Table 4: Summary of Course Information

COPY SHEET | UPDATE INDEX | CLEAR FORM

1	Course Name:	AIRCRAFT STRUCTURE					
	Course Code:	AAB 20503					
	Course Classification:	Major (core)					
2	Synopsis:	This course covers the basic and immediate level of aircraft structure as per standard guidelines of maintenance practices and approved maintenance manuals. It includes the introduction to the aircraft structural design, classifications, and structural components, sheet metal and composite repairs, welding techniques, non- destructive testing and painting. It also includes the defect recognition, defect inspection, defect evaluation and repair if necessary as per standard maintenance practices.					
3	Name(s) of Academic Staff:	1	Mariana Mat Rani				
		2	Salina Thani				
		3	Jaldin Ahmad				
4	Semester and Year offered:	Year Offered	2	Semester	2	*Remarks: Sharing with Bachelor of Aircraft Engineering Technology (Hons.) in Avionics*	
5	Credit Value:	3					
6	Pre-requisite/ co-requisite (if any):	N/A					

7 Course Learning Outcomes (CLO)

CLO1	Describe the various aircraft structural designs and its airworthiness consideration (C2, PLO1)
CLO2	APPLY and PERFORM the standard knowledge in aircraft structures during practical (C3, PLO2)
CLO3	PERFORM INSPECTION (P3) and ANALYZE (C4) findings using appropriate tools and equipment as per standard aircraft structures (P3, PLO5)
CLO 4	CARRY OUT the necessary repair in accordance with appropriate manufacturers manual (P3, PLO4)
CLO 5	PERFORM the documentations and certifications for maintenance tasks carried out on an aircraft in accordance with the appropriate regulatory requirements. (C3, PLO2)

8 Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods

Course Learning Outcomes	Programme Learning Outcomes (PLO)												Teaching Methods	Assessment Methods
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11			
CLO1		√											Lecture	
CLO2		√											Lecture	
CLO3					√								Practical	
CLO 4				√									Practical	
CLO 5		√											Lecture	
Mapping with MQF Cluster of Learning Outcomes		C2		C3A	C3A									

Indicate the primary causal link between the CLO and PLO by ticking '√' in the appropriate box.

C1 = Knowledge & Understanding, **C2** = Cognitive Skills, **C3A** = Practical Skills, **C3B** = Interpersonal Skills, **C3C** = Communication Skills, **C3D** = Digital Skills, **C3E** = Numeracy Skills, **C3F** = Leadership, Autonomy & Responsibility, **C4A** = Personal Skills, **C4B** = Entrepreneurial Skills, **C5** = Ethics & Professionalism

9 Transferable Skills (if applicable)

(Skills learned in the course of study which can be useful and utilized in other settings)

1	
2	
3	

Open-ended response (if any)

4	

10 Distribution of Student Learning Time (SLT)

Note: This SLT calculation is designed for home grown programme only.

	Course Content Outline and Subtopics	CLO*	Learning and Teaching Activities**									Total SLT
			Face-to-Face (F2F)								NF2F Independent Learning (Asynchronous)	
			Physical				Online/ Technology-mediated (Synchronous)					
			L	T	P	O	L	T	P	O		
1	AIRFRAME STRUCTURES - GENERAL a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life & Damage tolerance concept; Zonal and Station Identification system; Stress, strain, bending, compression, shear, torsion, tension, hoop, stress, fatigue; Drains and Ventilation provisions; System installation provisions; Lightning strike provision; Aircraft Bonding. b) Construction Methods of stressed skin fuselage, formers, stringers, bulkheads, frames , doublers, struts, ties, beams, floor structures, reinforcements, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure Assembly Techniques: riveting, bolting, bonding; Methods of surface protection, chromating, anodizing, painting; Surface Cleaning;Airframe Symmetry, methods of alignment and symmetry checks		6								6	
2	AIRFRAMESTRUCTURES AEROPLANES a) FUSELAGE (ATA 52/53/56) Fuselage construction and pressurization sealing; Wing, stabilizers, pylon and undercarriage attachments; Seat installation and Cargo loading system; Doors and Emergency exits- construction, mechanism , operation and safety device; Windows and windscreen construction and mechanisms b) WINGS (ATA 57) Construction; Fuel storage; Landing gear, pylon, control surface, and high lift/drag attachments. c) STABILIZERS (ATA 55) Construction ; Control surface attachments. d) FLIGHT CONTROL SURFACES (ATA 55/57) Construction and attachment; Balancing - mass and aerodynamic. e) NACELLES/PYLONS (ATA 54) Construction ; Firewalls; Engine mounts.		6								3	
3	RIVETING Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.		6								3	
4	MATERIAL HANDLING a) SHEET METAL Marking out and calculation of bend allowance; Sheet metal working , including bending and forming; Inspection of welded and brazed joints; Bonding methods and inspections of bonded joints. b) COMPOSITE AND NON-METALLIC Bonding practices; Environmental conditions; Inspection methods.		6								5	
5	WELDING, BRAZING, SOLDERING AND BONDING a) Soldering Methods; Inspection of soldered joints. b) Welding and Brazing Methods and inspection of bonded joints.		6								3	

