

KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN Session (2022-2023)

Discipline : Metallurgy	Semester: 5 th Sem	Name of the Teaching Faculty: Deepak Kumar Patra Asst. Professor Email ID: deepak_patrafmt@kp.kiit.ac.in
Subject: Ferrous Metallurgy - II (Th-4)	No. Of Days/Week - 4	Start Date: 14/09/2022 End Date: 21/01/2023
Week	Class Day	Theory Topics
1st	1st	Introduction to steel making.
	2nd	Brief history of principles of steel making & processes of steel making.
	3rd	Brief history of principles of steel making & processes of steel making.
	4th	Bistre steel making.
2nd	1st	Shear steel making.
	2nd	Crucible steel making.
	3rd	Bessemer steel making.
	4th	Open hearth steel making.
3rd	1st	Open hearth steel making.
	2nd	Discussion on possible questionnaire
	3rd	Different reactions involved in steel making.
	4th	Differentiation between acid process & basic process of steel making.
4th	1st	Explanation of the principles and conditions required in removal of „P“, „S“, Si“, „Mn“ and „C“ in steel making.
	2nd	Discussion on possible questionnaire
	3rd	List of the different raw materials required for steel making.
	4th	Discussion on the important raw materials available in India.
5th	1st	Quiz Test -1
	2nd	Different raw materials of LD process.
	3rd	Explanation the construction and operation of LD converter.
	4th	Describe the refining reaction in LD converter with reference to decarburization and dephosphorisation.

6th	1st	Mention the quality of steel and composition of slag in LD process.
	2nd	Advantages and limitations of LD process.
	3rd	Bottom, top and combined blowing.
	4th	Multi nozzle converter.
7th	1st	Explain OLP process
	2nd	Discussion on possible questionnaire
	3rd	Explanation of the principle, types of slags prepared by electric arc furnace.
	4th	Explain the steps of electric arc furnace heating to produce steel.
8th	1st	Advantages of electric arc furnace process.
	2nd	Advantages and limitations of induction furnace process
	3rd	Discussion on possible questionnaire
	4th	The principle of operation, merits and demerits of the recent steel making process like Ajax Process.
9th	1st	The principle of operation, merits and demerits of the recent steel making process like OBM Process.
	2nd	The principle of operation, merits and demerits of the recent steel making process like Spray steel making Process.
	3rd	Discussion on possible questionnaire
	4th	Explain different De-Oxidisers and their use.
10th	1st	Explanation of rimming steel.
	2nd	Explanation of semi-killed steel.
	3rd	Explanation of killed steel.
	4th	Differentiate between killed steel semi killed steel and rimming steel.
11th	1st	Quiz Test -2
	2nd	Direct pouring.
	3rd	Tundish teeming.
	4th	Bottom teeming
12th	1st	Describe different ingot defects, their causes and remedies.
	2nd	Describe different ingot defects, their causes and remedies.
	3rd	Discussion on possible questionnaire
	4th	Explain the principle and operation of continuous casting.

13th	1st	Describe different types of casters.
	2nd	Describe different types of casters.
	3rd	Describe about the moulds and mould maintenance in continuous casting.
	4th	Discuss advantages of continuous casting.
14 th	1st	Continuous casting of Billets,Blooms and Slabs.
	2nd	Discussion on possible questionnaire
	3rd	Explain the principle operation and advantages of secondary steel makingprocess such as VAD Process.
	4th	Explain the principle operation and advantages of secondary steel makingprocess such as VOD Process.
15th	1st	Explain the principle operation and advantages of secondary steel makingprocess such as AOD Process.
	2nd	Describe the stream degassing process.
	3rd	Discussion on possible questionnaire
	4th	Discussion on possible questionnaire

Recommended Books: Steel Making by R.H.Tupkary

Reference Books: 1 Manufacture of iron & Steel VoL II by Basforth

(Deepak Kumar Patra)
Asst.Prof. Meta.