

Electrical & Mechanical Services
Industry

Aircraft Maintenance Engineering
Branch

Specification of Competency Standards

Version 1

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Chapter 1

Preface

Background of the Industry

1. Aircraft maintenance engineering has played an important part in helping the commercial and industrial development in Hong Kong. Since the early 50s until today, air service is experiencing an ever expansion from the Kai Tak airport era to the new Hong Kong International Airport (HKIA) at Chek Lap Kok. In 2007/08, according to the Airport Authority Hong Kong (HKAA), the number of flights reached 300,000, carried 48 million passengers and 3.8 million tonnes of cargo. these figures have made HKIA among the top 5 busiest airports in the world.
2. The blooming economy and tourism in the neighbouring regions have led to the continuous development of the aviation industry in Hong Kong. At the turn of the century, Hong Kong economy began to take shape and aircraft maintenance engineering which at the same time had expanded to cope with a much larger volume of air traffic services. Today aviation industry has become the corner stone of the Hong Kong economy.
3. At the time when the Hong Kong economy was picking up, local universities had provided programs to train technical personnel enabling them to work in aircraft engineering. Aviation industry recognizes professional training is essential to ensure the quality, safety and airworthiness of the business. Hence, many organizations in the industry have provided different kinds of training for their own staff. If all the training organizations can join effort to develop a comprehensive training curriculum, that will certainly benefit the industry as a whole and, on the other hand, also provide professional development pathways to the people who wish to join it.

Current Status of the Aviation Industry

4. Since 2005, the HKIA has been monitoring closely the situations in the passenger and cargo transportation market and the growing demand in the mainland, especially in the Pearl Delta region. In the same year, bus and direct ferry services were available, connecting passengers and cargo between the HKIA and the mainland. the cross border service network has integrated the sea, air and land transport together and enabled the HKIA to become a truly transportation hub. In order to cope with the huge demand on aircraft services, local aircraft maintenance engineering companies have plans to expand their business in the coming years. All the developments have helped the HKAA

move a step further in working closely with the mainland. Today, Hong Kong has become the financial and air cargo transportation centre in Asia and, undoubtedly, her position is recognized in the international arena. The success relies on the long term contribution from a group of dedicated, hard working and progressive professionals who have been incessantly providing a stable, efficient, and competitive service and exploit their fullest potential to serve the industry. Providing quality aircraft maintenance service is essential in sustaining the long term development for the industry. It is expected that aircraft maintenance engineering would continue to play a significant role in assisting the prosperity for Hong Kong in future.

5. The development in aircraft maintenance engineering has been very stable and, in recent years, the industry needs to recruit large number of technical staff to cope with the ever increasing business. In anticipation of the opportunities brought by the growing economy and tourism, the industry will provide more job opportunities for young people who would like to engage in aircraft maintenance engineering.
6. At present, there are many different kinds of qualifications awarded upon completion of different training programs, but these programs are not necessarily relevant to the skills required by the industry nor are these programs quality-assured. Furthermore, in the absence of clear progression pathways, it is difficult for the industry to recruit new talent. In 2003, VTC, in response to the request from the industry to provide training in the area of aircraft maintenance engineering, has launched a full-time Higher Diploma in Aircraft Maintenance Engineering course to the graduates from secondary schools to serve the industry. The graduates from the course provide well trained and recognized manpower to sustain the aircraft service business in Hong Kong. In fact, the education sector, apart from full-time courses, should consider offering part-time bachelor or master degree programs for the in-service professionals to upgrade their level of academic attainment.

Specification of Competency Standards

7. In view of the industry's current status and future development trend, it is imminent that the Specification of Competency Standards (SCS) be formulated to provide a solid framework for training with unified course contents to enhance the industry's technical capability, competitiveness and quality of service.
8. The SCS consists of competency standards of different levels. Competency standards are benchmarks for the industry-specific knowledge, professional skills and soft skills required for performing different job functions of the industry. The functional areas and competency standards

under SCS will be practical and competency-based. The SCS not only sets out the professional knowledge and skills required for today, but also takes into account factors such as the development trend of both the industry and the society.

9. In the long run, the industry-recognized SCS will become the blueprint for training. It will not only ensure that training providers can meet the industry's present and future needs by offering training courses covering all the knowledge and skills required by the industry, but also provide employees with a clear set of learning pathways, so that they can draw up their own learning and career roadmaps. As such, the SCS will complement the full-scale implementation of the Qualifications Framework by the Government.
10. The E&M Industry Training Advisory Committee (ITAC), comprising representatives of employers, employees and professional bodies of the industry, has prepared a preliminary version of SCS for the industry with reference to its current status and development trend, as well as the standard and format adopted in the Mainland and overseas, with a view to providing employees with clear guidelines for devising their own learning and career roadmaps.

Chapter 2

Qualifications Framework

Qualifications Framework

11. The E&M Industry Training Advisory Committee (ITAC) was set up in July 2005 to facilitate the implementation of the Hong Kong Qualifications Framework (QF) in the industry. The proposed QF is a voluntary system. It is a seven-level hierarchy that provides benchmarks for determining the level of complexity and difficulty of individual competencies. It is also used to order and support qualifications of different natures and titles. The QF has in place an independent quality assurance (QA) system that would enhance recognition and acceptance of the qualifications in the industry, irrespective of the mode and source of learning.
12. The E&M ITAC is responsible for the development of its industry-specific, task-based Specification of Competency Standards (SCS) for the identified core functional areas. The SCS, in the form of Units of Competencies (UoCs), provides not only quantitative and qualitative specifications on the competencies required for specific tasks, but also the integrated outcome standards required as well as information on the QF level and credit.
13. The SCS may be used to aid vocational curriculum design by vocational education and training providers, or in-service employee development by HR personnel, or best practice recognition and qualifications by awarding bodies within the industry. SCS is the cornerstone to enhance workforce competitiveness and industry sustainability in the long run.
14. The QF aims to provide clear learning pathways for individuals to draw up their own roadmaps to obtain quality assured qualifications. Learners can either pursue a specific learning pathway to upgrade their skills in a particular area of specialization in a gradual and orderly manner (vertical development), or progress through traversing learning pathways to become multi-skilled (horizontal development). Through the full-scale implementation of the QF, we will foster a vocational environment and culture conducive to lifelong learning and continuing education in the industry. With the active participation of employers and employees as well as the wide acceptance of the industry, the QF will also encourage the development of quality training programmes by providers to meet the needs of the community and the industry.

Qualifications Framework Levels

15. The QF has seven levels, from level 1 to level 7, where level 1 is the lowest and level 7 the highest. The outcome characteristic of each level is depicted by a set of generic level descriptors (GLD) (Appendix 1). The GLD specifies for each QF level its generic complexity, demand and challenges in the four dimensions below:

- a. Knowledge and intellectual skills.
- b. Process.
- c. Application, autonomy and accountability. and
- d. Communications, IT skills and numeracy.

The UoCs (See Chapter 4) are benchmarked to the QF levels in accordance with the GLD. It is worth to note that competency elements in a UoC may fall in some or all of the GLD dimensions as what it naturally should be. The QF level assignment is essentially a holistic judgement on the unit's integrated outcome requirement.

16. QF levels are discrete. That is, there cannot be assignment of UoC in-between QF levels. Also, UoCs that may not fully match the characteristic requirement of one or more dimensions of a level would be “rounded” to the level below.

Chapter 3

Competency Standards

Major Functional Areas of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

17. The major functional areas of Aircraft Maintenance Engineering Branch include functions required for operation, repair and maintenance works and cover the required aircraft engineering knowledge, testing and diagnostic skills, and the repair and maintenance skills. The functions require the practitioners to be able to comply with the practices stipulated in the HKAR-66, well equipped with the related knowledge and skills, and follow the procedures and instructions as to perform the tasks.
18. Based on the generic level descriptors and the major functional areas, the E&M ITAC has formulated a “List of Competencies” for the Aircraft Maintenance Engineering Branch. The list provides details of the training requirements of the industry with regard to the different competency levels and functional areas. It is designed to provide clear and unified guidelines for drawing up individual learning roadmaps.

Competency Standards

19. Competency standards refer to the skills and knowledge required for a particular job function. They represent the industry benchmarks for the skills, knowledge and attributes required to perform competently in a particular job. Thus they are the most important part of the SCS.

Units of Competencies

20. The E&M ITAC has set out the competency standards for various job functions in the form of units of competencies, which describe the performance and standard required for each competency. Please refer to Chapter 4 for details.

Every “unit of competency” comprises eight basic items:

1. Title
2. Code
3. Range
4. Level
5. Credit
6. Competency
7. Assessment Criteria
8. Remarks

Chapter 4

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common (CM)	Category A License - General (AG)	Category A License - Aeroplane (AA)	Category A License - Helicopter (AH)	Category B1 License - General (BG)	Category B1 License - Aeroplane (BA)	Category B1 License - Helicopter (BH)	Category B2 License (BX)	Category B3 License (BY)	Workshop component - General (WS)	Workshop component - Avionic (AV)	Management (MG)
		Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
1	Conversion of different units of measurements (3 Credits) EMAMCM101A (P.41)											
	Referencing the working instructions and guidelines from the aviation publications and documentation with the knowledge of general aviation English (3 Credits) EMAMCM102A (P.42)											
2	Capacitors installation and testing in electric circuits (3 Credits) EMAMCM201A (P.44)	Mathematics I (1 Credits) EMAMAG201A (P.51)										
	Electronic equipment against electrostatic discharge handling (3 Credits) EMAMCM202A (P.46)	Physics I (2 Credits) EMAMAG202A (P.53)										

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common (CM)	Category A License - General (AG)	Category A License - Aeroplane (AA)	Category A License - Helicopter (AH)	Category B1 License - General (BG)	Category B1 License - Aeroplane (BA)	Category B1 License - Helicopter (BH)	Category B2 License (BX)	Category B3 License (BY)	Workshop component - General (WS)	Workshop component - Avionic (AV)	Management (MG)
		Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
2	Magnetic shielding selection and installation into electronic systems (3 Credits) EMAMCM203A (P.48)											
	Defective components replacement in aircraft (3 Credits) EMAMCM204A (P.49)											
	Filters selection for electric signal filtering (3 Credits) EMAMCM205A (P.50)											
3	Aeronautical electronic document files conversion and transfer between operating systems (4 Credits) EMAMCM301A (P.56)	Aircraft trestle or shore (2 Credits) EMAMAG301A (P.85)			Mathematics II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG301A (P.183)			Mathematics II (Avionics Repair and Maintenance) (4 Credits) EMAMBX301A (P.193)	Mathematics II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY301A (P.200)	Aeronautical rotating assembly balance (4 Credits) EMAMWS301A (P.207)		

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common (CM)	Category A License - General (AG)	Category A License - Aeroplane (AA)	Category A License - Helicopter (AH)	Category B1 License - General (BG)	Category B1 License - Aeroplane (BA)	Category B1 License - Helicopter (BH)	Category B2 License (BX)	Category B3 License (BY)	Workshop component - General (WS)	Workshop component - Avionic (AV)	Management (MG)
		Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3	File conversion from aeronautical manuscripts to electronic files (4 Credits) EMAMCM302A (P.58)	Aircraft defuel (2 Credits) EMAMAG302A (P.87)			Physics II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG302A (P.186)			Physics II (Avionics Repair and Maintenance) (4 Credits) EMAMBX302A (P.196)	Physics II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY302A (P.203)	Aeronautical component parts punching (3 Credits) EMAMWS302A (P.210)		
	Aeronautical electronic document files conversion and transfer between software packages (4 Credits) EMAMCM303A (P.60)	Aircraft maintenance in storage (6 Credits) EMAMAG303A (P.90)			Electronic fundamentals I (2 Credits) EMAMBG303A (P.190)					Aeronautical sheet metal by rolling (3 Credits) EMAMWS303A (P.212)		
	Aeronautical industry publications and documentation usage (6 Credits) EMAMCM304A (P.62)	Aircraft windows maintenance (4 Credits) EMAMAG304A (P.92)								Aircraft flight control surfaces balancing (9 Credits) EMAMWS304A (P.214)		
	Aeronautical engineering maintenance practices application (9 Credits) EMAMCM305A (P.63)	Applying aeronautical decals (2 Credits) EMAMAG305A (P.94)								Aeronautical sheet aluminum alloys slapping and beating (6 Credits) EMAMWS305A (P.216)		

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3	Aeronautical engineering tools and equipment selection, usage, and maintenance (9 Credits) EMAMCM306A (P.67)	Removal coatings from aeronautical components by using chemical paint removers (9 Credits) EMAMAG306A (P.97)								Cold work holes in aeronautical aluminum alloys (4 Credits) EMAMWS306A (P.218)		
	Avionic trade practices applying and defects locating (9 Credits) EMAMCM307A (P.69)	Aircraft potable water systems replenishment (1 Credits) EMAMAG307A (P.100)								Sheet Metal Cutting (9 Credits) EMAMWS307A (P.220)		
	Aviation parts and/or materials receiving from suppliers (9 Credits) EMAMCM308A (P.71)	Aircraft toilet systems service (2 Credits) EMAMAG308A (P.102)								Aircraft flying bracing wires rig (4 Credits) EMAMWS308A (P.222)		
	Aviation parts and/or materials dispatch (6 Credits) EMAMCM309A (P.74)	Aircraft lifting and lowering (2 Credits) EMAMAG309A (P.104)								Aeronautical sheet metal shrinking and stretching (8 Credits) EMAMWS309A (P.225)		
	Aviation parts and/or materials storage and pick (9 Credits) EMAMCM310A (P.76)	Aircraft refuel (2 Credits) EMAMAG310A (P.106)								Aeronautical sheet aluminum alloys forming by wheeling (8 Credits) EMAMWS310A (P.227)		

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3	Aviation parts and/or materials special handling, storage and disposal (9 Credits) EMAMCM311A (P.79)	Aircraft exterior surfaces clean (2 Credits) EMAMAG311A (P.109)								Defective electronic/ digital/ avionic components troubleshooting and repair (9 Credits) EMAMWS311A (P.229)		
	Aviation parts and/or materials purchasing (9 Credits) EMAMCM312A (P.83)	Aircraft gas turbine engines gas path cleaning (2 Credits) EMAMAG312A (P.111)										
		Aircraft interiors cleaning (2 Credits) EMAMAG313A (P.113)										
		Fixed wing aircraft service (4 Credits) EMAMAG314A (P.115)										
		Aircraft ground handling (4 Credits) EMAMAG315A (P.118)										

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3		Aircraft undercarriage oleos (shock struts) replenishment (4 Credits) EMAMAG316A (P.122)										
		Aircraft engine power augmentation or restoration systems replenishment (2 Credits) EMAMAG317A (P.124)										
		Aircraft hydraulic systems replenishment (2 Credits) EMAMAG318A (P.127)										
		Aircraft de-icing systems replenishment (2 Credits) EMAMAG319A (P.130)										
		Aircraft liquid oxygen systems replenishment (2 Credits) EMAMAG320A (P.133)										

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3		Aircraft gaseous oxygen systems replenishment (2 Credits) EMAMAG321A (P.136)										
		Aircraft pneumatic systems replenishment (2 Credits) EMAMAG322A (P.139)										
		Aircraft storage handling (8 Credits) EMAMAG323A (P.141)										
		Removal of aircraft from storage and prepare for service (4 Credits) EMAMAG324A (P.143)										
		Avionic maintenance practices application (9 Credits) EMAMAG325A (P.145)										

