and Power
in Rotational Motion, Angular Momentum, Conservation of Angular Momentum, Precession

**Week 9**

**Week 10**
Oscillations, Simple Harmonic Motion, Energy in Simple Harmonic Motion, The Simple and Physical Pendulums, Damped Oscillations, Forced Oscillations and Resonance

**Week 11**
Density, Pressure in a Fluid, Buoyancy, Fluid Flow, Bernoulli's Equation

**Week 12**
Mechanical Waves, Periodic Waves, Energy in Wave Motion, Wave Interference and Superposition, Standing Waves and Normal Modes on a String, Sound Waves

**Week 13**
Sound Intensity, Sound Waves and Normal Modes, Resonance and Sound, Interference and Beats, The Doppler Effect

**Week 14**

**Week 15**