VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY BURLA

DEPARTMENT OF MECHANICAL

LESSON PLAN FOR ENGINEERING MECHNANICS

SUBBJECT CODE: **BME- 101, 2nd Semester**

Lecture	**Topics to be covered**	**Remark**
Lecture 1	Concurrent forces on a plane: Introduction to engineering mechanics,	
Lecture 2	Composition of forces, parallelogram law, numerical problems.	
Lecture 3	Resolution of forces, equilibrium of collinear forces, super position and transmissibility, free body diagram,	
Lecture 4	Equilibrium of concurrent forces: Lami's theorem, method of projection, equilibrium of three forces in a plane,	
Lecture 5	Method of moments, numerical problems on equilibrium of concurrent forces	
Lecture 6	Friction: Definition of friction, static friction, dynamics friction, coefficient of friction, angle of friction, angle of repose. Wedge friction, simple friction problems based on sliding of block on horizontal and inclined plane and wedge friction	
Lecture 7	Ladder and rope friction, simple problems on ladder and rope friction.	
Lecture 8	General case of parallel forces, center of parallel forces, numerical problems.	
Lecture 9	Center of gravity, centroid of plane figure and curves, numerical examples.	
Lecture 10	Centroid of composite figures figure and curves, numerical problems.	
Lecture 11	Numerical examples on centroid of plane figure and curves	
Lecture 12	Composition and equilibrium of forces in a plane: Introduction to plane trusses, perfect, redundant truss,	
Lecture 13	Solving problem of truss using method of joint.	
Lecture 14	Numerical examples on solving truss problems using method of joint.	

Lecture 15	Method of section, numerical examples.	
Lecture 16	Numerical examples on method of joint and method of section	
Lecture 17	Principle of virtual work: Basic concept, virtual displacement, numerical problems	
Lecture 18	Numerical problems on virtual work.	
Lecture 19	Numerical problems on virtual work.	
Lecture 20	Moment of Inertia of plane figure with respect to an axis in its plane, numerical examples.	
Lecture 21	Moment of Inertia of plane figure with respect to an axis and perpendicular to the plane, parallel axis theorem, numerical examples.	
Lecture 22	Numerical examples on MI of plane figures.	
Lecture 23	Rectilinear Translation: Kinematics of rectilinear translation, displacement, velocity, acceleration, numerical problems on rectilinear translation	
Lecture 24	Principle of Dynamics: Newton's Laws, General equation of motion of a particle, differential equation of rectilinear motion, numerical problems.	
Lecture 25	Numerical problems on principle of dynamics	
Lecture 26	D'Alembert's Principle: Basic theory and numerical problems.	
Lecture 27	Numerical problems on D'Alembert's Principle.	
Lecture 28	Momentum and Impulse: Basic theory and numerical problems	
Lecture 29	Numerical problems on momentum and impulse.	
Lecture 30	Work and Energy: Basic theory and numerical problems	
Lecture 31	Ideal systems: Conservation of energy: Basic theory and numerical problems	
Lecture 32	Impact: Plastic impact, elastic impact, semi-elastic impact, coefficient of restitution numerical problems on impact on various conditions.	

Lecture 33	Numerical problems on impact.	
Lecture 34	Curvilinear Translation: Kinematics of curvilinear translation, displacement, velocity and acceleration, numerical problems on curvilinear translation	
Lecture 35	Differential equation of curvilinear motion: Basic theory and numerical problems	
Lecture 36	Motion of a Projectile:	
Lecture 37	Numerical problems on projectile for different cases.	
Lecture 38	D Alembert's Principles in Curvilinear Motion: Basic theory and numerical problems.	
Lecture 39	Rotation of rigid body: Kinematics of rotation and numerical problems.	
Lecture 40	Numerical problems on rotation of rigid bodies.	