

18MTE63	AEROSPACE MATERIALS	L	T	P	C
		3	0	0	3
Course Objectives:					
1.	To analyse the materials for aerospace.				
UNIT I	MECHANICAL BEHAVIOUR OF ENGINEERING MATERIALS	9	+	0	
Knowledge of various type of hardness testing machines and various types of hardness number linear and non – linear elastic properties – stress and strain curves – yielding and strain hardening toughness- modulus of resilience- bauchinger effect- effect of notches – testing and flaw detection of materials and components.					
UNIT II	MATERIALS IN AIRCRAFT CONSTRUCTION-01	9	+	0	
Aluminium and its alloys: types and identification. Properties-casting-heat treatment processes-surface treatments Magnesium and its alloys: cast and wrought alloys-aircraft applications, future specification, fabrication problems, special treatments. Titanium and its alloys: application, forming,machining,welding and heat treatment.					
UNIT III	MATERIALS IN AIRCRAFT CONSTRUCTION-02	9	+	0	
Steels: plain and low carbon steels, various low alloy steels. Aircraft steel specification, corrosion and heat resistant steels, structural applications. Maraging steels: Properties and applications Copper alloys: Monel,K-monel Superalloys: use –Ni base-Co base-Fe base- forging and casting of superalloys-welding,heat treatment.					
UNIT IV	ADHESIVE AND SEALANTS FOR AIRCRAFTS	9	+	0	
Advantages of bonded structure in airframes, crack arresting-weight saving- technology of adhesive bonding structural adhesive materials- test for bonding structure Typical bonded joints & non destructive tests for bonded joint bonded sandwich structures- materials – methods of construction of honeycombs					
UNIT V	NON METALS IN AIRCRAFT CONSTRUCTION	9	+	0	
Wood and fabric in aircraft construction and specifications- Glues use of glass, plastics and rubber in aircrafts, introduction to glass and carbon composites					
Total (L+T) = 45					Hours
Course Outcomes:					
Upon completion of this course, the students will be able to:					

CO1	:	Explain the production, properties and application of composites
CO2	:	Describe the metal matrix composites
CO3	:	Know about Ti. Ni based composites
CO4	:	Identify materials for engines and plasma engines
Text Books:		
1.		H. Buhl, Advanced Aerospace Materials, Springer Verlag, Berlin 1992.
Reference Books:		
1.		Balram Gupta et.al Aerospace Materials Vol 1, 2, 3 ARDB, S. Chand& Co. 1996.