LESSON PLAN

NAME OF FACULTY: VISHNU GOYAL

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: 5th

SUBJECT: THEORY OF MACHINES

LESSON PLAN DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: (3 Lectures & 2 Practicals)

WEEK	THEORY		PRACTICALS
	LECTURE NOS.	TOPIC	TOPIC
1st	1	**Unit -1. Simple Mechanisms:** Kinematics of Machines: - Definition of Kinematics, Dynamics, Statics, Kinetics, Kinematic link.	**Practical-1:** To study inversion of Four Bar Mechanism, SingleSlider Crank ChainMechanism and Double Slider Crank ChainMechanism with the help of workingmodels.
	2	Kinematic Pair and its types, constrainedmotion.	
	3	Constrained motion and its types, Kinematic chain & its types, Mechanism, inversion	
2nd	4	Machine and structure, Inversions of Kinematic Chain: Inversion of four bar chain, coupled wheels of Locomotive & Pantograph	**Practical-2:** To study various kinds of beltsdrives and gear trains with the help of workingmodels
	5	Inversion of Single Slider Crank chain- Rotary I.C. Engines mechanism, Crank and Slotted lever quick return mechanism.	
	6	Inversion of Double Slider Crank Chain- Scotch Yoke Mechanism & Oldham's Coupling.	
3rd	7	**Unit-2. Power Transmission:** Introduction to Belt and Rope drives, types of belt drives .	**Practical-3:** To find the moment of inertia of a flywheel. .
	8	Concept of velocity ratio, slip and creep; crowning of pulleys (simple numerical)	
	9	Flat and V belt drive: Ratio of driving tensions, power transmitted	

4th	**10**	Centrifugal tension, and condition for maximum horse power	**Practical-4:** To Study the different types of centrifugal governors & to plot graph between R.P.M & Displacement
	11	Different types of chains and their terminology	
	12	Gear Drive - Simple, compound	
5th	**13**	Reverted and Epicyclic gear trains	**Repeat Practical 1 to 4**
	14	Relative advantages and disadvantages of various drives.	
	15	Simple numerical	
6th	**16**	Doubts Session, **ASSIGNMENT - 1**	**Repeat Practical 1 to 4**
	17	**1ST SESSIONAL TEST**	
	18	**Unit 3: Flywheel** Principle and applications of flywheel Fluctuation of speed and fluctuation of energy - Concept only, Turning - moment diagram of flywheel fordifferent engines	
7th	**19**	Coefficient of fluctuation of speed and coefficient of fluctuation of energy.	**Repeat Practical 1 to 4**
	20	Simple numerical on above topics	
	21	**Unit-4: Governor** Function of a governor,comparison of flywheel and governor	
8th	**22**	Simple description and working of Watt, Porter	**Practical-5:** To construct cam profile for uniform velocity, SHM and uniform acceleration and retardation on drawing sheet.
	23	Hartnell governor (simple numerical based on watt and porter governor)	
	24	Terminology used in governors: Height, equilibrium speed,	
9th	**25**	Hunting, isochronisms,stability, sensitiveness of a governor	**Practical 6:** To perform the experiment of Balancing of rotating parts and find the unbalanced couple and forces.
	26	**Unit-5: Cam** Definition and function of cam. Description of different types of cams and followers with simple line diagram	
	27	Terminology of cam profile, Displacement diagram for uniform velocity	

10th	**28**	S.H.M. and uniform acceleration and Deceleration.	**Repeat Practical 5 to 6**
	29	S.H.M. and uniform acceleration and deceleration, **ASSIGNMENT- 2**	
	30	**2ND SESSIONAL TEST**	
11th	**31**	**Unit-6: Balancing**: Need of balancing,	**Repeat Practical 5 to 6**
	32	Concept of static and dynamic balancing	
	33	Introduction to balancing of rotating masses in the same plane.	
12th	**34**	Balancing of rotating masses in the different plane.	**Repeat Practical 1 to 6**
	35	Simple Numericals	
	36	Simple Numericals	
13th	**37**	**Unit 7: Vibrations**: Causes of vibrations in machines,	----
	38	Their harmful effects and remedies.	
	39	Types-longitudinal, transverse and torsional vibrations,	
14th	**40**	Damping of vibrations	----
	41	**ASSIGNMENT - 3**	
	42	**3RD SESSIONAL TEST**	
15th	**43**	Revision	**Repeat Practical**
	44	Revision	
	45	Revision	