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3		Aircraft on board maintenance system maintenance (3 Credits) EMAMAG326A (P.148)										
		Aircraft weighing (3 Credits) EMAMAG327A (P.150)										
		Aircraft pipes and hoses installation, inspection and testing (3 Credits) EMAMAG328A (P.152)										
		Springs installation, inspection and testing in engineering structures (3 Credits) EMAMAG329A (P.153)										
		Bearings and seals installation, inspection and testing in engineering structures (3 Credits) EMAMAG330A (P.154)										

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common (CM)	Category A License - General (AG)	Category A License - Aeroplane (AA)	Category A License - Helicopter (AH)	Category B1 License - General (BG)	Category B1 License - Aeroplane (BA)	Category B1 License - Helicopter (BH)	Category B2 License (BX)	Category B3 License (BY)	Workshop component - General (WS)	Workshop component - Avionic (AV)	Management (MG)
		Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3		Control cables installation, inspection and testing in engineering system (3 Credits) EMAMAG331A (P.155)										
		Aircraft inspection after abnormal events (3 Credits) EMAMAG332A (P.157)										
		Workplace hazards avoidance and emergencies handling (3 Credits) EMAMAG333A (P.158)										
		Aircraft documentation keeping and maintenance (3 Credits) EMAMAG334A (P.159)										
		Engines storage and preservation (3 Credits) EMAMAG335A (P.160)										

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common (CM)	Category A License - General (AG)	Category A License - Aeroplane (AA)	Category A License - Helicopter (AH)	Category B1 License - General (BG)	Category B1 License - Aeroplane (BA)	Category B1 License - Helicopter (BH)	Category B2 License (BX)	Category B3 License (BY)	Workshop component - General (WS)	Workshop component - Avionic (AV)	Management (MG)
		Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3		Electrical fundamentals I (2 Credits) EMAMAG336A (P.162)										
		Digital techniques and electronic instrument systems I (2 Credits) EMAMAG337A (P.164)										
		Materials and hardware I (2 Credits) EMAMAG338A (P.166)										
		Human factors I (2 Credits) EMAMAG339A (P.170)										
		Aviation legislation I (2 Credits) EMAMAG340A (P.172)										
		Maintenance Practices I (2 Credits) EMAMAG341A (P.176)										

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common (CM)	Category A License - General (AG)	Category A License - Aeroplane (AA)	Category A License - Helicopter (AH)	Category B1 License - General (BG)	Category B1 License - Aeroplane (BA)	Category B1 License - Helicopter (BH)	Category B2 License (BX)	Category B3 License (BY)	Workshop component - General (WS)	Workshop component - Avionic (AV)	Management (MG)
		Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
3		Basics Aerodynamics I (2 Credits) EMAMAG342A (P.181)										
4		Aircraft defects report (6 Credits) EMAMAG401A (P.232)	Aeroplane aerodynamics, structures and systems I (2 Credits) EMAMAA401A (P.241)	Helicopter aerodynamics, structures and systems I (2 Credits) EMAMAH401A (P.250)	Aircraft air conditioning and pressurization systems maintenance (9 Credits) EMAMBG401A (P.256)	Aircraft fixed pitch and/or ground adjustable propellers maintenance (5 Credits) EMAMBA401A (P.384)		Aircraft compasses compensation (2 Credits) EMAMBX401A (P.403)	Electrical fundamentals II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY401A (P.561)	Design tooling used to fabricate and repair aeronautical composite components (9 Credits) EMAMWS401A (P.595)	Aircraft passenger address system components repair (9 Credits) EMAMAV401A (P.820)	
		Gas turbine engine I (2 Credits) EMAMAG402A (P.234)	Propeller I (2 Credits) EMAMAA402A (P.248)		Aircraft mechanical flight control systems maintenance (9 Credits) EMAMBG402A (P.259)	Aircraft propellers assembly after shipment (3 Credits) EMAMBA402A (P.387)		Aircraft high frequency (HF) communications systems maintenance (5 Credits) EMAMBX402A (P.405)	Materials and hardware II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY402A (P.569)	Manufacture tooling used to fabricate and repair aeronautical composite components (9 Credits) EMAMWS402A (P.597)	Aircraft passenger entertainment system components repair (9 Credits) EMAMAV402A (P.823)	
		Piston engine I (2 Credits) EMAMAG403A (P.238)			Aircraft fuel storage and distribution systems maintenance (9 Credits) EMAMBG403A (P.262)	Aircraft variable pitch propellers and propeller systems maintenance (9 Credits) EMAMBA403A (P.390)		Aircraft very high frequency (VHF) communications systems maintenance (5 Credits) EMAMBX403A (P.408)	Maintenance Practices II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY403A (P.575)	Composite aeronautical components fabrication and repair at room temperature (9 Credits) EMAMWS403A (P.600)	Aircraft high frequency (HF) communication system components repair (9 Credits) EMAMAV403A (P.827)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Aircraft landing gear systems maintenance (9 Credits) EMAMBG404A (P.266)	Aircraft gas turbine engine thrust reverser systems maintenance (4 Credits) EMAMBA404A (P.394)		Aircraft intercommunications systems maintenance (5 Credits) EMAMBX404A (P.411)	Basics Aerodynamics II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY404A (P.583)	Composite aeronautical components fabrication and repair at elevated temperature (9 Credits) EMAMWS404A (P.603)	Repair aircraft very high frequency (VHF) communication system components (9 Credits) EMAMAV404A (P.830)	
					Aircraft hydraulic systems maintenance (9 Credits) EMAMBG405A (P.269)	Ground run propeller driven gas turbine engines up to 300 horsepower (hp) or equivalent (5 Credits) EMAMBA405A (P.397)		Aircraft public address systems maintenance (5 Credits) EMAMBX405A (P.414)	Human factors II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY405A (P.586)	Aeronautical graphic artwork production (9 Credits) EMAMWS405A (P.606)	Aircraft ultra high frequency (UHF) communication system components repair (9 Credits) EMAMAV405A (P.834)	
					Aircraft pneumatic/vacuum systems maintenance (9 Credits) EMAMBG406A (P.272)	Ground run propeller driven piston engines up to 300 horsepower (hp) or equivalent (5 Credits) EMAMBA406A (P.400)		Maintain aircraft emergency locator beacon systems (5 Credits) EMAMBX406A (P.417)	Aviation legislation II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY406A (P.589)	Aeronautical components repairing and fabricating by using boring machines (9 Credits) EMAMWS406A (P.609)	Aircraft video tape players repair (9 Credits) EMAMAV406A (P.838)	
					Aircraft mechanical ice and rain protection systems maintenance (4 Credits) EMAMBG407A (P.275)			Aircraft in-flight entertainment systems maintenance (5 Credits) EMAMBX407A (P.420)		Aeronautical component parts repairing by flame spraying (9 Credits) EMAMWS407A (P.611)	Aircraft in-flight entertainment video display repair (9 Credits) EMAMAV407A (P.842)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Aircraft water and waste systems maintenance (8 Credits) EMAMBG408A (P.278)			Aircraft direct current generating systems maintenance (5 Credits) EMAMBX408A (P.423)		Aeronautical components repairing and/or fabricating by using precision grinding machines (9 Credits) EMAMWS408A (P.613)	Aircraft galley heating equipment repair (9 Credits) EMAMAV408A (P.846)	
					Aircraft oxygen system components repairing and/or overhauling (9 Credits) EMAMBG409A (P.281)			Maintain aircraft alternating current generating systems (6 Credits) EMAMBX409A (P.426)		Aeronautical components repairing and/or fabricating by using milling machines (9 Credits) EMAMWS409A (P.616)	Aircraft galley chilling equipment repair (9 Credits) EMAMAV409A (P.850)	
					Aircraft engines inspection (6 Credits) EMAMBG410A (P.285)			Aircraft electrical motors and actuators maintenance (7 Credits) EMAMBX410A (P.429)		Reference lines of sight and planes establishing and maintaining by using optical tooling (9 Credits) EMAMWS410A (P.619)	Aircraft lead-acid batteries repair (5 Credits) EMAMAV410A (P.854)	
					Aircraft gas turbine auxiliary power units maintenance (9 Credits) EMAMBG411A (P.288)			Aircraft batteries and charging system maintenance (4 Credits) EMAMBX411A (P.432)		Aeronautical components repairing and/or fabricating by using turning machines (9 Credits) EMAMWS411A (P.622)	Aircraft nickel-cadmium batteries repair (5 Credits) EMAMAV411A (P.858)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Aircraft engine fuel systems maintenance (8 Credits) EMAMBG412A (P.291)			Aircraft power distribution systems maintenance (7 Credits) EMAMBX412A (P.435)		Aeronautical components peen (9 Credits) EMAMWS412A (P.625)	Aircraft digital computer equipment repair (9 Credits) EMAMAV412A (P.862)	
					Aircraft gas turbine engine lubrication systems maintenance (4 Credits) EMAMBG413A (P.294)			Aircraft lighting systems maintenance (3 Credits) EMAMBX413A (P.438)		Aeronautical NDT inspections by eddy current methods (9 Credits) EMAMWS413A (P.627)	Aircraft digital computer peripheral equipment repair (9 Credits) EMAMAV413A (P.866)	
					Aircraft fire protection systems maintenance (4 Credits) EMAMBG414A (P.297)			Aircraft fire protection and detection systems maintenance (4 Credits) EMAMBX414A (P.441)		Aeronautical NDT inspections by radiographic gamma ray methods (9 Credits) EMAMWS414A (P.630)	Electromechanical air data instruments repair (9 Credits) EMAMAV414A (P.870)	
					Aircraft gearboxes and/or transmissions maintenance (9 Credits) EMAMBG415A (P.300)			Aircraft gas turbine engine avionic ignition systems maintenance (2 Credits) EMAMBX415A (P.444)		Aeronautical NDT inspections by liquid penetrant methods (9 Credits) EMAMWS415A (P.633)	Mechanical air data instruments repair (9 Credits) EMAMAV415A (P.874)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Aircraft reciprocating powerplants maintenance (9 Credits) EMAMBG416A (P.303)			Aircraft temperature datum systems maintenance (2 Credits) EMAMBX416A (P.447)		Aeronautical NDT inspections by magnetic particle methods (9 Credits) EMAMWS416A (P.636)	Aircraft pressure sensing digital air data computers repair (9 Credits) EMAMAV416A (P.878)	
					Aircraft gas turbine engine power augmentation or restoration systems maintenance (4 Credits) EMAMBG417A (P.307)			Aircraft inertial navigation systems maintenance (5 Credits) EMAMBX417A (P.449)		Aeronautical NDT inspections by ultrasonic testing methods (9 Credits) EMAMWS417A (P.639)	Aircraft electronic instrument displays repair (9 Credits) EMAMAV417A (P.882)	
					Aircraft gas turbine powerplants maintenance (9 Credits) EMAMBG418A (P.310)			Aircraft weather radar systems maintenance (4 Credits) EMAMBX418A (P.452)		Optically aided aeronautical NDT inspections (9 Credits) EMAMWS418A (P.642)	Aircraft electronic multifunction displays repair (9 Credits) EMAMAV418A (P.886)	
					Aircraft gas turbine powerplant ignition systems maintenance (4 Credits) EMAMBG419A (P.313)			Aircraft radio and/or radar altimeter systems maintenance (4 Credits) EMAMBX419A (P.455)		Aeronautical NDT inspections by radiographic x-ray methods (9 Credits) EMAMWS419A (P.645)	Aircraft electronic character and/or symbol generators repair (9 Credits) EMAMAV419A (P.890)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Aircraft transportation (4 Credits) EMAMBG420A (P.316)			Aircraft ground proximity warning systems maintenance (5 Credits) EMAMBX420A (P.458)		Aircraft incubators repair (4 Credits) EMAMWS420A (P.648)	Aircraft electronic power control and distribution system components repair (9 Credits) EMAMAV420A (P.894)	
					Aircraft liquid oxygen systems maintenance (9 Credits) EMAMBG421A (P.319)			Aircraft traffic alert and collision avoidance systems maintenance (5 Credits) EMAMBX421A (P.461)		Aircraft carpets fabrication and repair (8 Credits) EMAMWS421A (P.650)	Aircraft solid state invertors repair (9 Credits) EMAMAV421A (P.898)	
					Aircraft gallery equipment maintenance (6 Credits) EMAMBG422A (P.322)			Aircraft monitoring instrument systems maintenance (5 Credits) EMAMBX422A (P.464)		Aircrew flying clothing and associated equipment maintenance and/or repair (9 Credits) EMAMWS422A (P.652)	Aircraft transformer rectifier units repair (5 Credits) EMAMAV422A (P.902)	
					Aircraft gaseous oxygen systems maintenance (9 Credits) EMAMBG423A (P.325)			Aircraft electrical system indicators and clocks maintenance (2 Credits) EMAMBX423A (P.467)		Inflatable aeronautical safety equipment maintenance (9 Credits) EMAMWS423A (P.656)	Aircraft electromechanical regulators repair (9 Credits) EMAMAV423A (P.906)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Aircraft piston engine lubrication systems maintenance (4 Credits) EMAMBG424A (P.328)			Aircraft flight data recording and/or cockpit voice recording systems maintenance (2 Credits) EMAMBX424A (P.470)		Aircraft cabin and crew seats maintenance (8 Credits) EMAMWS424A (P.659)	Aircraft primary airborne radar transceivers repair (9 Credits) EMAMAV424A (P.910)	
					Aircraft piston powerplant ignition systems maintenance (4 Credits) EMAMBG425A (P.331)			Aircraft pitot static systems maintenance (7 Credits) EMAMBX425A (P.473)		Aircraft interiors plastic trim application (4 Credits) EMAMWS425A (P.662)	Aircraft primary radar antenna drive units and control panels repair (9 Credits) EMAMAV425A (P.914)	
					Aircraft piston powerplants installation, operation and remove from a test bed (8 Credits) EMAMBG426A (P.334)			Aircraft gyroscopic instrument systems maintenance (2 Credits) EMAMBX426A (P.476)		Fabric items for aircraft interiors fabrication and/or repair (8 Credits) EMAMWS426A (P.665)	Aircraft distance measuring equipment repair (9 Credits) EMAMAV426A (P.918)	
					Aircraft piston engine lubrication system components repair and/or overhaul (8 Credits) EMAMBG427A (P.337)			Aircraft position indication systems maintenance (5 Credits) EMAMBX427A (P.479)		Aircraft seat belts and harness assemblies fabrication and/or repair (8 Credits) EMAMWS427A (P.668)	Aircraft tactical Air Navigation system components repair (9 Credits) EMAMAV427A (P.922)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Aircraft piston engine avionic ignition systems maintenance (2 Credits) EMAMBG428A (P.341)			Aircraft infrared imaging and/or detection systems maintenance (3 Credits) EMAMBX428A (P.482)		Aircraft brake units repairing and/or overhauling (8 Credits) EMAMWS428A (P.671)	Aircraft transponder system components repair (9 Credits) EMAMAV428A (P.926)	
					Electrical fundamentals II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG429A (P.344)			Aircraft night vision systems maintenance (2 Credits) EMAMBX429A (P.485)		Aircraft hydraulic system components repair and/or overhaul (9 Credits) EMAMWS429A (P.675)	Aircraft very high frequency (VHF) omnidirectional range system components repair (9 Credits) EMAMAV429A (P.930)	
					Digital techniques and electronic instrument systems II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG430A (P.353)			Aircraft head-up display systems maintenance (2 Credits) EMAMBX430A (P.488)		Aircraft liquid oxygen system components repair and/or overhaul (9 Credits) EMAMWS430A (P.679)	Aircraft instrument landing system components repair (9 Credits) EMAMAV430A (P.934)	
					Materials and hardware II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG431A (P.358)			Aircraft fiber optic cabling maintenance (2 Credits) EMAMBX431A (P.491)		Aircraft mechanical ice and rain protection system components repair and/or overhaul (9 Credits) EMAMWS431A (P.683)	Aircraft automatic direction finder system components repair (9 Credits) EMAMAV431A (P.938)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4					Human factors II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG432A (P.364)			Aircraft landing approach aid systems maintenance (8 Credits) EMAMBX432A (P.494)		Aircraft wheel assemblies repair and/or overhaul (6 Credits) EMAMWS432A (P.687)	Aircraft fiber optic conductors and harness assemblies Repair and/or fabrication (9 Credits) EMAMAV432A (P.942)	
					Aviation legislation II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG433A (P.367)			Aircraft distance measuring equipment system maintenance (4 Credits) EMAMBX433A (P.497)		Aircraft mechanical air conditioning and pressurization components repair and/or overhaul (9 Credits) EMAMWS433A (P.691)	Aircraft audio system components repair (9 Credits) EMAMAV433A (P.944)	
					Maintenance Practices II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG434A (P.373)			Aircraft Automatic Direction Finding systems maintenance (4 Credits) EMAMBX434A (P.500)		Aircraft fuel distribution system components repair and/or overhaul (9 Credits) EMAMWS434A (P.695)	Aircraft LORAN navigation system components repair (9 Credits) EMAMAV434A (P.948)	
					Basics Aerodynamics II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG435A (P.381)			Aircraft microwave systems maintenance (3 Credits) EMAMBX435A (P.503)		Aircraft landing gear system components repair and/or overhaul (9 Credits) EMAMWS435A (P.699)	Aircraft electronic engine control system components repair (9 Credits) EMAMAV435A (P.952)	

