

LESSON PLAN

Discipline : METALLURGY ENGG.		Semester: 4th		
Subject : Principle of Extractive Metallurgy Course Code: TH3		No. of Days / per week class allotted		
MONTH	Week	Day	Unit	
JANUARY	3rd	2nd	UNIT-1	
		3rd		
	4th	2nd	UNIT-2	
		3rd		
		2nd		
		3rd		
	5th	2nd	UNIT-3	
		3rd		
		2nd		
		3rd		
	FEBRUARY	2nd		
		3rd	2nd	
3rd				
2nd				
3rd				
4th		2nd		
		3rd		
		2nd		
		3rd		
		1st		
		2nd		
5th		2nd		
		3rd		
		2nd		
		3rd	UNIT-4	
6th	2nd			
MARCH	1st	3rd	UNIT-5	
		2nd		
		3rd		
	2nd	2nd		
		3rd		
		2nd		
		3rd		

MARCI	3rd	2nd	UNIT-6
		3rd	
		2nd	
		3rd	
	4th	2nd	
		3rd	
		3rd	
	5th	2nd	
		3rd	
	APRIL	1st	2nd
3rd			
2nd		2nd	
		3rd	
		2nd	
		3rd	
		2nd	
		3rd	
4th		1st	
		2nd	
		3rd	
		4th	

Subject Expert
Metallurgy Engineering

OVT. POLYTECHNIC MAYURBHANJ

I FOR PRINCIPLE OF EXTRACTIVE METALLURGY

SUMMER-2023-24

Name of the Teaching Faculty : SUBHASHMITA SAHOO

Semester From date : 16.01.2024

To Date : 26.04.2024

Topics

Defination of Metallurgical Terms

Discuss about ores minerals, gangue, flux and slag.

Define Matte, Speiss, also metals and alloys

Principles of Pretreatment of ores for Metal Extraction

Explain about drying

Define and Explain calculation

Explain Different Agglomeration process like Briquetting, Nodulising

Discuss about vaccum extrusion, Sintering and palletizing

General Methods and Principles of Extraction

Pyrometturgical Processes

Explain Roasting and Different roasting Methods

Explain Ellingham Diagram and Predominance Area Diagram

Explain smelting and Different smelting practice like flash smelting and matte smelting

Explain Distillation Methods and sublimation

Conversion of matte and pig iron

Explain Hydrometallurgical process

Different Stages of Hydrometallurgical process

Flow Diagram of Hydrometallurgical Extraction

Explain Leaching and Different Leaching methods

CLASS TEST 1

CLASS TEST 1

Electrometallurgical process

Defining Electrolysis, Ionic Conductivity, EMF Series, Faraday's Law of Electrolysis

Explain Electrowinning and Electrorefining

Basic Approaches to refining

Explain Refining

Discuss about Zone refining and Fire refining

Principles of Metal Extractions

Principles of Metallurgical Thermodynamics Zeroth law of thermodynamics

Reviewing 1st, 2nd and 3rd Law of Thermodynamics and their application in Metallurgical process

Discussing about the concept of Internal energy

Enthalpy, and Entropy also free energy of a chemical reaction

State Henry's law and Sivert's law

Principles of Metallurgical Thermodynamics Reaction kinetics
Explain First Order reaction and its significance
Explain the application of first order reaction Of Metallurgical processes
DRI Plant Operation and Abnormalities
INTERNAL-EXAM
INTERNAL-EXAM
Shutdown Procedure: Normal Shutdown Schedule for a 500 TDP Kiln.
The Start Up process: Heating of the Reactor Refractory
Accretion Formation
Key notes on process plant operation.
Quality Control in Sponge Iron Plant
Sampling: Sponge Iron and the Raw materials
Chemical Analysis of Sponge Iron, Iron Ore, Lime Stone/Dolomite and Coal
Scheme of Quality Control of input Raw Materials: Reactor Feed Iron Ore, Reactor Feed Coal, Back –Spill Coal, Slinger Coal.
Determination of Total Iron (FeT), Ferrous Iron and metallic Fe
Fugitive Dust Generation Water Pollution Mitigation Measures .Solid Waste Generation and Disposal
Environmental Monitoring
Environmental Standards. Production of Ferro
-alloys.Introduction to Ferro
-alloying elements.
CLASS TEST 2
CLASS TEST 2
Different Ferro alloys.General methods of producing Ferro
alloys: carbothermic and aluminothermy
reductions,
Refining of Ferro alloys.

HOD, Metallurgy Engg.
Govt. Polytechnic Mayurbhanj

Accademic Co-ordinator
Govt. Polytechnic Mayurbhanj