

PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF
ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN
Session-2023-2024

Discipline: Metallurgical Engg. Semester: 3rd

Subject: F.M-I

Name of the Teaching Faculty: Anadi Charan, Jena

Subject: FM-1 No. of Days/per week class allotted 04

Semester From Date: 1-8-23 To Date: 20-11-23 No. of Weeks: 16

Week	Class Day	Theory /Practical Topics
1st	1st Topic-1	Iron making - principles Raw materials required
	2nd	composition & quality of raw materials, functions of flux, coke etc.
	3rd	Resources of iron ore in India, odisha
	4th	Deposits of coal in odisha, :
2nd	1st Topic-2	Types of iron ores
	2nd	composition of iron ore, Characteristics of ore, coal, limestone.
	3rd	Iron ore evaluation method
	4th	coal, metallurgical coal, coke making
3rd	1st	comparison between coal & coke :
	2nd	Specification of coke for iron making
	3rd	Fluxes, its types, function in iron making
	4th	Evaluation of flux, methods of determination.

Signature of the Faculty

Subject: F.M-1 No. of Days/per week class allotted 04

Semester From Date: 1.8.23 To Date: 30/11.23 No. of Weeks: 16

Week	Class Day	Theory /Practical Topics
4th	1st Topic-3	Burden preparation, agglomeration processes.
	2nd	Sintering, pelletizing, etc.
	3rd	Fuels for blast furnace, functions of coke
	4th	Quality of metallurgical coke
5th	1st	Coke preparation in India
	2nd	Auxiliary fuels for blast furnace
	3rd	Injection of fuel into the blast furnace. Factors affecting fuel consumption.
4th	4th Topic-4	Introduction to blast furnace operation Charging methods
6th	1st 2nd	Droing, Blowing in operation
	2nd	Rolling, blowing out
	3rd 4th	Blowing out operation
	4th	Banking in operation


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Semester From Date: 1-8-23 To Date: 30-11-23 No. of Weeks: 16

Week	Class Day	Theory /Practical Topics
7th	1st	Blowing down operation in Blast furnace
	2nd	Tapping and fanning
	3rd	Bank draughting
	4th	Disposal of Slags, granulation of Slags.
8th	1st	Uses of Slags, composition of Slags.
	2nd Topic- 5	Blast furnace accessories.
	3rd	Stack lining and hearth lining
	4th	Lining of hearth walls Lining of Bosh
9th	1st	Blast furnace cooling arrangements
	2nd	Shaft coolers, hearth coolers
	3rd	Tap hole, drilling of tap hole
	4th	Casting house and tuyere assembly

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Semester From Date: 1.8.23 To Date: 30.11.23 No. of Weeks: 16

Week	Class Day	Theory / Practical Topics
10 th	1 st	Raw material sections ; charging host appliances
	2 nd	top charging system Sequence of charging
	3 rd	Gas cleaning plant Blast furnace stoves, functions.
	4 th Topic-6	Blast furnace irregularities Introduction
11 th	1 st	Heaving, causes, remedies
	2 nd	Scaffolding, causes, remedies :
	3 rd	Slip, chilled hearth, causes and control
	4 th	Pillarling, causes, control Break out, control.
12 th	1 st	Choking of gas at take flooding, remedies.
	2 nd	Channeling, causes, control Leakage of tuyere tap holes, coolers etc.
	3 rd Topic-7	Blast furnace operation Blast furnace profile
	4 th	Thermal, physical and chemical profile of blast furnace


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Semester From Date: 1-8-23 To Date: 30-11-23 No. of Weeks: 16

Week	Class Day	Theory / Practical Topics
13 th	1st	physical chemistry of the process
	2nd	Reactions in tuyere, and stack zones.
	3rd	Reactions in hearth and bosh zones
	4th	Efficiency of blast furnace process, Direct and indirect reduction reactions
14 th	1st	Burden calculation
	2nd	Burden calculation
	3rd Topics	Development of blast furnace operation
	4th Topics	Bell less charging, merits & demerits
15 th	1st	High top pressure operation
	2nd	Humidification & oxygen enrichment
	3rd	External desiliconisation
	4th	Desulphurisation,


Signature of the Faculty