Devi Ahilya Vishwavidyalaya, Indore, India **Institute of Engineering & Technology**					**III Year B.E. (Mechanical Engg.) (Full Time)**	
Course Code & Name	**Instructions Hours per Semester and Credits**					
6 RMPC1- MACHINE DESIGN II **Duration of Theory Paper- 04 Hours**	**Classroom Instruction (CI)**		**Lab Instruction (LI)**	**Term Work (TW) and Self Learning (SL)**	**Total no. of Hours Per semester**	**Total Credits (Total Hours/30)**
	L	**T**	**P**	**TW+SL**	**90**	**3**
	20	**10**	**00**	**60**		

Learning Objectives:

1. To provide the knowledge of fundamentals of designing the Power Transmitting Elements.
2. To introduce the designing of Internal Engine Components.
3. To develop skill to analyze the component under Dynamic loading.
4. To introduce the importance of Seals & Gasket in Engine.

Pre requisite(s): Machine Design I, Material Science, Strength of Material.

COURSE CONTENT

Unit- I

Design of Power Transmission Elements: Design for Single Plate Clutch, Cone clutch, Centrifugal clutch, Flat belt, V belt, Power Screw, Spur gear, Helical gear and Bevel gear.

Unit -II

Design for Dynamic Loading: Stress concentration factor, Design of parts subjected to Fatigue loading.

Unit -III

Design for Brakes: Design of Shoe brakes, Band brakes, Block brakes, Internal expanding Brakes and Disc brakes.

Unit -IV

Design for Internal Combustion Engine Parts: Design for Engine Cylinder, Piston, Connecting rod.

Unit-V

Design of Crank Shaft, Concept of Seals and Gasket: Design of Crank Shaft, Valves and Valve Gear Mechanism, Brief Introduction about Seals and Gasket.

Note: Only Mechanical Engineer's Handbook, Data-books and certified notes are allowed in the examination hall.

Course Out Come (CO)	After completion of the course, students will be able to:
CO1	Acquire Knowledge of Selection and Design of Power Transmitting Elements Like Clutches, Power screw, Belts and Gears.
CO2	Understand the application of Stress concentration factor and analyse its importance in Designing the components under Fatigue loading.
CO3	Understand the Knowledge and Selection of Different Types of Brakes and apply & analyse for Designing the different components of Brakes.
CO4	Understand the Concept of Engine Component Design Like Cylinder, Piston & Connecting Rod & apply the knowledge to analyse, Evaluate and Create new design for these components by using IT Tools.
CO5	Learn different types of Crankshafts and Valve Gear Mechanism, and Analyse, Evaluate and Create new design by considering different design variables. Also remember the basic knowledge and selection of seals and gaskets.

BOOKS RECOMMEDED:

[1]. Shigley J.E., *Mechanical Engineering Design*, McGraw-Hill 2015.
[2]. Spotts M.F.,Shoup T.E., Hrnberger L.E., *Design of Machine Elements*, Pearson Education ,8e,2007.
[3]. Sharma P.C. & Aggarwal D.K., *Machine Design*, S.K.Kataria & Sons,11e,2013
[4]. Bhandari V.B., Design of Machine Elements, McGraw-Hill, 4e,2017.
[5]. Black and Adams*, Machine Design*, Mc.Graw Hill,1968
[6]. Maleev V.L*., I.C.Engine Design*, , Mc.Graw Hill ,1945

CO-PO-PSO Mapping

Course Name: **Machine Design II** Course Code: **6RMPC1**

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO1	PSO2	PSO3
CO1	3	3	3	3	2	1	0	3	3	0	0	3	2	1
CO2	3	3	3	3	2	1	0	3	3	0	0	3	2	1
CO3	3	3	3	3	2	1	0	3	3	0	0	3	2	1
CO4	3	3	3	3	2	1	0	3	3	0	0	3	2	1
CO5	3	3	3	3	2	1	0	3	3	0	0	3	2	1
Average	3	3	3	3	2	1	0	3	3	0	0	3	2	1