

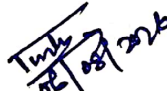
LESSON PLAN					
Discipline: Metallurgical Engineering		Semester: 5 TH Semester		Name of the Teaching Faculty: Smt Parasmitha Biswal	
Subject: Manufacturing of Steel & Stainless Steel Sub code: Th-1 (MTPC301)		No of days /week class allotted:03		Semester from Date: 01/07/2026 to 05/11/2026 No of weeks: 19	
Course Outcomes:					
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 .					
Month	Week	No of periods available	Class Day	Theory topics	CO
JULY	1ST	1P	01.07.2026	Fundamentals of Steelmaking	CO1
	2ND	3P	06.07.2026	Definition and objectives of steelmaking,	CO1
			07.07.2026	Role of carbon and impurities (Si, Mn, P, S, O, N), Acid and basic steelmaking processes,	CO1
			08.07.2026	Raw materials: hot metal, scrap, fluxes, Basic thermodynamics and kinetics of steelmaking reactions	CO1
	3RD	3P	13.07.2026	Conditions for removal of Si, P, S, Mn, and C, Overview of steel grades and their composition	CO1
			14.07.2026	Brief study of obsolete processes: Bessemer process and Open-Hearth process (with limitations)	CO2
			15.07.2026	Primary Steelmaking Processes Steel Making by LD Converter: Raw materials of LD process	CO2
	4TH	3P	20.07.2026	Primary Steelmaking Processes construction and operation of LD converter	CO2
			21.07.2026	Primary Steelmaking Processes emulsion and refining reactions in LD converter and sequence of elimination of impurity	CO2
			22.07.2026	Primary Steelmaking Processes Mn hump, quality of steel and composition of slag in LD process,	CO2
	5TH	3P	27.07.2026	Class test -01 & doubt clearing class	
			28.07.2026	Primary Steelmaking Processes Steel Making by LD Converter: Raw materials of LD process	CO2
			29.07.2026	Quality of steel and composition of slag in LD process	CO2
AUGUST	1ST	3P	03.08.2026	Advantages and limitations of LD process , importance of lance height	CO2
			04.08.2026	Developments in LD process: multi nozzle lance, combined blowing process.	CO2
			05.08.2026	Other Steel Making Processes: Working principle, process, advantage and limitations	CO3

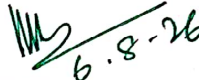
				of: OLP process, OBM Process.	
	2ND	2P	06.08.2026	De-Oxidation Practice: De-Oxidisers and their use, Killed, semi killed and rimming steel.	CO3
			07.08.2026	Stainless Steel Manufacturing Introduction to Stainless Steels: Definition and role of chromium (passivation)	CO3
AUGUST	3RD	3P	10.08.2026	Classification: Austenitic, Ferritic, Martensitic, Duplex, Precipitation hardening, Properties and applications	CO3
			13.08.2026	Classification: Austenitic, Ferritic, Martensitic, Duplex, Precipitation hardening, Properties and applications	CO3
			14.08.2026	Stainless Steel Making (Primary processes): Raw Materials for stainless steel making	CO3
	4TH	3P	17.08.2026	Class test -02	
			20.08.2026	Electric Arc Furnace: Principle, types of slags prepared by electric arc furnace, steps of electric arc furnace heating to produce stainless steel, advantages of electric arc furnace process	CO2
			21.08.2026	Induction Furnace: Principle and process of induction furnace, advantages and limitations of induction furnace process	CO2
	5 th	2P	24.08.2026	Principle of operation and advantages of secondary steel making processes such as: LHF Process, VOD Process,	CO2
			28.08.2026	Secondary Steel Making Process: Objectives of secondary steel making, AOD Process and RH- OB degassing process	CO2
	1ST	2P	31.08.2026	Inclusion Control and Clean LHF Process, VAD Process and RH- OB degassing process	
			03.09.2026	1st internal assessment	CO4
SEPTEMBER	2ND	3P	07.09.2026	Inclusion Control and Clean Steel Production, Process Control and Automation in Secondary Steelmaking,	CO4
			10.09.2026	Stainless steel grades and their industrial selection criteria.	CO4
			11.09.2026	Casting, Defects & Green Steel Pit Side Practice: Teeming methods such as: Direct pouring , Tundish teeming and Bottom teeming, Ingot defects, their causes and remedies,	CO5
	3RD	2P	17.09.2026	Casting, Defects & Green Steel Bottom teeming, Ingot defects, their causes and remedies,	CO5
			18.09.2026	Continuous Casting of Steel: Principle and operation of continuous casting,	CO5
	4TH	3P	21.09.2026	types of casters, advantages of continuous casting	CO5
			24.09.2026	products of Continuous casting,	CO5
			25.09.2026	Green Steel Technology: Brief idea on green steel	CO5
	5TH	1P	28.09.2026	2nd internal assessment	CO5

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OCTOBER	1ST	1P	01.10.2026	Discuss on products of Continuous casting,	CO5
	2ND	3P	05.10.2026	Basic idea about Emissions and Effluent Treatment.	CO5
			08.10.2026	Basic idea about Emissions and Effluent Treatment.	CO5
			09.10.2026	Waste Heat Recovery and By- product Utilization	CO5
	3RD	3P	12.10.2026	Class test -03	
			15.10.2026	Green Steel Ingot defects, their causes	CO5
			16.10.2026	Green Steel defects causes and remedies	
	4TH	2P	22.10.2026	Doubt clearing class	
			23.10.2026	Revision class	
	5TH	3P	26.10.2026	2 nd internal assessment	
			29.10.2026	Revision class	
			30.10.2026	Revision class	
NOVEMBER	1ST	2P	02.11.2026	Revision class	
			05.11.2026	Mock test for semester	


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