

PHYS 1307 - SYLLABUS

General Physics I - Mechanics

Text: *Fundamentals Of Physics*

by Halliday, Resnick, Walker,

10th edition

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Summer 2017

Course Objectives: Students will be able to:

- 1) demonstrate basic facility with the methods of scientific inquiry and problem solving
- 2) explain how the concepts and findings of physics shape our world
- 3) develop quantitative models as related to the course subject matter
- 4) apply symbolic systems of representation
- 5) formulate structured and logical arguments

Date	Class	Pre-class Prep	Surveys 8:00 AM	Suggested Quiz-Prep Chapter Problems	Objectives
Mo 6/5	Measurement	1.1 - 1.3		1.3, 1.12	Understand and use dimensions, units, and significant figures
Tu 6/6	Straight Line Motion I & II	2.1-4	2 & 3	2.2, 2.15,2.18, 2.19, 2.25	Understand and use distance, displacement, velocity, & acceleration in one dimension
We 6/7	Straight Line Motion III / Co-op	2.5-6	4	2.37, 2.44, 2.53	Interpret kinematics graphically and apply to free fall
Th 6/8	Vectors, Motion in 2D & 3D	3.1-2 4.1-4	5 & 6	4.9, 4.11,4.15, 4.22, 4.32	Understand vectors, scalar components, apply vector addition to kinematics
Fr 6/9	Co-op / QUIZ CHAP 1-4				
Mo 6/12	Force & Motion I & II	5.1-3	7 & 8	5.1, 5.6, 5.7, 5.16,5.17, 5.20, 5.38, 5.57	Understand Newton's 3 laws, apply to gravity, tension & normal forces
Tu 6/13	Force & Motion III & IV	6.1-3	9 & 10	6.13, 6.15, 6.36, 6.40, 6.43,6.49, 6.52, 6.57	Apply Newton's laws to resistive force & circular motion
We 6/14	Co-op / Energy & Work I	7.1-3	11	7.8, 7.11, 7.17, 7.20,	Apply kinetic energy and work to constant forces
Th 6/15	Energy & Work II / Potential Energy	7.4-6 8.1-3	12 & 13	7.30,7.39, 7.44, 7.46, 8.01, 8.03,	Apply kinetic energy and work to non-constant forces, power, understand potential energy
Fr 6/16	Conserved Energy / Center of Mass	8.3-5 9.1-2	14 & 20	8.24,8.27,8.42, 8.49, 8.122, 9.2,9.6,9.9,9.17	Analyze systems for mechanical energy conservation, CoM and Newton's 2nd law

Mo 6/19	Co-op / QUIZ CHAP 5-8				
Tu 6/20	Linear Momentum	9.3-8	15 & 16	9.3,9.34, 9.38, 9.43,9.60, 9.73,9.74, 9.98	Understand linear momentum and impulse, apply conservation of linear momentum
We 6/21	Co-op / Rotations I	10.1-3	17	10.13, 10.22	Understand angular displacement, velocity, acceleration about a fixed axis
Th 6/22	Rotations II & III	10.4-7 11.4-8	18 & 19	10.48,10.53, 11.29,11.43, 11.56	Extend laws of mechanics to rotation (rotational inertia, torque, angular momentum)
Fr 6/23	Equilibrium / Fluids I	12.1-2 14.1-5	21 & 22	12.9,12.13, 12.27, 14.3, 14.8, 14.28, 14.40	Apply mechanics to systems in equilibrium (balance), pressure effects of ideal fluids at rest
Mo 6/26	Co-op / QUIZ CHAP 9-12				
Tu 6/27	Fluids II / Oscillations I	14.6-7 15.1-2	23 & 24	14.52, 14.59, 14.76, 15.9, 15.11,15.30,15.33,	Apply equations of Bernoulli and Continuity to moving ideal fluids, mechanics to SHM
We 6/28	Oscillations II / Co-op	15.4-6	25	15.58, 15.61	Understand concepts of damped and forced oscillations
Th 6/29	Sound Waves	17.1-4,7	26 & 27	17.7, 17.9, 17.11, 17.16, 17.29, 17.36, 17.55, 17.61	Understand and apply sound wave displacement, speed, interference, intensity, frequency
Fr 6/30	Review Co-ops				Review problem-solving and conceptual questions of selected topics covered
Mo 7/3	FINAL EXAM 9 am – 10:50 am - quantitative problems				Based on Quiz and Quiz-Prep problems
Tu 7/4	<i>Day of Mourning for Loss of the American Colonies</i>				
We 7/5	FINAL EXAM 9 am – 10 am: conceptual questions				Based on concept questions done in class

Answers to odd-numbered problems in the textbook. Answers to even-numbered suggested problems (SI units unless stated otherwise): 1.12 3.1, 2.2 (a) 1.74 (b) 2.14, 2.18 (a) 54 (b) 18 (c) -12 (d) 64 (e) 4 (f) 24 (g) 2 (h) -24 (i) 18, 2.44 (a) 3.70 (b) 1.74 (c) 0.154, 4.22 (a) 0.495 (b) 3.07, 4.40 (a) 24.95 (b) 25.02, 5.16 (a) 0.260, 5.38 (a) 68N (b) 28N (c) -12N, 6.40 (a) 66.0 (b) -2.20×10^2 dC, 7.20 45, 7.46 2.7×10^5 , 8.42 (a) 5.6×10^2 (b) 5.6×10^2 , 9.2 (a) 1.1 (b) 1.3, 9.6 (a) 0.20 (b) 0.20 (c) 0.16, 9.34 (a) 4.50×10^{-3} (b) 0.529, 9.60 (a) 1.9 (b) right (c) elastic, 9.74 -500J, 10.22 (a) 3.0 (b) 30 (c) 6.0 (d) 90, 10.48 (a) 8.4 (b) 17 (c) 0, 11.56 6.46, 14.8 1.4×10^5 , 14.28 (b) 103, 14.40 6.5 mm, 14.52 4, 14.76 (a) 5% (b) 41%, 15.30 (a) 200 (b) 1.39 (c) 1.91, 15.58 0.39, 17.16 4.12, 17.36 0.67

