

GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN

Discipline : METALLURGY ENGG.		Semester: 4th Sem		Name of the Teaching Faculty : Sourav Adhya	
Subject : PEM		No. of Days / per week class allotted : 04		Semester From date : 14.02.2023	To Date : 23.05.2023
MONTH	Week	Day	Unit	Topics	
FEBRUARY	3rd	2nd	UNIT-1	Definition of Metallurgical Terms	
		3rd		Discuss about ores minerals, gangue, flux and slag.	
	4th	2nd		Define Matte, Speisss, also metals and alloys	
		3rd	UNIT-2	Principles of Pretreatment of ores for Metal Extraction	
		2nd		Explain about drying	
		3rd		Define and Explain calculation	
	5th	2nd		Explain Different Agglomeration process like Briquetting, Nodulising	
		3rd		Discuss about vaccum extrusion, Sintering and palletizing	
		2nd	UNIT-3	General Methods and Principles of Extraction	
		3rd		Pyrometturgical Processes	
	2nd	3rd		Explain Roasting and Different roasting Methods	
				DOLO PURNIMA	
	3rd	2nd		Explain Ellingham Diagram and Predominance Area Diagram	
		3rd		Explain smelting and Different smelting practice like flash smelting and matte smelting	
		2nd		Explain Distillation Methods and sublimation	

MARCH		3rd		Conversion of matte and pig iron
	4th	2nd		Explain Hydrometallurgical process
		3rd		Different Stages of Hydrometallurgical process
		2nd		Flow Diagram of Hydrometallurgical Extraction
		3rd		Explain Leaching and Different Leaching methods
	5th	2nd		Electrometallurgical process
		3rd		Defining Electrolysis, Ionic Conductivity, EMF Series, Faraday's Law of Electrolysis
		2nd		Explain Electrowinning and Electrorefining
				RAMA NAVAMI
		3rd	UNIT-4	Basic Approaches to refining
APRIL	6th	2nd		Explain Refining
	1st	3rd		Discuss about Zone refining and Fire refining
		2nd	UNIT-5	Principles of Metal Extractions
				GOOD FRIDAY
		3rd		Principles of Metallurgical Thermodynamics Zeroth law of thermodynamics
	2nd	2nd		Reviewing 1st, 2nd and 3rd Law of Thermodynamics and their application in Metallurgical process
				CLASS TEST-1
		3rd		Discussing about the concept of Internal energy
		2nd		Enthalpy, and Entropy also free energy of a chemical reaction
		3rd		State Henry's law and Siver's law
	3rd	2nd	UNIT-6	Principles of Metallurgical Thermodynamics Reaction kinetics
		3rd		Explain First Order reaction and its significance
		2nd		Explain the application of first order reaction Of Metallurgical processes
		3rd		DRI Plant Operation and Abnormalities
	4th	2nd		Shutdown Procedure: Normal Shutdown Schedule for a 500 TDP Kiln.
				MOHABISUBA SANKRANTI
		3rd		The Start Up process: Heating of the Reactor Refractory
		2nd		Accretion Formation
		3rd		Key notes on process plant operation.
				INTERNAL-1
				EID-UL-FITAR
	5th	2nd		Quality Control in Sponge Iron Plant

	5th	3rd		Sampling: Sponge Iron and the Raw materials
MAY	1st	2nd		Chemical Analysis of Sponge Iron, Iron Ore, Lime Stone/Dolomite and Coal
		3rd		Scheme of Quality Control of input Raw Materials: Reactor Feed Iron Ore, Reactor Feed Coal, Back –Spill Coal, Slinger Coal.
	2nd	2nd		Determination of Total Iron (FeT), Ferrous Iron and metallic Fe
				BUDDHA PURNIMA
		3rd		Environmental Management in DRI Plants
		2nd		Air Pollution Mitigation Measures.Hazardous Wastes and Chemicals.Occupational Health and Safety
		3rd		Fugitive Dust Generation Water Pollution Mitigation Measures .Solid Waste Generation and Disposal
				CLASS TEST-2
	3rd	2nd		Environmental Monitoring Environmental Standards. Production of Ferro-alloys.Introduction to Ferro-alloying elements.
		3rd		Different Ferro alloys.General methods of producing Ferro alloys: carbothermic and aluminothermy reductions.
		2nd		Refining of Ferro alloys.
		3rd		Production of individual Ferro alloys: Ferro manganese, Ferro chrome, charge chrome,ferrosilicon Fe -Ti, Fe -W, Fe -Mo and Fe -V
				SABITRI AMABASYA
	4th	2nd		Revision
		3rd		Revision
		2nd		Previous year question answer discussion