GANDHI SCHOOL OF ENGINEERING
BHABANDHA, BERHAMPUR
SESSION PLAN
3RD SEMESTER, BRANCH-MECHANICAL(GROUP 1)

ENGINEERING MATERIAL(TH-3)

Name of the Faculty –PROF. PODAL BIKASH KUMAR

Topics to be taken				Actually taken		
SL NO & CHAPTER	**No. of Periods assigned by SCTE & VT**	**Details of the topics**	**PLANNED DATE**	**Details of the topics**	**ACTUAL DATE**	**Remarks**
1. Engineering materials and their properties	**5**	1.1 Material classification into ferrous and non ferrous category and alloys 1.2 Properties of Materials: Physical and Chemical 1.3 Performance requirements 1.4 Material reliability and safety	**1/08/2023 TO 8/08/2023**	1.1 Material classification into ferrous and non ferrous category and alloys 1.2 Properties of Materials: Physical and Chemical 1.3 Performance requirements 1.4 Material reliability and safety	**1/08/2023** **2/08/2023** **3/08/2023** **4/08/2023** **8/08/2023**	
2. Ferrous Materials and alloys	**5**	2.1 Characteristics and application of ferrous materials 2.2 Classification, composition and application of low carbon steel, medium carbon stell and High carbon steel 2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel 2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V,Mo, W	**9/08/2023 TO 17/08/2023**	2.1 Characteristics and application of ferrous materials 2.2 Classification, composition and application of low carbon steel, medium carbon stell and High carbon steel 2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel 2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V,Mo, W	**9/08/2023** **10/08/2023** **11/08/2023** **16/08/2023** **17/08/2023**	

3. Iron – Carbon system	**8**	3.1 Concept of phase diagram and cooling curves 3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel	**18/08/2023 TO 1/09/2023**	3.1 Concept of phase diagram and cooling curves 3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel	**18/08/2023** **22/08/2023** **23/08/2023** **24/08/2023** **25/08/2023** **29/08/2023** **31/08/2023** **1/09/2023**	
4. Crystal imperfections	**10**	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections 4.2 Classification of imperfection: Point defects, line defects, surface defects and volume defects 4.3 Types and causes of point defects: Vacancies, Interstitials and impurities 4.4 Types and causes of line defects: Edge dislocation and screw dislocation 4.5 Effect of imperfection on material properties 4.6 Deformation by slip and twinning 4.7 Effect of deformation on material properties	**7/09/2023 TO 27/09/2023**	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections 4.2 Classification of imperfection: Point defects, line defects, surface defects and volume defects 4.3 Types and causes of point defects: Vacancies, Interstitials and impurities 4.4 Types and causes of line defects: Edge dislocation and screw dislocation 4.5 Effect of imperfection on material properties 4.6 Deformation by slip and twinning 4.7 Effect of deformation on material properties	**7/09/2023** **8/09/2023** **12/09/2023** **13/09/2023** **14/09/2023** **15/09/2023** **21/09/2023** **22/09/2023** **26/09/2023** **27/09/2023**	

5. Heat Treatment	**10**	5.1 Purpose of Heat treatment 5.2 Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures 5.3 Surface hardening: Carburizing and Nitriding 5.4 Effect of heat treatment on properties of steel 5.5 Hardenability of steel	**29/09/2023 TO 17/10/2023**	5.1 Purpose of Heat treatment 5.2 Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures 5.3 Surface hardening: Carburizing and Nitriding 5.4 Effect of heat treatment on properties of steel 5.5 Hardenability of steel	**29/09/2023** **3/10/2023** **4/10/2023** **5/10/2023** **6/10/2023** **10/10/2023** **11/10/2023** **12/10/2023** **13/10/2023** **17/10/2023**	
6. Non-ferrous alloys	**10**	6.1 Aluminium alloys: Composition, property and usage of Duralmin, y-alloy 6.2 Copper alloys: Composition, property and usage of Copper-Aluminium, Copper-Tin, Babbit, Phosperous bronze, brass, Copper-Nickel 6.3 Predominating elements of lead alloys, Zinc alloys and Nickel alloys 6.4 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.	**18/10/2023 TO 10/11/2023**	6.1 Aluminium alloys: Composition, property and usage of Duralmin, y-alloy 6.2 Copper alloys: Composition, property and usage of Copper-Aluminium, Copper-Tin, Babbit, Phosperous bronze, brass, Copper-Nickel 6.3 Predominating elements of lead alloys, Zinc alloys and Nickel alloys 6.4 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.	**18/10/2023** **19/10/2023** **31/10/2023** **1/11/2023** **2/11/2023** **3/11/2023** **7/11/2023** **8/11/2023** **9/11/2023** **10/11/2023**	

7. Bearing Material	**3**	7.1 Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cd base bearing materials	**15/11/2023 TO 17/11/2023**	7.1 Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cd base bearing materials	**15/11/2023 16/11/2023 17/11/2023**	
8. Spring materials	**3**	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material	**21/11/2023 TO 23/11/2023**	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material	**21/11/2023 22/11/2023 23/11/2023**	
9. Polymers	**3**	9.1 Properties and application of thermosetting and thermoplastic polymers 9.2 Properties of elastomers	**24/11/2023 TO 29/11/2023**	9.1 Properties and application of thermosetting and thermoplastic polymers 9.2 Properties of elastomers	**24/11/2023 28/11/2023 29/11/2023**	
10. Composites and Ceramics	**3**	10.1 Classification, composition, properties and uses of particulate based and fiber reinforced composites 10.2 Classification and uses of ceramics	**30/11/2023 TO 6/12/2023**	10.1 Classification, composition, properties and uses of particulate based and fiber reinforced composites 10.2 Classification and uses of ceramics REVISION-	**30/11/2023 1/12/2023 6/12/2023 7/12/2023 8/12/2023**	

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