



Lahore University of Management Sciences

PHY 101 – Mechanics

Fall 2016

Instructors	Adam Zaman Chaudhry
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TA Office Hours	
Course URL (if any)	

Course Basics				
Credit Hours	4			
Lecture(s)	Nbr of Lec(s) Per Week	2	Duration	110 Minutes
Recitation (per week)	Nbr of Rec (s) Per Week		Duration	
Lab (if any) per week	Nbr of Session(s) Per Week		Duration	
Tutorial (per week)	Nbr of Tut(s) Per Week	1	Duration	90 Minutes

Course Distribution	
Core	SSE Core
Elective	
Open for Student Category	
Closed for Student Category	

COURSE DESCRIPTION
Introduces the principles of classical mechanics. Straight-line kinematics; motion in a plane; relative inertial frames and relative velocity; forces; particle dynamics with force; work, conservative forces, potential energy and conservation of energy; conservation of momentum, center of mass and the center of mass reference frame; rigid bodies and rotational dynamics; conservation of angular momentum; central force motions; waves, simple harmonic motion, oscillations, coupled harmonic oscillators

COURSE PREREQUISITE(S)	
<ul style="list-style-type: none">•••	None

COURSE OBJECTIVES	
<ul style="list-style-type: none">•••	<ul style="list-style-type: none">To explain Newton's laws of motion and its applicationsTo explain special relativity and its applicationsTo explain simple harmonic motion, waves and oscillations



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Learning Outcomes	
<ul style="list-style-type: none"> • To understand the applications of Newton's laws of motion • To understand simple harmonic motion, waves and oscillations 	
Grading Breakup and Policy	
Assignment(s): Home Work: 10% Quiz(s): 20% Class Participation: Attendance: Midterm Examination: 35% Project: Final Examination: 35%	

Examination Detail	
Midterm Exam	Yes/No: Yes Combine Separate: Combined Duration: 180 Minutes Preferred Date: Exam Specifications: No books, no notes, no help sheet allowed. Calculators allowed
Final Exam	Yes/No: Yes Combine Separate: Combined Duration: 180 Minutes Exam Specifications: No books, no notes, no help sheet allowed. Calculators allowed

COURSE OVERVIEW			
Week	Topics	Recommended Readings	Objectives/ Application
1	Calculus		
2	Calculus		
3	Physics and measurements, vectors		
4	Motion in one, two and three dimensions		
5	Newton's laws of motions and applications		
6	Work and energy		
7	Conservation of energy		
8	Universal gravitation		
9	System of particles		
10	Collisions, rotation of a rigid body		



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11	Dynamics of a rigid body, part I		
12	Dynamics of a rigid body, part II		
13	Oscillations		
14	Waves		

Textbook(s)/Supplementary Readings

Richard Wolfson, Essential University Physics, 2nd Edition, Addison-Wesley, 2011.

Hugh D. Young, Roger A. Freedman and Lewis Ford, University Physics, 12th edition, Addison-Wesley, 2007.

Richard Feynman, Feynman Lectures on Physics, Volume 1. Available online at http://www.feynmanlectures.caltech.edu/I_toc.html

Daniel Kleppner and Norman Ramsey, Quick Calculus, 2nd Edition, John Wiley & Sons, 1985.