

SESSION:		WINTER 2023								
BRANCH:		MECHANICAL ENGINEERING								
SEMESTER:		3RD SEC-B								
SUBJECT:		ENGINEERING MATERIAL (TH-3)								
NAME OF THE FACULTY:			KISHORE KUMAR DAS							
SL NO.	MONTH	CHAPT. NO.	DATE	TOPICS TO BE COVERED	NO. OF ACADEMIC DAYS AVAILABLE FOR THE SUBJECT	% COVERED				
1	AUGUST	1	4.8.23	1.1 Material classification into ferrous and non ferrous category and alloys	18	31%				
			5.8.23	1.2 Properties of Materials: Physical, Chemical and Mechanical						
			8.8.23	1.2 Properties of Materials: Physical, Chemical and Mechanical						
			9.8.23	1.2 Properties of Materials: Physical, Chemical and Mechanical						
			10.8.23	1.2 Properties of Materials: Physical, Chemical and Mechanical						
			11.8.23	1.3 Performance requirements						
		12.8.23	1.4 Material reliability and safety							
		2	16.8.23	2.1 Characteristics and application of ferrous materials						
			17.8.23	2.2 Classification, composition and application of low carbon steel,						
			18.8.23	2.2 medium carbon steel and High carbon steel						
			19.8.23	2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel						
			22.8.23	2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel						
			23.8.23	2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel						
		3	24.8.23	2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,						
			25.8.23	2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,						
			26.8.23	3.1 Concept of phase diagram and cooling curves						
							29.8.23	3.1 Concept of phase diagram and cooling curves		
							31.8.23	3.1 Concept of phase diagram and cooling curves		
			1.9.23	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel						

	3	2.9.23	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel			
		5.9.23	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel			
2	SEPT.	4	7.9.23	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections	18	31%
			8.9.23	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections		
			9.9.23	4.2 Classification of imperfection: Point defects, line defects, surface defects and volume defects		
			12.9.23	4.2 Classification of imperfection: Point defects, line defects, surface defects and volume defects		
			13.9.23	4.3 Types and causes of point defects: Vacancies, Interstitials and impurities		
			14.9.23	4.4 Types and causes of line defects: Edge dislocation and screw dislocation		
			15.9.23	4.5 Effect of imperfection on material properties		
			21.9.23	4.6 Deformation by slip and twinning		
			22.9.23	4.7 Effect of deformation on material properties		
			23.9.23	4.7 Effect of deformation on material properties		
		5	26.9.23	5.1 Purpose of Heat treatment		
			27.9.23	5.2 Process of heat treatment: Annealing, normalizing, hardening, tempering, stress relieving measures		
			28.9.23	5.2 Process of heat treatment: Annealing, normalizing, hardening, tempering, stress relieving measures		
		5	29.9.23	5.2 Process of heat treatment: Annealing, normalizing, hardening, tempering, stress relieving measures		
30.9.23	5.3 Surface hardening: Carburizing and Nitriding					
3.10.23	5.3 Surface hardening: Carburizing and Nitriding					
4.10.23	5.4 Effect of heat treatment on properties of steel					
		5.10.23	5.5 Hardenability of steel			
		6.10.23	6.1 Aluminum alloys: Composition, property and usage of Duralmin, $\gamma$ -alloy			

3	OCT.	6	7.10.23	6.2 Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel	10	17%
			10.10.23	6.2 Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel		
			11.10.23	6.2 Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel		
			12.10.23	6.3 Predominating elements of lead alloys, Zinc alloys and Nickel alloys		
			13.10.23	6.4 Low alloy materials like P-91, P-22 for power plants and other		
			31.10.23	6.4 high temperature services. High alloy materials like stainless steel grades of duplex, super duplex materials etc		
4	NOV.	6	1.11.23	6.4 high temperature services. High alloy materials like stainless steel grades of duplex, super duplex materials etc	13	21%
			7	2.11.23		
		3.11.23		7.1 Tin Base, Lead base, Cadmium base bearing materials		
		4.11.23		7.1 Tin Base, Lead base, Cadmium base bearing materials		
		8	7.11.23	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material		
			8.11.23	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material		
		9	9.11.23	9.1 Properties and application of thermosetting and thermoplastic polymers		
			10.11.23	9.1 Properties and application of thermosetting and thermoplastic polymers		
			14.11.23	9.2 Properties of elastomers		
			15.11.23	9.2 Properties of elastomers		
		10	16.11.23	10.1 Classification, composition, properties		
			17.11.23	10.1 uses of particulate based and fiber reinforced composites		
			18.11.23	10.2 Classification and uses of ceramics		

## BRIEF SUMMARY OF THE PLAN

SL. NO.	MONTH	UNIT/CHAPTER TO BE COVERED	% COVERAGE
1	AUGUST	CHAPTER-1, 2 & 3	31%
2	SEPTEMBER	CHAPTER- 3, 4 & 5	31%
3	OCTOBER	CHAPTER-5 & 6	17%
4	NOVEMBER	CHAPTER- 6, 7, 8, 9 & 10	21%

~~Signature~~

signature of HOD  
3/8/23

signature of principal  
3/8/23