UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING,
ROURKELA
Session: **2024-25**

Discipline: Metallurgical Engineering	Semester: **5th**	Name of the Teaching Faculty: Smt. PARASMITA BISWAL	
Subject: Ferrous Metallurgy-FM-II (TH-04)	No. of days/per week class allotted:4	Semester from Date: 01. 07. 2024 to Date: 08.11.2024 No. of weeks: 19	

Week	Class Day	Module	Lecture Topics
1	1	Chapter -1: Steel Making Processes	Introduction about steel making
	2		Brief history of principles of steel making
	3		processes of steel making
	4		-do-
2	5		Bistre steel making & Shear steel making
	6		Crucible steel making
	7		Bessemer steel making.
	8		Open hearth steel making
3	9		-do-
	10	Chapter -2 Principles of steel making	Reactions involved in steel making
	11		acid process & basic process ofsteel making
	12		principles and conditions required in removal of P, S, Si, Mn and C in steel making
4	13		-do-
	14	Chapter-3: Raw Materials for Steel Making	Raw materials required for steel making
	15		-do-
5	16		important raw materials available in India
	17		different raw materials of LD process
	18	Chapter-4: Steel Makingby LD Converter	construction and operation of LD converter
	19		-do-
6	20		Refining reaction in LD

			converterwith reference to decarburization and dephosphorisation.
	21		-do-
	22		Quality of steel and composition of slag in LD process
7	23		advantages and limitations of LD process
	24		Bottom, top and combined blowing
	25		Multi nozzle converter
	26		OLP process
8	27		Doubt clearing Class
	28	Chapter-5: Blast furnaceOperation	Principle of electric arc furnace
	29		Types of slags prepared by electric arc furnace
	30		-do-
9	31		advantages of electric arc furnace process
	32		steel making induction furnace
	33		advantages and limitations of induction furnace process
	34	Chapter-6: Brief Study of Other Recent Processes of Steel Making	Ajax Process
10	35		OBM Process
	36		-do-
	37		Spray Steel Making Process
	38	Chapter-7: De-OxidationPractice	Different De-Oxidisers and their use
11	39		killed steel, semi killed steel and rimming steel
	40		-do-
	41	Chapter-8: Pit Side Practice	Teeming methods
	42		Direct pouring,Tundish teeming and Bottom teeming
12	43		-do-
	44		Ingot defects, their causes and remedies
	45		Principle and operation of continuous casting

	46		-do-
13	47		Different types of casters
	48		-do-
	49		Moulds and mould maintenance in continuous casting.
	50	Chapter- 9: Continuous Casting of Steel	Advantages of continuous casting
14	51		Continuous casting of Billets, Blooms and Slabs.
	52		Importance of Secondary SteelMaking
	53		steps of electric arc furnaceheating to produce steel
	54		-do-
15	55	Chapter- 10: Secondary Steel Making Processes	AOD Process
16	56		-do-
	57		VAD Process
	58		VOD Process
	59		-do-
17	60		steps of electric arc furnaceheating to produce steel
	61		-do-
	62		Doubt clearing class
18	63		Stream degassing process.
	64		-do-
	65		Revision Class
19	66		Revision Class
	67		Important question discussion