

Lesson Plan

Name of Faculty : Kamal Kumar, Assistant Professor
Discipline : Mechanical Engineering
Semester : 5th
Subject : PC/ME/13-T, DESIGN OF MACHINE ELEMENTS
Lesson Plan Duration: 15 weeks (from September, 2024 to December, 2024)
Work Load (Lecture/Practical) per week (in hours): Lectures 04 hours

Week	Lecture Day	Topic (Including Assignment/Test)	%Syllabus Covered	Remarks
Unit-I Design for Variable loading				
1 st	1	Variable Loading, Different types of fluctuating/ variable stresses		
	2	Fatigue strength considering stress concentration factor		
	3	Problems		
	4	Fatigue strength considering surface factor, size factor, reliability factor		
2 nd	5	Problems		
	6	Goodman Criterion		
	7	Problems		
	8	Soderberg's Criterion		
3 rd	9	Problems		
	10	Fatigue design using Miner's equation		
	11	Problems		
	12	Problems		
UNIT-II Springs, Joints & Drives				
4 th	13	Introduction to types of springs		
	14	Design for helical springs against tension and their uses		
	15	Design for helical springs against compression and fluctuating loads		
	16	Problems		
5 th	17	Surging phenomenon in springs		
	18	Design of cotter joints		
	19	Design of knuckle joints		
	20	Problems		
6 th	21	Design of flat belt drives		
	22	Problems		
	23	Design of V- belt drives		
	24	Problems		
7 th		Minor Test- I		

Week	Lecture Day	Topic (Including Assignment/Test)	% Syllabus Covered	Remarks
UNIT-III Bearings Keys, Clutches & Brakes				
8 th	25	Selection of ball and roller bearing based on static and dynamic load carrying capacity using load-life relationship		
	26	Selection of Bearings from manufacturer's catalogue		
	27	Selection of suitable lubricants		
	28	Design Problems		
9 th	29	Flat, Kennedy Keys, Splines		
	30	Rigid & Flexible coupling design		
	31	Design Problems		
10 th	32	Various types of clutches		
	33	Single disc, Multidisc clutch design		
	34	Design Problems		
	35	Cone & Centrifugal clutch design		
11 th	36	Design Problems		
	37	Various types of Brakes, Self energizing condition of brakes		
	38	Internal & external expanding, band brakes		
	39	Design Problems		
	40	Thermal Considerations in brake designing		
UNIT-IV Gears				
12 th	41	Classification, Selection of gears		
	42	Terminology of gears		
	43	Force analysis, Selection of material for gears		
	44	Beam & wear strength of gear tooth, Buckingham equation		
13 th	45	Design Problems		
	46	Design of spur gear including the Consideration for maximum power transmitting capacity		
	47	Design Problems		
	48	Design of helical gear including the Consideration for maximum power transmitting capacity		
14 th		Minor Test- II		
15 th	49	Design Problems		
	50	Design of bevel gear including the Consideration for maximum power transmitting capacity		
	51	Design Problems		
	52	Gear Lubrication		