

Discipline: Mechanical Engineering	Semester : 3rd Semester	Name of the Teaching Faculty: Shri Arun kumar Sahu, Ptgf mechanical engineering
Subject: ENGINEERING MATERIALS	No. of Days/week Class Allotted: 60	No of weeks: 18
week	Class Day	Theory Topics
1 st	1 st	Material Classification into ferrous and nonferrous ferrous category and alloys
	2 nd	Physical Properties of Materials
	3 rd	Chemical Properties of Materials
	4 th	Mechanical Properties of materials
2 nd	1 st	Performance requirements
	2 nd	Material reliability and safety
	3 rd	Characteristics and application of ferrous materials
	4 th	Classification, composition and application of Low carbon steel
3 rd	1 st	Classification, composition and application of medium carbon steel
	2 nd	Classification, composition and application of High carbon steel
	3 rd	Low alloy steel
	4 th	High alloy steel
4 th	1 st	Tool steel and Stain less steel
	2 nd	Toolsteel:Effect ofvariousalloyingelementssuchasCr,Mn,Ni,V suchasCr,Mn,Ni,V, Mo
	3 rd	Concept of phase diagram and cooling curves
	4 th	Feature esofIron-Carbondiagramwithsalientmicro-constituentsof Iron and Steel
5 th	1 st	Crystaldefines,classificationofcrystals,idealcrystalandcrystalimperfections
	2 nd	Classificationofimperfection
	3 rd	Pointdefects,linedefects,surfacedefectsand volumedefects
	4 th	Typesandcausesofpointdefects:Vacancies,Interstitialsandimpurities
6 th	1 st	Typesandcausesoflinedefects:Edgedislocation
	2 nd	screwdislocation
	3 rd	Effectofimperfectiononmaterialproperties
	4 th	Deformationbyslipandtwinning
7 th	1 st	Effectofdeformationonmaterialproperties
	2 nd	PurposeofHeattreatment
	3 rd	Processofheattreatment

	4 th	Annealing,normalizing
8 th	1 st	hardening,tampering,stressrelievingmeasures
	2 nd	Surfacehardening
	3 rd	CarburizingandNitriding
	4 th	Effectofheattreatmentonpropertiesofsteel
9 th	1 st	Hardenabilityofsteel
	2 nd	Aluminumalloys:Composition, <u>propertyandusageofDuralmin</u> , <u>γ-alloy</u> .
	3 rd	Copperalloys:Composition,propertyandusageofCopper-Aluminium
	4 th	Copper-Tin, Babbit , Phosperous bronze, brass,Copper-Nickel
10 th	1 st	Predominatingelementsofleadalloys,ZincalloysandNickelalloys
	2 nd	LowalloymaterialslikeP-91,P-22forpowerplants
	3 rd	high temperature services. High alloy materials like stainlesssteelgradesofduplex,superduplexmaterialsetc.
	4 th	Classification, composition, properties and uses of copper base bearing Material
11 th	1 st	Classification, composition, properties and uses of Tin base bearing Material
	2 nd	Classification, composition, properties and uses of Lead base bearing Material Cadmium base bearing Material
	3 rd	Classification,composition,properties and uses of Iron-base spring materials
	4 th	Classification,composition,properties and uses of Copper base spring material
12 th	1 st	Propertiesandapplicationofthermosettingandthermoplastic polymers
	2 nd	Propertiesofelastomers
	3 rd	Classification,composition,propertiesandusesofparticulatebasedandfiberreinforce composites
	4 th	Classificationandusesofceramics
13 th	1 st	Revision of Chapter – 1.1,1.2
	2 nd	Revision of Chapter – 1.3,1.4
	3 rd	Revision of Chapter – 2.1,2.2,2.3
	4 th	Revision of Chapter – 2.4
14 th	1 st	Revision of Chapter – 3.1
	2 nd	Revision of Chapter – 3.2
	3 rd	Revision of Chapter – 4.1, 4.2
	4 th	Revision of Chapter – 4.3,4.4
15 th	1 st	Revision of Chapter – 4.5,4.6, 4. 7
	2 nd	Revision of Chapter – 5.1,5.2
	3 rd	Revision of Chapter – 5.3,5.4, 5.5
	4 th	Revision of Chapter – 6.1,6.2
16 th	1 st	Revision of Chapter – 6.3,6.4
	2 nd	Revision of Chapter – 7
	3 rd	Revision of Chapter – 8

	4 th	Revision of Chapter – 9	
17 th	1 st	Revision of Chapter – 10.1	
	2 nd	Revision of Chapter – 10.2	
	3 rd	Discussion of Probable Questions and Answers (1)	
	4 th	Discussion of Probable Questions and Answers(2)	
18 th	1 st	Discussion of Probable Questions and Answers (3)	
	2 nd	Discussion of Probable Questions and Answers(4)	
	3 rd	Discussion of Probable Questions and Answers (5)	
	4 th	Discussion of Probable Questions and Answers (6)	