LESSONPLAN

Discipline:**Metallurgy Engineering**	Semester: **5thsemester**	NameoftheTeachingFaculty: **Miss Bhagyashree Bal**
Subject: **HEAT TREATMENT TECHNOLOGY** Subcode:**Th.3**	No of days /week class allotted:**03/week**	Semester from Date:**13/08/2024 to 08/11/2024** No of weeks:**15**

Month	Week	No of periods available	ClassDay	Theorytopicstobecovered
August	1st	02P	14-08-24	2.0 Heat Treatment Process for Steels.
			16-08-24	2.1 Discuss annealing
	2nd	03P	21-08-24	2.2 Explain stress relieving annealing
			22-08-24	2.3 Explain different types of annealing: homogenizing annealing, recrystallisation annealing, isothermal annealing, processannealing
			23-08-24	2.4Explaintheprocessofnormalizing,comparison Between annealing and normalization
	3rd	03P	28-08-24	2.5Discuss the process of hardening
			29-08-24	2.6Describethefactorsaffectinghardeningprocess
			30-08-24	2.7 Explain different methods of hardening. Process of quenching.
September	4th	03P	04-09-24	2.8 Discuss quenching media and different types of quenchants: water, oil, brine, polymer quenchant, salt bath.
			05-09-24	2.9Explainthetemperingprocessforsteel. 2.10Discussthermo-mechanicaltreatmentofsteel.
			06-09-24	2.11 Discuss martempering, austempering and subzero treatment
	5th	04P	11-09-24	MonthlyTest
			12-09-24	3.1 Define hardenability Discuss the method of determination of hardenability (Gross Man's critical diameter method)
			13-09-24	3.2Discuss the method of determination of hardenability (Jominey end quenchmethod).
	6th	03P	18-09-24	3.3 Discuss the method of estimation of hardenability From chemical composition and fracture test
			19-09-24	3.4 Discuss the factors affecting hardenability: effect of austenitic grain size, carbon content, and alloying elements

			20-09-24	4.0 Surface Hardening Methods 4.1 Discuss high frequency induction hardening
	7th	03P	25-09-24	4.1 Flame hardening, electron beam hardening,laser hardening
			26-09-24	4.2 Discuss the methods of case depth measurement of steel
			27-09-24	4.3 Explain different carburizing-processes of steel: pack carburizing
October	9th	02P	03-10-24	4.3 Explain different carburizing-processes of steel:liquid carburizing, gas carburizing and vacuum carburizing
			04-10-24	4.4Discuss the post carburizing heat treatment.
	10th	02P	17-10-24	4.5Explainprocessofnitridingofsteel. 4.6 Explain the process of cyaniding, carbo-nitriding of steel
			18-10-24	4.7Explaintheplasmanitriding. 4.8Explainsaltbathnitrocarburizing
	11th	03P	23-10-24	4.9 Explain boronising, chromizing & Toyato diffusion process. 5.0DiscusstheHeatTreatmentofNonFerrousAlloys: introduction
			24-10-24	
			25-10-24	5.1Discuss AgeHardening or precipitation hardening of Al-Cu alloys, types of precipitates.
	12th	01P	30-10-24	4.4 Discuss the post carburizing heat treatment.
November	14th	01P	01-11-24	4.5Explainprocessofnitridingofsteel. 4.6 Explain the process of cyaniding, carbo-nitriding of steel
	15th	03P	06-11-24	5.1Discuss Age Hardening or precipitation hardening of Al-Cu alloys, types of precipitates.
			07-11-24	6.0AlloySteels 6.1 Discuss different alloy steels- low alloy and high alloy steels.
			08-11-24	6.2Discuss the effect of alloying elements on steel. 6.3Discussdiesteel,highspeedsteel 6.3 Discuss high strength, low alloy steels, stainless steels 6.4 Discus the heat treatment of tool steel and stainless steel

Bhagyashree Bal

PREPARED BY

Miss. Bhagyashree Bal
Faculty, METALLURGY OSME,
KEONJHAR