6	DISASSEMBLY, INSPECTION , REPAIR AND ASSEMBLY TECHNIQUES a) Types of defects and visual inspection techniques; Corrosion removal, assessment and re-protection. b) General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes; c) Non destructive inspection techniques including, penetrant , radiographic, eddy current, ultrasonic and boroscope methods. d) Disassembly and re-assembly techniques . e) Trouble shooting techniques.		6								5	
7	PRACTICAL - SHEET METAL REPAIR P7.8A : Sheet Metal Riveting using raised and countersunk rivets. P7.8B : Identification of Rivets Setting Faults. P7.8C : Identify ,select and use rivet setting equipment P7.14A: Joggle & U-Channel P?.18D: Surface Patch including removal of defective rivets without causing further skin damage. P?.18E: Surface Patch including removal of defective rivets without causing furthe skin damage.				18						1	
8	PRACTICAL - COMPOSITE REPAIR P7.14B: Inspect And Repair Fiberglass Structuresor Damaged, Deterioration And Lamination P7.14C: Inspection and Repair Of Honeycomb Structure				6						1	
9	P7.18A: Disassembly, Cleaning, Inspection, Defect Assessment, Reassembly, Test & Release Procedures. P7.18B: Treatment Of Corrosion P7.18C: Painting P11.3A: Carry Out Windows / Transparencies Cleaning and Polishing P11.3B: Aircraft Structure: Examine Cabin Windows P11.3C: Carry Out Aircraft Symmetry Check				6						1	
10	PRACTICAL NDT 7.18G : Non-Destructive Methods-Visual Inspection 7.18H: Non Destructive Testing - Dye Penetrant /Fluorescent				6						1	
11	P7.15A: Soldering P7.15B: Welding				6						1	
12												
13												
14												
15												
16												
17												
18												
19												
20												
											SUB-TOTAL SLT:	**108**

	Continous Assessement	%	Face-to-Face (F2F)		NF2F	
			Physical	Online/ Technology-mediated (Synchronous)	Independent Learning for Assessment (Asynchronous)	
1	Midterm Examination	10		1	1	
2	Quizzes	10		1	1	
3	Assignment / Practical	40			2	
4						
5						
					SUB-TOTAL SLT:	**6**

	Final Assessement	%	Face-to-Face (F2F)		NF2F	
			Physical	Online/ Technology-mediated (Synchronous)	Independent Learning for Assessment (Asynchronous)	
1	Final Examination	40	2		4	
2						

3						
4						
5						

	SUB-TOTAL SLT:	**6**
	SLT for Assessment:	12
	GRAND TOTAL SLT:	120
A	% SLT for F2F Physical Component: *[Total F2F Physical /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100)]*	66.67
B	% SLT for Online & Independent Learning Component: *[(Total F2F Online + Total Independent Learning) /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]*	**33.33**
C	% SLT for All Practical Component: *[% F2F Physical Practical + % F2F Online Practical]*	**35.00**
C1	% SLT for F2F Physical Practical Component *[Total F2F Physical Practical /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100)]*	**35.00**
C2	*% SLT for F2F Online Practical Component* *[Total F2F Online Practical / (Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]*	

Please tick (√) if this course is **Industrial Training/ Clinical Placement/ Practicum** using 50% of Effective Learning Time (ELT)

Note:

* Indicate the CLO based on the CLO's numbering in Item 8

** For ODL programme: Courses with mandatory practical requiremnets imposed by the programme standards or any related standards can be exempted from complying to the minimum 80% ODL delivery rule in the SLT.

11	Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room etc)	

12	References (include required and further readings, and should be the most current)	Main Reference: UniKL MIAT Approved Training Notes Module 7 and Module 11 Additional Reference: 1. A&P Airframe Textbook, Jeppesen Sanderson, Inc. 2. A&P Technician General Textbook, Jeppesen Sanderson, Inc 3. A&P Technician Welding Textbook, Jeppesen Sanderson, Inc.
13	Other additional information (if applicable)	
Note: Number of PLO indicated is purely for illustration purposes only and the number is subjected to the curriculum design.		