Lesson Plan

Name of the Faculty : Vikash
Discipline : Civil Engg.
Semester : 1st
Subject : Applied Mechanics
Lesson plan duration : 35 week

Week	Theory		Practical	
	Lecture Day	Topic (including assignments /tests)	Practical Day	Topic
Week 1	Day 1	1.1Concept of engineering mechanics definition of mechanics, statics, dynamics, application of engineering mechanics in practical fields.	Day 1	Overview of the subject, Importance in industry & Applications of the subject.
	Day 2	1.2 Different system of units(FPS CGS,MKS and SI) and their conversion from one to another		
Week 2	Day 1	Simple numerical problems,	Day 1	Verification of polygon law of forces using Gravesand's apparatus.
	Day 2	fundamental unit and derived units		
Week 3	Day 1	1.3 Concept of rigid body, scalar and vector quantites	Day 1	To verify the forces in different members of jib crane.
	Day 2	Revision		
Week 4	Day 1		Day 1	To verify the reaction at the supports of a simply supported beam.
		Unit 2 Laws of forces		
		Laws of forces Definition of force, Bow's Notations, types of force; Point force and uniformly distributed force,		
	Day 2	effect of force, charactertics of a force		
Week 5	Day 1	2.2 Different force systems,	Day 1	To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane
	Day 2	principle of transmissibility of forces, law of super-position		
Week 6	Day 1	2.3 Composition and resolution of coplanar concurrent forces, resultant force,	Day 1	To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
	Day 2	method of composition of forces laws of forces, triangle law of forces		
Week 7	Day 1	Polygen law of forces graphically,analytically, resolution of forces	Day 1	Practice

	Day 2	2.4 Free body diagram 2.5 Equilibrant force and its determination		
Week 8	Day 1	2.6 Lami's theorm Simple numerical problems	Day 1	To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
	Day 2	Revision		
Week 9	Day 1	Mock test	Day 1	To find mechanical advantage, velocity ratio and efficiency of single purchase crab.
	Day 2			
		Unit 3 Moment		
		3.1 Concept of moment		
Week 10	Day 1	3.2 Moment of a force and units of moment	Day 1	Practice
	Day 2	3.3 Varignon's theorem (definition only)		
Week 11	Day 1	3.4 Principle of moment and its applications	Day 1	Practice
	Day 2	(Levers – simple and compound, steel yard, safety valve, reaction at support)		
Week 12	Day 1	3.5 Parallel forces (like and unlike parallel force), calculating their resultant	Day 1	To find out center of gravity of regular lamina.
	Day 2	3.6 Concept of couple, its properties and effects		
Week 13	Day 1	3.7 General conditions of equilibrium of bodies under coplanar forces	Day 1	To find out center of gravity of irregular lamina.
	Day 2	3.8Position of resultant force by moment		
Week 14	Day 1	[Simple problems on the above topics]	Day 1	To determine coefficient of friction between three pairs of given surface.
	Day 2	Mock Test		
Week 15	Day 1	Unit 4 Friction 4.1Definition and concept of friction, types of friction, force of friction, Limiting Friction	Day 1	Practice
	Day 2	4.2Laws of static friction, coefficient of friction angle of friction, angle of repose		
Week	Day 1	4.3Equilibrium of a body lying on a	Day 1	To find out center of gravity of

16		horizontal plane,		irregular lamina.
	Day 2	Equilibrium of a body lying on a rough inclined plane.		
	Day 1	4.4 Calculation of least force required	Day 1	To determine coefficient of friction
		to maintain equilibrium of a body on a rough inclined plane subjected to a force:		between three pairs of given surface.
Week 17		a) Acting along the inclined plane		
	Day 2	b)At some angle with the inclined plane		
		4.5Ladder friction		
Week 18	Day 1	4.6Advantages and Disadvantages of friction	Day 1	practice
	Day 2	4.7Methods of increasing/decreasing the force of friction.		
Week 19	Day 1	Simple problems	Day 1	To find mechanical advantage, velocity ratio and efficiency of single purchase crab.
	Day 2	Unit 5 Centre of gravity		
		5.1 Concept, definition of centroid of plain figures		
Week 20	Day 1	centre of gravity of symmetrical solid bodies, difference between centroid and C.G	Day 1	To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
	Day 2	5.2Determination of centroid of plain and composite lamina using moment method only		
Week 21	Day 1	centroid of bodies with removed portion	Day 1	practice
	Day 2	5.3 Determination of center of gravity of solid bodies - cylinder		
	Day 1	Determination of center of gravity of solid bodies - cube, cuboid	Day 1	practice
Week 22	Day 2	Determination of center of gravity of solid bodies- sphere		
Week 23	Day 1	Determination of center of gravity of solid bodies- composite bodies and bodies with portion removed	Day 1	To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
	Day 2	Simple problems on the above topics		
Week 24	Day1	Revision	Day 1	Verification of the polygon law of

	Day 2	Unit 6 Simple machines		forces using Gravesand's apparatus.
		6.1 Definition of Simple and compound machine (Examples)		
Week 25	Day 1	Definition of load, effort, velocity ratio, mechanical advantage and efficiency of a machine	Day 1	practice
	Day 2	load, effort, velocity ratio, mechanical advantage their relationship,		
Week 26	Day 1	law of machines and efficiency of a machine	Day 1	practice
	Day 2	6.3 Definition of ideal machine, reversible and self locking machine		
Week 27	Day 1	6.4 Effort lost in friction, Load lost in friction	Day 1	To verify the reaction at the supports of a simply supported beam.
	Day 2	Determination of maximum mechanical advantage and maximum efficiency		
Week 28	Day 1	6.5 System of pulleys (first, second)	Day 1	To verify the forces in different members of jib crane.
	Day 2	Third system of pulleys		
Week 29	Day 1	6.6 Determination of velocity ratio, mechanical advantage and efficiency	Day 1	Practice
	Day 2	Working principle and application of wheel and axle,		
Week 30	Day 1	Weston's Differential Pulley Block	Day 1	To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane.
	Day 2	simple screw jack, worm and worm wheel		
Week 31	Day 1	single and double winch crab.	Day 1	practice
	Day 2	Expression for their velocity ratio and field of their application [Simple problems on the above topics]		
Week 32	Day 1	Revision	Day 1	practice
	Day 2	Mock Test		
Week 33	Day 1	Assignment of unit 6	Day 1	practice
	Day 2	Students problem		
Week 34	Day 1	Assignment of unit 5	Day 1	practice
	Day 2	Revision of unit 5		
Week 35	Day 1	Assignment and revision of unit 4	Day 1	practice
	Day 2	Class test		