Detailed Course Schedule for Phys (110)

Week #	Date	Topic
1	Sat	General Introduction Chapter (1) Measurement (1-1) (1-2),(1-3),(1-4 page 3 0nly) , (1-5,1-6,1-7 definition only)
	Mon	Chapter(2) Motion along a straight line (2-1), (2-2), (2-3), (2-4).
	Wed	S.P (2-1), (2-5), S.P (2-3).
2	Sat	(2-6), S.P (2-4 a-b).
	Mon	(2-7), S.P (2-5).
	Wed	(2-9), S.P (2-7), S.P (2-8).
3	Sat	Chapter (3) Vectors(3-1) (3-2), (3-3), S.P (3-1).
	Mon	(3-4), S.P (3-2), (3-5).
	Wed	(3-6), S.P (3-4).

إعداد: أ. مها دفتردار
إشراف : د.هناء فرحان

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

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Week #	Date	Topic
7	Sat	(5-7), (5-8).
	Mon	(5-9), S.P (5-4), S.P (5-5).
	Wed	S.P (5-8), S.P (5-9).
8	Sat	Chapter(6) Force and Motion—II (6-1) (6-2 only page117), (6-3), S.P (6-1).
	Mon	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).

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

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Week #	Date	Topic
11	Sat	(9-3 to equation 9-15, (proof of equation 9-14 NO) S.P(9-3).
	Mon	(9-4),(9-5).
	Wed	(9-7), S.P.(9-6)

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Detailed Course Schedule for Phys (110)

Week #	Date	Topic
1	sun	1-General Introduction 2-Chapter (1) Measurement (1-1) (1-2),(1-3),(1-4 page 3 0nly) , (1-5,1-6,1-7 definition)
	Tue	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	sun	(2-6), S.P (2-4 a-b) (2-7), S.P (2-5).
	Tue	(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).

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

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Week #	Date	Topic
7	Sun	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).
	Tue	S.P (5-2), (5-7), (5-8).
8	Sun	(5-9), S.P (5-4), S.P (5-5). S.P (5-8).
	Tue	S.P (5-9), Chapter(6) Force and Motion—II (6-1) (6-2 only page117), (6-3).
9	Sun	S.P (6-1),S.P (6-2 only calculating acceleration a), (6-5), S.P (6-6).
	Tue	Chapter(7) Kinetic Energy and Work (7-1) (7-2), (7-3), S.P (7-1). (7-4), (7-5).

إعداد: أ. مها دفتردار
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Week #	Date	Topic
10	Sun	S.P (7-2), S.P (7-3). (7-6 work done in lifting and lowering an object (NO)) , S.P (7-4-a).
	Tue	(7-7 work done by an applied force (NO)), S.P (7-7), (7-9), S.P (7-11).
11	Sun	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).
	Tue	(9-4),(9-5), (9-7), S.P.(9-6)

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Chapter 4

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

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) $v_x = v_0 \cos 40.0^\circ = 19.2$ 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.