

**KIIT POLYTECHNIC**  
Department of Metallurgical Engineering

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***LESSON PLAN***

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**Session** :: Winter – 2022  
**Course Type** :: Theory  
**Semester/Branch** :: 5<sup>th</sup> Semester, Metallurgical Engineering  
**Subject (with code)** :: Non Ferrous Metallurgy (Th-05)  
**Contact hours/week** :: 4  
**Name of Faculty** :: Manas Ranjan Behera

SL. NO.	CLASS ID	COURSE CONTENT	MODE OF DELIVERY	EXHIBIT/ REFERENCE
1	1	Non ferrous ore reserves in India.	Lecture (Explanation )	Study material
2	2	Non ferrous industries in India.	Lecture (Explanation )	Study material
3	3	<b>Class Test/Assignment Evaluation</b>		
4	4	Bayer's process of alumina production.	Lecture (Explanation )	Extraction of Non ferrous metal by Ray, Sridhar & Abraham
5	5	Fused salt electrolysis of alumina by Hall-Heroult process.	Lecture (Explanation )	Study material
6	6	Anode effect.	Lecture (Explanation )	Study material
7	7	Refining of aluminium.	Lecture (Explanation )	Study material
8	8	Uses of aluminium.	Lecture (Explanation )	Study material
9	9	Process of tin ore concentration and smelting for tin extraction.	Lecture (Explanation )	Study material
10	10	Refining of tin.	Lecture (Explanation )	Study material
11	11	Uses of tin.	Lecture (Explanation )	Study material
12	12	<b>Class Test/Assignment Evaluation</b>		
13	13	Roasting of copper ore.	Lecture (Explanation )	Study material
14	14	Matte smelting of copper ore.	Lecture (Explanation )	Study material
15	15	Converting of copper matte.	Lecture (Explanation )	Extraction of Non ferrous metal by Ray, Sridhar & Abraham
16	16	Refining of copper	Lecture	Study material

			(Explanation )	
17	17	Uses of copper.	Lecture (Explanation )	Study material
18	18	Roasting and sintering of lead ore.	Lecture (Explanation )	Study material
19	19	Extraction of lead by blast furnace smelter.	Flipped class	Study material
20	20	Refining of base bullion.	Lecture (Explanation )	Study material
21	21	Uses of lead.	Lecture (Explanation )	Study material
23	23	Roasting of zinc ore concentrate.	Lecture (Explanation )	Study material
24	24	Zinc extraction by vertical retort process.	Lecture (Explanation )	Extraction of Non ferrous metal by Ray,Sridhar&Abraham
25	25	Refining of zinc.	Lecture (Explanation )	Study material
26	26	Leaching and preparation of zinc base solution.	Lecture (Explanation )	Study material
27	27	Electrolysis of zinc solution.	Lecture (Explanation )	Study material
28	28	Uses of zinc.	Lecture (Explanation )	Study material
29	29	Roasting of nickel ore.	Lecture (Explanation )	Study material
30	30	Smelting of nickel concentrate.	Lecture (Explanation )	Study material
31	31	Refining of nickel.	Studio based	Study material
32	32	Uses of nickel.	Lecture (Explanation )	Study material
33	33	<b>Class Test/Assignment Evaluation</b>		
34	34	Extraction of titanium.	Lecture (Explanation )	Study material
35	35	Treatment of titanium ore.		
36	36	Process of chlorination for titanium extraction.	Lecture (Explanation )	Study material
37	37	Magnesium reduction for titanium extraction.	Lecture (Explanation )	Study material
38	38	Refining of titanium.	Lecture (Explanation )	Study material
39	39	Uses of titanium.	Lecture (Explanation )	Study material
40	40	<b>Class Test/Assignment Evaluation</b>		
41	41	Extraction of gold.	Lecture (Explanation )	Study material
42	42	Process of cyanidation for gold extraction.	Flipped class	Study material
42	42	Uses of gold.	Lecture (Explanation )	Study material
43	43	<b>Class Test/Assignment Evaluation</b>		
44	44	Production of secondary metals.	Lecture (Explanation )	Study material

45	45	Production of copper and lead from scraps.	Studio based	Study material
46	46	Production of zinc and aluminium from scraps.	Lecture (Explanation )	Study material
47	47	<b>Class Test/Assignment Evaluation</b>		
48	48	Discussion on previous year's questions.		

Manas Ranjan Behera  
Signature of Concern Teacher