PHYS 2610 - General Physics 1

Fall 2026 Syllabus, Section 01, CRN 40383,

Credit hours: 4

Instructor

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Public Instructor Information

Instructor Title: Associate Professor
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Course Description

2610. General Physics 1. A course in mechanics; the kinematics and dynamics of masses in translation and rotation; Newton's Laws; gravity; the conservation laws of energy and momentum; simple harmonic motion and introduction to wave motion and sound. Prereq.: High school physics or PHYS 1501. Prereq. or concurrent: MATH 1571. 4 s.h.

Course Readings

Group	Title	Author	ISBN
Optional	Any edition of a Calculus based Physics text.		

Handwritten notes spanning the course as a whole will be provided at regular intervals. No external textbook is required though any previous version of the Calculus based general Physics text by Serway and Jewitt may be used), and homework sets will be sent to you via email and posted on the Blackboard site.

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Schedule of Topics and Assignments

Day	Date	Proposed Topic	Due/To Prepare for Class
Mon	8/24	Introductory comments; course expectations and broader comment on Newtonian Physics	
Tue	8/25	Segment 1: Dimensions and Units; we begin by discussing numbering systems and physical length scales.	
Wed	8/26	Segment 1: We continue by discussing dimensional analysis	
Fri	8/28	Segment 1: We discuss how quantities such as area and volume scale and continue discussing dimensional analysis.	
Mon	8/31	Segment 2: Motion and kinematics: We discuss coordinate systems and the notion of position..	

Tue	9/1	Segment 2: We discuss average velocity and motivate instantaneous velocity as limit, the derivative.	
Wed	9/2	Segment 2: We discuss from a qualitative perspective the relationship among position, velocity, and acceleration.	
Fri	9/4	Segment 2: We discuss velocity, acceleration, and position in a rigorous quantitative manner. We review relevant Calculus related concepts.	
Mon	9/7	Labor day recess; class will not meet	
Tue	9/8	Segment 2: We consider the special case of uniform acceleration and we derive relevant relationships.	
Wed	9/9	Segment 2: We discuss real world (single stage) uniform acceleration scenarios.	
Fri	9/11	Segment 2: Real world multi-stage uniform acceleration situations are discussed.	
Mon	9/14	Segment 3: We review vector mathematics and trigonometric functions.	
Tue	9/15	Segment 3: Physical intuition is used to motivate projectile motion.	
Wed	9/16	Segment 3: Projectile motion is examined in the context of symmetric trajectories.	
Fri	9/18	Segment 3: Projectile motion is discussed for non-symmetric trajectories; we pause to review for the midterm exam.	
Mon	9/21		First midterm exam
Tue	9/22	Segment 3: The concept of (Galilean) relative velocity is discussed, and real world examples are considered.	
Wed	9/23	Segment 4: Radian measure and angular velocity are considered.	
Fri	9/25	Segment 4: We obtain relationships for centripetal acceleration and we consider examples.	
Mon	9/28	Segment 5: We discuss and motivate Newton's Three Laws.	
Tue	9/29	Segment 5: We consider weight forces and normal forces.	
Wed	9/30	Segment 5: We consider motion down a frictionless ramp.	
Fri	10/2	Segment 5: Tension forces are discussed, and we begin to consider friction forces.	
Mon	10/5	Segment 5: We continue to discuss static and kinetic friction forces.	
Tue	10/6	Segment 5: We discuss Hooke's Law and spring forces.	
Wed	10/7	Segment 5: The Universal Law of Gravitation is discussed.	
Fri	10/9	Segment 6: The notion of work is introduced.	
Mon	10/12	Segment 6: Kinetic Energy and the Work Energy Theorem are discussed.	

Tue	10/13	Segment 6: Potential Energy and Conservation of Energy are discussed.	
Wed	10/14	Segment 6: Applications of conservation of energy are examined.	
Fri	10/16	Segment 6: We continue to discuss conservation of energy and pause to review for the second midterm exam.	
Mon	10/19		Second midterm exam
Tue	10/20	Segment 7: Momentum (and why it is conserved) is introduced by reflecting on Newton's Third law	
Wed	10/21	Segment 7: Conservation of momentum for fully inelastic collisions is considered.	
Fri	10/23	Segment 7: Conservation of momentum is explored for fully elastic 1D collsions.	
Mon	10/26	Segment 7: The notion of impulse is introduced, and real world applications are considered.	
Tue	10/27	Segment 8: The notion of the moment of inertia is introduced.	
Wed	10/28	Segment 8: Further examples of moments of inertia are discussed, and we consider rotational kinetic energy.	
Fri	10/30	Segment 8: We discuss situations in which both translational and kinetic energy are present, most notably the case of rolling motion.	
Mon	11/2	Segment 9: We begin to consider non-equilibrium situations involving torque	
Tue	11/3	Segment 9: Torque is motivated with a qualitative discussion.	
Wed	11/4	Segment 9: Torque is defined in a rigorous quantitative manner. Vector dot and cross products are reviewed. The right hand rule is introduced.	
Fri	11/6	Segment 9: We begin to discuss equilibrium situations involving torque.	
Mon	11/9	Segment 9: We discuss non-equilibrium cases involving torque.	
Tue	11/10	Segment 10: We discuss angular momentum and the conservation of angular momentum.	
Wed	11/11	Veteren's Day observance; class will not meet	
Fri	11/13	Segment 11: We introduce the notion of pressure and consider examples; we pause to review for the third midterm exam.	
Mon	11/16		Third midterm exam
Tue	11/17	Segment 11: We consider applications of pressure, and we discuss buoyancy.	
Wed	11/18	Segment 11: We discuss continuity of flow and hydraulic systems.	
Fri	11/20	Segment 11: We derive the Bernoulli equation and apply it to real world situations.	

Mon	11/23	Segment 12: We discuss the harmonic oscillator.	
Tue	11/24	Segment 12: We consider the pendulum for the case in which the amplitudes are small.	
Wed	11/25	Thanksgiving recess begins, and class will not meet	
Fri	11/27	Segment 13: We discuss waves and wave physics in a qualitative sense.	
Mon	11/30	Segment 13: We begin discussing standing waves in strings and columns of air.	
Tue	12/1	Segment 13: We continue discussing standing waves.	
Wed	12/2	Segment 13: We discuss sound intensity and the Decibel measure.	
Fri	12/4	Segment 13: We discuss the Doppler shift in the case of sound.	
Mon	12/7		In class review for the final exam begins.
Tue	12/8		We conclude reviewing for the final exam.
Wed	12/9		Final exam from 10:30 am - 12:30 pm

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.