



LESSON PLAN

Academic Session: January-May2024

Program Name	Computer Engg.
Subject Name	Engineering Mechanics
Subject Code	ES 106
Semester	2nd
Subject Co-ordinator name	Vivek Sharma

Evaluation Scheme

Sr. No.	Category Of Course	Co de No.	Course Title	Hours/Week			Total Hours/Week	Credits	Evaluation Scheme							
				L	P	DCS			Internal		External			Total		
									Th	Pr	Th.	Hrs.	Pr		Hrs	
1	Engineering Science	ES 106	Engineering Mechanics (Th)	3	0	1	4	3	40		60	3				
		ES 112	Engineering Mechanics (Lab)	0	2	0	2	1	0	40	0	0	60	3	100	
Reference Books				1) Khurmi, R.S., Applied Mechanics, S.Chand & Co. New Delhi 2) Applied Mechanics by Birinder Singh Kaption Publishers Ludhiana 3) A text book of Engineering Mechanics by RK Bansal, Laxmi Publications.												

Courses Outcomes (Cos)

CO-1	To obtain resultant of various forces.
CO-2	To calculate support reactions through conditions of equilibrium for various structures.
CO-3	To understand role of friction in equilibrium problems
CO-4	To know fundamental laws of machines and their applications to various engineering problems.

Teaching Plan

Unit No.	Name of Topic	Proposed Date	Actual Date	Signature	Remarks
1	Significance and relevance of Mechanics	30/01/24			
	Applied mechanics, Statics, Dynamics.	31/01/24			
	Space, time				
	mass, particle, flexible body and rigid body	01/02/24			
	Scalar and vector quantity, Units of measurement (SI units)	03/02/24			
	Fundamental units and derived units.	06/02/24			
	Force – unit, representation as a vector	07/02/24			
	and by Bow's notation	08/02/24			
	Characteristics and effects of a force,	13/02/24			

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	Principle of transmissibility of force,	14/02/24			
	Force system and its classification. Resolution of a force - Orthogonal components of a force	15/02/24			
	Moment of a force, Varignon's Theorem.	17/02/24			
	Composition of forces – Resultant, analytical method for determination of resultant for concur- rent,	20/02/24			
	Non-concurrent and parallel co-planar force systems –	21/02/24			
	Law of triangle, parallelogram	22/02/24			
	Polygon of forces.	27/02/24			
2	Equilibrium and Equilibrant, Free body and Free body diagram,	28/02/24			
	Analytical and graphical methods of analyzing equilibrium.	29/02/24			
	Lami's Theorem – statement and explanation,	02/03/24			
	Application for various engineering problems.	05/03/24			
	Types of beam, supports (simple, hinged, roller and fixed)	06/03/24			
	and loads acting on beam (vertical point load, uniformly distributed load),	07/03/24			
	Beam reaction for cantilever,	12/03/24			
	simply supported beam with or without overhang-	13/03/24 14/03/24			
	subjected to combination of Point load and uniformly distributed load	16/03/24 19/03/24			
	Beam reaction graphically for simply supported beam subjected to vertical point loads only.	20/03/24 21/03/24			
3	Friction and its relevance in engineering,	23/03/24			
	types and laws of friction,	26/03/24			
	limiting equilibrium	27/03/24			
	Limiting friction, co-efficient of friction,	28/03/24			
	angle of friction, angle of repose,	30/03/24			
	Relation between co-efficient of friction	02/04/24			
	Angle of friction.	03/04/24			
	Equilibrium of bodies on level surface subjected to force parallel	04/04/24			
	and inclined to plane.	06/04/24			
	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.	09/04/24			
4	Centroid of geometrical plane figures (square, rectangle, triangle circle, semi-circle, quarter circle).	10/04/24 16/04/24			
	Centroid of composite figures composed of not more than two geometrical figures	18/04/24			
	Centre of Gravity of simple solids (Cube, cuboid,	20/04/24 23/04/24			
	cone, cylinder, sphere, hemisphere)	24/04/24			
	Centre of Gravity of composite solids composed of not more than two simple solids.	25/04/24 27/04/24			

