Subject Name : ENGINEERING MECHANICS

Year/Semester : II/III

Faculty Name : SUMIT SAINI

COURSE OUTCOMES

CO-1	Student will be able to understand the Fundamental law and principle of Engineering mechanics.
CO-2	Students will be able to understand theAnalysis of truss and moment of inertia of different section.
CO-3	Students will be able to understand the principle of virtual work, energy and power..
CO-4	Student will be able to understand the principle of friction and simple stress and strain..

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	M	L	L	M	-	-	L	M	-	M
CO2	H	H	H	M	H	M	H	M	H	H	H	H
CO3	H	M	M	L	L	M	-	-	L	M	-	M
CO4	H	M	M	L	M	M	-	-	-	M	M	M

JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTER

Department of Civil Engineering

LECTURE PLAN

Subject:3CE3-04 ENGINEERING MECHANICS   **Year/sem: II/ 1II**

No. of Lecture Req./(Avl.) : /(28)

Semester Starting: 02.07.2020   **Semester Ending:**

Unit No./ Total lec. Req.	Topics	Lect. Req.	Lect. No.	Date of Delivery	Remark/ Actual lect. Taken
Unit-1 (5)	Introduction to objective, scope and outcome the subject.	1	1	7/2/2020	7/2/2020
	Statics of particles and rigid bodies: Fundamental laws of mechanics.	1	2	7/3/2020	7/3/2020
	Principle oftransmissibility, System of forces (conservative and nonconservative)	1	3	7/9/2020	7/9/2020
	Resultant force, Resolution offorce, Moment and Couples, Resolution of a force into a force and a couple	1	4	7/16/2020	7/16/2020
	Free body diagram,Equilibrium, Conditions for equilibrium, Lami's theorem.	1	5	7/17/2020	7/17/2020
Unit-2 (8)	Plane trusses: Types of structures, Trusses, Support Conditions,	1	6	7/23/2020	7/23/2020
	Types of Loadings, Classificationof trusses, Determinacy of trusses	1	7	7/24/2020	7/24/2020
	Basic assumptions of truss analysis (zero force member, tension orcompression member	1	8	8/6/2020	8/6/2020
	Method of joints, Method of sections.	1	9	8/7/2020	8/7/2020
	Centroid & Moment of inertia (M.I): Location of centroid, Moment of inertia (mass and area)	1	10	8/13/2020	8/13/2020
	Parallel axis and perpendicular axis theorems	1	11	8/14/2020	8/14/2020
	M.I of composite section, M.I. of solid bodies,	1	12	8/16/2020	8/16/2020
	Polarmoment of inertia, principle axis and principle moment of inertia	1	13	8/20/2020	8/20/2020
Unit- 3 (4)	Virtual work: Principle of Virtual Work.	1	14	8/25/2020	8/25/2020
	Active forces and active force diagram, Stability ofequilibrium	1	15	8/27/2020	8/27/2020
	Work, Energy and Power:Work of a force, weight and couple, Power, Efficiency	1	16	8/30/2020	8/30/2020
	Energy,Kinetic energy of rigid body, Principle of work and energy, Conservation of energy.	1	17	9/2/2020	
Unit -4 (4)	Friction: Types of Friction, Laws of friction,	1	18	9/5/2020	
	Angle of friction, Angle of repose, Ladder, Wedge,Belt Friction	1	19	9/8/2020	
	Springs: Stiffness of springs, springs in series and parallel	1	20	9/12/2020	
	Introduction to laminated plate springs,leaf spring, close coiled helical springs, open coiled springs	1	21	9/18/2020	
Unit-5 (7)	Simple Stresses and Strains: Concept of stress and strain in three dimensions	1	22	9/27/2020	
	generalizedHooke's law; Young's modulus, Shear stress	1	23	10/5/2020	
	Shear strain, Modulus of rigidity, Complementary shearstress	1	24		
	Poisson's ratio, Volumetric strain, Bulk modulus	1	25		
	relation between elastic constants, Stress and strain thin cylinder	1	26		
	spherical cell under internal pressure.	1	27		
	longitudinal and hoop stress	1	28		
	Text & Reference books :				
	1.D.S BISTH				
	2. D.S. KUMAR				
	3. DOMKUNDWAR				

RAJASTHAN TECHNICAL UNIVERSITY, KOTA
SYLLABUS
II Year - III Semester: B.Tech. (Civil Engineering)

3CE3-04: ENGINEERING MECHANICS

Credit: 2
2L+0T+0P

Max. Marks: 100 (IA:20, ETE:80)
End Term Exam: 2 Hours

SN	CONTENT	Hrs.
1	**Introduction:** objective, scope and outcome of the course.	1
2	**Statics of particles and rigid bodies:** Fundamental laws of mechanics, Principle of transmissibility, System of forces (conservative and non-conservative), Resultant force, Resolution of force, Moment and Couples, Resolution of a force into a force and a couple, Free body diagram, Equilibrium, Conditions for equilibrium, Lami's theorem.	4
3	**Plane trusses:** Types of structures, Trusses, Support Conditions, Types of Loadings, Classification of trusses, Determinacy of trusses, Basic assumptions of truss analysis (zero force member, tension or compression member), Method of joints, Method of sections.	4
4	**Centroid & Moment of inertia (M.I.):** Location of centroid, Moment of inertia (mass and area), Parallel axis and perpendicular axis theorems, M.I of composite section, M.I. of solid bodies, Polar moment of inertia, principle axis and principle moment of inertia.	4
5	**Virtual work:** Principle of Virtual Work, Active forces and active force diagram, Stability of equilibrium.	4
	Work, Energy and Power: Work of a force, weight and couple, Power, Efficiency, Energy, Kinetic energy of rigid body, Principle of work and energy, Conservation of energy.	
6	**Friction:** Types of Friction, Laws of friction, Angle of friction, Angle of repose, Ladder, Wedge, Belt Friction.	2
7	**Springs**: Stiffness of springs, springs in series and parallel, Introduction to laminated plate springs, leaf spring, close coiled helical springs, open coiled springs.	2
8	**Simple Stresses and Strains:** Concept of stress and strain in three dimensions and generalized Hooke's law; Young's modulus, Shear stress, Shear strain, Modulus of rigidity, Complementary shear stress; Poisson's ratio, Volumetric strain, Bulk modulus, relation between elastic constants, Stress and strain thin cylinder and spherical cell under internal pressure.	7
	TOTAL	28