

## Module 6

# Materials & Hardware

	Level		
	A	B1	B2
<b>6.1 Aircraft Materials - Ferrous</b>			
a) Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloys steels;	1	2	1
b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1
<b>6.2 Aircraft Materials - Non-Ferrous</b>	A	B1	B2
a) Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials;	1	2	1
b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1
<b>6.3 Aircraft Materials - Composite and Non-Metallic</b>	A	B1	B2
Composite and non-metallic other than wood and fabric	1	2	2
a) Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents.			
b) The detection of defects in composite and non-metallic material; Repair of composite material.	1	2	-
Wooden Structures	1	2	-
Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation of maintenance of wooden structures; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure.			
Fabric covering			
Characteristics, properties and types of fabric used in aeroplanes; Inspection methods for fabric; Types of defects in fabric; Repair of fabric covering.	1	2	-
<b>6.4 Corrosion</b>	A	B1	B2
a) Chemical fundamentals; Formation by: galvanic action process, microbiological, stress;	1	1	1
b) Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.	2	3	2
<b>6.5 Fasteners</b>	A	B1	B2
Screw Threads	2	2	2
Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads.			
Bolts, studs and screws	2	2	2
Bolt types: specification, identification and marking of aircraft bolts, international standards			
Nuts: self locking, anchor, standard types; Machine screws: aircraft specifications;			
Studs: types and uses, insertion and removal; Self tapping screws, dowels			
Locking devices	2	2	2
Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.			
Aircraft rivets	1	2	1
Types of solid and blind rivets: specifications and identification, heat treatment.			

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<b>6.6 Pipes &amp; Unions</b>			
a) Identification of, and types of rigid and flexible pipes and their connectors used in aircraft;	2	2	2
b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2	2	1
<b>6.7 Springs</b>	A	B1	B2
Types of springs, materials, characteristics and applications.	-	2	1
<b>6.8 Bearings</b>	A	B1	B2
Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2
<b>6.9 Transmissions</b>	A	B1	B2
Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.	1	2	2
<b>6.10 Control Cables</b>	A	B1	B2
Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	1	2	1
<b>6.11 Electrical Cables and Connectors</b>	A	B1	B2
Cable types, construction and characteristics; High tension and co-axial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.	1	2	2