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Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4								Aircraft wiring loom and harness assemblies maintenance (9 Credits) EMAMBX436A (P.506)		Aircraft pneumatic power supply system components repair and/or overhaul (9 Credits) EMAMWS436A (P.703)	Aircraft compass system components repair (9 Credits) EMAMAV436A (P.956)	
								Aircraft autopilot systems maintenance (9 Credits) EMAMBX437A (P.509)		Aircraft water and waste systems components repair and/or overhaul (9 Credits) EMAMWS437A (P.707)	Aircraft flight data recording equipment repair (9 Credits) EMAMAV437A (P.960)	
								Aircraft global positioning satellite navigation systems maintenance (8 Credits) EMAMBX438A (P.512)		Aircraft flexible fuel tanks repair (9 Credits) EMAMWS438A (P.711)	Aircraft electrical and electronic switching equipment repair (9 Credits) EMAMAV438A (P.964)	
								Aircraft compass systems maintenance (9 Credits) EMAMBX439A (P.515)		Removal of coatings from aeronautical components by using plastic media blasting (9 Credits) EMAMWS439A (P.715)	Aircraft gyroscopic instrument system components repair and/or recondition (9 Credits) EMAMAV439A (P.968)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	<u>Common</u> (CM)	<u>Category A License - General</u> (AG)	<u>Category A License - Aeroplane</u> (AA)	<u>Category A License - Helicopter</u> (AH)	<u>Category B1 License - General</u> (BG)	<u>Category B1 License - Aeroplane</u> (BA)	<u>Category B1 License - Helicopter</u> (BH)	<u>Category B2 License</u> (BX)	<u>Category B3 License</u> (BY)	<u>Workshop component - General</u> (WS)	<u>Workshop component - Avionic</u> (AV)	<u>Management</u> (MG)
QF Levels	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>	<u>Unit of Competency</u>
4								Electrical fundamentals II (Avionics Repair and Maintenance) (4 Credits) EMAMBX440A (P.518)		Coating systems application on aircraft and aeronautical equipment (9 Credits) EMAMWS440A (P.718)	Aircraft ground proximity warning system components repair (9 Credits) EMAMAV440A (P.972)	
								Digital techniques and electronic instrument systems II (Avionics Repair and Maintenance) (4 Credits) EMAMBX441A (P.527)		Aircraft gas turbine powerplants installation, operation and remove from a test bed (8 Credits) EMAMWS441A (P.721)	Aircraft reciprocating engine ignition system components repair (9 Credits) EMAMAV441A (P.976)	
								Materials and hardware II (Avionics Repair and Maintenance) (4 Credits) EMAMBX442A (P.533)		Aircraft gas turbine compressor sections repair and/or overhaul (9 Credits) EMAMWS442A (P.724)	Aircraft radio and radar altimeter system components repair (9 Credits) EMAMAV442A (P.980)	
								Maintenance Practices II (Avionics Repair and Maintenance) (4 Credits) EMAMBX443A (P.539)		Aircraft gas turbine combustion sections repair and/or overhaul (9 Credits) EMAMWS443A (P.727)	Aircraft direct reading instrument system components repair (9 Credits) EMAMAV443A (P.984)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4								Basics Aerodynamics II (Avionics Repair and Maintenance) (4 Credits) EMAMBX444A (P.545)		Aircraft powerplant turbine sections repair and/or overhaul (9 Credits) EMAMWS444A (P.730)	Aircraft remote reading quantitative instruments and components repair (9 Credits) EMAMAV444A (P.988)	
								Human factors II (Avionics Repair and Maintenance) (4 Credits) EMAMBX445A (P.548)		Aircraft gas turbine engines assembly and disassembly (9 Credits) EMAMWS445A (P.733)	Aircraft gas turbine engine ignition system components repair (9 Credits) EMAMAV445A (P.992)	
								Aviation legislation II (Avionics Repair and Maintenance) (4 Credits) EMAMBX446A (P.551)		Aircraft fixed pitch propeller assembly repair and/or overhaul (9 Credits) EMAMWS446A (P.736)	Aircraft electrical rotating machines repair and/or recondition (9 Credits) EMAMAV446A (P.996)	
								Electronic fundamentals II (Avionics Repair and Maintenance) (3 Credits) EMAMBX447A (P.557)		Aircraft gas turbine engine fuel system components repair and/or overhaul (9 Credits) EMAMWS447A (P.740)	Aircraft remote reading flight instruments and components repair (9 Credits) EMAMAV447A (P.1000)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4										Aircraft reciprocating engine fuel system components repair and/or overhaul (9 Credits) EMAMWS448A (P.744)	Aircraft wiring loom and harness assemblies Repair and/or fabrication (9 Credits) EMAMAV448A (P.1004)	
										Aircraft gas turbine engine fuel control units repair and/or overhaul (9 Credits) EMAMWS449A (P.748)	Aircraft electric cabin heating system components repair (9 Credits) EMAMAV449A (P.1006)	
										Aircraft gearboxes and transmissions repair and/or overhaul (9 Credits) EMAMWS450A (P.752)	Commercial aviation optical system components repair (9 Credits) EMAMAV450A (P.1010)	
										Aircraft gas turbine engine lubrication system components repair and/or overhaul (8 Credits) EMAMWS451A (P.756)	Aircraft navigation computing system components repair (9 Credits) EMAMAV451A (P.1014)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4										Aircraft reciprocating engines repair and/or overhaul (9 Credits) EMAMWS452A (P.760)	Aircraft electrical anti-icing and de-icing system components repair (9 Credits) EMAMAV452A (P.1018)	
										Aircraft gas turbine engine power augmentation or restoration system components repair and/or overhaul (4 Credits) EMAMWS453A (P.764)	Aircraft automatic electronic braking system components repair (9 Credits) EMAMAV453A (P.1022)	
										Aircraft gas turbine engine thrust reverser system components repair and/or overhaul (4 Credits) EMAMWS454A (P.768)	Aircraft autopilot system components repair and/or recondition (9 Credits) EMAMAV454A (P.1026)	
										Aircraft variable pitch propeller assembly repair and/or overhaul (9 Credits) EMAMWS455A (P.772)	Aircraft fire detection and protection system components repair (9 Credits) EMAMAV455A (P.1030)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common (CM)	Category A License - General (AG)	Category A License - Aeroplane (AA)	Category A License - Helicopter (AH)	Category B1 License - General (BG)	Category B1 License - Aeroplane (BA)	Category B1 License - Helicopter (BH)	Category B2 License (BX)	Category B3 License (BY)	Workshop component - General (WS)	Workshop component - Avionic (AV)	Management (MG)
		Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4										Aircraft reciprocating powerplants test on a test bed (6 Credits) EMAMWS456A (P.776)	Aircraft global positioning system components repair (9 Credits) EMAMAV456A (P.1034)	
										Aircraft turbo-prop or turbo-shaft powerplants test on a test bed (9 Credits) EMAMWS457A (P.779)	Aircraft inertial navigation system components repair (9 Credits) EMAMAV457A (P.1038)	
										Aircraft turbo-fan or turbo-jet powerplants test on a test bed (9 Credits) EMAMWS458A (P.782)	Aircraft lighting system components repair (9 Credits) EMAMAV458A (P.1042)	
										Aeronautical component parts repairing and fabricating by brazing and soldering (6 Credits) EMAMWS459A (P.785)	Aircraft pitot static systems components repair (9 Credits) EMAMAV459A (P.1046)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4										Aircraft external fabric covering applying and/or repair (9 Credits) EMAMWS460A (P.788)	Aeronautical electronic test equipment repair (9 Credits) EMAMAV460A (P.1050)	
										Aeronautical sheet metal folding (3 Credits) EMAMWS461A (P.790)	Aircraft cockpit voice recorders and area microphones repair (9 Credits) EMAMAV461A (P.1054)	
										Aeronautical metals and components head treatment (9 Credits) EMAMWS462A (P.792)	Avionic printed circuit boards repair (9 Credits) EMAMAV462A (P.1058)	
										Aircraft metal and composite structures visually inspection (5 Credits) EMAMWS463A (P.795)	Aeronautical printed circuit boards etching (6 Credits) EMAMAV463A (P.1061)	
										Aircraft metal structure repair and/or fabrication (9 Credits) EMAMWS464A (P.797)	Avionic repair skills (9 Credits) EMAMAV464A (P.1064)	

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4										Aeronautical wooden structural components repair and fabrication (9 Credits) EMAMWS465A (P.799)		
										Aircraft metal components assembly by using fasteners (9 Credits) EMAMWS466A (P.801)		
										Aeronautical sheet metal forming by rubber pressing (9 Credits) EMAMWS467A (P.805)		
										Aeronautical metal components assembly by bonding (9 Credits) EMAMWS468A (P.807)		
										Aircraft plastic transparencies repair (9 Credits) EMAMWS469A (P.810)		

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
4										Analysis of data collected from engine indication systems in piston engines for troubleshooting engine defects (6 Credits) EMAMWS470A (P.812)		
										Aeronautical components, tooling and machine tools inspection and calibration by using optical tooling (9 Credits) EMAMWS471A (P.814)		
										Aeronautical component parts repair and/or fabrication by welding (8 Credits) EMAMWS472A (P.816)		

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
5	Maintenance tasks planning and scheduling (9 Credits) EMAMCM501A (P.1067)	Granting aircraft certificates (9 Credits) EMAMAG501A (P.1071)			Gas turbine engine II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG501A (P.1072)	Ground run propeller driven gas turbine engines over 300 horsepower (hp) or equivalent (9 Credits) EMAMBA501A (P.1084)	Helicopter aerodynamics, structures and systems II (Mechanics Repair and Maintenance) (3 Credits) EMAMBH501A (P.1105)	Aircraft System (Avionics Repair and Maintenance) (4 Credits) EMAMBX501A (P.1113)	Wooden aeroplanes (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY501A (P.1122)			
	Maintenance of quality control for maintenance tasks (9 Credits) EMAMCM502A (P.1069)				Piston engine II (Mechanics Repair and Maintenance) (3 Credits) EMAMBG502A (P.1079)	Ground run propeller driven piston engines over 300 horsepower (hp) or equivalent (9 Credits) EMAMBA502A (P.1087)		Propulsion system (Avionics Repair and Maintenance) (4 Credits) EMAMBX502A (P.1120)	Aeroplane aerodynamics, structures and systems II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY502A (P.1124)			
						Propeller II (Mechanics Repair and Maintenance) (3 Credits) EMAMBA503A (P.1090)			Piston engine II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY503A (P.1132)			
						Aeroplane aerodynamics, structures and systems II (Mechanics Repair and Maintenance) (3 Credits) EMAMBA504A (P.1093)			Propeller II (Simple Light Aeroplane Repair and Maintenance) (5 Credits) EMAMBY504A (P.1137)			

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
5						Wooden aeroplanes (Mechanics Repair and Maintenance) (3 Credits) EMAMBA505A (P.1103)						
6												Long-term maintenance forecast planning for an aircraft fleet and major aircraft components (40 Credits) EMAMMG601A (P.1141)
												Quality Assurance (12 Credits) EMAMMG602A (P.1144)
												Project Management (12 Credits) EMAMMG603A (P.1147)
												Risk Assessment (12 Credits) EMAMMG604A (P.1149)

List of Competencies of the Aircraft Maintenance Engineering Branch in the Electrical & Mechanical Services Industry

Functional Areas	Common	Category A	Category A	Category A	Category B1	Category B1	Category B1	Category B2	Category B3	Workshop	Workshop	Management
	(CM)	License - General (AG)	License - Aeroplane (AA)	License - Helicopter (AH)	License - General (BG)	License - Aeroplane (BA)	License - Helicopter (BH)	License (BX)	License (BY)	component - General (WS)	component - Avionic (AV)	(MG)
QF Levels	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency	Unit of Competency
6												Safety Management System (12 Credits) EMAMMG605A (P.1151)
												Aircraft legislation (12 Credits) EMAMMG606A (P.1153)
												Liability of Flight Schedule (12 Credits) EMAMMG607A (P.1158)
												Safety assessment (12 Credits) EMAMMG608A (P.1160)
												Incident and Accident Investigation (12 Credits) EMAMMG609A (P.1162)
												Aircraft certification (30 Credits) EMAMMG610A (P.1164)

Competency Level 1

1. Title	Conversion of different units of measurements
2. Code	EMAMCM101A
3. Range	Assembly and maintenance work such as selection of parts (fasteners)/ drills with correct dimensions or servicing e.g. fuelling.
4. Level	1
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Conversion principles ♦ Understand the relationship between different units of measurements and the methods to convert the units from one to another</p> <ul style="list-style-type: none"> • Metric units • Imperial (British) units • US units <p>6.2 Computation method for conversion ♦ Able to use computation skills to convert the dimensions to the required units for ease of work in accordance with the procedures, e.g. basic mathematical calculation</p>
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to convert the various units of measurements from one to another.</p> <p>(ii) Able to clearly explain the principle for the inter-conversion</p>
8. Remarks	(Ref: HKAR-66 Module 1 & 2)

1. Title	Referencing the working instructions and guidelines from the aviation publications and documentation with the knowledge of general aviation English
2. Code	EMAMCM102A
3. Range	Applicable to all documentation works which require the observance of written instructions or guidelines.
4. Level	1
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the general aviation English vocabulary covering :</p> <ul style="list-style-type: none"> • aircraft structures • tools and equipment • maintenance processes • commonly-used aviation jargons <p>6.2 Comprehension ♦ Able to comprehend and follow instructions mentioned in written documents to conduct engineering work in accordance with the procedures.</p> <p>6.3 Professional approach ♦ Able to keep abreast with the prevailing aviation publications and documentation.</p> <p style="padding-left: 100px;">♦ Understand the working instructions and guidelines of the aviation documents.</p>
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to read written instructions in general aviation English and extract working guide lines for conduction of engineering work.</p> <p>(ii) Able to make reference to and clearly explain the aviation publications and documentation.</p>
8. Remarks	The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in general English.

