

## B.Tech 5<sup>th</sup> Semester (Mechanical Engineering)

### Lesson Plan: of Design of Machine Elements-1 (PCC-ME-503/21)

S.N.	Content to be Covered	Lect. No.
<b>UNIT-1</b>		
1	General considerations, Ergonomic and value engineering considerations in design	1
2	Role of processing in design, Design considerations for casting, forging and machining	2
3	Procedure of design of machine elements	3
4	Engineering materials & their mechanical properties, Selection of material	4
5	theories of failures, static loading, factor of safety under different loading conditions, stress concentration	5
6	Concept of fatigue failures for dynamic loading.	6
<b>UNIT-2</b>		
7	Riveted Joints & their types	7
8	Design of riveted joints	8
9	Design of riveted joints	9
10	Welded joints & their types	10
11	Design of welded joints	11
12	Design of welded joints	12
13	Bolted joints, Details of screw threads	13
14	Design of bolted joints	14
15	Design of bolted joints	15
16	Cotter Joints, Different types of cotter joints, their applications	16
17	Design and constructional cotter joints	17
18	Design and constructional cotter joints	18
19	Knuckle Joint, construction & detailed design procedure	19
<b>UNIT-3</b>		
20	Different types of keys & Couplings, their applications	20
21	Forces on a key, Design of Keys against torque	21
22	Design of Rigid Couplings: Muff Coupling & Clamp Couplings	22
23	Design of Flange Coupling	23
24	Design of Flexible Couplings: Bushed-pin,	24
25	Design of Universal Coupling	25

26	Design of Oldham's Coupling	26
<b>UNIT-4</b>		
27	Design of shaft subjected to static loading: pure torsion, simple bending	27
28	Combined bending and torsion, combined bending torsion and axial loads	28
29	Design of shafts for fluctuating loads	29
30	Design of shafts for fluctuating loads	30
<b>UNIT-5</b>		
31	Springs, types of spring and their application, Technical terms	31
32	Detailed design procedure of helical springs,	32
33	Series & parallel springs	33
34	Leaf Springs & their types, Design of leaf springs	34
<b>UNIT-6</b>		
35	Clutches, types of clutches and their applications	35
36	Detailed design of Single and multi-disc clutch	36
37	Detailed design of Cone and Centrifugal clutch	37
38	Type of Brakes, Block Brake with Shoe, pivoted Block Brake	38
39	Internal Expanding Brake, Band Brake, Disk Brake	39