

Lesson Plan

Name of the Faculty: Ms. Loveleen Sharma

Discipline: Aeronautical Engineering

Semester: 5th

Subject: Aircraft Materials and Manufacturing Processes

Work Load (Lecture/Practical) per week (in hours): Lectures- , Practicals-

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical day	Topic
1 st	1 st	Properties of flight vehicle materials,	1 st	
	2 nd	Properties of flight vehicle materials,		
	3 rd	Importance of strength/weight ratio of materials for Aerospace Vehicles: Structures		
	4 th	Importance of strength/weight ratio of materials for Aerospace Vehicles: Structures		
2 nd	5 th	Importance of temperature variations,	2 nd	
	6 th	factors affecting choice of material for different parts of airplane.		
	7 th	factors affecting choice of material for different parts of airplane.		
	8 th	Revision And Assignments		
3 rd	9 th	Alloying Theory,	3 rd	
	10 th	Binary diagrams,		
	11 th	iron-carbon diagram,		
	12 th	Aluminium-copper diagram,		
4 th	13 th	structure- property correlation,	4 th	
	14 th	General Characteristics of Metallic Materials- Stress- strain curve, fatigue, creep, corrosion and prevention,		
	15 th	General Characteristics of Metallic Materials- Stress- strain curve, fatigue, creep, corrosion and prevention,		
	16 th	Surface hardening of metals,		
5 th	17 th	weld ability,	5 th	
	18 th	formability & machineability.		
	19 th	Revision and Assignments		

	20 th	Test		
6 th	21 st	Classification of alloy steels,	6 th	
	22 nd	Effect of alloying elements,		
	23 rd	Carbon steels v/s Alloys steels,		
	24 th	corrosion resistant steels,		
7 th	25 th	Heat treatment,	7 th	
	26 th	Corrosion prevention methods, Selection		
	27 th	application of steel alloys to aircraft manufacture		
	28 th	Revision and test		
8 th	29 th	Aluminum alloys,	8 th	
	30 th	Heat treatment, High strength and high corrosion resistant alloys,		
	31 st	Magnesium alloys and their properties,		
	32 nd	Heat treatment.		
9 th	33 rd	Application to Aerospace Vehicle of these alloys	9 th	
	34 th	Revision And Assignments		
	35 th	Test		
	36 th	Classification of heat resistant materials and iron,		
10 th	37 th	Classification of heat resistant materials and iron,	10 th	
	38 th	Nickel and cobalt base alloys, Refractory materials: Ceramics,		
	39 th	Nickel and cobalt base alloys, Refractory materials: Ceramics,		
	40 th	Titanium and its alloys, properties of Inconel, Monal and K-Monal,		
11 th	41 st	Titanium and its alloys, properties of Inconel, Monal and K-Monal,	11 th	
	42 nd	Nimonic and super alloys: Application to Aerospace vehicles.		
	43 rd	Nimonic and super alloys: Application to Aerospace vehicles		
	44 th	Transparent Materials, plastic, Rubber,		
12 th	45 th	Transparent Materials, plastic, Rubber,	12 th	
	46 th	Synthetic Rubber wood, Fabrics.		
	47 th	Revision and Assignment		
	48 th	Test		
13 th	49 th	Definition-Advantages and Disadvantages-Materials and its Compositions-Types of Moulding-	13 th	

	50 th	Definition-Advantages and Disadvantages-Materials and its Compositions-Types of Moulding-		
	51 st	HoneyComb Design –Nomex-Curing Processes-Pre-peg-Vacuum Bagging.		
	52 nd	HoneyComb Design –Nomex-Curing Processes-Pre-peg-Vacuum Bagging.		
14 th	53 rd	Profiling, Hydro forming, mar forming bending rolls, Spar milling,	14 th	
	54 th	Spark erosion and Powdered metal parts, integral machining, Contour etching,		
	55 th	High energy rate forming,		
	56 th	Manufacturing of honeycomb structures,		
15 th	57 th	General methods of construction of aircraft and aero engine parts.	15 th	
	58 th	General methods of construction of aircraft and aero engine parts.		
	59 th	Revision and Assignments		
	60 th	Test		