

**PNS SCHOOL OF ENGINEERING MARSHAGHAI KENDRAPARA**

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : JYOTIRMAY JENA
Subject : ENGINEERING MATERIAL	No. of Days / per week class allotted : 5	Semester From date : 01.08.2023 to Date :30.11.2023 No. of Weeks : 14
Week	Class Day	Topics
1	1st	Material classification
	2nd	into ferrous and non ferrous category
	3rd	alloys
	4th	Types of alloys
	5th	REVISION
2	1st	Properties of Materials
	2nd	Physical , Chemical and Mechanical
	3rd	Performance requirements
	4th	Material reliability and safety
	5th	REVISION
3	1st	Characteristics of ferrous materials
	2nd	application of ferrous materials
	3rd	Classification of low carbon steel
	4th	composition of low carbon steel
	5th	REVISION
4	1st	application of low carbon steel
	2nd	Classification of Medium carbon steel
	3rd	composition of Medium carbon steel
	4th	application of Medium carbon steel
	5th	REVISION
5	1st	Classification of High carbon steel
	2nd	composition of High carbon steel
	3rd	application of High carbon steel
	4th	Alloy steel
	5th	REVISION
6	1st	Low alloy steel
	2nd	high alloy steel
	3rd	tool steel
	4th	stainless steel
	5th	REVISION
7	1st	Tool steel:
	2nd	Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
	3rd	Concept of phase diagram
	4th	cooling curves
	5th	REVISION

8	1st	Features of Iron-Carbon diagram
	2nd	with salient micro-constituents of Iron and Steel
	3rd	Crystal defines
	4th	classification of crystals
	5th	REVISION
9	1st	crystal imperfections
	2nd	Classification of imperfection
	3rd	Point defects
	4th	line defects
	5th	REVISION
10	1st	volume defects
	2nd	surface defects
	3rd	Types and causes of point defects
	4th	Vacancies
	5th	REVISION
11	1st	Interstitials and impurities
	2nd	Types and causes of line defects
	3rd	Edge dislocation and
	4th	screw dislocation
	5th	REVISION
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
	5th	REVISION
13	1st	Purpose of Heat treatment
	2nd	Process of heat treatment: Annealing, normalizing, hardening, tempering,
	3rd	Surface hardening: Carburizing and Nitriding and Effect of
	4th	Hardenability of steel
	5th	REVISION
14	1st	Aluminum alloys: Composition, property and usage of Duralmin, $\gamma$ - alloy.
	2nd	Copper- Aluminum, Copper-Tin, Babbitt , Phosphorous 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.

Signature of H.O.D, Mechanical

Signature of Lecturer