GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN

Discipline :		Semester: 5th Sem		Name of the Teaching Faculty : Arabinda Nayak
Subject : HTT		No. of Days / per week class allotted : 04		Semester From date : 15.09.2022 To Date : 21.01.2023
MONTH	Week	Day	Unit	Topics
SEPTEMBER	3rd	1st	UNIT-1	**Solid State Phase Transformation.**
		4th		Solid State Phase Transformation.
	4th	2nd		Give an introduction to diffusion, state fick"s law.
		1st		Discuss the formation of austenite.
		2nd		Explain the mechanism of formation" of austenite
		4th		Discuss austenitic grain size.
	5th	1st		Explain the methods of determination of austenitic grain size.
		4th		State the importance of grain size
		2nd		Explain the method of measurement of grain size.
		1st		Discuss the methods of control austenitic grain size.
OCTOBER	2nd			**Durga Puja holiday**
	3rd	1st		Discuss decomposition of austenite and pearlitic transformation.
		4th		Explain the process of construction of T-T-T diagram and CCT diagram.
		2nd	UNIT-2	Discuss the TTT Diagram for hypo eutectoid, eutectoid and hyper eutectoid steel.
		1st		Discuss the TTT Diagram for hypo eutectoid, eutectoid and hyper eutectoid steel.
	4th	1st		Explain bainitic transformation.
		4th		Explain martensitic transformation.
		2nd		**Heat Treatment Process for Steels.**
		1st		Discuss annealing.
	5th	1st	UNIT-3	Explain stress relieving annealing.
		4th		**Diwali (holiday)**
		2nd		Explain different types of annealing.
		1st		Explain the process of normalizing.
	6th	1st		Discuss the process of hardening.
R	1st	1st		Describe the factors affecting hardening process.
		4th		Explain different methods of hardening.
		2nd		Discuss quenching media and different types of quenchants.
	2nd	1st		Explain the tempering process for steel.
		4th		Discuss thermo-mechanical treatment of steel.
		2nd		**Rash purnima(holiday)**
		1st		Discuss martempering, austempering and subzero treatment.

NOVEMBER	3rd	1st		**Hardenability**
		4th		Define hardenability
		2nd		Discuss the method of determination of hardenability (Gross Man"s critical diameter method &Jominey end quench method).
		1st		Discuss the method of determination of hardenability (Gross Man"s critical diameter method &Jominey end quench method).
	4th	1st		Internal assesment
		4th		Internal assesment
		2nd		Discuss the method of estimation of hardenability from chemical composition and fracture test
		1st		Discuss the method of estimation of hardenability from chemical composition and fracture test
	5th	2nd		Discuss the factors affecting hardenability: effect of austenitic grain size, carbon content, and alloying elements.
		1st		Discuss the factors affecting hardenability: effect of austenitic grain size, carbon content, and alloying elements.
DECEMBER	1st	1st		**Surface Hardening Methods**
		4th		Discuss high frequency induction hardening -flame hardening, electron beam hardening, laser hardening.
	2nd	1st		Discuss high frequency induction hardening -flame hardening, electron beam hardening, laser hardening.
		4th		Discuss the methods of case depth measurement of steel.
		2nd		Explain different carburizing-processes of steel: pack carburizing, liquid carburizing, gas carburizing and vacuum carburizing.
		1st		CLASS TEST-1
	3rd	1st		Discuss the post carburizing heat treatment.
		4th		Discuss the post carburizing heat treatment.
		2nd		Explain process of nitriding of steel
		1st		Explain process of nitriding of steel
	4th	1st		Explain the process of cyaniding, carbo-nitriding of steel
		4th	**REVISION**	Explain the process of cyaniding, carbo-nitriding of steel
		2nd		Explain the plasma nitriding.
JANUARY	1st	3rd		Explain the plasma nitriding.
		4th		Explain salt bath nitro carburizing.
		1st		Explain salt bath nitro carburizing.
	2nd	2nd		Explain boronising, chromizing & Toyato diffusion process.
		4th		Explain boronising, chromizing & Toyato diffusion process.
		3rd		**Explain boronising, chromizing & Toyato diffusion process.**
	3rd	1st		Discuss Age Hardening of Al-CU alloys.
		3rd		**Alloy Steels**
		4th		Discuss different alloy steels- low alloy and high alloy steels.
	4th	4th		Discuss the effect of alloying elements.
		2nd		Discuss die steel, high speed steel, high strength, low alloy steels, stainless steels.
		1st		Discus the heat treatment of tool steel and stainless steel.