Competency Level 2

1. Title	Capacitors installation and testing in electric circuits
2. Code	EMAMCM201A
3. Range	Installation and testing of capacitors in electric circuits are usually carried out in a specialist bay or workshop.
4. Level	2
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Operation and working principles</p> <ul style="list-style-type: none"> ◆ Understand the operation and working principles of capacitors, including: <ul style="list-style-type: none"> • factors affecting capacitance • capacitor types and construction • exponential charge and discharge <p>6.2 Testing methods</p> <ul style="list-style-type: none"> ◆ Able to use appropriate tools to test capacitors in accordance with the procedures, including: <ul style="list-style-type: none"> • the working condition • appropriate installation i.e. desired capacitance, and at correct working voltage etc. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to follow the specifications to install capacitors in electric circuits in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to perform inspection on capacitors in accordance with the procedures.

7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to install and test the capacitors in electric circuits according to the required specifications and restore the normal function of the electric circuits. (ii) Able to clearly describe the installation and testing procedures, and their technical requirements. (iii) Able to draft the reports for the installation and testing work.
8. Remarks	<p>(Ref: HKAR-66 Module 3.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in electric circuits.</p>

1. Title	Electronic equipment against electrostatic discharge handling
2. Code	EMAMCM202A
3. Range	Tasks that need to come into contact with electronic equipments such as replacement work or engineering work in the vicinity of these equipments. The job should be done in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	2
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Handling techniques</p> <ul style="list-style-type: none"> ◆ Understand the special handling techniques for equipment sensitive to electrostatic discharges : <ul style="list-style-type: none"> • knowledge of electron theory and the theories of static electricity • identification of symbols for marking this type of components • possible risks/damages to be incurred with improper handling • uses of component and personnel anti-static protection devices <p>6.2 Handling methods</p> <ul style="list-style-type: none"> ◆ Apply special handling techniques and protection devices to deal with electronic equipment against electrostatic discharge in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to apply special handling techniques to deal with electronic equipment in accordance with the procedures. ◆ Able to follow the maintenance manual instructions to handle the equipment.

<p>7. Assessment Criteria</p>	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to handle (e.g. transport from supplies stores to hangar) electronic equipment with appropriate methods so as to safeguard the equipment from electrostatic discharge and the potential damages. (ii) Able to describe and quote examples to illustrate the means to handle the equipment correctly. (iii) Able to make preparation for documents to explain the correct handling of electronic equipment.
<p>8. Remarks</p>	<p>(Ref: HKAR-66 Module 3.1, 3.2 & 5.12) The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in electrostatic principles.</p>

1. Title	Magnetic shielding selection and installation into electronic systems
2. Code	EMAMCM203A
3. Range	Installation or maintenance of electronic system is usually carried out in a specialist bay or workshop
4. Level	2
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Theory ♦ Understand the theory of magnetism, including :</p> <ul style="list-style-type: none"> • magnetization and demagnetization • methods of magnetic shielding • possible electromagnetic environment and influences on maintenance practices <p>6.2 Methods and procedures ♦ Able to provide magnetic shielding to electronic systems that are prone to damages caused by magnetic actions in accordance with the procedures.</p> <p>6.3 Professional approach ♦ Able to select and install appropriate magnetic shields to electronic systems in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Understand the requirements by the aviation industry.</p>
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to provide magnetic shielding to electronic systems.</p> <p>(ii) Able to describe and quote examples to illustrate different means of magnetic shielding.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 3.10 & 5.14)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in electrical theories and electrical terminology.</p>

1. Title	Defective components replacement in aircraft
2. Code	EMAMCM204A
3. Range	Maintenance of systems having defective components in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	2
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Constructions and principles ♦ Understand the construction and working principles for defective systems, including :</p> <ul style="list-style-type: none"> • how the defective component is linked to the system as a whole <p>6.2 Procedures ♦ Able to replace the defective component with one in good condition in accordance with the procedures.</p> <p>6.3 Professional approach ♦ Able to follow in-house procedures to label the defective component and send it to appropriate party for repair or disposal.</p> <p>♦ Able to complete the task within the stipulated duration.</p>
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to replace the defective components in aircraft.</p> <p>(ii) Able to restore the normal functioning of the system containing that component.</p> <p>(iii) Able to prepare reports for the replacement work.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.18)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the use of common tools.</p>

1. Title	Filters selection for electric signal filtering
2. Code	EMAMCM205A
3. Range	Design of electric circuits for special signal transmission or repair work of electric circuits.
4. Level	2
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Operation of different filters ♦ Able to understand the operation of different filters :</p> <ul style="list-style-type: none"> • knowledge of AC theory and L, C and R circuits • types of filters and their operation : low pass, high pass, band pass and band stop <p>6.2 Application and uses of different filters ♦ Able to select appropriate filters for electric signal filtering in accordance with the procedures.</p>
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to select different filter set-up for specific functions in electric circuits.</p> <p>(ii) Able to describe in general words and examples the operation of different types of filters.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 3.13, 3.14 & 3.16)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in electrical theories.</p>

1. Title	Mathematics I
2. Code	EMAMAG201A
3. Range	Mathematics is needed for a wide range of calculations relating to aircraft repair and maintenance works, e.g. applicable to repair and maintenance works in aircrafts, stores, airworthiness, documentation, analysis, and tools etc
4. Level	2
5. Credit	1
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to know about the principal element of the Arithmetic unit ◆ Able to know about the principal element of the Algebra unit ◆ Able to know about the principal element of the geometry unit <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Graphical representation. • Nature and uses of graphs, graphs of equations/functions. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to know about the principal elements of the subjects. ◆ Able to understand the basic knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Graphical representation. • Nature and uses of graphs, graphs of equations/functions. ◆ Able to apply the knowledge in the aircraft maintenance task.

7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to know about the theoretical fundamentals of the subjects. (ii) Able to give a very brief description of the subjects using, as appropriate, typical examples. (iii) Able to apply the knowledge in a practical manner.
8. Remarks	Ref: HKAR-66 Module 1

1. Title	Physics I
2. Code	EMAMAG202A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	2
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to know about the Matter <ul style="list-style-type: none"> • Nature of matter, chemical compounds, states and changes between states ◆ Able to know about the Mechanics <ul style="list-style-type: none"> • Statics • Kinetics • Dynamics • Fluid dynamic ◆ Able to know about the Thermodynamics <ul style="list-style-type: none"> • Temperature and Heat definition. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Fluid dynamic • Thermodynamics <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to know about the principal elements of the subjects. ◆ Able to understand the basic knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Fluid dynamic • Thermodynamics

	<p style="text-align: center;">◆ Able to apply the knowledge in the aircraft maintenance task.</p>
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to know about the theoretical fundamentals of the subjects. (ii) Able to give a very brief description of the subjects using, as appropriate, typical examples. (iii) Able to apply the knowledge in a practical manner.
8. Remarks	Ref: HKAR-66 Module 2: Physics

Competency Level 3

1. Title	Aeronautical electronic document files conversion and transfer between operating systems	
2. Code	EMAMCM301A	
3. Range	Convert and transfer electronic files	
4. Level	3	
5. Credit	4	
6. Competency	<u>Performance Requirement</u>	
	6.1 Convert and transfer electronic files	<ul style="list-style-type: none"> ◆ Able to review the documents and procedures. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. computer, electronic storage media, publications. ◆ Able to setup the file conversion program in accordance with the procedures. ◆ Able to convert and transfer the electronic files to electronic files in other operating systems in accordance with the procedures.
	6.2 Professional approach	<ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to store the electronic files in accordance with the procedures. ◆ Able to prepare the electronic storage media for storage, transit or use in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, certification. ◆ Able to return the work area in a condition that enables the next task to begin

7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to convert and transfer the aeronautical electronic files between operating systems using file conversion software.
8. Remarks	Ref: NZQA - 4017

1. Title	File conversion from aeronautical manuscripts to electronic files
2. Code	EMAMCM302A
3. Range	Convert and transfer electronic files, e.g. optical character reader or scanner with optical character reading software
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Convert aeronautical manuscripts to electronic files</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. computer, optical character reader, electronic storage media, publications. ◆ Able to setup the file conversion program in accordance with the procedures. ◆ Able to convert the manuscripts to electronic files in accordance with the procedures. <p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to store the converted electronic files in accordance with the procedures. ◆ Able to prepare the manuscripts and electronic storage media for storage, transit or use in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, certification. ◆ Able to return the work area in a condition that enables the next task to begin

7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to convert the aeronautical manuscripts to electronic files.
8. Remarks	Ref: NZQA - 4018

1. Title	Aeronautical electronic document files conversion and transfer between software packages	
2. Code	EMAMCM303A	
3. Range	Convert and transfer electronic files,e.g. database files to word processed files and vice versa	
4. Level	3	
5. Credit	4	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Convert and transfer aeronautical electronic files between software packages.</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. computer, electronic storage media, publication ◆ Able to setup the file conversion program in accordance with the procedures. ◆ Able to convert and transfer the electronic files to electronic files in other software packages in accordance with the procedures. <p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to store the converted electronic files in accordance with the procedures. ◆ Able to prepare the electronic storage media for storage, transit or use in accordance with the procedures, and task requirements. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, certification. ◆ Able to return the work area in a condition that enables the next task to begin 	

7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to convert and transfer the aeronautical electronic files between software packages using file conversion software.
8. Remarks	Ref: NZQA - 4019

1. Title	Aeronautical industry publications and documentation usage
2. Code	EMAMCM304A
3. Range	Aeronautical industry publications and documentation are usually used in a specialist bay or workshop.
4. Level	3
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Obtain information from aeronautical publications and documents</p> <ul style="list-style-type: none"> ◆ Able to determine the required publications and documents by analyzing task requirements. ◆ Able to determine the amendment status to ensure information is current. ◆ Able to locate the required information using the publication system layout. ◆ Able to return the publications and documents to allocated storage area to prevent damage and enable access for future use in accordance with the procedures. <p>6.2 Complete aeronautical industry documentation</p> <ul style="list-style-type: none"> ◆ Able to select the documentation required for the task in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to process, store and/or archive the completed documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <p>(i) Able to obtain information from the aeronautical publications and documents.</p> <p>(ii) Able to complete the aeronautical industry documentation.</p>
8. Remarks	Ref: NZQA - 3894

1. Title	Aeronautical engineering maintenance practices application
2. Code	EMAMCM305A
3. Range	<p>Aeronautical engineering maintenance practices are usually applied in a specialist bay or workshop.</p> <p>Foreign objects (FOD) stand for anything that can find its way into an aircraft engine or flight control mechanisms that could possibly cause damage to aircraft, equipment or people.</p>
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Apply aeronautical occupational health and safety practices</p> <ul style="list-style-type: none"> ◆ Able to identify the workplace hazards and comply with the safety procedures when working on and around aircraft, e.g. workplace hazards may include noise, propellers and/or rotors, rotating components, heights, weights, engine intakes and exhausts, hazardous materials, high-energy ignition systems, forms of radiation (VDUs, radio frequencies, radio active materials, microwaves, X-Rays), high-pressure hydraulic and pneumatic systems, electrical systems. ◆ Able to report the workplace hazards in accordance with the procedures.

		<ul style="list-style-type: none"> ◆ Able to interpret and comply with the aeronautical safety signs, symbols and instructions in accordance with the procedures, e.g. radiation (radio, microwave and X-ray), servicing, isolated systems, painting, chemical use. ◆ Able to isolate and/or deactivate the systems to be worked on in accordance with the procedures.
	<p>6.2 Apply aeronautical engineering maintenance practices</p>	<ul style="list-style-type: none"> ◆ Able to convert the imperial and metric measurements, weights and quantities in accordance with the procedures. ◆ Able to interpret the aeronautical engineering drawings in accordance with the procedures. ◆ Able to apply the tool control procedures applicable to aircraft maintenance tasks in accordance with aviation industry standards and procedures. ◆ Able to request the inspections in accordance with the procedures. ◆ Able to control the quality of work in accordance with the procedures, e.g. quality standards accessed, applied.
	<p>6.3 Perform mechanical aeronautical engineering tasks</p>	<ul style="list-style-type: none"> ◆ Able to connect and disconnect the aeronautical plumbing in accordance with the procedures, e.g. quick disconnect couplings, unions, flexible and rigid tubes, hoses and pipes.

		<ul style="list-style-type: none"> ◆ Able to maintain the bearings in accordance with the procedures,e.g. remove, clean, inspect, lubricate, protect, and fit. ◆ Able to maintain the threads in accordance with the procedures,e.g. clean, inspect, identify, dress. ◆ Able to select and use the attachment and locking hardware in accordance with the procedures,e.g. fasteners (nuts, bolts, washers, screws), locking devices (lock washers, split pins, lock wire, lock tabs).
	6.4 Perform aeronautical electrical engineering tasks	<ul style="list-style-type: none"> ◆ Able to bond and/or earth the aeronautical components or parts in accordance with the procedures. ◆ Able to connect and disconnect the aeronautical electrical connectors in accordance with the procedures.
	6.5 Perform aeronautical preventative maintenance	<ul style="list-style-type: none"> ◆ Able to identify and remove the foreign objects to prevent damage to personnel, aircraft, and equipment in accordance with the procedures,e.g. FOD - loose hardware, tools, parts, pavement fragments, pens, coins, badges, hats, rags, wildlife. locations - in/on aircraft, in/on components, on flight lines, in work areas. ◆ Able to fit and remove the isolation tags, blanks, covers, and locks in accordance with the procedures. ◆ Able to identify, remove and prevent corrosion in accordance with the procedures.

	<p>6.6 Use troubleshooting techniques to locate mechanical and electrical defects</p> <ul style="list-style-type: none"> ◆ Able to locate and report the defects using knowledge of mechanical equipment, system and component operation in accordance with the procedures, e.g. leaks, chafing, dents, gouges, binding, restrictions, obstructions. ◆ Able to locate the defects using troubleshooting techniques in accordance with the procedures, e.g. troubleshooting techniques - visual inspections, half-split rule, troubleshooting charts, interpretation of component and/or system circuit diagrams. ◆ Able to locate and report the defects, using knowledge of electrical equipment, circuit, and system and component operation in accordance with the procedures, e.g. short-circuits, open circuits, no lights, no indications, burning smells and/or smoke.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to apply the aeronautical occupational health and safety practices. (ii) Able to apply the aeronautical engineering maintenance practices. (iii) Able to perform the mechanical aeronautical engineering tasks. (iv) Able to perform the electrical aeronautical engineering tasks. (v) Able to perform the aeronautical preventative maintenance. (vi) Able to use troubleshooting techniques to locate the mechanical and electrical defects.
<p>8. Remarks</p>	<p>Ref: NZQA - 3895</p>

1. Title	Aeronautical engineering tools and equipment selection, usage, and maintenance
2. Code	EMAMCM306A
3. Range	<p>Tools and equipment may include: hand tools - spanners, screw drivers, pliers, hammers, files, socket sets, torque wrenches, drills, saws, clamps, chisels, drifts, reamers, taps and dies, snips and shears, wire strippers. powered tools and equipment - isolating transformers, extension power leads, portable drills, portable grinders, drill presses, bench grinders, air driven tools, dimplers. support equipment - lifting tackle, jacks, benders and folders, guillotines, grease guns, ladders, stands. measuring and marking out equipment - micrometers, callipers, vernier gauges, dial test indicators, bore gauges, rulers, straight edges, combination set squares and protractors, clinometers, hole and telescopic gauges, limit and comparator gauges and mandrels, surface tables and plates, vee and scribing blocks, squares, level gauges, marking out compounds, scribes.</p> <p>All calibrated tooling and electrical tooling must be within current compliance in accordance with the procedures.</p>
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Select aeronautical engineering tools and equipment</p> <ul style="list-style-type: none"> ◆ Hand tools are selected for the task in accordance with the procedures. ◆ Powered tools and equipment are selected for the task in accordance with the procedures. ◆ Support equipment is selected and set up for the task in accordance with the procedures. ◆ Measuring and marking out equipment is selected for the task in accordance with the procedures.

