Lesson Plan

Department of Metallurgical Engineering

UGIE Rourkela

Session: 2022-23

UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA Session: 2022-23			
Discipline: **Metallurgical Engineering**	Semester: 4th	Name of the Teaching Faculty: **SUMEETA RANI SARAP**	
Subject: **Principle of extractive metallurgy(TH-03)**	No. of days/per week class allotted:4	Semester from Date: **10. 03. 2022** to Date: **10.06.2022** No. of weeks: 14	
Week	**Class No.**	**Module**	**Lecture Topics**
1	1	Chapter -1: Definition of metallurgical terms	Ores and minerals
	2		slag , flux , gangue
	3		Matte, speiss, metals and alloys
	4		-do-
2	5	Chapter -2: Principle of pre-treatment of ores for metal extractions	Drying and calcination
	6		Agglomeration processes
	7		-do-
	8		-do-
3	9		-do-
	10		-do-
	11	Chapter-3: General Methods of Extraction	Pyro metallurgical processes
	12		Roasting, different roasting methods
4	13		Ellingham diagram
	14		-do-
	15		-do-
	16		-do-
5	17		smelting and different smelting practices
	18		Flash smelting , matte smelting , hearth smelting
	19		-do-
	20		distillation and sublimation
6	21		process of converting of matte and pig iron
	22		hydrometallurgical

			process
	23		Flow diagram of hydrometallurgical extraction
	24		leaching and different leaching methods
7	25		-do-
	26		Electrometallurgical process
	27		-do-
	28		Electrolysis, Faraday's law of electrolysis
8	29		-do-
	30		EMF series
	31		-do-
	32		electro wining
9	33		electro refining
	34	Chapter-7: Basic approaches to refining	Refining process
	35		-do-
	36	Chapter-5:Principle of metal extractions	Metallurgical thermodynamics
10	37		-do-
	38		-do-
	39		Zeroth law of thermodynamics
	40		1st law of thermodynamics
11	41		2nd law of thermodynamics
	42		3rd law of thermodynamics
	43		Internal Energy
	44		enthalpy
12	45		Entropy , entropy change
	46		Free energy
	47		Henry's law
	48		Sivert's Law
13	49		-do-
	50		Reaction Kinetics
	51		-do-
	52	Chapter-6: Reaction Kinetics	first order reaction
14	53		-do-
	54		Half-life period
	55		Significance of first order reaction
	56		application of first order reaction
15	57		Revision class
	58		Revision class
	59		Revision class
	60		Important question discussion

Sangeeta Rani Sahu
Lect in metallurgy