


Lesson Plan

Subject: **ENGINEERING MATERIAL** (Th 3) Name of faculty: **SATYABRATA MOHARANA**

Semester: 3rd Class allotted: 4p/week Branch: Mechanical Session: 2023(W)

Discipline	Semester	From date:	To date:	Teaching Aid
Subject:	No. of days/ per week	Theory/ Practical –Topics/Lesson		
Week	Date/Period			
1	01/08/2023	1.0 Engineering materials and their properties		White Board
	to	1.1 Material classification into ferrous and non ferrous category and alloys		Marker
	05/08/2023	1.2 Properties of Materials: Physical , Chemical and Mechanical		Smart board
2		1.3 Performance requirements		White Board
		1.4 Material reliability and safety		Marker
	07/08/2023	2.0 Ferrous Materials and alloys		Smart board
	to	2.1 Characteristics and application of ferrous materials		
	12/08/2023	2.2 Classification, composition and application of low carbon steel, medium carbon steel and High carbon steel		
3	14/08/2023	2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel		White Board
	to	2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,		Marker
	19/08/2023	3.0 Iron – Carbon system		Smart board
		3.1 Concept of phase diagram and cooling curves		
4		Concept of phase diagram and cooling curves		White Board
	21/08/2023	Concept of phase diagram and cooling curves		Marker
	to	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel		Smart board
	26/08/2023	Continue....		
5	28/08/2023	Continue....		White Board
	to	4.0 Crystal imperfections		Marker
	02/09/2023	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections		Smart board
6	04/09/2023	4.2 Classification of imperfection: Point defects, line defects, surface defects and volume defects		White Board
	to			Marker
	09/09/2023	4.3 Types and causes of point defects: Vacancies, Interstitials and impurities		Smart board
7	11/09/2023	4.4 Types and causes of line defects: Edge dislocation and screw dislocation		White Board
	to	4.5 Effect of imperfection on material properties		Marker
	16/09/2023	4.6 Deformation by slip and twinning		Smart board
		4.7 Effect of deformation on material properties		


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Week	Date/Period	Theory/ Practical – Topics/Lesson	Teaching Aid
8	18/09/2023	5.0 Heat Treatment	White Board
	to	5.1 Purpose of Heat treatment	Marker
	23/09/2023	5.2 Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures	Smart board
9	25/09/2023	5.3 Surface hardening: Carburizing and Nitriding	White Board
	to		Marker
	30/09/2023	5.4 Effect of heat treatment on properties of steel	Smart board
		Continue....	
10	03/10/2023	5.5 Hardenability of steel	White Board
	to	Continue....	Marker
		6.0 Non-ferrous alloys	Smart board
	07/10/2023	6.1 Aluminum alloys: Composition, property and usage of Duralmin, γ - alloy.	
11	09/10/2023		
	to	Internal Exam	
	14/10/2023		
12	16/10/2023	6.2 Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbit, Phosperous bronze, brass, Copper- Nickel	White Board
	to		Marker
	20/10/2023	6.3 Predominating elements of lead alloys, Zinc alloys and Nickel alloys	Smart board
13	30/10/2023	6.4 Low alloy materials like P-91, P-22 for power plants and other high temperature services	White Board
	to	Continue...	Marker
	04/11/2023	High alloy materials like stainless steel grades of duplex, super duplex materials etc.	Smart board
14	06/11/2023	7.0 Bearing Material	White Board
	to	7.1 Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials	Marker
	11/11/2023		Smart board
		8.0 Spring materials	
15	13/11/2023	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material	White Board
	to		Marker
	18/11/2023	9.0 Polymers	Smart board
		9.1 Properties and application of thermosetting and thermoplastic polymers 9.2 Properties of elastomers	
16		10.0 Composites and Ceramics	White Board
	20/11/2023	10.1 Classification, composition, properties and uses of particulate based and fiber reinforced composites	Marker
	to		Smart board
	25/11/2023	10.2 Classification and uses of ceramics	


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17	28/11/2023	Revision...	White Board
	to	Revision...	Marker
	30/11/2023	Revision...	Smart board
		Revision...	



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