VIKASH INSTITUTE OF TECHNOLOGY, BARGARH

LESSON PLAN

Semester:4TH		**Year: 2025**	**Course: B.Tech**
		Sub: KINEMATICS & DYNAMICS OF MACHINES	**Total Credit:03**
Branch :MECHANICAL		**Sub Code : MEPC2004**	
Name of the Faculty:		**SOMESH SAHU**	
Designation :		**ASST.PROFESSOR**	
Department :		**MECHANICAL ENGINEERING**	
Session		**2024-25**	
Recommended Books		**Text book**:	
		1.Theory of Machines and Mechanisms: By Joseph Edward Shigley	
		2.Mechanism & Machine Theory by J. S. Rao and R. V. Dukipatti, New Age International.	
		Reference Books:	
		1.Theory of Mechanisms and Machines by A. Ghosh & A. K. Mallick, East West Press	
		2.Kinematics and Dynamics of Machines by G.H. Martin, Mc Graw-Hill.	

Sl. No.	Lecture No.	Topics to be covered	No. of Classes
		MODULE-1	
1	Lecture-01	Mechanisms-Basic kinematic concepts & definitions	**8**
2	Lecture-02	mechanisms, link, kinematic pair, degrees of freedom	
3	Lecture-03	Kinematic chain, degrees of freedom for plane mechanism, Gruebler's equation, Inversion of mechanism, Four bar chain & their inversions, Single slider crank chain, Double slider crank chain & their inversion.	
4	Lecture-04	Kinematic Analysis: Graphical analysis of position	
5	Lecture-05	Velocity and acceleration of four barand Slider crank mechanisms.	
6	Lecture-06	Instantaneous centre method, Aronhold-Kennedy Theorem, Rubbing velocity at a Pin-joint.Coriolis component of acceleration.	
7	Lecture-07	Gear and Gear Trains: Gear terminology, Types of Gear	
8	Lecture-08	properties and methods of generation of standard tooth profiles,	
		MODULE-2	
9	Lecture-09	Force analysis. Types of gear trains: Simple, Compound,	
10	Lecture-10	Reverted and Epicyclic gear trains, Train value,	
11	Lecture-11	Tabular method and analytical method for Epicyclic gear trains.	
12	Lecture-12	Methods of finding train value/velocity ratio:	10
13	Lecture-13	Turning Moment Diagram and Flywheel:	
14	Lecture-14	Turning moment diagram, Turning moment diagrams for different types of engines	
15	Lecture-15	Fluctuation of energy and fluctuation of speed,Theory of Flywheel.	
16	Lecture-16	Mechanism for Control (Governors): Governors-Watt	
17	Lecture-17	, Proell, Hartnell. Performance parameters: Sensitiveness, Stability	
18	Lecture-18	Hunting, Isochronism.Governor Effort and Power.	

MODULE-3			
19	Lecture-19	Friction Effects: Screwjack, Friction between pivot and collars	9
20	Lecture-20	Single, Multi-plate and cone clutches, anti-friction bearing.	
21	Lecture-21	Flexible Mechanical Elements: Belt, Rope and chain drives	
22	Lecture-22	, Initial tension, Effect of centrifugal tension on power transmission	
23	Lecture-23	Maximum power transmission capacity,	
24	Lecture-24	Belt creep and slip.	
25	Lecture-25	Brakes: Classification of brakes, Types of brakes,	
26	Lecture-26	Analysis of different brakes,	
27	Lecture-27	Braking of a vehicle.	
MODULE-4			
28	Lecture-28	Balancing of rotating components and linkages	8
29	Lecture-29	and Dynamic Balancing	
30	Lecture-30	Balancing of Single Rotating Mass by Balancing Masses in Same plane and in Different planes	
31	Lecture-31	Balancing of Single Rotating Mass by Balancing Masses in Same plane and in Different planes	
32	Lecture-32	Balancing of Several Rotating Masses rotating in same plane	
33	Lecture-33	Balancing of Several Rotating Masses rotating in same plane	
34	Lecture-34	Balancing of Several Rotating Masses rotating in Different planes.	
35	Lecture-35	Balancing of Several Rotating Masses rotating in Different planes.	

Signature of Faculty Member **Signature of HOD**

PRINCIPAL