

BARGAON INSTITUTE OF TECHNOLOGY

DEPT. OF BASIC SCIENCE & MECHANICAL ENGINEERING

LESSON PLAN

DISCIPLINE: All Branches

FROM: _____ TO: _____

NAME OF THE FACULTY: _____

COURSE CODE: TH 7

SUBJECT: ENGINEERING MECHANICS (TH-7)

TOTAL CLASS AVAILABLE IN SEMESTER: 64

NO. OF PERIODS : 02 / WEEK

NO. OF CREDITS: 2

SL. NO.	WEEK	CLASS DATE	NO. OF CLASS / DAY	TOPICS PLANNED TO BE COVERED	Signature
01	01		Class 1	Unit: 1 Introduction to Mechanics - 1.1 Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics, Space, time, mass, particle, flexible body and rigid body.	
01	01		Class 2	1.2 Scalar and vector quantity, Units of measurement (SI units), Fundamental units and derived units.	
02	02		Class 3	1.3 Force – unit, representation as a vector and by Bow's notation.	
02	02		Class 4	1.4 Characteristics and effects of a force, Principle of transmissibility of force.	
03	03		Class 5	Unit: 2 Force System - 2.1 Force system and its classification.	
03	03		Class 6	2.2 Resolution of a force - Orthogonal components of a force.	
04	04		Class 7	2.3 Moment of a force, Law of moment, State Varignon's Theorem.	
04	04		Class 8	2.3 Couple and its moment, properties of a couple.	
05	05		Class 9	2.4 Composition of forces, Resultant force (Concepts and expression).	
05	05		Class 10	2.5 Analytical method for determination of resultant for concurrent coplanar force system.	
06	06		Class 11	2.5 Analytical method for determination of resultant for non-concurrent and parallel coplanar force system.	
06	06		Class 12	2.6 Triangle Law of forces and Polygon Law of forces	

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				(Statement Only).	
07	07		Class 13	2.6 Parallelogram law of Forces (Statement and Derivation).	
07	07		Class 14	2.7 Simple Numerical on Parallelogram law of forces and force resolution.	
08	08		Class 15	2.7 Simple Numerical on resultant of concurrent force system.	
08	08		Class 16	2.7 Simple Numerical on non-concurrent and parallel force system.	
09	09		Class 17	Unit: 3 Equilibrium - 3.1 Equilibrium and Equilibrant, Condition of Equilibrium.	
09	09		Class 18	3.2 Free body and Free body diagram (FBD) with examples.	
10	10		Class 19	3.3 Analytical and graphical methods of analyzing equilibrium.	
10	10		Class 20	3.4 Lami's Theorem – Statement and Explanation.	
11	11		Class 21	3.5 Application of Lami's Theorem for various engineering problems.	
11	11		Class 22	3.6 Simple Numerical on equilibrium of concurrent forces using Lami's Theorem.	
12	12		Class 23	3.6 Simple Numerical on general coplanar force system equilibrium.	
12	12		Class 24	3.7 Beam: Types of Loads, Beam types, Supports with their Reactions with neat sketch.	
13	13		Class 25	3.7 Determination of support reactions for simply supported beams with point loads.	
13	13		Class 26	3.7 Determination of support reactions for beams with uniformly distributed loads (UDL).	
14	14		Class 27	Unit: 4 Friction - 4.1 Friction and its relevance in engineering, types of friction.	
14	14		Class 28	4.2 Laws of friction, limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose.	
15	15		Class 29	4.3 Relation between co-efficient of friction and angle of friction.	
15	15		Class 30	4.4 Simple Numerical on co-efficient of friction and	

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				angle of repose.	
16	16		Class 31	4.5 Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.	
16	16		Class 32	4.5 Numericals on bodies on horizontal level plane.	
17	17		Class 33	4.6 Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.	
17	17		Class 34	4.7 Ladder Friction - Concept and equilibrium conditions.	
18	18		Class 35	4.8 Simple Numerical on ladder friction.	
18	18		Class 36	4.8 Additional numerical problems on static friction and inclined planes.	
19	19		Class 37	Unit: 5 Centroid and Centre of Gravity - 5.1 Definition of Centroid, Centroid of geometrical plane figures (square, rectangle, triangle).	
19	19		Class 38	5.1 Centroid of circle, semi-circle, quarter circle.	
20	20		Class 39	5.2 Centroid of composite figures composed of not more than three geometrical figures (Introduction & Methodology).	
20	20		Class 40	5.3 Locate centroid of C - Section.	
21	21		Class 41	5.3 Locate centroid of I - Section.	
21	21		Class 42	5.3 Locate centroid of L and T Section.	
22	22		Class 43	5.4 Definition of Centre of Gravity (C.G.), Centre of Gravity of simple solids (Cube, cuboid).	
22	22		Class 44	5.4 Centre of Gravity of cone, cylinder, sphere, hemisphere (Expression Only).	
23	23		Class 45	Numerical practice on centroid of composite asymmetrical sections.	
23	23		Class 46	Numerical practice on finding C.G. of combined simple solid bodies.	
24	24		Class 47	Unit: 6 Moment of Inertia - 6.1 Definition of Moment of Inertia (M.I.), M.I. of Plane Figures- rectangle, square, triangle, circle, semicircle (Only Expression).	

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24	24		Class 48	6.2 Parallel Axis Theorem (Statement and Proof).	
25	25		Class 49	6.3 Perpendicular Axis Theorem (Statement and Proof).	
25	25		Class 50	6.4 Determination of Moment of Inertia of Composite Section (I-Section).	
26	26		Class 51	6.4 Determination of Moment of Inertia of Composite Section (T-Section and Channel Section).	
26	26		Class 52	Numerical problems on M.I. of symmetrical and unsymmetrical sections.	
27	27		Class 53	Unit: 7 Simple Lifting Machine - 7.1 Simple lifting machine, load, effort, mechanical advantage (M.A.), Velocity ratio (V.R.), efficiency of machines, Applications and advantages.	
27	27		Class 54	7.2 Law of machine, Ideal machine, friction in machine, maximum Mechanical advantage and efficiency.	
28	28		Class 55	7.3 Reversible and non-reversible machines, conditions for reversibility.	
28	28		Class 56	7.4 Determination of MA, VR and Efficiency of Simple Axle and wheel, Differential Axle and Wheel.	
29	29		Class 57	7.5 Determination of MA, VR and Efficiency of Worm and worm wheel.	
29	29		Class 58	7.6 Determination of MA, VR and Efficiency of Single purchase crab winch.	
30	30		Class 59	7.6 Determination of MA, VR and Efficiency of Double purchase crab winch.	
30	30		Class 60	7.7 Determination of MA, VR and Efficiency of Simple Screw Jack.	
31	31		Class 61	7.8 Determination of MA, VR and Efficiency of 1st, 2nd and 3rd System of Pulleys.	
31	31		Class 62	7.9 Simple Numerical on lifting machines (Law of machine, MA, VR, Efficiency).	
32	32		Class 63	Unit: 8 Gear and Gear Train - 8.1 Gear, Gear Drive, Types of Gear Drive. 8.2 Gear Train, Types of Gear Train.	
32	32		Class 64	8.3 Velocity Ratio of Simple and Compound Gear Train. 8.4 Numerical on Simple and Compound Gear Train.	

Signature of Faculty: _____

Principal / HOD: _____