NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: AUTOMOBILE COMPONENT DESIGN (TH-5)

Name Of The Faculty :- Er. Subhabrata Mohapatra
Branch :- Automobile Engineering **Semester :-** 5th
Academic Year : 2025-26 **Examination :-** 2025 (w)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	BASIC CONCEPET OF DESIGN	12	14
2	DESIGN OF MACHINE ELEMENT	6	9
3	DESIGN OF SHAFT KEY & COMPONENT	10	13
4	DESIGN OF LEVERS	6	8
5	DESIGNOF CHASSIS	10	13
6	DESIGN OF ENGINE COMPONENT	16	18
	Total Period:	60	75

S. Mohapatra 10/07/25

sign of the faculty

10/07/2025

Sign of H.O.D

Name of the programme: Diploma in AUTOMOBILE ENGINEERING	Semester: 5th	**Name of the Teaching Faculty:** Er. Subhabrata Mohapatra	
		Academic Year : 2025-26 **Examination :** 2025 (W)	
Course Code: TH.5	**Course Year:** Third Year	**No. of Classes Alloted Per Week :**	5
		Planned Classes Required to Complete the Course	75
Week	**Class Day**	**Topics to be Covered**	
1st	**1st**	Basic concepts of design	
	2nd	Introduction to design	
	3rd	Introduction to design	
	4th	Classification of design	
	5th	Stress analysis	
2nd	**1st**	Types of external loads	
	2nd	Types of induced stresses: tensile, compressive, shear crushing & bearing	
	3rd	bending, torsion, thermal stresses, creep, proof stresses resilience principal stresses.	
	4th	Stress- strain diagram for ductile & brittle material and its importance	
	5th	bending, torsion, thermal stresses, creep, proof stresses resilience principal stresses.	
3rd	**1st**	Variable stresses machine parts, fatigue & endurance limit, stress-time diagrams for variable stresses.	
	2nd	Working stresses for static load, variable or fatigue load	
	3rd	Factor of safety, selection of factor of safety	
	4th	Introduction to theories of failure-maximum principal theory. Maximum shear stress theory, Distribution energy theory	
	5th	Selection of material and justifications of automobile components, advanced materials for automotive components	
4th	**1st**	.Concept of standardization, preferred numbers & inter chargeability in design practice.	
	2nd	Common types of fasteners with their applications-through bolts, tap bolts, top bolts, studies cap screws and machine screws	
	3rd	Bearings – classification, location in automobiles systems & selection of bearings.	
	4th	Post design aspects ergonomic aspect aesthetic consideration (shape, colour, surface finish) for automobile.	
	5th	Post design aspects ergonomic aspect aesthetic consideration (shape, colour, surface finish) for automobile.	
5th	**1st**	Post design aspects ergonomic aspect aesthetic consideration (shape, colour, surface finish) for automobile.	
	2nd	Design of machine elements.	
	3rd	Design of socket & spigot type cotter joint	

Week	Class Day	Topics to be Covered
5th	4th	Design of socket & spigot type cotter joint
	5th	Design of socket & spigot type cotter joint
6th	1st	Design of knuckle joint
	2nd	Design of knuckle joint
	3rd	Design of knuckle joint
	4th	Design of turnbuckle
	5th	Design of turnbuckle
7th	1st	Application of above machine elements in an automobile.
	2nd	Application of above machine elements in an automobile.
	3rd	Design of shafts, keys &couplings
	4th	Design of shaft for torsion, rigidity, bending, combined bending &torsion..
	5th	Design of shaft for torsion, rigidity, bending, combined bending &torsion..
8th	1st	Compression of solid & hollow shafts
	2nd	Compression of solid & hollow shafts
	3rd	Types of keys design of sunk rectangular key, woodruff key. Effect of keyways on shaft
	4th	Types of keys design of sunk rectangular key, woodruff key. Effect of keyways on shaft
	5th	Types of keys design of sunk rectangular key, woodruff key. Effect of keyways on shaft
9th	1st	Design of coupling-muff, flange and bush pin type flexible
	2nd	Design of coupling-muff, flange and bush pin type flexible
	3rd	Design of coupling-muff, flange and bush pin type flexible
	4th	Design of levers.
	5th	Design of levers.
10th	1st	Rocker arm
	2nd	Hand lever
	3rd	Pedals for rectangular cross-section& fulcrum Pinonly
	4th	Design of chassis component
	5th	Design of chassis component
11th	1st	Design of cloth- single plate & multi plate
	2nd	Design of cloth- single plate & multi plate

Week	Class Day	Topics to be Covered
11th	3rd	Teeth calculation of gears for sliding mesh/constant mesh gear box of given data.
	4th	Design of semi elliptical leaf spring, helical spring-torsion &compression
	5th	Design of semi elliptical leaf spring, helical spring-torsion &compression
12th	1st	Data of engine specifications & calculation of cylinder dimensions for given
	2nd	Data of engine specifications & calculation of cylinder dimensions for given
	3rd	Design of cylinder head thickness &bolts
	4th	Design of cylinder head thickness &bolts
	5th	Design of valve seat & valve lift
13th	1st	Design of valve seat & valve lift
	2nd	Design of piston crown by bending strength & thermal considerations
	3rd	Design of piston crown by bending strength & thermal considerations
	4th	Design of piston rings & skirt length
	5th	Design of piston rings & skirt length
14th	1st	bending & shear considerations.
	2nd	bending & shear considerations.
	3rd	bending & shear considerations.
	4th	Design of connecting rod cross-section(I-section)
	5th	Design of connecting rod cross-section(I-section)
15th	1st	Design of connecting rod cross-section(I-section)
	2nd	Design of big end, cap &bolt.
	3rd	Design of big end, cap &bolt.
	4th	Design of over hung crankshaft.
	5th	Design of over hung crankshaft.

S. Mohapatra
10/07/25

sign of the faculty

10/07/2025

Sign of H.O.D