

Govt. Polytechnic, Jajpur

Session: 2026-27

Lesson Plan

Discipline: Metallurgical Engineering	Semester: 5th	Name of the Teaching Faculty: Goutam Kumar Majhi	
Subject: Manufacturing of Steel & Stainless Steel (TH-01)	No. of days/per week class allotted:03	Semester from Date: 01. 07. 2026 to Date: 05.11.2026 No. of weeks: 15	
Week	Class	Module	Lecture Topic
1	1	Unit I	Introduction, definition and objectives of steelmaking
	2		Evolution and importance of steelmaking
	3		Role of carbon
2	4		Role of impurities
	5		Acid and basic steelmaking
	6		Raw materials
3	7		Thermodynamics
	8		Kinetics
	9		Removal of Si, Mn, P, S and C
4	10	Unit II	Steel grades; Bessemer & Open Hearth
	11		LD raw materials
	12		LD construction
5	13		Refining reactions
	14		Impurity removal
	15		Slag composition
6	16		Lance height
	17		Multi-nozzle & combined blowing
	18		OLP
7	19	Unit III	OBM
	20		Deoxidation practice
	21		Introduction to stainless steel
8	22		Classification
	23		Properties & applications
	24		Raw materials

9	25		EAF principle
	26		EAF slags & process
	27		Advantages of EAF
10	28		Induction furnace
	29		Advantages/limitations IF
	30		Secondary steelmaking objectives
11	31		LHF
	32		VOD
	33		AOD
12	34		RH-OB
	35		Inclusion control
	36		Automation & grade selection
13	37	Unit IV	Pit side practice
	38		Teeming methods
	39		Ingot defects
14	40		Continuous casting
	41		Types of casters
	42		Advantages/products
15	43		Green steel
	44		Emission, effluent, WHR
	45		Revision & discussion

Course Outcomes (COs)

After successful completion of this course, the student will be able to:

1. CO1: Explain principles, raw materials, and impurity control in steelmaking
2. CO2: Describe BOF/LD, EAF, and secondary steelmaking processes
3. CO3: Understand stainless steel classification and alloying principles
4. CO4: Explain AOD, VOD, induction furnace, and ladle metallurgy practices
5. CO5: Identify casting methods, defects, testing, and industrial applications

G. S. S. S. S.
20/06/2024
Course co-ordinator

V. S. S. S. S.
30/06/2024
HOD Metallurgy