

Detailed Course Schedule for Phys (110)

Week #	Date	Topic
1	Sun	General Introduction Chapter (1) Measurement (1-1) (1-2),(1-3),(1-4 page 3 Only) , (1-5,1-6,1-7 definition only)
	Tue	Chapter( 2) Motion along a straight line (2-1), (2-2), (2-3), (2-4).
	Thu	S.P (2-1), (2-5), S.P (2-3).
2	Sun	(2-6), S.P (2-4 a-b).
	Tue	(2-7), S.P (2-5).
	Thu	(2-9), S.P (2-7), S.P (2-8).
3	Sun	Chapter (3) Vectors(3-1) (3-2), (3-3), S.P (3-1).
	Tue	(3-4), S.P (3-2), (3-5).
	Thu	(3-6), S.P (3-4).

Week #	Date	Topic
4	Sun	(3-8), S.P (3-7).
	Tue	(3-8 the vector product), S.P (3-9).
	Thu	Chapter( 4)Motion in Two and Three Dimensions(4-1) (4-2), S.P (4-1), S.P (4-2 a).
5	Sun	(4-3), S.P (4-3), (4-4), S.P (4-4).
	Tue	S.P (4-5) ,(4-5 only page 65).
	Thu	(4-6 for this section you must solve problem21 and problem 38 ).
6	Sun	S.P (4-7), (4-7) but the proof of Eq.4-34 (NO), S.P (4-10)
	Tue	Chapter( 5) Force and Motion-I (5-1) (5-2), (5-3), (5-4(but inertial reference frames (NO))), (5-5).
	Thu	(5-6), S.P (5-1), S.P (5-2).

Week #	Date	Topic
7	Sun	(5-7), (5-8).
	Tue	(5-9), S.P (5-4), S.P (5-5).
	Thu	S.P (5-8), S.P (5-9).
8	Sun	Chapter( 6) Force and Motion—II (6-1) (6-2 only page117), (6-3), S.P (6-1).
	Tue	S.P (6-2 only calculating acceleration a), (6-5), S.P (6-6).
	Thu	Chapter(7) Kinetic Energy and Work (7-1) (7-2), (7-3), S.P (7-1).
9	Sun	(7-4), (7-5).
	Tue	S.P (7-2), S.P (7-3).
	Thu	(7-6 work done in lifting and lowering an object (NO)) , S.P (7-4-a)

Week #	Date	Topic
10	Sun	(7-7 work done by an applied force (NO)), S.P (7-7).
	Tue	(7-9), S.P (7-11).
	Thu	Chapter(9) Center of Mass and Linear Momentum (9-1) (9-2 , (solid bodies NO)) , S.P(9-1)
11	Sun	( 9-3 to equation 9-15, (proof of equation 9-14 NO) S.P(9-3).
	Tue	(9-4),(9-5).
	Thu	(9-7), S.P.(9-6)

### Detailed Course Schedule for Phys (110)

Week #	Date	Topic
1	Mon	1-General Introduction 2-Chapter (1) Measurement (1-1) (1-2),(1-3),(1-4 page 3 Only) , (1-5,1-6,1-7 definition)
	Wed	Chapter( 2) Motion along a straight line (2-1) (2-2), (2-3), (2-4), S.P (2-1), (2-5), S.P (2-3)
2	Mon	(2-6), S.P (2-4 a-b) (2-7), S.P (2-5).
	Wed	(2-9), S.P (2-7), S.P (2-8).
3	Sun	Chapter (3) Vectors (3-1) (3-2), (3-3), S.P (3-1),
	Tue	(3-4), S.P (3-2), (3-5).

Week #	Date	Topic
4	Mon	(3-6), S.P (3-4).
	Wed	(3-8), S.P (3-7), (3-8 the vector product), S.P (3-9).
5	Mon	Chapter( 4)Motion in Two and Three Dimensions (4-1) (4-2), S.P (4-1), S.P (4-2 a), (4-3).
	Wed	S.P (4-3),(4-4), S.P (4-4), S.P (4-5).
6	Mon	(4-5 only page 65) (4-6 for this section you must solve problem21 and problem 38 ).
	Wed	S.P (4-7), (4-7) but the proof of Eq.4-34 (NO), S.P (4-10).

Week #	Date	Topic
7	Mon	Chapter( 5) Force and Motion-I (5-1) (5-2), (5-3), (5-4(but inertial reference frames (NO))), (5-5).  (5-6), S.P (5-1).
	Wed	S.P (5-2), (5-7), (5-8).
8	Mon	(5-9), S.P (5-4), S.P (5-5).  S.P (5-8).
	Wed	S.P (5-9), Chapter( 6) Force and Motion—II (6-1) (6-2 only page117), (6-3).
9	Mon	S.P (6-1),S.P (6-2 only calculating acceleration a), (6-5), S.P (6-6).
	Wed	Chapter(7) Kinetic Energy and Work (7-1) (7-2), (7-3), S.P (7-1). (7-4), (7-5).

Week #	Date	Topic
10	Mon	S.P (7-2), S.P (7-3). (7-6 work done in lifting and lowering an object (NO)) , S.P (7-4-a).
	Wed	(7-7 work done by an applied force (NO)), S.P (7-7), (7-9), S.P (7-11).
11	Mon	Chapter(9) Center of Mass and Linear Momentum (9-1) (9-2 , (solid bodies NO)) , S.P(9-1), ( 9-3 to equation 9-15, (proof of equation 9-14 NO) S.P(9-3).
	Wed	(9-4),(9-5), (9-7), S.P.(9-6)



## Chapter 4

Problem 21. (a) From Eq. 4-22 (with  $\theta_0 = 0$ ),  $h = (-gt^2)/2$ ,  $h = -45.0\text{m}$

the time of flight is

$$t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2(45.0\text{ m})}{9.80\text{ m/s}^2}} = 3.03\text{ s.}$$

(b) From (Eq. 4-21)

$$\Delta x = v_0 t = (250\text{ m/s})(3.03\text{ s}) = 758\text{ m.}$$

(c) from Eq.( 4-23 )

$$|v_y| = gt = (9.80\text{ m/s}^2)(3.03\text{ s}) = 29.7\text{ m/s.}$$

Problem 38. (a) from Eq. 4-21

$$t = \frac{\Delta x}{v_x} = \frac{22.0\text{ m}}{(25.0\text{ m/s}) \cos 40.0^\circ} = 1.15\text{ s.}$$

The vertical distance ( from Eq. 4-22 )

$$\Delta y = (v_0 \sin \theta_0)t - \frac{1}{2}gt^2 = (25.0\text{ m/s}) \sin 40.0^\circ (1.15\text{ s}) - \frac{1}{2}(9.80\text{ m/s}^2)(1.15\text{ s})^2 = 12.0\text{ m.}$$

(b)  $v_x = v_0 \cos 40.0^\circ = 19.2\text{ m/s.}$

(c) from ( Eq. 4-23)

$$v_y = v_0 \sin \theta_0 - gt = (25.0\text{ m/s}) \sin 40.0^\circ - (9.80\text{ m/s}^2)(1.15\text{ s}) = 4.80\text{ m/s.}$$

(d) As  $v_y > 0$  when the ball hits the wall, it has not reached the highest point yet.

