

GOVT. POLYTECHNIC BOLANGIR
LESSON PLAN

Discipline : AUTOMOBILE	Semester: 5th	Name of the Teaching Faculty : Faculty 1
Subject : AUTOMOBILE COMPONENT DESIGN	No. of Days / per week class allotted :	Semester From date : SEP-15-2022 To Date : DEC-22-2022 No. of Weesks : 13
Week	Class Day	Topics
3RD SEP	1st	Basic concepts of design - Introduction to design , Classification of design , Design Consideration
	2nd	Design procedure , Stress analysis , Types of external loads
	3rd	Types of induced stresses: tensile, compressive, shear crushing & bearing pressure,
	4th	bending, torsion, thermal stresses, creep, proof stresses resilience principal stresses.
4TH SEP	1st	Stress- strain diagram for ductile & brittle material and its importance ,
	2nd	Variable stresses machine parts, fatigue & endurance limit, stress-time diagrams for variable stresses.
	3rd	Working stresses for static load, variable or fatigue load
	4th	Factor of safety, selection of factor of safety , Stress concentration causes and remedies
2ND OCT	1st	Introduction to theories of failure-maximum principal theory. Maximum shear stress theory, Distribution energy theory ,
	2nd	Selection of material and justifications of automobile components , advanced materials for automotive components , Concept of standardization, preferred numbers & inter chargeability in design practice.
	3rd	Common types of fasteners with their applications-through bolts, tap bolts, top bolts, studies cap screws and machine screws, designation of screw thread , stresses in screw fosterers, bolts of uniform strength.
	4th	Bearings – classification, location in automobiles systems & selection of bearings ,
3RD OCT	1st	Post design aspects ergonomic aspect aesthetic consideration (shape, colour, surface finish) for automobile.
	2nd	Design of machine elements -Design of socket
	3rd	Design of machine elements -spigot type cotter joint
	4th	Design of knuckle joint
4TH OCT	1st	Design of knuckle joint
	2nd	Design of turnbuckle.
	3rd	Design of turnbuckle.
	4th	Application of above machine elements in an automobile.
	1st	Design of shafts, keys &couplings -Conceptual understanding of shaft, axles &spindles.

1ST NOV	2nd	Design of shafts, keys & couplings -Conceptual understanding of shaft, axles & spindles.
	3rd	Design of shaft for torsion,
	4th	Design of shaft rigidity,
2ND NOV	1st	Design of shaft bending,
	2nd	Design of shaft combined bending & torsion.
	3rd	Compression of solid & hollow shafts
	4th	Design of propeller shaft, whirling & critical speed.
3RD NOV	1st	Design of rear axle
	2nd	Types of keys design of sunk rectangular key, woodruff key. Effect of keyways on shaft.
	3rd	Design of coupling-muff, flange and bush pin type flexible
	4th	Design of coupling-muff, flange and bush pin type flexible
4TH NOV	1st	Design of levers. Types of levers
	2nd	Design of Rocker arm
	3rd	Design of Bell crank lever
	4th	Design of Hand lever
1ST DEC	1st	Design of Bell crank lever
	2nd	Design of Pedals for rectangular cross-section & fulcrum Pin only.
	3rd	Design of chassis component -Design of cloth- single plate & multi plate.
	4th	Teeth calculation of gears for sliding mesh/constant mesh gear box of given data.
2ND DEC	1st	Design of semi elliptical leaf spring, helical spring-torsion & compression
	2nd	Design of engine components. Data of engine specifications & calculation of cylinder dimensions for given power
	3rd	Design of cylinder head thickness & bolts. Design of valve seat & valve lift
	4th	Design of piston crown by bending strength & thermal considerations
3RD DEC	1st	Design of piston rings & skirt length, Design of piston pin for bearing, bending & shear considerations
	2nd	Design of connecting rod cross-section (I-section)
	3rd	Design of big end, cap & bolt
	4th	Design of over hung crankshaft.