PHYS 1307 - SYLLABUS

General Physics I - Mechanics

Text: *Fundamentals Of Physics*

by Halliday, Resnick, Walker,

10th edition

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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	2.15,2.18, 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	2.44, 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, 4.32	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	Understand Newton's 3 laws, apply to gravity, tension & normal forces
Tu 6/13	**Force & Motion III & IV**	**6.1-3**	9 & 10	6.15, 6.36, 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, 9.2,9.9,9.17	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	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, 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	*Day of Mourning for Loss of the American Colonies*				
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 x 10^2 dC, 7.20 45, 7.46 2.7 x 10^5 , 8.42 (a) 5.6 x 10^2 (b) 5.6 x 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 x 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 x 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