

Lesson Plan

Name of the Faculty : SH. AmitPhogat
 Discipline : Mechanical Engg.
 Semester : 3rd
 Subject : Applied Mechanics
 Lesson plan duration : 15 Weeks(July 2018 to Nov 2018)

Week	Theory		Practical	
	Lecture Day	Topic (including assignments /tests)	Practical Day	Topic
Week-1	1 st	Concept of engineering mechanics definition of mechanics, statics, dynamics	1 st	Overview of the subject, Importance in industry & Applications of the subject.
	2 nd	Application of engineering mechanics in practical fields		
	3 rd	Different systems of units (FPS, CGS, MKS and SI)	2 nd	Overview of the subject, Importance in industry & Applications of the subject
	4 th	Their conversion from one to another e.g. density, force, pressure, work, power, velocity, acceleration		
Week 2	1 st	Simple Numerical Problems	1 st	Verification of the polygon law of forces using Gravesand's apparatus.
	2 nd	Fundamental Units and Derived Units.		
	3 rd	Concept of rigid body, scalar and vector quantities	2 nd	Verification of the polygon law of forces using Gravesand's apparatus.
	4 th	Revision		
Week 3	1 st	Mock Test	1 st	To verify the forces in different members of jib crane.
	2 nd	Laws of forces Definition of force, Bow's Notations, types of force		
	3 rd	Point force/concentrated force & Uniformly distributed force, effects of force, characteristics of a force.	2 nd	To verify the forces in different members of jib crane.
	4 th	Different force systems, principle of transmissibility of forces, law of superposition		
	1 st	Composition and resolution of coplanar concurrent forces, resultant force, method of composition of forces	1 st	To verify the reaction at the supports of a simply supported beam.
	2 nd	laws of forces, triangle law of forces		

Week4	3 rd	polygon law of forces - graphically, analytically, resolution of forces	2 nd	To verify the reaction at the supports of a simply supported beam.
	4 th	Free body diagram Equilibrant force and its determination		
Week 5	1 st	Lami's theorem [Simple problems on above topics]	1 st	To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane.
	2 nd	Moment - Concept of moment Moment of a force and units of moment		
	3 rd	Varignon's theorem (definition only) Principle of moment and its applications	2 nd	To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane.
	4 th	(Levers – simple and compound, steel yard, safety valve, reaction at support)		
Week 6	1 st	Parallel forces (like and unlike parallel force), calculating their resultant	1 st	To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
	2 nd	Concept of couple, its properties and effects General conditions of equilibrium of bodies under coplanar forces		
	3 rd	Position of resultant force by moment [Simple problems on the above topics]	2 nd	To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
	4 th	Revision of Chapter		
Week 7	1 st	Mock Test	1 st	Practice
	2 nd	Friction - Definition and concept of friction, types of friction, force of friction, Limiting Friction		
	3 rd	Laws of static friction, coefficient of friction, angle of friction, angle of repose.	2 nd	Practice
	4 th	Equilibrium of a body lying on a horizontal plane, equilibrium of a body lying on a rough inclined plane.		

	1 st	Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force: a) Acting along the inclined plane	1 st	To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
	2 nd	b) At some angle with the inclined plane		
Week 08	3 rd	Ladder friction Advantages and Disadvantages of friction	2 nd	To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
	4 th	Methods of increasing/decreasing the force of friction.(Simple problems)		
Week 09	1 st	Assignment	1 st	To find mechanical advantage, velocity ratio and efficiency of single purchase crab.
	2 nd	Test		
	3 rd	Centre of Gravity -Concept, definition of centroid of plain figures	2 nd	To find mechanical advantage, velocity ratio and efficiency of single purchase crab.
	4 th	Centre of gravity of symmetrical solid bodies, difference between centroid and C.G		
Week 10	1 st	Determination of centroid of plain and composite lamina using moment method only	1 st	Practice
	2 nd	centroid of bodies with removed portion		
	3 rd	Determination of center of gravity of solid bodies - cylinder	2 nd	Practice
	4 th	Determination of center of gravity of solid bodies - cube, cuboid		
Week 11	1 st	Determination of center of gravity of solid bodies- sphere	1 st	To find out center of gravity of regular lamina.
	2 nd	Determination of center of gravity of solid bodies- composite bodies and bodies with portion removed		
	3 rd	Simple problems on the above topics	2 nd	To find out center of gravity of regular lamina.
	4 th	Simple problems on the above topics		

Week12	1 st	Assignment on Chapter Centre of Gravity	1 st	To find out center of gravity of irregular lamina.
	2 nd	Mock Test		
	3 rd	Simple Machines- Definition of Simple and compound machine (Examples)	2 nd	To find out center of gravity of irregular lamina.
	4 th	Definition of load, effort, velocity ratio, mechanical advantage and efficiency of a machine		
Week 13	1 st	load, effort, velocity ratio, mechanical advantage their relationship, law of machines and efficiency of a machine	1 st	Practice
	2 nd	Definition of ideal machine, reversible and self locking machine		
	3 rd	Effort lost in friction, Load lost in friction	2 nd	Practice
	4 th	Determination of maximum mechanical advantage and maximum efficiency		
Week 14	1 st	System of pulleys (first, second)	1 st	To determine coefficient of friction between three pairs of given surface.
	2 nd	Third system of pulleys		
	3 rd	Determination of velocity ratio, mechanical advantage and efficiency	2 nd	To determine coefficient of friction between three pairs of given surface.
	4 th	Working principle and application of wheel and axle, Weston's Differential Pulley Block		
Week 15	1 st	simple screw jack, worm and worm wheel	1 st	Practice
	2 nd	single and double winch crab.		
	3 rd	Expression for their velocity ratio and field of their application [Simple problems on the above topics]	2 nd	Practice
	4 th	Mock Test		