

Lesson Plan

Name of faculty:- Ms. Kiran Bala

Discipline:- Mechanical Engineering

Semester:- 2nd

Subject:-Applied Mechanics Theory

Lesson Plan Duration:- 15 weeks

Work Load:- Lectures-3

WEEK	THEORY		Sign. & date
	DAY	TOPIC	
1st	1 st	Unit -1. Concept of mechanics, Classification of mechanics, utility of mechanics in engineering field, Concept of rigid body, scalar and vector quantities.	
	2 nd	Unit-2: Definition of force, measurement of force in SI units, its representation, types of force: Point force/concentrated force & Uniformly distributed force,	
	3 rd	effects of force, characteristics of a force, Different force systems (coplanar and non-coplanar)	
2nd	1 st	principle of transmissibility of forces, law of superposition, Free body diagram,	
	2 nd	Composition and resolution of coplanar concurrent forces, resultant force, method of composition of forces, laws of forces, parallelogram law of forces (with derivation),	
	3 rd	triangle law of forces, polygon law of forces - graphically, analytically	
3rd	1 st	resolution of forces, resolving a force into two rectangular components, Lami's theorem,	
	2 nd	Simple numericals, Equilibrium of forces and its determination	
	3 rd	Unit 3: Concept of moment, Moment of a force and units of moment, Varignon's theorem (definition only),.	
4th	1 st	Principle of moment and its applications (Levers – simple and compound, steel yard, safety valve)	
	2 nd	Simple numericals. Parallel forces (like and unlike parallel force), calculating their resultant,	
	3 rd	Concept of couple, its properties and effects, General conditions of equilibrium of bodies under coplanar forces, Position of resultant force by moment	
5th	1 st	1st Sessional	
	2 nd		
	3 rd		
6th	1 st	Unit 4: Definition and concept of friction, types of friction, force of friction, Laws of static friction, coefficient of friction,	
	2 nd	angle of friction, angle of repose, cone of friction, Equilibrium of a body lying on a horizontal plane,	
	3 rd	equilibrium of a body lying on a rough inclined plane.	
7th	1 st	Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force acting along the inclined plane and subjected to a force acting at some angle with the inclined plane	
	2 nd	Simple numericals.	
	3 rd	Unit 5 :Concept, definition of centroid of plain figures and centre of gravity of	

WEEK	THEORY		Sign. & date
	DAY	TOPIC	
		symmetrical solid bodies. Axis of symmetry, Reference axis.	
8th	1 st	Determination of centroid of plain and composite lamina (T, L, C and I shape) using moment method only,	
	2 nd	centroid of bodies with removed portion.	
	3 rd	Determination of center of gravity of solid bodies - cone, cylinder, hemisphere and sphere; composite bodies and bodies with portion removed.	
9th	1 st	Unit 6 :Newton's laws of motion and their applications, Concept of momentum.	
	2 nd	Derivation of force equation from second law of motion, numerical problems on second law of motion.	
	3 rd	Bodies tied with string, Newton's third law of motion, numerical problems, conservation of momentum, impulse and impulsive force.	
10th	1 st	2nd Sessional	
	2 nd		
	3 rd		
11th	1 st	Unit 7: Definition of effort, velocity ratio, mechanical advantage and efficiency of a machine and their relationship, law of machines, Simple and compound machine (Examples).	
	2 nd	Definition of ideal machine, reversible and self locking machine. Effort lost in friction, Load lost in friction,	
	3 rd	determination of maximum mechanical advantage and maximum efficiency, Simple numericals.	
12th	1 st	System of pulleys (first, second, third system of pulleys),	
	2 nd	determination of velocity ratio, mechanical advantage and efficiency. Working principle and application of wheel and axle, Weston's Differential Pulley Block, simple screw jack,	
	3 rd	worm and worm wheel, single and double winch crab. Expression for their velocity ratio and field of their application.	
13th	1 st	3rd Sessional	
	2 nd		
	3 rd		
14th	1 st	Revision	
	2 nd	Revision	
	3 rd	Revision	
15th	1 st	Revision	
	2 nd	Revision	
	3 rd	Revision	

Lesson Plan

Name of faculty:- Mr. Sumit Kumar

Discipline:- Mechanical Engineering

Semester:- 2nd

Subject:-Applied Mechanics Practical

Lesson Plan Duration:-15 weeks

Work Load:-Practicals-4

WEEK	TOPIC	Sign. & date	
		Group 1	Group 2
1st	1. Verification of polygon law of forces using universal force table/Gravesend apparatus		
2nd	2. Verification of Lami's theorem.		
3rd	3. To verify law of moments by using Bell crank lever		
4th	4. To verify the forces in different members of jib crane.		
5th	5. To determine coefficient of friction between three pairs of given surface.		
6th	6. To find out center of gravity of regular lamina		
7th	7. To find out center of gravity of irregular lamina.		
8th	8. To find the mechanical advantage, velocity ratio and efficiency of a screw jack.		
9th	9. To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel		
10th	10. To find mechanical advantage, velocity ratio and efficiency of single purchase crab.		
11th	File checking		
12th	File checking		
13th	Revision		
14th	Revision		
15th	Internal viva		

