

**GOPAL KRISHNA COLLEGE OF
ENGINEERING AND TECHNOLOGY
GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005**

LESSON PLAN

Name of the Subject: DESIGN OF MACHINE ELEMENTS-I (DME-I)

Name of the Faculty: Er. RASHMI RANJAN MISHRA

Subject Code:MEPC2005

Course Structure:3-0-0

Semester: 4th Semester

Branch:Mechanical

Semester From: JANUARY to APRIL

No. of Weeks: 16

Week	Day	Theory / Practical Topics	Classes
1		Unit 1 – Fundamentals of Machine Design	9
	1	Introduction to machine design and design procedure	1
	2	Stages in design and standardization	1
	3	Interchangeability and preferred numbers	1
2	4	Fits and tolerances	1
	5	Factor of safety concept	1
	6	Engineering materials: ferrous and non-ferrous	1
3	7	Material properties and selection criteria	1
	8	Use of design data books	1
	9	Revision/problem-solving (Module-I)	1
		Unit 2 – Design of Joints and Fasteners	9

Week	Day	Theory / Practical Topics	Classes
4	10	Design of riveted joints	1
	11	Design of welded joints	1
	12	Threaded fasteners under different loading	1
5	13	Boiler joints	1
	14	Cotter joints	1
	15	Knuckle joints	1
6	16	Numerical problems on joints	1
	17	Revision of Module-II	1
	18	Tutorial session	1
		Unit 3 – Shafts, Keys and Couplings	12
7	19	Classification of keys and pins	1
	20	Design of keys and pins	1
	21	Introduction to shaft design	1
8	22	Shaft design based on strength	1
	23	Shaft design based on torsional rigidity	1
	24	Shaft under fluctuating loads	1
9	25	ASME code for shaft design	1
	26	Design of rigid couplings	1

Week	Day	Theory / Practical Topics	Classes
	27	Design of flexible couplings	1
10	28	Numerical problems on shafts and couplings	1
	29	Revision of Module-III	1
	30	Tutorial/problem-solving	1
		Unit 4 – Springs	9
11	31	Types of helical springs	1
	32	Design of helical springs	1
	33	Spring buckling and surge	1
12	34	End conditions of springs	1
	35	Design of leaf springs	1
	36	Nipping of leaf springs	1
13	37	Numerical problems on springs	1
	38	Revision of Module-IV	1
	39	Tutorial session	1
		Unit 5 – Bearings	9
14	40	Types of bearings and selection	1
	41	Dynamic and static load ratings	1
	42	Bearing life calculations	1

Week	Day	Theory / Practical Topics	Classes
15	43	Sliding contact bearings	1
	44	Journal bearing design	1
	45	Footstep bearing	1
16	46	Numerical problems on bearings	1
	47	Overall revision	1
	48	Doubt clearing and exam preparation	1

Books Recommended

1. *Machine Design* by R.S. Khurmi and J.K. Gupta
2. *Design of Machine Elements* by V.B. Bhandari
3. *Mechanical Engineering Design* by Shigley
4. *Machine Design Data Book* by PSG College of Technology

NPTEL Lectures

1. <https://nptel.ac.in/courses/112105124>
2. <https://nptel.ac.in/courses/112103024/>