

Lesson Plan

Subject-HEAT TREATMENT TECHNOLOGY (Code):TH.3Name of faculty:Semester: 5th

Class allotted :50/60pBranch :METALLURGY Session: 2024(w)

Discipline	Semester	From date: 01/07/24To date:26/10/24	Teaching Aid
Subject:	No. of days/ per week: 4p/week	Theory/ Practical –Topics/Lesson	
Week	Date/Period		
1	01/07/2024 TO 06/07/2024	1.0 Solid State Phase Transformation. 1.1 Give an introduction to diffusion, state fick"s law. 1.2 Discuss the formation of austenite 1.3 Explain the mechanism of formation" of austenite	White board & Marker
2	08/07/2024 TO 13/07/2024	1.4 Discuss austenitic grain size. 1.5 Explain the methods of determination of austenitic grain size. 1.6 State the importance of grain size 1.7 Explain the method of measurement of grain size.	White board & Marker
3	15/07/2024 TO 20/07/2024	1.8 Discuss the methods of control austenitic grain size. 1.9 Discuss decomposition of austenite and pearlitic transformation. 1.10 Explain the process of construction of T-T-T diagram and CCT diagram.	White board & Marker
4	22/07/2024 TO 27/07/2024	1.11 Discuss the TTT Diagram for hypo eutectoid, eutectoid and hyper eutectoid steel. 1.12 Explain bainitic transformation. 1.13 Explain Heat Treatment Process for Steels. 2.1 Discuss annealingmartensitic transformation	White board & Marker
5	29/07/2024 TO 03/08/2024	2.2 Explain stress relieving annealing. 2.3 Explain different types of annealing. 2.4 Explain the process of normalizing.	White board & Marker
6	05/08/2024 TO 10/08/2024	2.5 Discuss the process of hardening' 2.6 Describe the factors affecting hardening process. 2.7 Explain different methods of hardening.	White board & Marker

7	12/08/2024 TO 17/08/2024	2.8 Discuss quenching media and different types of quenchants. 2.9 Explain the tempering process for steel. 2.10 Discuss thermo-mechanical treatment of steel.	White board & Marker
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Week	Date/Period	Theory/ Practical –Topics/Lesson	Teaching Aid
8	20/08/2024 TO 24/08/2024	2.11 Discuss martempering, austempering and subzero treatment. 3.0 Hardenability 3.1 Define hardenability	White board & Marker
9	27/08/2024 TO 31/08/2024	3.2 Discuss the method of determination of hardenability (Gross Man"s critical diameter method & Jominey end quench method). 3.3 Discuss the method of estimation of hardenability from chemical composition and fracture test.	White board & Marker
10	02/09/2024 TO 06/09/2024	3.4 Discuss the factors affecting hardenability: effect of austenitic grain size, carbon content, and alloying elements. 4.0 Surface Hardening Methods 4.1 Discuss high frequency induction hardening -flame hardening, electron beam hardening, laser hardening.	White board & Marker
11	09/09/2024 TO 13/09/2024	I.A	White board & Marker
12	14/09/2024 TO 21/09/2024	4.2 Discuss the methods of case depth measurement of steel. 4.3 Explain different carburizing-processes of steel: pack carburizing, liquid carburizing, gas carburizing and vacuum carburizing. 4.4 Discuss the post carburizing heat treatment.	White board & Marker
13	23/09/2024 TO 28/09/2024	4.5 Explain process of nitriding of steel 4.6 Explain the process of cyaniding, carbo-nitriding of steel 4.7 Explain the plasma nitriding. 4.8 Explain salt bath nitro carburizing	White board & Marker
14	30/09/2024 TO 05/10/2024	4.9 Explain boronising, chromizing& Toyato diffusion process.	White board & Marker

15	07/10/2024 TO 09/10/2024	5.0 Discuss the Heat Treatment of Non Ferrous Alloys. 5.1 Discuss Age Hardening of Al-CU alloys.	White board & Marker
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Week	Date/Period	Theory/ Practical –Topics/Lesson	Teaching Aid
16	17/10/2024 TO 19/10/2024	6.0 Alloy Steels 6.1 Discuss different alloy steels- low alloy and high alloy steels. 6.2 Discuss the effect of alloying elements.	White board & Marker
17	21/10/2024 TO 26/10/2024	6.3 Discuss die steel, high speed steel, high strength, low alloy steels, stainless steels. 6.4 Discuss the heat treatment of tool steel and stainless steel	White board & Marker

Signature of HOD

Sagarika Palei
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