

KIIT POLYTECHNIC
Metallurgical Engineering Department

LESSON PLAN

Session :: Winter– 2022
Course Type :: Theory
Semester/Branch :: 3rd Semester, Metallurgical Engineering
Subject (with code) :: Ferrous Metallurgy - I (Th-4)
Contact hours/week :: 4 hours
Name of Faculty :: Deepak Kumar Patra

SL. No.	CLAS S ID	COURSE CONTENT	MODE OF DELIVERY	EXHIBIT/ REFERENCE
1	1	Introduction to Ferrous Metallurgy	Lecture (Elaboration)	Iron Making by Tupkaray R. H
2	2	Different Raw Materials and their functions	Lecture (Explanation)	Study material
3	3	Different Raw Materials and their functions	Flipped class	Study material
4	4	Deposits of iron ores flux and coal in india with particulars reference to Odisha.	Flipped class	Study material
5	5	Different types of iron ores Composition and characteristics of raw materials.	Lecture (Explanation)	Iron Making by Tupkaray R. H
6	6	Assignment & summarise		

7	7	Evaluation of iron ores.	Collaborative thinking	Iron Making by Tupkaray R. H
8	8	Metallurgical coal Difference between coal and coke	Lecture (Explanation)	Blast Furnace Iron Making by A. K. Biswas
9	9	Required properties of coke for making iron	Lecture (Explanation)	Blast Furnace Iron Making by A. K. Biswas
10	10	Flux and its types Evaluation of Flux (available base & basicity)	Lecture (Explanation)	Study material
11	11	Quality of burden (physical & chemical properties)	Lecture (explanation)	Iron Making by Tupkaray R. H
12	12	Different types of agglomeration required for burden preparation for blast furnace, Briquetting & Nodulizing	Video presentation	Study material
13	13	Sintering	Video presentation	Study material
14	14	Pelletising	Video presentation	Study material
15	15	Assignment & summarise		
16	16	Function of coke.	Guided thinking	Iron Making by Tupkaray R. H
17	17	Quality requirement of coke.	Guided thinking	Iron Making by Tupkaray R. H
18	18	Preparation of B.F. fuel in India,Auxiliary fuels.	Lecture (Explanation)	Iron Making by Tupkaray R. H
19	19	Fuel Injection,Factors affecting fuel consumption in blast furnace.	Lecture (Explanation)	Study material
20	20	Charging methods and process	Lecture (Explanation)	Study material
21	21	Blowing in	Lecture (Explanation)	Iron Making by Tupkaray R. H
22	22	Banking in		Iron Making by Tupkaray R. H
23	23	Blowing out, blowing down	Lecture (Explanation)	Iron Making by Tupkaray R. H
24	24	Tapping, Fanning.	Lecture (Explanation)	Iron Making by Tupkaray R. H
25	25	Back draughting.	Lecture (Elaboration)	Iron Making by Tupkaray R. H
26	26	Disposal of slags, Slags granulation & their utilization	Lecture (Elaboration)	Blast Furnace Iron Making by A. K. Biswas
27	27	Assignment & summarise		
28	28	Blast furnace refractories Stack lining,Hearth lining,Hearth walls,Bosh lining	Lecture (Explanation)	Blast Furnace Iron Making by A. K. Biswas
29	29	Blast furnace cooling arrangement Shaft coolers,Hearth & bosh coolers	Lecture (Explanation)	Blast Furnace Iron Making by A. K. Biswas
30	30	Tap holes and top hole drilling machine Cast house,Tuyeres assembly	Studio based	Study material
31	31	Raw materials section Charge hosting appliances,Top charging system	Studio based	Study material

		Blowers, boilers, pumps		
32	32	Gas cleaning plant	Flipped class	Study material
33	33	Blast furnace stoves	Prompt and cue	Study material
34	34	Assignment & summarise		
35	35	Hanging, Scaffolding	Collaborative thinking	Study material
36	36	Slip, Chilled hearth, Pillaring, Break out	Collaborative thinking	Study material
37	37	Chocking of gas off take Flooding and coke ejection through tap hole	Collaborative thinking	Study material
38	38	Leaking tuyers tap holes and coolers Channeling	Collaborative thinking	Study material
39	39	Assignment & summarise		
40	40	Thermal, physical and chemical profile, Physical chemistry of blast furnace process	Lecture (Explanation)	Study material
41	41	Reactions in tuyer zone, reaction in stack	Lecture (Explanation)	Blast Furnace Iron Making by A. K. Biswas
42	42	Reaction in bosh, Reaction in hearth	Lecture (Explanation)	Study material
43	43	Efficiency of B. F. process, Direct & indirect reduction	Lecture (Explanation)	Iron Making by Tupkaray R. H
44	44	Silicon & sulphur reaction	Lecture (Explanation)	Study material
45	45	Burden calculation for B/F operation	Lecture (Explanation)	Iron Making by Tupkaray R. H
46	46	Bell less charging, High top pressure operation	Lecture (Elaboration)	Study material
47	47	Humidification & oxygen enrichment of blast	Collaborative thinking	Study material
48	48	External disiliconisation, Desulphurization	Lecture (Explanation)	Study material

Signature of faculty