Lesson Plan

Department of Metallurgical Engineering

UGIE Rourkela

Discipline: **Metallurgical Engineering**

Subject: **Principles of extractive metallurgy (Th3)**

Semester: **4th**

Total Period allotted: **60**

Period per week: **4**

Name of the Teaching Faculty: **Sumeeta Rani Sarap**

Week	Class No.		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