Lesson Plan For

Ferrous Metallurgy – I (2020-21)

Department of Metallurgical Engineering

UGIE Rourkela

Discipline: **Metallurgical Engineering**

Subject: **Ferrous Metallurgy-II(TH-04)**

Semester: **5th**

Total Period allotted: **60**

Period per week: **4**

Name of the Teaching Faculty: **Goutam Kumar Majhi**

Week	Class No.		Lecture Topics
1	1	Chapter -1: Steel Making Processes	Introduction about steel making
	2		Brief history of principles of steel making & processes of steel making
	3		Bistre steel making & Shear steel making
	4		Crucible steel making
2	5		Bessemer steel making.
	6		Open hearth steel making
	7	Chapter -2 Principles of steel making	Reactions involved in steel making
	8		acid process & basic process of steel making
3	9		principles and conditions required in removal of P, S, Si, Mn and C in steel making
	10		-do-
	11		-do-
	12	Chapter-3: Raw Materials for Steel Making	Raw materials required for steel making
4	13		-do-
	14		important raw materials available in India
	15	Chapter-4: Steel Making by LD Converter	different raw materials of LD process

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

13	49		Moulds and mould maintenance in continuous casting.
	50		Advantages of continuous casting
	51		Continuous casting of Billets,Blooms and Slabs.
	52	Chapter- 10: Secondary Steel Making Processes	Importance of Secondary Steel Making
14	53		VAD Process
	54		VOD Process
	55		AOD Process
	56		-do-
15	57		Stream degassing process.
	58		Revision Class-I
	59		Revision Class-II
	60		Important question discussion