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5	Simple lifting machine, load, effort, mechanical advantage	30/04/24			
	Applications and advantages.	01/05/24			
	Velocity ratio, efficiency of machines	02/05/24			
	Law of machine. Ideal machine	04/05/24			
	friction in machine	07/05/24			
	maximum Mechanical advantage and efficiency,	08/05/24			
	reversible and non-reversible machines,	09/05/24			
	Conditions for reversibility.	14/05/24			
	Velocity ratios of Simple axle and wheel	15/05/24			
	Differential axle and wheel	16/05/24			
	Worm and worm wheel	18/05/24			
	Simple screw jack.	21/05/24			
		22/05/24			
	25/05/24				

### Assignments

Assignment No.	Contents of syllabus covered	Proposed Date	Actual Date	Signature	Remarks
A-1	Unit-(1-2)	06/03/2024			
A-2	Unit-(3-5)	08/05/2024			

### House Test/Class Test

Name of Test	Contents of syllabus Covered	Proposed Date	Actual Date	Signature	Remarks
Class Test-1	Unit(I-II)	As per HPTSB Academic Calender			
Class Test-2	Unit (III-V)				
House Test	Unit(1- V)				

### Lab Plan

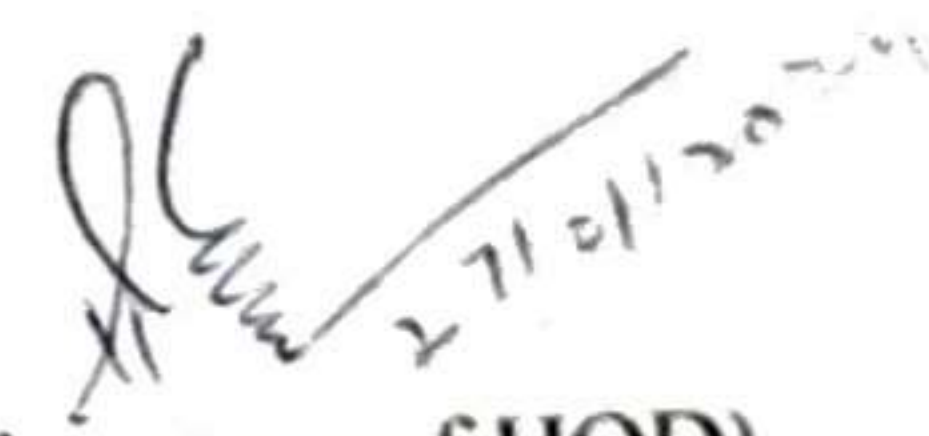
Sr. No.	Name of Practical	Proposed Date		Actual Date		Remarks
		G1	G2	G1	G2	
1)	To study various equipments related to Engineering Mechanics.	02/02/24	02/02/24			
2)	To find the M.A., V.R., Efficiency and law of machine for Differential Axle and Wheel.	09/02/24	09/02/24			
3)	To find the M.A., V.R., Efficiency and law of machine for Simple Screw Jack.	16/02/24	16/02/24			
4)	Derive Law of machine using Worm and worm wheel	23/02/24	23/02/24			
5)	Determine resultant of concurrent force system applying Law of Polygon of forces using force table	01/03/24 15/03/24	01/03/24 15/03/24			

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6)	Determine resultant of concurrent force system graphically.	22/03/24	22/03/24			
7)	Determine resultant of Parallel force system graphically.	05/04/24	05/04/24			
8)	Verify Lami's theorem	12/04/24	12/04/24			
9)	Study forces in various members of Jib crane.	19/04/24	19/04/24			
10)	Determine support reactions for simply supported beam.	26/04/24	26/04/24			
11)	Obtain support reactions of beam using graphical method.	03/05/24	03/05/24			
12)	Determine coefficient of friction for motion on horizontal and inclined plane.	17/05/24	17/05/24			
13)	Determine centroid of geometrical plane figure.	24/05/24	24/05/24			

  
(Signature of Teacher)

  
(Signature of HOD)

Approved

  
Principal 27.1.24

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Distt-Kangra (H.P)