

"PVC" NSSK GOVERNMENT POLYTECHNIC BILASPUR AT KALOL

Lesson Plan (Session : Sep.to Dec. 2021)

Name of Teacher : Sameer Sharma

Subject : Machine Design

Class : Mechanical (5th Semester)

Sr. No.	Month	Week	Date	Name of Chapter	Content to be taught	Remarks
1	September	4th	21,22,23,24,25	Introduction	Introduction to Machine Design, Syllabus overview, Evaluation Scheme, Design – Definition, Type of design, necessity of design, Comparison of designed and un-designed work, Design procedure, Characteristics of a good designer	
		5th	28,29,30		Design terminology: stress, strain, factor of safety, factors affecting factor of safety, stress concentration, methods to reduce stress concentration, fatigue, endurance limit, General design consideration, Codes and Standards (BIS standards)	
2	October	1st	1			Engineering materials and their mechanical properties, Properties of engineering materials: elasticity, plasticity, malleability, ductility, toughness, hardness and resilience. Fatigue, creep, tenacity, strength, Selection of materials, criterion for material selection
		2nd	5,6,7,8	Design Failure	Various design failure theories-maximum stress theory, maximum strain theory, Classification of loads, Design under tensile, compressive and torsional loads	
		3rd	12,13,14,16	Design of Shafts	Type of shafts, shaft materials, Type of loading on shafts, standard sizes of shafts available, Shafts subjected to torsion only, determination of shaft diameter (hollow and solid shaft) on the basis of Strength criterion, Rigidity criterion	
		4th	19,21,22,23		Determination of shaft diameter (hollow and solid shaft) subjected to bending, Determination of shaft diameter (hollow and solid shaft) subjected to combined torsion and bending, Numerical Practice	CT-I (21/10/21)
		5th	26,27,28,29,30	Design of Keys	Types of keys, materials of keys, functions of keys, Failure of keys (by Shearing and Crushing), Design of keys (Determination of key dimension), Effect of keyways on shaft strength, Numerical Practice	
3	November	1st	2	Design of Joints	Types of joints: Temporary, permanent joints, utility of various joints	
		2nd	9,10,11,12		Temporary Joint, Knuckle Joints – Different parts of the joint, material used for the joint, type of knuckle Joint, design of the knuckle joint, Cotter Joint – Different parts of the spigot and socket joints, Design of spigot and socket joint	
		3rd	16,17,18,20		Permanent Joint : Welded Joint - Welding symbols. Type of welded joint, strength of parallel and transverse fillet welds, Strength of combined parallel and transverse weld,	
		4th	23,24,25,26,27		Riveted Joints: Rivet materials, Rivet heads, leak proofing of riveted joint – caulking and fullering Different modes of rivet joint failure, Design of riveted joint – Lap and butt, single and multi-riveted joint	CT-II (25/11/21)
		5th	30,	Design of Flange Coupling	Necessity of a coupling, advantages of a coupling, types of couplings	
4	December	1st	1,2,3,4		Design of muff coupling, design of flange coupling (both protected type and unprotected type).	
		2nd	7,8,9,10	Design of Screwed Joints	Introduction, Advantages and Disadvantages of screw joints, location of screw joints	
		3rd				House Test
		4th	21,22,23,24		Important terms used in screw threads, designation of screw threads, Initial stresses due to screw up forces, stresses due to combined forces, Design of bolts for cylinder cover	
		5th	28,29,30,31	Revision	Revision of previous question paper	

Sameer Sharma
14/09/2021

Signature of teacher

Chavha

HOD (ME)