	<p>6.2 Apply aeronautical engineering maintenance practices</p> <ul style="list-style-type: none"> ◆ Tools and equipment are used in a safe and efficient manner, to produce the required outcome without damaging components or tooling in accordance with the procedures. ◆ Tools and equipment are maintained in accordance with the procedures, e.g. clean, repair, replace, report defects. ◆ Tools and equipment are stored safely and securely after use in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to select the aeronautical engineering tools and/or equipment. (ii) Able to use and maintain the aeronautical engineering tools and equipment.
<p>8. Remarks</p>	<p>Ref: NZQA - 3896</p>

1. Title	Avionic trade practices applying and defects locating
2. Code	EMAMCM307A
3. Range	Apply avionic trade practices and locate defects are usually done in a specialist bay or workshop
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Apply avionic trade practices</p> <ul style="list-style-type: none"> ◆ Able to carry out communication using avionic related terminology in accordance with the procedures. ◆ Able to join and/or terminate the wiring and connectors in accordance with the procedures, e.g. solder, crimp. ◆ Able to prevent and/or control the electromagnetic interference in accordance with the procedures. ◆ Able to avoid the electrostatic damage in accordance with the procedures. ◆ Able to fit and remove the avionic components and parts in accordance with the procedures, e.g. circuit boards, line replaceable units (black boxes), wiring looms and harnesses. ◆ Able to test the operation of replaced components and parts in accordance with the procedures. <p>6.2 Locate avionic defects</p> <ul style="list-style-type: none"> ◆ Able to measure the resistance, voltage, current, and insulation resistance in accordance with the procedures. ◆ Able to interpret the electrical circuit diagrams in accordance with the procedures.

7. Assessment Criteria	The integral outcome requirement of this UoC are: (i) Able to apply the avionic trade practices. (ii) Able to locate the avionic defects.
8. Remarks	Ref: NZQA - 3897

1. Title	Aviation parts and/or materials receiving from suppliers
2. Code	EMAMCM308A
3. Range	This UoC is intended for people who are required to receive aviation parts and materials from suppliers as part of their aviation storekeeping duties.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Receive aviation parts and/or materials from suppliers</p> <ul style="list-style-type: none"> ◆ Able to unload the aviation parts and/or materials packages from transport in accordance with the procedures. ◆ Able to check the aviation parts and/or materials packages to ensure conformity with order documents, e.g. conformity - quantity, freedom from external damage, leakage. ◆ Able to take action for non-conformities in accordance with the procedures, e.g. actions - delivery refused, documentation amended, acceptance of partial delivery <p>6.2 Inspect inwards aviation parts and/or materials for conformance and send aviation parts and/or materials to storage</p> <ul style="list-style-type: none"> ◆ Able to unpack and inspect in sequence to ensure that aviation parts and/or materials are processed in order of priority. ◆ Able to detect and record the transit damage to unpacked aviation parts and/or materials in accordance with the procedures. ◆ Able to confirm the supplier documentation details conform to order specifications, e.g. documentation details - shelf life status, release notes, approved supplier.

	<ul style="list-style-type: none"> ◆ Able to take corrective action to address documentation non-conformities in accordance with the procedures. ◆ Able to store and record the special purpose transit packaging in accordance with the procedures. ◆ Able to update the stock control system to record receipt of aviation parts and/or materials in accordance with the procedures. ◆ Able to update the stock control system to record receipt of aviation parts and/or materials in accordance with the procedures. ◆ Able to select the destination for aviation parts and/or materials in accordance with the procedures. ◆ Able to confirm the storage packaging of aviation parts and/or materials complies with procedures. ◆ Able to confirm the storage labeling of aviation parts and/or materials complies with procedures. ◆ Able to dispatch the aviation parts and/or materials to selected storage areas in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the receipt documentation in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to update the stock control system to record receipt and location of aviation parts and/or materials in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to receive the aviation parts and/or materials from suppliers. (ii) Able to inspect the inwards aviation parts and/or materials for conformance. (iii) Able to send the aviation parts and/or materials to storage. (iv) Able to complete the receipt documentation.
8. Remarks	Ref: NZQA - 15885

1. Title	Aviation parts and/or materials dispatch
2. Code	EMAMCM309A
3. Range	This UoC is intended for people who dispatch aviation parts and/or materials to external agencies and customers as part of their aviation storekeeping duties.
4. Level	3
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Check dispatch documentation</p> <ul style="list-style-type: none"> ◆ Able to receive the aviation parts and/or materials for dispatch match dispatch instructions,e.g. instructions - part number, serial number, quantity. ◆ Able to confirm the aircraft release documentation provided is complete and matches items in accordance with the procedures. <p>6.2 Package aviation parts and/or materials for dispatch and complete dispatch documentation</p> <ul style="list-style-type: none"> ◆ Able to pack the aviation parts and/or materials for dispatch in accordance with the procedures,e.g. packing - bagging, wrapping, transit case packing, crating, weighing, measuring dimensions. ◆ Able to identify the packages and confirm they meet the transit documentation requirements,e.g. identification - address labels, fragile labels, special handling labels, dangerous goods markings. ◆ Able to complete the dispatch documentation in accordance with destination and procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to select the transportation method in accordance with the procedures and meets consignment requirements, e.g. consignment requirements may include but are not limited to - urgency, weight, cost, customer specifications, fragility, dangerous goods requirements, and hazard restrictions. ◆ Able to dispatch the consignment in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to check the dispatch documentation. (ii) Able to package the aviation parts and/or materials for dispatch. (iii) Able to complete the dispatch documentation. (iv) Able to carry out dispatch of aviation parts and/or materials.
<p>8. Remarks</p>	<p>Ref: NZQA - 15886</p>

1. Title	Aviation parts and/or materials storage and pick
2. Code	EMAMCM310A
3. Range	This UoC is intended for people who carry out warehousing activities as part of their aviation storekeeping duties.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Position aviation parts and/or materials in an aviation store</p> <ul style="list-style-type: none"> ◆ Able to label the Aviation parts and/or materials in accordance with the procedures. ◆ Aviation parts and/or materials are binned or positioned in accordance with the procedures, e.g. procedures - binning location matched with binning documentation, stacking order, segregation of incompatible materials, reallocation of storage areas. ◆ Able to bin the aviation parts and/or materials in a way that ensures the oldest stock is used first. ◆ Able to apply suitable handling and storage methods to aviation parts and/or materials to minimize danger to personnel and damage to items. ◆ Able to maintain the quality of aviation parts and/or materials in storage in accordance with the procedures, e.g. procedures - cleanliness, physical security, re-preservation, inhibiting, visual inspection of condition, temperature, light, humidity.

	<p>6.2 Record storage of aviation parts and/or materials</p> <p>6.3 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to update the location and binning records in accordance with the procedures. ◆ Able to carry out stocktaking in accordance with the procedures. ◆ Able to control the shelf life requirements in accordance with the procedures, e.g. procedures - expiry dates monitored, records updated, re-lifing <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to pick in sequence to minimize time and distance and maintains order of priority in accordance with the procedures. ◆ Able to perform inspection for picked parts and/or materials to ensure fitness for issue, e.g. inspection - freedom from damage, correct labeling, within shelf life, integrity of packaging. ◆ Able to distribute the picked aviation parts and/or materials in accordance with the procedures. ◆ Able to update the stock records in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to position the aviation parts and/or materials in an aviation store. (ii) Able to record storage of aviation parts and/or materials. (iii) Able to pick and distribute the aviation parts and/or materials.
8. Remarks	Ref: NZQA - 15887

1. Title	Aviation parts and/or materials special handling, storage and disposal
2. Code	EMAMCM311A
3. Range	Aviation parts and/or materials referred to in this UoC are those which require evidence of authenticity and traceability to the manufacturer prior to their release for use on aircraft. Shelf lifed parts and/or materials are items which have a limited storage period before use or installation in an aircraft or component.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Identify aviation parts and/or materials requiring special handling and storage</p> <ul style="list-style-type: none"> ◆ Able to identify the aviation parts and/or materials in terms of requirements for special handling, e.g. aviation parts and/or materials requiring special handling may include - electrostatic sensitive parts, magnetic sensitive parts, oxygen system parts, shelf lifed parts, delicate parts, radioactive parts, tyres, chemicals, fluids, aircraft metals, windows and transparencies.

	<p>◆ Able to identify the aviation parts and/or materials in terms of requirements for special storage conditions,e.g. aviation parts and/or materials requiring special storage conditions may include - rubber and plastic parts, electrostatic sensitive parts, magnetic sensitive parts, oxygen system parts, shelf lifed parts, delicate parts, radioactive parts, tyres, chemicals, fluids, aircraft metals, windows and transparencies.</p> <p>special storage conditions may include - cleanliness, temperature, humidity, light exclusion, dust exclusion, segregation, stacking, freedom from contamination.</p>
6.2	<p>Handle and store the aviation parts and/or materials which require special handling or special storage condition</p> <p>◆ Able to handle the aviation parts and/or materials in accordance with special handling requirements,e.g. aviation parts and/or materials requiring special handling may include - electrostatic sensitive parts, magnetic sensitive parts, oxygen system parts, shelf lifed parts, delicate parts, radioactive parts, tyres, chemicals, fluids, aircraft metals, windows and transparencies</p>

	<ul style="list-style-type: none">◆ Able to store the aviation parts and/or materials are stored in accordance with special storage conditions,e.g. aviation parts and/or materials requiring special storage conditions may include - rubber and plastic parts, electrostatic sensitive parts, magnetic sensitive parts, oxygen system parts, shelf lifed parts, delicate parts, radioactive parts tyres, chemicals, fluids, aircraft metals, windows and transparencies.◆ Able to store the shelf lifed aviation parts and/or materials in accordance with the procedures,e.g. shelf life requirements include - expiry dates monitored, stock rotated, expired parts disposed of, expired parts re-lifed.◆ Able to maintain and monitor the environmental conditions of storage area in accordance with the procedures.◆ Able to complete the task within the stipulated duration.◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.
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	<p>6.3 Professional approach</p> <p>◆ Able to handle the aviation parts and/or materials are in accordance with special disposal conditions contained in procedures, e.g. aviation parts and/or materials requiring special disposal conditions may include but are not limited to</p> <ul style="list-style-type: none"> - hazardous materials, unserviceable parts requiring mutilation.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to identify the aviation parts and/or materials which require special handling and storage. (ii) Able to handle the aviation parts and/or materials which require special handling. (iii) Able to store the aviation parts and/or materials which require special storage conditions. (iv) Able to handle of the aviation parts and/or materials which require special disposal in accordance with the procedures.
<p>8. Remarks</p>	<p>Ref: NZQA - 15888</p>

1. Title	Aviation parts and/or materials purchasing
2. Code	EMAMCM312A
3. Range	This UoC is intended for people who carry out purchasing activities as part of their aviation storekeeping duties.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Establish purchasing requirements for aviation parts and/or materials and/or services</p> <ul style="list-style-type: none"> ◆ Able to establish the purchasing requirements from inventory history in accordance with the procedures, e.g. history - minimum and maximum stock levels, stock turn rate, vendor lead time, predicted use rate, total inventory value. ◆ Able to identify the possible sources of required parts and/or materials and/or services in accordance with the procedures. ◆ Able to select the vendor in accordance with selection criteria, e.g. selection criteria - lead time, item price, price breaks, vendor approvals, vendor history, warranty items, delivery method. ◆ Able to raise purchase orders with selected vendor in accordance with the procedures. <p>6.2 Monitor order progress</p> <ul style="list-style-type: none"> ◆ Able to establish order progress in accordance with the procedures. ◆ Able to take follow-up action for discrepant orders in accordance with the procedures. ◆ Able to negotiate the changes to orders and/or delivery methods in accordance with the procedures, e.g. customer, vendor, transport agency.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the purchasing documentation in accordance with the procedures, e.g. documentation - purchase orders, order confirmations, receipt advice, stock lists. ◆ Able to update the vendor history in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to establish purchasing requirements for the aviation parts and/or materials and/or services. (ii) Able to monitor the order progress. (iii) Able to complete all the requirements associated with the purchasing actions.
<p>8. Remarks</p>	<p>Ref: NZQA - 15889</p>

1. Title	Aircraft trestle or shore
2. Code	EMAMAG301A
3. Range	<p>Aircraft trestling or shoring is usually carried out in an aircraft hangar or workshop during the aircraft non-flight time.</p> <p>Agrichemical standard for any substance, whether inorganic or organic, man-made or naturally occurring, modified or in its original state, that is used in any agriculture, horticulture or related activity, to eradicate, modify or control flora and fauna. For the purposes of aerial agrichemical application, it includes liquid fertilizers, and suspension fertilizers</p>
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Trestle or shore an aircraft</p> <ul style="list-style-type: none"> ◆ Able to prepare the aircraft to trestle or shore in accordance with the procedures. ◆ Able to posit the equipment in accordance with the procedures, e.g. slings, trestles, cradles, inflation pads, protective systems, props, beams. ◆ Able to trestle or shore the aircraft in accordance with the procedures <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration.

	<ul style="list-style-type: none"> ◆ Able to remove the trestles or shoring in accordance with the procedures. ◆ Able to prepare the aircraft for next maintenance task or for flight operations in accordance with the procedures. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures. ◆ Able to report and record the non-conformities and abnormal situations in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to trestle or shore the aircraft. (ii) Able to complete all the requirements associated with the trestling or shoring task.
8. Remarks	Ref: NZQA - 20632

1. Title	Aircraft defuel
2. Code	EMAMAG302A
3. Range	Aircraft defueling is usually carried out in an aircraft hangar or workshop during the aircraft non-flight time.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Prepare to defuel aircraft</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to check the environmental conditions in which the task is to be carried out for suitability in accordance with the procedures, e.g. precipitation, lightning, airborne dust and/or debris. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, safety equipment, support equipment, defuelling equipment. ◆ Able to prepare the aircraft and ground equipment for defuelling in accordance with the procedures, e.g. pumps, ground power units, stands, fire extinguishers. ◆ Able to calculate the quantity or weight of fuel to be unloaded in accordance with the procedures, e.g. gallons, liters, pounds, kilograms, specific gravity.

