



MAHARAJA POLYTECHNIC, TARABAI, BHUBANESWAR.
LESSON PLAN

NAME OF FACULTY:-DEEPAK SAMAL
BRANCH & SEMESTER:-MECHANICAL ENGG& 3rd SEM
TOTAL NO. OF STUDENT IN THE CLASS:-
TOTAL NO. OF CLASSES REQUIRED:-60
SESSION:-2022-23

SUBJECT NAME:- ENGINEERING MATERIAL
SUBJECT CODE:- TH.1

Sl. No.	Topics to be covered	Topics covered on date	Total no. of students present	Verified by HoD	Verified by the principal	Remark
	UNIT:1 Engineering materials and their properties					
1.	Material classification into ferrous and non ferrous category					
2.	Material classification OF ALLOYS.					
3.	Properties of Materials: Physical					
4.	Properties of Materials; Chemical					
5.	Properties of Materials; Mechanical					
6.	Performance requirements					
7.	Material reliability and safety					
8.	UNIT:2 Ferrous Materials and alloys					
9.	Characteristics and application of ferrous materials					
10.	Classification, composition and application of low carbon steel					
11.	Classification, composition and application of medium carbon steel					

12.	Classification, composition and application of High carbon steel					
13.	Alloy steel: Low alloy steel, high alloy steel					
14.	tool steel and stainless steel					
15.	Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,					
16.	UNIT:3 Iron – Carbon system					
17.	Concept of phase diagram					
18.	cooling curves					
19.	Features of Iron-Carbon diagram with salient micro-constituents of Iron					
20.	Features of Iron-Carbon diagram with salient micro-constituents of steel.					
21.	UNIT:4 Iron – Crystal imperfections					
22.	Crystal defines, classification of crystals					
23.	ideal crystal and crystal imperfections					
24.	Classification of imperfection: Point defects, line defects					
25.	surface defects and volume defects					
26.	Types and causes of point defects: Vacancies, Interstitials and impurities					
27.	Types and causes of line defects: Edge dislocation					
28.	Types and causes of line defects: screw dislocation					
29.	Effect of imperfection on material properties					
30.	Deformation by slip and twinning					
31.	Effect of deformation on material properties					
32.	UNIT:5 Heat Treatment					
33.	Purpose of Heat treatment					
34.	Process of heat treatment: Annealing					

35.	Process of heat treatment: normalizing					
36.	hardening, tempering					
37.	stress relieving measures					
38.	Surface hardening: Carburizing and Nitriding					
39.	Effect of heat treatment on properties of steel					
40.	Hardenability of steel					
41.	UNIT:6 Non-ferrous alloys					
42.	Aluminum alloys: Composition, property					
43.	usage of Duralmin, γ - alloy.					
44.	Copper alloys: Composition, property and usage of CopperAluminum, Copper-Tin, Babbitt					
45.	Phosphorous bronze, brass, Copper- Nickel					
46.	Predominating elements of lead alloys					
47.	Zinc alloys and Nickel alloys					
48.	Low alloy materials like P-91, P-22 for power plants and other 10 high temperature services					
49.	High alloy materials like stainless steel grades of duplex, super duplex materials etc.					
50.	UNIT:7 Bearing Material					
51.	Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials					
52.	UNIT:8 Spring Material					
53.	Classification, composition, properties and uses of Ironbase and Copper base spring material					

54.	UNIT:9 Polymers					
55.	Properties and application of thermosetting and thermoplastic polymers					
56.	Properties of elastomers					
57.	UNIT:10 Composites and Ceramics					
58.	Classification, composition, properties and uses of particulate based					
59.	Classification, composition, properties and uses of fiber reinforced composites					
60.	Classification and uses of ceramics					

SIGN OF FACULTY

SIGN OF HOD

SIGN OF PRINCIPAL

