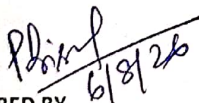


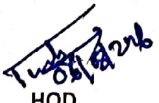
LESSON PLAN					
Discipline: Metallurgical Engineering		Semester: 3 RD Semester	Name of the Teaching Faculty: Smt Parasmitha Biswal		
Subject: Fuel , Furnace & Refractories Sub code: Th-3 (MTPC205)		No of days /week class allotted:03	Semester from Date: 01/07/2026 to 05/11/2026 No of weeks: 19		
Course Outcomes:					
1. Understanding of Fuels and Their Properties To identify different types of fuels (solid, liquid, and gaseous) and their classification.					
2. Proficiency in Fuel Analysis To perform fuel analysis (proximate and ultimate analysis).					
3. Understanding of Furnace Operation To gain a solid understanding of the operation, and types of furnaces (e.g., blast furnaces, electric furnaces					
4. Knowledge of Refractories and Their Properties such as acidic, basic, and neutral refractories .					
Month	Week	No of periods available	Class Day	Theory topics	CO
JULY	1 ST	2P	03-07-26	Definition and classification of fuels (gaseous fuels)	CO1
			04-07-26	Definition and classification of fuels (solid, liquid, and gaseous fuels)	CO1
	2 ND	2P	06-07-26	Sources of fuel and their uses in industries : Calorific value	CO1
			10-07-26	Sources of fuel and their uses in ; gross and net calorific value	CO1
	3 RD	3P	13-07-26	Proximate and ultimate analysis of fuels	CO2
			17-07-26	Physical and chemical properties of fuels (moisture content, ash, sulfur, carbon content)	CO2
			18-07-26	Types of Fuels (Solid Fuels Liquid Fuels Gaseous Fuels) Origin of Coal,	CO2
	4 TH	2P	20-07-26	Types of Fuels composition, and classification	CO2
			24-07-26	CLASS TEST 01	CO2
	5 TH	2P	27-07-26	Types of Fuels :coking properties and swelling index of coal,	CO2
			31-07-26	Carbonization of coal , Differentiate between H.T.C and L.T.C ,	
AUGUST	1 ST	1P	01-08-26	Quiz test and doubt clearing class	CO2
	2 ND	2P	03-08-26	Coal: types composition, and classification , swelling index of coal	CO2
			06-08-26	Test carried out for coke (Shatter and Micum index) Origin and constitution of petroleum	CO2
	3 RD	3P	10-08-26	Discuss on flash point, fire point, cloud point, pour point	CO2
			11-08-26	Production and utilization of Methane , water gas, coke oven gas	CO2
			13-08-26	Production and utilization of producer gas, carbureted water gas	CO2
	4 TH	3P	17-08-26	Heat losses in furnace	CO2
			18-08-26	Overview of Furnace, Types of Metallurgical furnaces (a) heat treatment	CO3

W



				(b) melting furnace	
			20-08-26	Overview of Furnace, Types of Metallurgical furnaces c) smelting furnace d) refining furnace	CO3
	5 TH	2P	24-08-26	CLASS TEST 02	
			25-08-26	Types of waste heat recovery system such as regenerators and recuperators.	CO3
	1 ST	3P	31-08-26	Types of waste heat recovery system such as regenerators and recuperators.	
SEPTEMBER			01-09-26	Doubt clear class	
			03-09-26	Introduction to Refractory materials,	
	2 ND	3P	07-09-26	Classification of Refractories, properties of Refractories.	CO4
			08-09-26	1 ST INTERNAL ASSESEMENT	CO4
			10-09-26	Special refractories like high alumina, mullite, SiC, Zirconia	CO4
	3 RD	1P	17-09-26	Criteria for selection and types of refractories selected for blast furnace,	
	4 TH	3P	21-09-26	CLASS TEST 03	
			22-09-26	Criteria for selection and types of refractories selected for L.D furnace	CO4
			24-09-26	Criteria for selection and types of refractories selected for arc furnace, coke oven	CO4
	5 TH	3P	28-09-26	Recent advancements in Fuels, Furnaces & Refractory	CO4
			29-09-26	Carbon Capture & Utilization (CCU) in Fuel Technologies: CO ₂ Sequestration in Industrial Applications	CO4
OCTOBER	1 ST		01-10-26	Carbon Capture & Utilization (CCU) in Fuel Technologies: Clean Coal Technologies,	CO4
	2 ND	3P	05-10-26	Advanced Refractory Materials: Nano-Refractories	CO4
			06-10-26	Graphite-Based & Carbon-Composite Refractories	CO4
			08-10-26	Advanced Refractory Materials: Ultra-High-Temperature Ceramics (UHTCs)	CO4
	3 RD	3P	12-10-26	Advanced Refractory Materials: Ultra-High-Temperature Ceramics (UHTCs)	CO4
			13-10-26	Alternative Fuels for Industrial Heating: Waste-Derived Fuels,	CO4
			15-10-26	Eco-Friendly Furnace Technologies: Hybrid & Solar-Assisted Furnaces	CO4
	4 TH	1P	22-10-26	REVISION CLASS	
	5 TH	3P	26-10-26	DOUBT CLEAR CLASS	
			27-10-26	2 ND INTERNAL ASSESEMENT	
			29-10-26	REVISION CLASS	
NOVEMBER	1 ST	3P	02-11-26	DOUBT CLEAR CLASS	
			03-11-26	REVISION CLASS	
			05-11-26	MOCK TEST FOR SEMESTER PATTERN	


 PREPARED BY
 PARASMITA BISWAL
 LECTURER (STAGE-II)
 OSME, KEONJHAR


 HOD
 METALLURGY DEPARTMENT
 OSME KEONJHAR


 PRINCIPAL
 OSME KEONJHAR