

LESSON PLAN (AY 2026-27 W)

Decipline: Metallurgy Engineering	Semester: 5th	Name of the Teaching Faculty: Smt. Sushree Subhashree Das
Course: Advanced Material Course code: Th-3 (A) (MTEP301) (A)	No of days/Week class allotted: 03	Semester from Date: 01/07/2026 to 05/11/2026 No of weeks: 20

Course Outcomes:

CO1. know the Classification and signifiacne of advanced materials used in modern industries, including metals, ceramics, polymers, and composites.

CO2. Analyse the properties, processing techniques, and applications of corrosion-resistant alloys, super alloys, and nanomaterials.

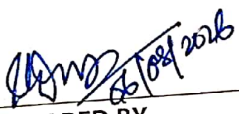
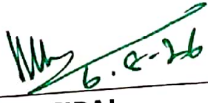
CO3. Explain the classification and properties of advance materials such as super alloys, smart matyerials, and composites.

Month	Week	No. of Periods Available	Class Day	Theory topics	CO
July	1st	2P	02-07-2026	Introduction to Advanced Materials: Definition and classification of advanced materials	CO1
			04-07-2026	The driving forces behind materials research and development	CO1
	2nd	2P	07-07-2026	Comparison between conventional and advanced materials	CO1
			09-07-2026	Applications of advanced materials in various fields (aerospace, automotive, electronics, biomedical, etc.)	CO1
	3rd	2P	14-07-2026	Metallic Advanced Materials & Applications: High-performance alloys (Nickel, Titanium, and Cobalt-based alloys)	CO1
			18-07-2026	Corrosion Resistant Alloys: Stainless Steels(304.316), Magnesium-aluminum alloys (5000 Series (e.g.,5052,5083), Cobslt-Based Alloy)	CO1
	4th	2P	21-07-2026	Super alloys: Types, manufacturing methods (Directionally solidify casting,	CO1
			23-07-2026	Manufacturing methods (Directionally solidify casting	CO1
	5th	2P	28-07-2026	Revision & Discussion	CO1
			30-07-2026	MONTHLY TEST	CO1
Aug	2nd	3P	04-08-2026	single-crystal casting) Properties, and applications	CO1
			05-08-2026	Shape Memory Alloys (SMA) - Nitinol	CO1

	3rd	3P	06-08-2026	Shape Memory Alloys (SMA) - Cu-Al-Ni alloys	CO1
			11-08-2026	Different Examples & applications of SMA	CO1
			12-08-2026	Metallic Glasses (Amorphous Metals)	CO2
			13-08-2026	Formation and properties of metallic glasses	CO2
	4th	3P	18-08-2026	Formation and properties of metallic glasses	CO2
			19-08-2026	Applications of metallic glasses	
			20-08-2026	Revision & Discussion	CO2
	5th	1P	25-08-2026	MONTHLY TEST	CO2
Sept	1st	3P	01-09-2026	Doubt clearing class	
			02-09-2026	Introduction to Polymers and types	CO2
			03-09-2026	Polymer Matrix Composites (PMCs)	CO2
	2nd	3P	08-09-2026	1 st Internal Assessment	CO1 & CO2
			09-09-2026	Types of reinforcing fibers (glass, carbon, aramid).	CO3
			10-09-2026	Manufacturing techniques (lay-up).	CO2
	3rd	1P	17-09-2026	Properties and applications of PMCs	CO2
	4th	3P	22-09-2026	Ceramic Matrix Composites (CMCs): Reinforcement of ceramic matrices with fibers or particles	CO3
			23-09-2026	Reinforcement of ceramic matrices with fibers or particles	CO3
			24-09-2026	High-temperature applications of CMCs	CO3
	5th	2P	29-09-2026	Revision & Discussion	CO3
			30-09-2026	MONTHLY TEST	CO3
OCT	1st	1P	01-10-2026	Nanomaterials: Introduction to Nanomaterials	CO3
	2nd	3P	06-10-2026	Classification of nanomaterials (0D, 1D, 2D, 3D).	CO3
			07-10-2026	One Synthesis method each of 0D, 1D, 2D & 3D nanomaterials	CO3
			08-10-2026	Quiz test	CO3
	3rd	3P	13-10-2026	Carbon Nanotubes (CNTs) and Graphene: Structure, properties, and applications of CNTs and graphene	CO3
			14-10-2026	Properties, and applications of CNTs and graphene	CO3

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	4th	2P	15-10-2026	Smart Materials: Definition and classification of smart materials.	CO3	
			21-10-2026	Piezoelectric Materials: Piezoelectric effect and applications	CO3	
			22-10-2026	Energy storage materials (batteries, fuel cells).	CO3	
	5th	3P	27-10-2026	Materials for sustainable development	CO3	
			28-10-2026	2nd Internal Assessment	CO2 to CO3	
			29-10-2026	Doubt clearing class	CO3	
	Nov	1st	3P	03-11-2026	Revision & Discussion	All COS
				04-11-2026	VIVA	All COS
				05-11-2026	Course wrap-up & question bank discussion	CO1 to CO3

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