	<ul style="list-style-type: none"> ◆ Able to confirm the system to be defuelled is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application and removal of power and for system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances obtained, isolation tags fitted/removed, warning signs positioned, aircraft leveled, aircraft positioned, ignition sources eliminated.
6.2 Method and procedures	<ul style="list-style-type: none"> ◆ Able to confirm the fuel, containers and equipment are matched with system to be defuelled in accordance with the procedures. ◆ Able to defuel the aircraft in accordance with the procedures,e.g. fuel quality tested to determine if disposal is required, bonding attached, defuelling equipment connected, defuelling sequence and quantity monitored and controlled if applicable. ◆ Able to take initial action in event of abnormal situations in accordance with the procedures,e.g. fire, spillage, personal contamination by fuel.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to return the aircraft, system and work areas in a state that enables the next task to begin in accordance with the procedures. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures. ◆ Able to report and record the non-conformities and abnormal situations in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to use the pressurized or gravity systems. (ii) Able to make preparation for the aircraft defuel. (iii) Able to defuel the aircraft. (iv) Able to complete all the requirements associated with the defuelling tasks.
<p>8. Remarks</p>	<p>Ref: NZQA - 20633</p>

1. Title	Aircraft maintenance in storage	
2. Code	EMAMAG303A	
3. Range	Aircraft maintenance in storage is usually carried out on the aircraft in the hangar.	
4. Level	3	
5. Credit	6	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Prepare to maintain aircraft in storage</p> <ul style="list-style-type: none"> ◆ Understand the methods and procedures of aircraft storage maintenance. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the aircraft servicing documents and procedures. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to identify the aircraft to be maintained is matched with the registration and servicing documentation. ◆ Able to prepare the aircraft for maintenance in accordance with the procedures, e.g. doors and/or panels are opened and closed. blanks, locks, chocks and covers are removed, stowed and/or fitted. bonding leads and/or isolation tags are connected and disconnected. 	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to inspect the aircraft in accordance with the procedures, e.g. airframe, powerplant, landing gear. fuel contamination checks, system functional checks. foreign objects and bird nests removed. inhibitor and corrosion preventative restored. ◆ Able to identify, locate and report the defects in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the documentation in accordance with procedure. ◆ Able to check the tools, equipment and publications and return them for service or storage in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft in storage. (ii) Able to maintain the aircraft in storage.
8. Remarks	Ref: NZQA - 3926

1. Title	Aircraft windows maintenance
2. Code	EMAMAG304A
3. Range	Maintenance of aircraft windows is usually carried out on the aircraft in the hangar.
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Prepare to maintain aircraft window</p> <ul style="list-style-type: none"> ◆ Understand the methods and procedures of aircraft windows maintenance. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to identify the window to be maintained is matched with the aircraft registration and documentation ◆ Able to determine the serviceability of window in accordance with the procedures, e.g. inspect, troubleshoot, assess. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify window defects in accordance with the procedures, e.g. replace, seal.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to complete the documentation in accordance with procedure. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. equipment, safety equipment. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to maintain the aircraft windows. (ii) Able to complete all the requirements associated with the maintenance task.
8. Remarks	Ref: NZQA - 3928

1. Title	Applying aeronautical decals
2. Code	EMAMAG305A
3. Range	The aeronautical decal applying is usually carried out in an aircraft hangar or workshop during the aircraft non-flight time.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the format for the markings and signs, including: <ul style="list-style-type: none"> • dimensions of the content • requirements concerning the layout or posting up of the signs <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, equipment, safety equipment, clothing, publications. ◆ Able to confirm the aircraft, component, or aeronautical equipment identification is matched with the documentation. ◆ Able to posit the ground equipment in accordance with the procedures. ◆ Able to establish the working environment in accordance with the procedures, e.g. temperature, lighting. ◆ Able to prepare the decals in accordance with the procedures, e.g. fabricated, positioned.

	<ul style="list-style-type: none"> ◆ Able to prepare the aircraft, component, or aeronautical equipment surface in accordance with the procedures. Range cleaned, degreased. ◆ Able to apply the decals in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability in accordance with the procedures. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to apply the decals to aircraft or aircraft components or aeronautical equipment. (ii) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 10.5, 10.8 & 10.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 4012</p>

1. Title	Removal coatings from aeronautical components by using chemical paint removers
2. Code	EMAMAG306A
3. Range	The coating removal activity is usually carried out in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the aircraft coatings removal methods and procedures.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. materials, equipment, safety equipment, clothing, publications.</p> <p style="padding-left: 100px;">♦ Able to identify the aircraft, aircraft components or aeronautical equipment is matched with the documentation.</p> <p style="padding-left: 100px;">♦ Able to establish the working Environment in accordance with the procedures, e.g. temperature, lighting, ventilation, work area secured and hazard warning signs.</p> <p style="padding-left: 100px;">♦ Able to make preparation for the ground equipment in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to apply masking to aircraft, aircraft components or aeronautical equipment in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to apply paint remover in accordance with the procedures, e.g. brush or spray. <li>◆ Able to remove the coating system in accordance with the procedures. <li>◆ Able to make preparation for aircraft, aircraft components or aeronautical equipment for the next task in accordance with the procedures, e.g. washed or cleaned, masking is removed. <li>◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the coating removing within the stipulated duration. <li>◆ Able to check the resources for serviceability in accordance with the procedures. <li>◆ Able to handle waste and surplus materials in accordance with the procedures, e.g. serviceable, unserviceable, waste, hazardous.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. ◆ Able to complete the documentation in accordance with procedure
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the removal of protective coatings. (ii) Able to remove the protective coatings from aircraft, aircraft components, or aeronautical equipment using chemical paint removers. (iii) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 4015

1. Title	Aircraft potable water systems replenishment
2. Code	EMAMAG307A
3. Range	Aircraft potable water systems replenishment is usually carried out in an aircraft ramp.
4. Level	3
5. Credit	1
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft potable water systems.</p> <p>6.2 Methods and procedures ♦ Able to review the aircraft servicing documents and procedures.</p> <p style="padding-left: 150px;">♦ Able to ensure the resources are available for service or their status in accordance with the procedures, e.g. tools, replenishment equipment and medium, safety equipment, publications.</p> <p style="padding-left: 150px;">♦ Able to confirm the potable water system to be replenished is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to make preparation and check the ground equipment and aircraft in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to confirm the replenishment equipment and medium are matched with system to be replenished in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to replenish the systems in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to take initial action in event of abnormal situations in accordance with the procedures.</p>

	<ul style="list-style-type: none"> ◆ Able to report and record the non-conformities in accordance with the procedures.
6.3 Professional approach	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, and preparation for next activity. ◆ Able to check and return the resources for serviceability in accordance with the procedures, included: <ul style="list-style-type: none"> • tools, equipment, safety equipment ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, waste.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the replenishment of aircraft potable water systems. (ii) Able to replenish the aircraft potable water systems. (iii) Able to complete all the requirements associated with the replenishment tasks.
8. Remarks	Ref: NZQA - 20629

1. Title	Aircraft toilet systems service
2. Code	EMAMAG308A
3. Range	Aircraft toilet systems service is usually carried out in an aircraft ramp.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft toilet systems.</p> <p>6.2 Methods and procedures ♦ Able to review the aircraft servicing documents and procedures.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. servicing equipment and medium, safety equipment, publications. fluid levels checked.</p> <p style="padding-left: 150px;">♦ Able to confirm the toilet systems to be serviced is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to make preparation and check the ground equipment and aircraft in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to service the toilet systems in accordance with the procedures,e.g. system drained, flushed, recharged.</p> <p style="padding-left: 150px;">♦ Able to confirm the servicing equipment and medium are matched with aircraft toilet system to be serviced in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to take initial action in event of abnormal situations in accordance with the procedures,e.g. spillage, personal contamination.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the non-conformities in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, and preparation for next activity. ◆ Able to check and return the resources for serviceability in accordance with the procedures, included: <ul style="list-style-type: none"> ◆ tools, equipment ◆ Able to handle waste materials in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the servicing of aircraft toilet systems. (ii) Able to service the aircraft toilet systems. (iii) Able to complete all the requirements associated with the servicing tasks.
8. Remarks	Ref: NZQA - 20630

1. Title	Aircraft lifting and lowering	
2. Code	EMAMAG309A	
3. Range	Aircraft lifting and lowering is usually carried out in an aircraft hangar.	
4. Level	3	
5. Credit	2	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to determine the lifting and lowering tasks by reviewing servicing documentation. ◆ Able to obtain and check the equipment for serviceability or status in accordance with the procedures, e.g. tools, jacks, slings, hoists, cradles, inflation bags. ◆ Able to prepare the aircraft for lifting and lowering in accordance with the procedures, e.g. structural panels fitted, centre of gravity position noted, fuel load, weight configuration, position aircraft and equipment on lifting area. ◆ Able to assess and prepare the lifting area in accordance with the procedures, e.g. wind, ground level and firm, obstructions removed. ◆ Able to make preparation for the equipment in accordance with the procedures, e.g. jacks, hoists. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to lift the aircraft in accordance with the procedures. ◆ Able to lower the aircraft in accordance with the procedures 	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the aircraft for next maintenance task or for flight operations in accordance with the procedures. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the lifting and lowering of an aircraft. (ii) Able to lift and lower an aircraft. (iii) Able to complete all the requirements associated with the lifting and lowering tasks.
8. Remarks	Ref: NZQA - 20631

1. Title	Aircraft refuel
2. Code	EMAMAG310A
3. Range	Refuel aircraft is usually carried out in an aircraft ramp and may be assessed against the use of pressurized or gravity systems.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft fueling systems.</p> <p>6.2 Methods and procedures ♦ Able to review the aircraft servicing documents and procedures.</p> <p style="padding-left: 100px;">♦ Able to check the suitability for environmental conditions in which the task is to be carried out in accordance with the procedures,e.g. precipitation, lightning, airborne dust and/or debris.</p> <p style="padding-left: 100px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, tools, safety equipment, support equipment, refueling equipment.</p> <p style="padding-left: 100px;">♦ Able to calculate the quantity or weight of fuel to be loaded in accordance with the procedures,e.g. gallons, liters, pounds, kilograms, specific gravity.</p> <p style="padding-left: 100px;">♦ Able to confirm the system to be refueled is matched with aircraft registration and documentation.</p>

	<ul style="list-style-type: none">◆ Able to make preparation and check the ground equipment and aircraft in accordance with the procedures,e.g. pumps, ground power units, stands, fire extinguishers.◆ Able to set up the aircraft and system for the application and removal of power and for system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances obtained, isolation tags fitted/removed, warning signs positioned, aircraft leveled, aircraft positioned, ignition sources eliminated.◆ Able to confirm the fuel, containers and equipment are matched with system to be refueled in accordance with the procedures.◆ Able to refuel the aircraft in accordance with the procedures,e.g. fuel quality checked, bonding attached, refueling equipment connected, distribution sequence and quantity monitored and controlled.◆ Able to take initial action in event of abnormal situations in accordance with the procedures,e.g. fire, spillage, personal contamination by fuel.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to return the aircraft, system and work areas in a state that enables the next task to begin in accordance with the procedures. ◆ Able to check and return the resources for serviceability in accordance with the procedures ◆ Able to report and record the non-conformities and abnormal situations in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the refueling of aircraft. (ii) Able to refuel the aircraft. (iii) Able to complete all the requirements associated with the refueling tasks.
<p>8. Remarks</p>	<p>Ref: NZQA - 20634</p>

1. Title	Aircraft exterior surfaces clean
2. Code	EMAMAG311A
3. Range	Aircraft exterior surfaces cleaning are usually carried out in the hangar. Aircraft exterior refers to - structure, undercarriage, and flight control surfaces.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the aircraft exterior surfaces cleaning methods and procedures.</p> <p>6.2 Methods and procedures ♦ Able to obtain and check the resources for serviceability and status in accordance with the procedures, e.g. publications, tools, cleaning materials, cleaning equipment, safety equipment and clothing, disposal equipment and drains.</p> <p>♦ Able to identify the aircraft to be cleaned is matched with the aircraft registration and document.</p> <p>♦ Able to prepare the aircraft for cleaning in accordance with the procedures, e.g. positioned, configured, protective blanks and covers fitted.</p> <p>♦ Able to clean the aircraft exterior surfaces in accordance with the procedures.</p> <p>♦ Able to make preparation for the required equipment for aircraft cleaning in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, removal of blanks and covers, preparation for next activity. ◆ Able to check and return the tools, materials, and equipment to service or storage in accordance with the procedures ◆ Able to complete the documentation in accordance with procedure.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the cleaning of an aircraft. (ii) Able to clean the aircraft exterior surfaces. (iii) Able to complete all the requirements associated with the cleaning tasks.
<p>8. Remarks</p>	<p>Ref: NZQA - 3901</p>

1. Title	Aircraft gas turbine engines gas path cleaning
2. Code	EMAMAG312A
3. Range	Gas path of aircraft gas turbine engines cleaning is usually carried out in an aircraft hangar. Foreign objects (FOD) stand for anything that can find its way into an aircraft engine or flight control mechanisms that could possibly cause damage to aircraft, equipment or people
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to identify the aircraft engine to be cleaned is matched with the aircraft registration and documentation. ◆ Able to obtain and check the resources for serviceability and status in accordance with the procedures, e.g. tools, publications, cleaning materials, cleaning equipment, safety equipment and clothing. ◆ Able to make preparation for the engine for cleaning in accordance with the procedures, e.g. suitable location, configuration, protective blanks, protective covers. ◆ Able to make preparation for the equipment in accordance with the procedures, to enable cleaning task to be carried out. ◆ Able to clean the engine using an abrasive medium or by washing in accordance with the procedures, e.g. suitable location, engine motored over, cleaning medium applied, engine shut down.

	<p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to carry out post-cleaning engine inspection in accordance with the procedures. ◆ Able to arrange post-cleaning engine run in accordance with the procedures, e.g. approved ground run area, area cleared of foreign objects, approved ground run personnel. ◆ Able to check and return the tools, materials, equipment, and publications to service or storage and/or disposed of in accordance with the procedures. ◆ Able to make preparation for the work and aircraft area, to enable next task to begin in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the cleaning of the aircraft gas turbine engines. (ii) Able to clean the gas path of the aircraft gas turbine engines. (iii) Able to complete all the requirements associated with the cleaning tasks.
8. Remarks	Ref: NZQA - 3902

1. Title	Aircraft interiors cleaning	
2. Code	EMAMAG313A	
3. Range	Aircraft interiors cleaning are usually carried out in an aircraft hangar. Aircraft interiors include the cabin, cargo area, cockpit, and windows.	
4. Level	3	
5. Credit	2	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to identify the aircraft to be cleaned is matched with the aircraft registration and documentation. ◆ Able to select, obtain, and check the resources for serviceability and status in accordance with the procedures, e.g. publications, tools, cleaning materials, cleaning equipment, safety equipment and clothing. ◆ Able to prepare the aircraft for cleaning in accordance with the procedures, e.g. lights, power supply. ◆ Able to clean the aircraft interiors in accordance with the procedures. <p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to check and return the tools, materials, and equipment to service or storage or disposed of in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. 	

	<ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the cleaning of an aircraft. (ii) Able to clean the aircraft interiors. (iii) Able to complete all the requirements associated with the cleaning tasks.
8. Remarks	Ref: NZQA - 3903

1. Title	Fixed wing aircraft service
2. Code	EMAMAG314A
3. Range	<p>The fixed wing aircraft service activity is usually carried out in an aircraft hangar.</p> <p>Service of fixed wing aircraft may include: pre and post flight checks, daily checks, visual inspections, component lubrication, snow and ice removal, cleaning windows, inflating and deflating tyres, connecting and disconnecting ground services, and preventing foreign object damage. Servicing tasks are normally carried out on the ramp, flight line or airfield.</p>
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to determine the servicing tasks by reviewing aircraft servicing documentation. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, equipment, publications. ◆ Able to identify the aircraft to be serviced is matched with the aircraft registration and servicing documentation. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to apply and/or remove the ground supply services in accordance with the procedures.

