Lesson Plan/ Course Break – up
ESC-202T-ENGINEERING MECHANICS

Name of the Faculty	Mr. ManikGoyal
Discipline	B.Tech in Civil Engineering
Semester	III (2nd Year)
Subject	Engineering Mechanics
Lesson Plan Duration	15 Weeks (from September to December2021)
Work Load (Lecture / Practical) per week (in hrs.)	Lectures – 03

Week	Theory		
	Lecture Day	Topic (Including assignment / Test)	
1st	1	**Review of Basic Force System:** Laws of mechanic	
	2	Vector algebra review	
	3	Moment of a force about a point and axis	
2nd	4	Couple and couple moment	
	5	Addition and subtraction of couples	
	6	Moment of a couple about a line	
3rd	7	Resultantofaforce system.Problems	
	8	**Equilibrium of forces:** Introduction, Lami's theorem	
	9	Methods for the equilibrium of coplanar forces	
4th	10	Analyticalmethod for the equilibrium of coplanar forces	
	11	Free body diagram, general equations of equilibrium	
	12	Free body diagram, general equations of equilibrium	
5th	13	Tension in astring,Problems	
	14	**Truss andFrames:** Types of frame	
	15	Types of stresses in frames (Tensile and compressive)	
6th	16	Assumptions forforces in the members of a perfect frame	
	17	Analytical methods for the forces	
	18	Method of joints	
7th	1st Minor Test		
8th	19	Method of sections(orMethodofmoments)	
	20	Simplysupportedtrusses,Problems	
	21	Simplysupportedtrusses,Problems	
9th	22	**Centroid and center of gravity:** Definition Centroid of regular shapes Symmetrical sections	
	23	Unsymmetrical sections Reference axis Centre of gravity of solid bodies	

	24	Centroid and centre of gravity of hollow sections. Problems	
10th	25	**Moment of Inertia:** Introduction and significance, Parallel axis theorem Perpendicular axis theorem, Mass moment of inertia	
	26	Area moment of shapes: L-sections, T-sections, I-sections Moment of inertia of unsymmetrical sections, hollow sections, Product of inertia	
	27	Properties of product of inertia, Principal axis. Problems	
11th	28	**Particle dynamics-** Rectilinear motion, Plane curvilinear motion (rectangular, path and polar coordinates)	
	29	Newton's 2nd law (rectangular, path and polar coordinates), Work- kinetic energy, power, potential energy	
	30	Impulse-momentum (linear, angular), Impact (Direct and oblique). Problems	
12th	31	**Virtual work:** Introduction, Concept and principle of virtual work, Virtual displacements, Sign conventions	
	32	Applications of principle of virtual work on beams carrying point load, uniformly distributed load	
	33	Applications of virtual work on ladders. Problems	
13th	34	**Friction:** Introduction, Types of friction, Laws of friction	
	35	Equilibrium of a body on a rough horizontal plane and inclined plane	
	36	Equilibrium of a body on a rough inclined plane subjected to a force acting along the inclined plane	
14th		**2nd Minor test**	
15th	37	Equilibrium of a body on a rough inclined plane subjected to a force acting along the inclined plane	
	38	Equilibrium of a body on a rough inclined plane subjected to a force acting horizontally. Problems	
	39	Equilibrium of a body on a rough inclined plane subjected to a force acting horizontally. Problems	