GOVT. POLYTECHNIC BOLANGIR **LESSON PLAN**

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : Faculty 5
Subject : ENGINEERING MATERIAL	No. of Days / per week class allotted : 4	Semester From date : 15.09.2022 to Date :22.12.2022 No. of Weesks : 14
Week	**Class Day**	**Topics**
15.9 - 17.9	1st	Material classification
	2nd	into ferrous and non ferrous category
	3rd	alloys
	4th	Types of alloys
19.9-24.9	1st	Properties of Materials
	2nd	Physical , Chemical and Mechanical
	3rd	Performance requirements
	4th	Material reliability and safety
26.9-1.10	1st	Characteristics of ferrous materials
	2nd	application of ferrous materials
	3rd	Classification of low carbon steel
	4th	composition of low carbon steel
10.10-15.10	1st	application of low carbon steel
	2nd	Classification of Medium carbon steel
	3rd	composition of Medium carbon steel
	4th	application of Medium carbon steel
17.10-22.10	1st	Classification of High carbon steel
	2nd	composition of High carbon steel
	3rd	application of High carbon steel
	4th	Alloy steel
24.10-29.10	1st	Low alloy steel
	2nd	high alloy steel
	3rd	tool steel
	4th	stainless steel
31.10-5.11	1st	Tool steel:
	2nd	Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
	3rd	Concept of phase diagram
	4th	cooling curves
7.11-12.11	1st	Features of Iron-Carbon diagram
	2nd	with salient micro-constituents of Iron and Steel
	3rd	Crystal defines
	4th	classification of crystals
14.11-19.11	1st	crystal imperfections
	2nd	Classification of imperfection
	3rd	Point defects
	4th	line defects
21.11-26.11	1st	volume defects
	2nd	surface defects
	3rd	Types and causes of point defects
	4th	Vacancies
28.11-3.12	1st	Interstitials and impurities
	2nd	Types and causes of line defects
	3rd	Edge dislocation and
	4th	screw dislocation
5.12-10.12	1st	Effect of imperfection on material properties
	2nd	Deformation by slip and twinning
	3rd	Deformation by slip and twinning
	4th	Effect of deformation on material properties
12.12-17.12	1st	Purpose of Heat treatment
	2nd	Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures
	3rd	Surface hardening: Carburizing and Nitriding and Effect of heat treatment on properties of steel
	4th	Hardenability of steel
19.12-22.12	1st	Aluminum alloys: Composition, property and usage of Duralmin, y- alloy.
	2nd	Copper- Aluminum, Copper-Tin, Babbit , Phosperous bronze, brass, Copper-Nickel
	3rd	Predominating elements of lead alloys, Zinc alloys and Nickel alloys
	4th	Low alloy materials like P-91, P-22 for power plants and other high temperature services. High alloy materials like stainless steel grades of duplex, super duplex materials etc.