Lesson Plan

Name of the Institute:	**C. V. Raman Polytechnic**
Department:	**Basic Science**
Semester/Division/Branch:	**1st sem/All Branches**
Subject Name :	**Engineering Mechanics**
Total No. of Class (Required):	**60**
Faculty Name:	**Ms. Sutapa Sarkar**

Class No.	Brief description of the Topic/Chapter to be taught	Remarks
1	Fundamentals.DefinitionsofMechanics,Statics,Dynamics,RigidBodies	
2	Basic concepts of Time, Space, Mass, Flexible body, rigid body, scalar quantity, vector quantity, Units of measurement (Fundamental units, Derived units, SI units)	
3	Force:- Introduction, units, characteristics of force, effect of force.	
4	Force system & classification(collinear, coplanar, parallel, concurrent, non-concurrent and non-parallel force system)	
5	Force system & classification(collinear, coplanar, parallel, concurrent, non-concurrent and non-parallel force system)	
6	Principlesof Static force (Equilibrium law of force, principle of superposition	
7	Resolution of force (orthogonal components, non-orthogonal components)	
8	Composition of force (Resultant force), Analytical methods of concurrent force system (a) Law of parallelogram of force (b) law of triangle of force (c) Methods of resolution.	
9	Composition of force (Resultant force), Analytical methods of concurrent force system (a) Law of parallelogram of force (b) law of triangle of force (c) Methods of resolution	
10	Solving various engineering problems related to composition of forces.	
11	Solving various engineering problems related to composition of forces.	
12	GraphicalMethod.Introduction,Spacediagram,Vectordiagram,Polygon law of forces	
13	Varignon's Theorem, Couple — Definition, S.I. units, measurement of couple, properties of couple.	
14	**2.EQUILIBRIUM [8 periods]**	
15	Equilibrium & Equilibrant, condition of equilibrium, free body diagram.	
16	Lamia's theorm statement & prove.	
17	Lamia's theorem Application for solving various engineering problems.	
18	Lamia's theorem Application for solving various engineering problems.	
19	Types of supports , types of loading.	
20	Types of Beams	
21	Beam reactions (cantilever beam, simply supported, overhang beam)	
22	Solving various engineering problems related to beam reactions.	
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25	**3. FRICTION[10** periods]	
26	Friction, Limiting friction, Coefficient of friction, Angle of friction, A.ngle of Repose.	

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27	Types of friction, Laws of friction, Advantages & Disadvantages of Friction.	
28	Equilibrium of a body horizontal plane surface	
29	Equilibrium of a body horizontal plane surface with horizontal external force.	
30	Equilibrium of a body horizontal plane surface with inclined external force.	
31	Equilibrium of a body inclined plane surface.	
32	Equilibrium of a body inclined plane with parallel external force to plane.	
33	Solving exercise	
34	Solving exercise.	
35	Solving exercise.	
36	**4. CENTROID & MOMENT OF INERTIA** [14 periods]	
37	Center of gravity & Centroid (Definition & comparison),axes of reference.	
38	Centroid of standard shapes.	
39	Centroid of composite figures.	
40	Centroid of geometrical figures such as squares, rectangles, triangles, circles, semicircles & quarter circles	
41	Centroid of geometrical figures such as squares, rectangles, triangles, circles, semicircles & quarter circles	
42	Center of gravity of simple solids (cylinder, cone, sphere ,hemisphere)	
43	Center of gravity of simple solids (cylinder, cone, sphere ,hemisphere)	
44	Center of gravity of composite solids	
45	Center of gravity of composite solids	
46	Exercise	
47	Revision	
48	**5. SIMPLE LIFTING MACHINES [8 periods]**	
49	Definition of simple machine, compound machine, lifting machine, simple lifting machine.	
50	Define M.A, V.R. & Efficiency & State the relation between them,	
51	State Law of Machine, Reversibility of Machine, Self-Locking Machine.	
52	Study of simple machines — simple axle & wheel, single purchase crab winch & double purchase crab winch, Worm & Worm Wheel, Screw Jack.	
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54	Study of simple machines — simple axle & wheel, single purchase crab winch & double purchase crab winch, Worm & Worm Wheel, Screw Jack.	
55	Double purchase crab winch, Worm & Worm Wheel, Screw Jack.	
56	Types of hoisting machine like derricks etc., Their use and working principle.	
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58	Doubt clearing class	
59	Doubt clearing class	
60	Revision	

Sulapa Sarkar.