	<ul style="list-style-type: none">◆ Able to prepare the aircraft for servicing in accordance with the procedures, e.g. doors and panels are opened or closed. blanks, locks, chocks and covers are removed, stowed and/or fitted. bonding and/or earthing leads are fitted. isolation tags are fitted, positioned, connected and/or disconnected. warning signs positioned.◆ Able to inspect the aircraft for obvious signs of damage, wear and non-conformities in accordance with procedures. Range airframe, cabin, flight deck, powerplant, antennae, flight controls, cargo compartment, landing gear, wheels and brakes, corrosive material spillage.◆ Able to prepare the aircraft for flight, e.g. components lubricated, magnetic inspection plugs checked, windows cleaned, tyres inflated or deflated, ground services are connected and disconnected, foreign objects removed from aircraft and ground area, required onboard aircraft documentation checked.◆ Able to identify, locate and report the non-conformities in accordance with the procedures.◆ Able to check and replenish the system and component fluid levels.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the tools and equipment for damage and/or wear and return them to storage area in accordance with the procedures. ◆ Able to handle the surplus parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, used, and hazardous. ◆ Able to complete the servicing documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the servicing of fixed wing aircraft. (ii) Able to service the fixed wing aircraft. (iii) Able to complete all the requirements associated with the servicing tasks.
<p>8. Remarks</p>	<p>Ref: NZQA - 3906</p>

1. Title	Aircraft ground handling
2. Code	EMAMAG315A
3. Range	Aircraft ground handling is usually carried out in an aircraft hangar.
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Marshal aircraft</p> <ul style="list-style-type: none"> ◆ Able to select and use the marshalling equipment, clothing and assistants in accordance with the procedures. ◆ Able to select the marshalling positions to ensure adequate visibility and safety in accordance with the procedures, e.g. for flight crew, for ground markings, for ground personnel, for aircraft clearance from obstructions. ◆ Able to marshal the aircraft using International Civil Aviation Organization (ICAO), or Air Standardization Coordinating Committee (ASCC) marshalling signals in accordance with the procedures. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to prepare the aircraft for engine start in accordance with the procedures, e.g. blanks, covers and screens are removed or fitted (as required), chocks and brakes are applied, aircraft is positioned, fire extinguisher is positioned, access doors are closed and area checked clear around the aircraft. ◆ Able to apply and remove the start services in accordance with the procedures.

	<ul style="list-style-type: none"> ◆ Able to control and/or report the fires discovered on engine or services during start-up or shutdown, or brakes during shutdown are in accordance with the procedures,e.g. pilot signaled, fire section notified, attempt to extinguish. ◆ Able to establish the communication with flight deck crew in accordance with the procedures,e.g. verbal, visual, electronic. ◆ Able to follow the emergency or precautionary engine shutdown procedures in accordance with the procedures. ◆ Able to record and report the emergency shutdowns in accordance with the procedures. ◆ Able to prepare the aircraft to be moved in accordance with the procedures. Range structural panels fitted, doors, panels and cowls closed, covers, blanks, locks, chocks and steering mechanisms positioned as necessary, clearance obtained. ◆ Able to select and fit the towing and moving equipment, and select and posit the personnel in accordance with the procedures,e.g. equipment - tow bars, tow arms, bridles, wheels, towing vehicles. personnel - clearance personnel, aircraft brake operator, tow vehicle driver.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to establish and maintain the communication between aircraft, control tower, towing vehicle, and clearance crew in accordance with the procedures, e.g. verbal, visual, electronic. ◆ Able to move the aircraft in accordance with aircraft type and procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to park the aircraft in accordance with the procedures. ◆ Able to tie down the aircraft in accordance with aircraft type and procedures, e.g. picketing or mooring. ◆ Able to install and remove the securing equipment in accordance with aircraft type and procedures, e.g. locks, chocks, covers, blanks, propeller or rotor tie downs, special equipment. ◆ Able to complete the documentation in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to marshal the aircraft. (ii) Able to assist with the engine starting and shutdown. (iii) Able to move the aircraft manually or by towing. (iv) Able to park and moor the aircraft.
8. Remarks	Ref: NZQA - 3907

1. Title	Aircraft undercarriage oleos (shock struts) replenishment
2. Code	EMAMAG316A
3. Range	Aircraft undercarriage oleos replenishment is usually carried out in an aircraft hangar.
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials. ◆ Able to confirm the oleos to be replenished is matched with aircraft registration and documentation. ◆ Able to confirm the replenishment medium, container and equipment are matched with oleos to be replenished in accordance with the procedures. ◆ Able to report and record the non-conformities in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to replenish the aircraft undercarriage oleos (shock struts). (ii) Able to complete all the requirements associated with the replenishment task.
8. Remarks	Ref: NZQA - 3908

1. Title	Aircraft engine power augmentation or restoration systems replenishment
2. Code	EMAMAG317A
3. Range	Aircraft engine power augmentation or restoration systems replenishment is usually carried out in an aircraft hangar.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 knowledge ♦ Understand the operation principle of the aircraft engine power augmentation or restoration systems</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, equipment, safety equipment, publications, materials.</p> <p style="padding-left: 100px;">♦ Able to confirm the system to be replenished is matched with the aircraft registration and documentation.</p> <p style="padding-left: 100px;">♦ Able to confirm the replenishment medium, container and equipment are matched with system to be replenished in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to check the suitability of environmental conditions to carry out the replenishment task in accordance with the procedures,e.g. precipitation, airborne debris or dust.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to replenish the system in accordance with the procedures. ◆ Able to take action in an abnormal situation in accordance with the procedures, e.g. spillage, personal contamination by replenishment medium. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to report and record the non-conformities in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the replenishment of aircraft engine power augmentation or restoration systems. (ii) Able to replenish the system. (iii) Able to complete all the requirements associated with the replenishment task.
8. Remarks	Ref: NZQA - 3909

1. Title	Aircraft hydraulic systems replenishment
2. Code	EMAMAG318A
3. Range	Aircraft hydraulic systems replenishment is usually carried out on the aircraft in the hangar.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft hydraulic systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be replenished is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to check the suitability of environmental conditions to carry out the replenishment task in accordance with the procedures, e.g. precipitation, airborne debris or dust.</p> <p style="padding-left: 150px;">♦ Able to confirm the replenishment medium, container and equipment are matched with system to be replenished in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to replenish the system in accordance with the procedures,e.g. fuel quality checked, bonding attached, refueling equipment connected, distribution sequence and quantity monitored and controlled. <li>◆ Able to take action in an abnormal situation in accordance with the procedures,e.g. spillage, personal contamination by replenishment medium. <li>◆ Able to report and record non-conformities in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to complete the documentation in accordance with the procedures. <li>◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. <li>◆ Able to check and return the resources for serviceability in accordance with the procedures,e.g. tools, equipment, safety equipment.
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	<p>◆ Able to handle unused materials in accordance with the procedures. Range serviceable, unserviceable, surplus, waste, scrap, hazardous.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the replenishment of the aircraft hydraulic system. (ii) Able to replenish the hydraulic system. (iii) Able to complete all the requirements associated with the replenishment task.
8. Remarks	Ref: NZQA – 3911

1. Title	Aircraft de-icing systems replenishment
2. Code	EMAMAG319A
3. Range	Aircraft de-icing systems replenishment is usually carried out on the aircraft in the hangar.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft de-icing system.</p> <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ♦ Able to review the maintenance documents and procedures to decide on maintenance task. ♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials. ♦ Able to confirm the system to be replenished is matched with the aircraft registration and documentation. ♦ Able to check the suitability of environmental conditions to carry out the replenishment task in accordance with the procedures, e.g. recipitation, airborne debris or dust. ♦ Able to replenish the system in accordance with the procedures. ♦ Able to confirm the replenishment medium, container and equipment are matched with system to be replenished in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to take action in an abnormal situation in accordance with the procedures, e.g. pillage, personal contamination by replenishment medium. <li>◆ Able to report and record non-conformities in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. <li>◆ Able to complete the documentation in accordance with the procedures. <li>◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment. <li>◆ Able to handle unused materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the replenishment of aircraft de-icing system. (ii) Able to replenish the de-icing system. (iii) Able to complete all the requirements associated with the replenishment task.
8. Remarks	Ref: NZQA – 3912

1. Title	Aircraft liquid oxygen systems replenishment
2. Code	EMAMAG320A
3. Range	Replenish aircraft liquid oxygen system is usually carried out in an aircraft ramp during the aircraft grounded time.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to check the suitability of environmental conditions to carry out the replenishment task in accordance with the procedures, e.g. precipitation, lightning. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, replenishment equipment and medium, safety equipment and clothing, publications. ◆ Able to confirm the system to be replenished is matched with the aircraft registration and documentation. ◆ Able to make preparation for the ground for replenishment in accordance with the procedures, e.g. replenishment unit, ground power unit, stands.

	<ul style="list-style-type: none"> ◆ Able to prepare the aircraft and system for the application or removal of power and for system operation in accordance with the procedures,e.g. aircraft positioned, clearances obtained, isolation tags fitted, warning signs positioned, ground equipment and safety equipment positioned, ignition sources eliminated, equipment bonded and/or earthed, non-essential systems switched off. ◆ Able to clean the area under replenishment and venting point on the ground in accordance with the procedures,e.g. free from oil and grease.
6.2 Methods and procedures	<ul style="list-style-type: none"> ◆ Able to replenish the system in accordance with the procedures. ◆ Able to take initial action in event of abnormal situations in accordance with the procedures,e.g. fire, spillage, personal contamination by replenishment medium.
6.3 Professional approach	<ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to replenish the oxygen supply systems. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.

	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return the resources to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to report and record the non-conformities. ◆ Able to complete the documentation in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the replenishment of the aircraft liquid oxygen system. (ii) Able to replenish the aircraft liquid oxygen system. (iii) Able to complete all the requirements associated with the replenishment task.
8. Remarks	Ref: NZQA - 3913

1. Title	Aircraft gaseous oxygen systems replenishment
2. Code	EMAMAG321A
3. Range	Replenish aircraft gaseous oxygen system is usually carried out in an aircraft ramp during the aircraft non-flight time.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, replenishment equipment and medium, safety equipment, publications. ◆ Able to confirm the system to be replenished is matched with the aircraft registration and documentation. ◆ Able to check the suitability of environmental conditions to carry out the replenishment task in accordance with the procedures, e.g. precipitation, lightning, airborne debris.

	<p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> <li>◆ Able to prepare the aircraft, system and area for replenishment in accordance with the procedures,e.g. aircraft positioned, clearances obtained, isolation tags fitted, warning signs positioned, ground equipment and safety equipment positioned, ignition sources eliminated, equipment bonded and/or earthed, non-essential systems switched off. <li>◆ Able to prepare the aircraft and system for the application or removal of power and for system operation in accordance with the procedures,e.g. aircraft positioned, clearances obtained, isolation tags fitted, warning signs positioned, ground equipment and safety equipment positioned, ignition sources eliminated, equipment bonded and/or earthed, non-essential systems switched off. <li>◆ Able to replenish the system in accordance with the procedures. <li>◆ Able to confirm the replenishment medium, container and equipment are matched with system to be replenished in accordance with enterprise procedures. <li>◆ Able to replenish the system in accordance with enterprise procedures. <li>◆ Able to take initial action in event of abnormal situations in accordance with the procedures,e.g. fire, leakage, contamination of equipment.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to replenish the oxygen supply systems. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return the resources to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to report and record the non-conformities. ◆ Able to complete the documentation in accordance with the procedures
<p>7. Assessment Criteria</p>	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the replenishment of aircraft gaseous oxygen system. (ii) Able to replenish the aircraft gaseous oxygen system. (iii) Able to complete all the requirements associated with the replenishment task.
<p>8. Remarks</p>	<p>Ref: NZQA - 3914</p>

1. Title	Aircraft pneumatic systems replenishment
2. Code	EMAMAG322A
3. Range	Aircraft pneumatic systems replenishment is usually carried out on the aircraft in the hangar.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft pneumatic systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be replenished is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to confirm the replenishment medium, container and equipment are matched with system to be replenished in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to report and record non-conformities in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to replenish the system in accordance with the procedures, e.g. fuel quality checked, bonding attached, refueling equipment connected, distribution sequence and quantity monitored and controlled.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements and the current code of practice in carrying out aircraft pneumatic systems replenishment. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle unused materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. Able to handle unused materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the replenishment of aircraft pneumatic system. (ii) Able to replenish the aircraft pneumatic system. (iii) Able to complete all the requirements associated with the replenishment task.
8. Remarks	Ref: NZQA - 3915

1. Title	Aircraft storage handling
2. Code	EMAMAG323A
3. Range	Storage of aircraft.
4. Level	3
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the basic areas of preparation work that needed to be done before an aircraft is to be stored, such as : <ul style="list-style-type: none"> • removal of fluids e.g. fuel and other corrosive fluids • removal of some detachable components e.g. batteries <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to prepare the aircraft for storage in accordance with the procedures,e.g. doors and/or panels are opened and closed. blanks, locks, chocks and covers are removed, stowed and/or fitted. bonding leads and isolation tags are connected and disconnected. components are lubricated, inhibitors are applied. ◆ Able to identify the aircraft is matched with the aircraft registration and servicing documentation. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to take every necessary measure to allow the work to be done in a safe manner : <ul style="list-style-type: none"> • cordon off the site to prevent trespassers during the processes • securely taxi and transport the aircraft to the site for storage ◆ Able to check and return the resources to storage for next service, or disposed of in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to handle an aircraft for storage, applying correct and safe procedures. (ii) Able to prepare report to state the means to perform the storage work.
<p>8. Remarks</p>	<p>(Ref: HKAR-66 Module 2.2 & 7.16)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in aircraft handling.</p> <p>Ref: NZQA - 3929</p>

1. Title	Removal of aircraft from storage and prepare for service
2. Code	EMAMAG324A
3. Range	Remove aircraft from storage and service preparation is usually carried out in an aircraft ramp and hangar during the aircraft grounded time.
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Remove aircraft from storage</p> <ul style="list-style-type: none"> ◆ Able to identify the aircraft is matched with the aircraft registration and servicing documentation. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, procedures. ◆ Able to remove the aircraft from storage in accordance with the procedures,e.g. doors and/or panels are opened and closed. blanks, locks, chocks and covers are removed, stowed and/or fitted. bonding leads and isolation tags are connected and disconnected. inhibitors are removed. <p>6.2 Prepare aircraft for service</p> <ul style="list-style-type: none"> ◆ Able to prepare the aircraft for service in accordance with the procedures,e.g. position aircraft, inspect for condition. ◆ Able to identify locate and report the non-conformities in accordance with the procedures. ◆ Able to check and return the resources to storage for next service, or disposed of in accordance with the procedures.

