



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



LESSON PLAN

SUBJECT: Th-4 (ENGINEERING MECHANICS)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Fundamentals of Engineering Mechanics	14	14
2	Equilibrium	8	8
3	Friction	10	10
4	Centroid & moment of Inertia	14	14
5	Simple Machines	8	8
6	Dynamics	6	6
	Total Period:	60	60

Discipline: AUTO/CIVIL/EE/EEE/M ECH	Semester: 1ST/2ND	Name of the Teaching Faculty: Er. Santosh Kumar
Week	Class Day	Theory / Practical Topics
1st	1st	1.1 Fundamentals. Definitions of Mechanics, Statics, Dynamics, Rigid Bodies,
	2nd	1.1 Fundamentals. Definitions of Mechanics, Statics, Dynamics, Rigid Bodies,
	3rd	1.2 Introduction to Force, Force System. Definition, Classification of force system according to plane & line of action
	4th	Principles of Superposition. Action & Reaction Forces & concept of Free Body Diagram
2nd	1st	simple problems related to force system
	2nd	1.3 Resolution of a Force. Definition, Method of Resolution, Types of Component forces, Perpendicular components & non-perpendicular components.
	3rd	1.3 Resolution of a Force. Definition, Method of Resolution, Types of Component forces, Perpendicular components & non-perpendicular components.
	4th	1.4 Composition of Forces. Definition, Resultant Force, Method of composition of forces
3rd	1st	1.4 Composition of Forces. Definition, Resultant Force, Method of composition of forces
	2nd	1.4.1 Analytical Method such as Law of Parallelogram of forces & method of resolution
	3rd	1.4.2. Graphical Method. Introduction, Space diagram, Vector diagram, Polygon law of forces
	4th	1.4.3 Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method

4 th	1 st	1.5 Moment of Force. Definition, Geometrical meaning of moment of a force, measurement of moment of a force & its S.I units.
	2 nd	1.5 sign convention, Law of moments, Varignon's Theorem, Couple – Definition, S.I. units, measurement of couple, properties of couple.
	3 rd	2.1 Definition, condition of equilibrium, Analytical & Graphical conditions of equilibrium for concurrent, non-concurrent & Free Body Diagram.
	4 th	2.1 Definition, condition of equilibrium, Analytical & Graphical conditions of equilibrium for concurrent, non-concurrent & Free Body Diagram.
5 th	1 st	2.2 Lamia's Theorem – Statement, Application for solving various engineering problems
	2 nd	simple problems related to moment and lamia's theorem.
	3 rd	3.1 Definition of friction, Frictional forces, Limiting frictional force, Coefficient of Friction
	4 th	Angle of Friction & Repose, Laws of Friction, Advantages & Disadvantages of Friction
6 th	1 st	INTERNAL ASSESMENT
	2 nd	INTERNAL ASSESMENT
	3 rd	3.2 Equilibrium of bodies on level plane – Force applied on horizontal & inclined plane (up & down).
	4 th	3.3 Ladder, Wedge Friction
7 th	1 st	SIMPLE PROBLEM RELATED TO FRICTION.
	2 nd	REVISION
	3 rd	4.5 Effect of imperfection on material properties
	4 th	4.6 Deformation by slip and twinning

8th	1st	4.7 Effect of deformation on material properties
	2nd	Revision
	3rd	4.1 Centroid – Definition, Moment of an area about an axis.
	4th	centroid of geometrical figures such as squares, rectangles, triangles, circles, semicircles & quarter circles, centroid of composite figures.
9th	1st	centroid of geometrical figures such as squares, rectangles, triangles, circles, semicircles & quarter circles, centroid of composite figures.
	2nd	SIMPLE PROBLEM RELATED TO CENTROID OF SOME FIGURE.
	3rd	4.2 Moment of Inertia – Definition, Parallel axis & Perpendicular axis Theorems
	4th	4.2 Moment of Inertia – Definition, Parallel axis & Perpendicular axis Theorems
10th	1st	M.I. of plane lamina & different engineering sections.
	2nd	REVISION.
	3rd	5.1 Definition of simple machine, velocity ratio of simple and compound gear train, explain simple & compound lifting machine
	4th	define M.A, V.R. & Efficiency & State the relation between them, State Law of Machine, Reversibility of Machine, Self Locking Machine.
11th	1st	5.2 Study of simple machines – simple axle & wheel, single purchase crab winch & double purchase crab winch, Worm & Worm Wheel, Screw Jack
	2nd	5.2 Study of simple machines – simple axle & wheel, single purchase crab winch & double purchase crab winch, Worm & Worm Wheel, Screw Jack
	3rd	5.3 Types of hoisting machine like derricks etc, Their use and working principle
	4th	5.3 Types of hoisting machine like derricks etc, Their use and working principle

12th	1st	SIMPLE PROBLEM RELATED TO MA,VR AND EFFICENCY OF MACHINE.
	2nd	REVISION.
	3rd	6.1 Kinematics & Kinetics, Principles of Dynamics
	4th	Newton's Laws of Motion, Motion of Particle acted upon by a constant force,
13th	1st	Newton's Laws of Motion, Motion of Particle acted upon by a constant force,
	2nd	Equations of motion, DeAlembert's Principle.
	3rd	SIMPLE PROBLEM RELATED TO NEWTONS LAWS OF MOTION
	4th	6.2 Work, Power, Energy & its Engineering Applications, Kinetic & Potential energy & its application.
14th	1st	6.2 Work, Power, Energy & its Engineering Applications, Kinetic & Potential energy & its application.
	2nd	6.3 Momentum & impulse, conservation of energy & linear momentum, collision of elastic bodies, and Coefficient of Restitution
	3rd	6.3 Momentum & impulse, conservation of energy & linear momentum, collision of elastic bodies, and Coefficient of Restitution
	4th	6.3 Momentum & impulse, conservation of energy & linear momentum, collision of elastic bodies, and Coefficient of Restitution
15th	1st	SIMPLE PROBLEM RELATED TO WORK ENERGY AND POWER
	2nd	SIMPLE PROBLEM RELATED TO WORK ENERGY AND POWER
	3rd	SIMPLE PROBLEM RELATED TO WORK ENERGY AND POWER
	4th	REVISION