Lesson Plan

Name of the Institute:	**C. V. Raman Polytechnic**
Department:	**Engineering 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.	Ch-1 BASICS OF MECHANICS AND FORCE SYSTEM	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.	
9	Composition of force (Resultant force), Analytical methods of concurrent force system (b) law of triangle of force.	
10	Composition of force (Resultant force), Analytical methods of concurrent force system (c) Methods of resolution.	
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	Solving exercise	
15	**Ch-2 EQUILIBRIUM**	
16	Equilibrium & Equilibrant, condition of equilibrium, free body diagram.	
17	Lamia's theorm statement & prove.	
18	Lamia's theorem Application for solving various engineering problems.	
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20	Types of supports , types of loading (vertical,inclined,point,udl)	
21	Types of Beams, supports(simple,hinged,roller &fixed)	
22	Beam reactions (cantilever beam, simply supported, overhang beam)	
23	Solving various engineering problems related to beam reactions.	
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26	**3. FRICTION**	
27	Friction, limiting friction,angle of friction, angle of repose.	

Class No.	Ch-1 BASICS OF MECHANICS AND FORCE SYSTEM	Remarks
28	Types of friction, Laws of friction, Advantages & Disadvantages of Friction.	
29	Equilibrium of a body horizontal plane surface with horizontal external force.	
30	Equilibrium of a body horizontal plane surface with horizontal external force.	
31	Equilibrium of a body horizontal plane surface with inclined external force.	
32	Equilibrium of a body inclined plane with parallel external force to plane.	
33	Equilibrium of a body inclined plane with parallel external force to plane.	
34	Solving exercise	
35	Solving exercise.	
36	**4. CENTROID & CENTER OF GRAVITY**	
37	Center of gravity & Centroid (Definition & comparison),axes of reference, axis of symmetry.	
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	solving exercise	
47	**5. SIMPLE LIFTING MACHINES**	
48	Definition of simple machine, compound machine, lifting machine, simple lifting machine.	
49	Define Load, Effort,Mechanical advantage, Velocity Ratio & Efficiency & State the relation between M.A, V.R & EFFICIENCY .	
50	State Law of Machine, Reversibility of Machine, Self-Locking Machine.	
51	Maximum mechanical advantage, maximum efficiency, ideal machine	
52	Study of simple machines - simple axle & wheel, differential axle & wheel.	
53	Study of simple machines - single purchase crab winch double purchase crab winch	
54	Study of simple machines - Worm & Worm Wheel.	
55	Study of simple machines - simple screw Jack.	
56	Study of simple machines - Weston's Differential Pulley block.	
57	Study of simple machines - Geared pulley block	
58	Revision	
59	Doubt clearing class	
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