BHAI GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF APPLIED SCIENCES

LESSON PLAN

Subject Name: Mechanics of solids **Subject Code: - BTPH-101-18**

Year: - 2022-23 **Semester: - 2nd**

Lecture	Unit	Date/ Week	Topic	Teaching Aids	Reference
Lecture :1	UNIT-I	WEEK-1	Introduction to Del operator and Physical significance of gradient	Chalk Board	Analytical Mechanics By Satish K. Gupta
Lecture :2			Concept of divergence and curl	Presentation	
Lecture :3			Potential energy function, F = - Grad V, equipotential surfaces, Forces in nature	Chalk Board	
Lecture :4			Numerical problems	Chalk Board	
Lecture :5		WEEK-2	Newton's Laws and its completeness in describing particle motion	Presentation	Analytical Mechanics By Satish K. Gupta
Lecture :6			Conservative and non- conservative forces, curl of a force field	Chalk Board	
Lecture :7			Central forces, Conservation of Angular Momentum and Energy	Chalk Board	
Lecture :8			Numerical problems	Chalk Board	
Lecture :9		WEEK-3	Introduction to Cartesian, spherical and cylindrical coordinate system.	Chalk Board	S Chanda Engineering Physics
Lecture :10			Inertial and Non- inertial frames of reference	Chalk Board	
Lecture :11			Rotating coordinate system	Presentation	
Lecture :12			Numerical problems	Chalk Board	
Lecture :13		WEEK-4	Centripetal and Coriolis accelerations	Presentation	S. Chanda Engineering Physics
Lecture :14			Problem discussion	Chalk Board	
Lecture :15			Numerical problems	Chalk Board	
Lecture :16	UNIT-II	WEEK-5	Introduction and derivation of Mechanical simple harmonic oscillators	Presentation	Engineering Mechanics by Manoj K. Harbola
Lecture :17			Damped oscillations	Presentation	
Lecture :18			Damped harmonic oscillator and its types	Presentation	
Lecture :19			Numerical problems	Chalk Board	
Lecture :20		WEEK-6	Energy decay in a damped harmonic oscillator	Presentation	
Lecture :21			Power dissipation in damped harmonic oscillator	Presentation	
Lecture :22			Quality factor, forced mechanical oscillators	Chalk Board	
Lecture :23			Numerical problems	Chalk Board	
Lecture :24	UNIT-III	WEEK-7	Resonance or resonant oscillations	Chalk Board	Analytical Mechanics By Satish K. Gupta
Lecture :25			Introduction of rigid body, center of mass, center of gravity	Presentation	
Lecture :26			Moment of inertia of different bodies	Presentation	
Lecture :27			Numerical problems	Chalk Board	
Lecture :28		WEEK-8	Moment of inertia of ring and rectangular lamina	Chalk Board	
Lecture :29			Moment of inertia of circular disk, theorem of parallel and perpendicular axis	Presentation	
Lecture :30			Angular momentum about a point of a rigid, Euler's laws of motion	Presentation	
Lecture :31			Numerical problems	Chalk Board	
Lecture :32		WEEK-9	Euler's equation of motion	Chalk Board	Analytical

Lecture :33			Moment of force, couple	Chalk Board	Mechanics By Satish K. Gupta
Lecture :34			Concept of Stress, Strain and its types.	Chalk Board	
Lecture :35			Numerical problems	Chalk Board	
Lecture :36	UNIT-IV	WEEK-10	Friction and its types, laws of friction, limiting friction	Chalk Board	Engineeering physics by Dr. Rakesh Dogra
Lecture :37			Angle of friction and angle of repose.	Chalk Board	
Lecture :38			Motion on horizontal and inclined plane.	Chalk Board	
Lecture :39			Numerical problems	Chalk Board	
Lecture :40		WEEK-11	Methods of reducing friction.	Chalk Board	S Chanda Engineering Physics
Lecture :41			Concepts of elasticity, plasticity	Chalk Board	
Lecture :42			Concepts of strain hardening, failure.	Presentation	
Lecture :43			Numerical problems	Chalk Board	
Lecture :44		WEEK-12	One dimensional stress-strain curve	Chalk Board	
Lecture :45			Hook's law and young's modulus.	Chalk Board	
Lecture :46			Force analysis axial and shear force	Chalk Board	
Lecture :47			Numerical problems	Chalk Board	
Lecture :48		WEEK-13	Bending and twisting force.	Chalk Board	
Lecture :49			Bending stress, shear stress	Chalk Board	
Lecture :50			Expression for bending moment of beam.	Chalk Board	
Lecture :51			Numerical problems	Chalk Board	
Lecture :52		WEEK-14	Problem Discussion	Chalk Board	
Lecture :53			Twisting of wire/ cylinder.	Class Test	
Lecture :54			Concept of energy strain.	Chalk Board	
Lecture :55			Yield criteria	Chalk Board	
Lecture :56		WEEK-14	Problem Discussion	Chalk Board	
Lecture :57			Previous year question paper discussion	Chalk Board	
Lecture :58			Doubt session	Chalk Board	