

**Lesson Plan**

Name of the Faculty : Mr. Deepak Anand  
 Discipline : Mechanical Engineering  
 Semester : 6<sup>th</sup>  
 Subject : Design of Machine Element-I (PCC-ME- 304G)  
 Lesson Plan Duration : 15 Weeks (from April 2021 to July 2021)  
 \*\* Work Load (Lecture) per week (in hours): Lectures-03, Practicals-00

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Design Philosophy: Problem Identification- Problem Statement, Specifications, Constraints.		No Practicals
	2 <sup>nd</sup>	Feasibility Study, Technical Feasibility, Economic & Financial Feasibility, Societal & Environmental Feasibility.		
	3 <sup>rd</sup>	Generation of Solution Field (Solution Variants), Brain Storming.		
2 <sup>nd</sup>	4 <sup>th</sup>	Preliminary Design, Selection of best possible solution, Detailed Design.		
	5 <sup>th</sup>	Selection of Fits & Tolerances and analysis of dimensional chains.		
	6 <sup>th</sup>	Selection of Materials: Classification of Engineering Materials.		
3 <sup>rd</sup>	7 <sup>th</sup>	Mechanical Properties of the Commonly used Engineering Materials.		
	8 <sup>th</sup>	Hardness, Strength Parameters with reference to Stress-Strain Diagram.		
	9 <sup>th</sup>	Factor of Safety.		
4 <sup>th</sup>	10 <sup>th</sup>	Mechanical Joints: ISO Metric Screw Threads, Bolted Joints in Tension.		
	11 <sup>th</sup>	Eccentrically Loaded bolted joints in shear and under combined stresses.		

	12 <sup>th</sup>	Design of Power Screws.		
5 <sup>th</sup>	13 <sup>th</sup>	Design of Various Types of Welding Joints under different static load conditions.		
	14 <sup>th</sup>	Riveted Joints, Cotter & Knuckle Joints: Design of various types of riveted joints under different static loading conditions.		
	15 <sup>th</sup>	Eccentrically loaded riveted joints.		
6 <sup>th</sup>	16 <sup>th</sup>	Design of Cotter Joints.		
	17 <sup>th</sup>	Design of Knuckle Joints.		
	18 <sup>th</sup>	Belt, Rope & Chain Drives: Design of belt drives.		
7 <sup>th</sup>	19 <sup>th</sup>	Flat & V-belt drives.		
	20 <sup>th</sup>	Condition for transmission of max. power.		
	21 <sup>st</sup>	Selection of belt.		
8 <sup>th</sup>	22 <sup>nd</sup>	Design of rope drives.		
	23 <sup>rd</sup>	Design of chain drives with sprockets.		
	24 <sup>th</sup>	Keys, Couplings & Flywheel: Design of Keys- Flat Keys.		
9 <sup>th</sup>	25 <sup>th</sup>	Design of Kennedy Keys & Splines Keys.		
	26 <sup>th</sup>	Couplings Design- Rigid & Flexible coupling.		
	27 <sup>th</sup>	Turning moment diagram, Coefficient of fluctuation of energy & speed.		
10 <sup>th</sup>	28 <sup>th</sup>	Design of Flywheel- Solid disc & rimmed flywheels.		
	29 <sup>th</sup>	Clutches: Various types of clutches in use.		
	30 <sup>th</sup>	Design of friction clutches- Disc & Multidisc clutches.		
11 <sup>th</sup>	31 <sup>st</sup>	Cone & Centrifugal clutches.		
	32 <sup>nd</sup>	Torque transmitting capacity.		
	33 <sup>rd</sup>	Brakes: Various types of Brakes.		
12 <sup>th</sup>	34 <sup>th</sup>	Self energizing condition of brakes.		
	35 <sup>th</sup>	Design of shoe brakes- Internal expanding brakes.		

	36 <sup>th</sup>	External expanding brakes.		
13 <sup>th</sup>	37 <sup>th</sup>	Band brakes.		
	38 <sup>th</sup>	Thermal Considerations in brake designing.		
	39 <sup>th</sup>	Design Problems based on Riveted Joints.		
14 <sup>th</sup>	40 <sup>th</sup>	Design Problems based on Cotter & Knuckle Joints.		
	41 <sup>st</sup>	Design Problems based on Belt & Rope Drives.		
	42 <sup>nd</sup>	Design Problems based on Couplings.		
15 <sup>th</sup>	43 <sup>rd</sup>	Design Problems based on Flywheels.		
	44 <sup>th</sup>	Design Problems based on Various Types of Clutches.		
	45 <sup>th</sup>	Design Problems based on Various Types of Brakes.		