	<p style="text-align: center;">◆ Able to complete the documentation in accordance with the procedures.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <p>(i) Able to remove the aircraft from storage.</p> <p>(ii) Able to prepare the aircraft for service.</p>
8. Remarks	Ref: NZQA - 3930

1. Title	Avionic maintenance practices application
2. Code	EMAMAG325A
3. Range	This unit of competency is for people pursuing UoCs in the avionic repair and avionic maintenance domains. It covers electrical knowledge and generic maintenance practices which apply to avionic repair and maintenance activities.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Demonstrate knowledge of direct current (DC) electrical circuits</p> <ul style="list-style-type: none"> ◆ Able to describe the direct current (DC) sources in terms of their application to avionic components and systems, including: electron theory, static electricity, electrical terms, generation methods, electrical cells. ◆ Able to describe the direct current resistive circuits in terms of their application to avionic components and systems, including: resistance and resistors, circuit operation, electrical power, variable resistors. ◆ Able to describe the capacitors in terms of their application to and use in, avionic components and systems, including: capacitor principles, types, operation in circuits. ◆ Able to describe the magnetism in terms of its characteristics and application to electrical circuits and avionic equipment, including: properties of magnets, terrestrial magnetism, magnetic fields, electromagnetic induction.

	<p>6.2 Demonstrate knowledge of alternating current (AC) circuits</p>	<ul style="list-style-type: none"> ◆ Able to describe the direct current rotating machines in terms of principles of construction and operating characteristics, including: motors, generators. ◆ Able to describe the alternating current single-phase circuits in terms of their characteristics and application to avionic systems and equipment, including: range electrical terms, reactance, impedance, series and parallel circuits, resonance, filter circuits, calculations performed. ◆ Able to describe the alternating current rotating machines in terms of principles of construction and operating characteristics, including: range motors, generators. ◆ Able to describe the three phase alternating current in terms of its application to aircraft electrical systems, including: star and delta connection, line and phase values. ◆ Able to explain the transformers in terms of types and principles of operation, including: variac, double-wound, auto-transformer.
	<p>6.3 Identify avionic and aircraft wiring components</p>	<ul style="list-style-type: none"> ◆ Able to select the aircraft wiring to match circuit specifications, including: insulation type, wire gauge, conductor material, wire numbering. ◆ Able to select the avionic components to match circuit specifications, including: semiconductors, fuses, plugs, connectors, terminals, solenoids, relays, transformers, circuit breakers, switches, resistors, capacitors, batteries, ground points. by appearance, by symbols on circuit diagrams.

	<p>6.4 Apply avionic repair and maintenance skills</p> <ul style="list-style-type: none"> ◆ Able to test the circuit protection devices in accordance with standard industry practices, including: circuit breakers, fuses. ◆ Able to solder the avionic components in accordance with standard industry practices, including: cup terminals, turret terminals, axial lead components, dual-in-line packages, coaxial plugs. tooling selected. ◆ Able to avoid the electrostatic discharge damage in accordance with standard industry practices. ◆ Able to measure the electrical quantities in accordance with standard industry practices, including: continuity, insulation, voltage, current, resistance, frequency. in alternating and direct current circuits.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to demonstrate knowledge of direct and alternating current electrical circuits and their application and use in avionic equipment. (ii) Able to identify avionic and aircraft wiring components, test circuit protection devices, solder plugs, terminals and avionic parts. and are able to measure electrical quantities and avoid electrostatic discharge damage when handling avionic components.
<p>8. Remarks</p>	<p>Ref: NZQA - 7247</p>

1. Title	Aircraft on board maintenance system maintenance
2. Code	EMAMAG326A
3. Range	Repair of On Board Maintenance Systems in aircraft in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Constructions and working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for On Board Maintenance Systems, including : <ul style="list-style-type: none"> • basic knowledge of computer structures <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Fulfill the requirements and processes for routine maintenance of the On Board Maintenance Systems in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to repair and maintain the On Board Maintenance Systems in accordance with the procedures.

7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to apply the learned knowledge to perform maintenance of On Board Maintenance Systems in aircraft. (ii) Able to describe in detail the techniques used in maintaining the electrical power systems. (iii) Able to prepare reports for the maintenance works.
8. Remarks	<p>(Ref: HKAR-66 Module 5.6, 11.18 & 13.10)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in computer technology and electronics.</p>

1. Title	Aircraft weighing
2. Code	EMAMAG327A
3. Range	Aircraft weighing should be done in an aircraft hangar or workshop during the aircraft grounded time. This skill is applicable to tasks such as updating the data record of aircraft or application for certification.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Basic theories of Mechanics</p> <ul style="list-style-type: none"> ◆ Understand the basic theories of Mechanics that can aid in aircraft weighing, such as : <ul style="list-style-type: none"> • use of vector diagrams to determine the equilibrium aircraft in the weighing process • determination of the effectiveness of aircraft jacking (velocity ration, mechanical advantage etc.) <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to perform the weighing and subsequent record in accordance with the procedures, including : <ul style="list-style-type: none"> • draining out of fluids e.g. portable drinking water • taxiing the aircraft in an appropriate location and direction <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to take every necessary measures to allow the work to be done in a safe manner : <ul style="list-style-type: none"> • cordon off the site to prevent trespassers • securely jacking the aircraft ◆ Able to complete the task within the stipulated duration.

7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to perform the aircraft jacking correctly and safely. (ii) Able to perform the weighing and maintain the aircraft weighing records.
8. Remarks	<p>(Ref: HKAR-66 Module 2.2 & 7.16)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in aircraft handling and work safety.</p>

1. Title	Aircraft pipes and hoses installation, inspection and testing
2. Code	EMAMAG328A
3. Range	Installation and maintenance of aircraft pipes and hoses in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Types of pipes and hoses and their connectors used in aircraft</p> <ul style="list-style-type: none"> ◆ Understand the differences of various types of rigid and flexible pipes and hoses, including : <ul style="list-style-type: none"> • identification and application • standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes <p>6.2 Methods</p> <ul style="list-style-type: none"> ◆ Able to execute the work with proper techniques, including flaring or clamping of pipes in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to follow manufacturers' instruction or work manuals to perform the work. ◆ Able to adopt safety precautions according to the nature of the work (pressure that the pipes are subject to). ◆ Able to complete the task within the stipulated duration.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to install/ inspect/ test the aircraft pipes and hoses.</p> <p>(ii) Able to prepare reports to record the work.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 6.6 & 7.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p>

1. Title	Springs installation, inspection and testing in engineering structures
2. Code	EMAMAG329A
3. Range	Tasks that work on structures installed with springs in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Characteristics and applications ♦ Understand the characteristics and applications of springs, including :</p> <ul style="list-style-type: none"> • different types and materials <p>6.2 Methods ♦ Able to execute the work with proper techniques, ensuring premature fatigue will not occur in accordance with the procedures.</p> <p>6.3 Professional approach ♦ Able to follow manufacturers' instruction or work manuals to perform the work.</p> <ul style="list-style-type: none"> ♦ Able to adopt safety precautions according to the nature of the work. ♦ Able to complete the task within the stipulated duration.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to install/ inspect/ test the springs in engineering structures.</p> <p>(ii) Able to prepare reports to record the work.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 6.7 & 7.10)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p>

1. Title	Bearings and seals installation, inspection and testing in engineering structures
2. Code	EMAMAG330A
3. Range	Tasks that work on structures installed with bearings and seals in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Characteristics and applications ♦ Understand the characteristics and applications of bearings and seals, including :</p> <ul style="list-style-type: none"> • different types, materials and construction • cleaning and lubrication requirements • defects and their causes <p>6.2 Methods ♦ Able to execute the work with proper techniques in accordance with the procedures.</p> <p>6.3 Professional approach ♦ Able to follow manufacturers' instruction or work manuals to perform the work.</p> <ul style="list-style-type: none"> ♦ Able to adopt safety precautions according to the nature of the work. ♦ Able to complete the task within the stipulated duration.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to install/ inspect/ test the bearings and seals in engineering structures.</p> <p>(ii) Able to prepare reports to record the work.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 6.8, 7.11 & 15.8)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p>

1. Title	Control cables installation, inspection and testing in engineering system
2. Code	EMAMAG331A
3. Range	Tasks that work on systems installed with control cables in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Characteristics and operating principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and operating principles of different cables and pulley-and-cable system components, including : <ul style="list-style-type: none"> • Bowden cables • aircraft flexible control systems <p>6.2 Methods</p> <ul style="list-style-type: none"> ◆ Able to execute the work with proper techniques in accordance with the procedures, including : <ul style="list-style-type: none"> • swaging end fittings • installation of turnbuckles and compensation devices <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to follow manufacturers' instruction or work manuals to perform the work. ◆ Able to adopt safety precautions according to the nature of the work. ◆ Able to complete the task within the stipulated duration.

7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to install/ inspect/ test different control cables in engineering systems. (ii) Able to prepare reports to record the work. (iii) Able to describe the working conditions of the control cables clearly.
8. Remarks	<p>(Ref: HKAR-66 Module 6.10 & 7.13)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p>

1. Title	Aircraft inspection after abnormal events
2. Code	EMAMAG332A
3. Range	Inspection or repair of aircraft after abnormal events in an aircraft hangar during the aircraft grounded time.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Scope of inspection following different abnormal events</p> <ul style="list-style-type: none"> ◆ Understand the scope of inspection following different abnormal events, covering : <ul style="list-style-type: none"> • content of inspection placing emphasis on different items according to the nature of events • examples of events : lightning strikes, High Intensity Radiated Field penetration, heavy landing <p>6.2 Execution of aircraft inspection</p> <ul style="list-style-type: none"> ◆ Able to use inspection tools and methods to inspect aircraft after abnormal events in accordance with the procedures <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to evaluate the airworthiness of the aircraft after the abnormal events in accordance with the procedures. ◆ Able to complete the task within the stipulated duration.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to perform thorough and appropriate inspection to the aircraft after abnormal events.</p> <p>(ii) Able to prepare reports to list out the inspection findings for different abnormal events.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.18 & 7.19)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the aircraft inspection.</p>

1. Title	Workplace hazards avoidance and emergencies handling
2. Code	EMAMAG333A
3. Range	Applicable to all tasks.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Identification of workplace hazards and methods to deal with emergencies</p> <ul style="list-style-type: none"> ◆ Able to identify potential workplace hazards in accordance with the procedures <ul style="list-style-type: none"> • origin of hazards • preventive measures ◆ Understand the appropriate means to deal with emergencies and accidents in the workplace. <p>6.2 Avoidance of workplace hazards and dealing with emergencies</p> <ul style="list-style-type: none"> ◆ Adopt correct attitude to minimize the occurrence of workplace accidents. ◆ Follow appropriate procedures to deal with emergencies in case of accidents.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to eliminate the occurrence of workplace hazards by adopting correct attitude at work.</p> <p>(ii) Able to deal with emergencies and accidents with appropriate procedures.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 9.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the use of personal protective equipment.</p>

1. Title	Aircraft documentation keeping and maintenance
2. Code	EMAMAG334A
3. Range	Applicable to all aircraft engineering works.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Data in the aircraft documentation</p> <ul style="list-style-type: none"> ◆ Understand the data that are needed to be recorded in the various documents, including : <ul style="list-style-type: none"> • condition reports e.g. heavy landing checks, defects investigations in log books • cross-reference to other files / records <p>6.2 Methods</p> <ul style="list-style-type: none"> ◆ Keep the documents systematically in accordance with the procedures <ul style="list-style-type: none"> • in locations as required e.g. on board • with updated data entry <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to keep and preserve the documents in good conditions for periods as specified in AN(HK)O 1995. ◆ Able to produce the documents for inspection in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to keep and maintain aircraft documentation in order.</p> <p>(ii) Able to describe the requirements to be fulfilled for keeping various aircraft documentation.</p> <p>(iii) Able to maintain an efficient and effective filing system.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 10.1 - 10.5, 10.8 & 10.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the techniques for filing and storage of documentation.</p>

1. Title	Engines storage and preservation
2. Code	EMAMAG335A
3. Range	Storage / preservation of gas turbine engines or piston engines and their depreservation for re-use in aircraft.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the methods for preservation and depreservation of the engines and their accessories and systems, including : <ul style="list-style-type: none"> • removal of corrosive agents e.g. moisture before storage • removal of preserving materials e.g. storage bags after storage <p>6.2 Methods and Procedures</p> <ul style="list-style-type: none"> ◆ Able to follow instruction manuals to preserve engine and the associated components for storage or depreserve them for re-use in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to maintain an environment and sufficient space for the storage, preserve and depreserve of engines in accordance with the procedures. ◆ Understand the requirements and current code of practice for the job. ◆

7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to preserve the gas turbine engines or piston engines and their associated accessories in aircraft. (ii) Able to depreserve the gas turbine engines or piston engines and their associated accessories. (iii) Able to prepare reports to explain the methods of preservation and depreservation.
8. Remarks	<p>(Ref: HKAR-66 Module 15.22 & 16.13)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p>

1. Title	Electrical fundamentals I
2. Code	EMAMAG336A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	2
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the electron theory ◆ Able to understand the static electricity and conduction ◆ Able to understand the electrical terminology ◆ Able to understand the generation of electricity <ul style="list-style-type: none"> • Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion. ◆ Able to understand the DC Sources of electricity <ul style="list-style-type: none"> • Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells. Cells connected in series and parallel. • Internal resistance and its effect on a battery. • Construction, materials and operation of thermocouples. • Operation of photo-cells.

	<ul style="list-style-type: none"> ◆ Able to understand the AC theory <ul style="list-style-type: none"> • Sinusoidal waveform: phase, period, frequency, cycle. • Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power. • Triangular/Square waves. • Single / 3 phase principles.
	<p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the basic elements of the subjects. (ii) Able to give a simple description of the whole subject, using common words and examples. (iii) Able to use the typical terms.
8. Remarks	Ref: HKAR-66 Module 3: Electrical fundamentals

1. Title	Digital techniques and electronic instrument systems I
2. Code	EMAMAG337A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	2
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the electronic instrument systems ◆ Able to understand the numbering systems <ul style="list-style-type: none"> • Numbering systems: binary, octal and hexadecimal. ◆ Able to understand the data buses ◆ Able to understand the basic computer structure <ul style="list-style-type: none"> • Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM). • Computer technology (as applied in aircraft systems). ◆ Able to understand the electrostatic sensitive devices <ul style="list-style-type: none"> • Special handling of components sensitive to electrostatic discharges. • Awareness of risks and possible damage, component and personnel anti-static protection devices.

	6.2 Professional approach ♦ Able to understand the principal elements of the subjects.
7. Assessment Criteria	The integral outcomes requirement of this UoC are: (i) Able to understand the basic elements of the subjects. (ii) Able to give a simple description of the whole subject, using common words and examples. (iii) Able to use the typical terms.
8. Remarks	Ref: HKAR-66 Module 5: Digital techniques and electronic instrument systems

1. Title	Materials and hardware I
2. Code	EMAMAG338A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the Aircraft Materials - Ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common alloy steels used in aircraft. • Heat treatment and application of alloys steels. ◆ Able to understand the Aircraft Materials – Non-ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common non-ferrous materials used in aircraft. • Heat treatment and application of nonferrous materials. ◆ Able to understand the Aircraft Materials – Composite and Non-metallic <ul style="list-style-type: none"> • Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft. • Sealants and bonding agents. • The detection of defects in composite material.

- Repair of composite material.
- ◆ Able to understand the corrosion
- ◆ Able to understand the Fasteners
 - Screw threads
 - Bolts, studs and screws
 - Locking devices
 - Aircraft rivets
- ◆ Able to understand the Pipes and Unions
 - Identification of, and types of rigid and flexible pipes and their connectors used in aircraft.
 - Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.
- ◆ Able to understand the Springs
 - Types of springs, materials, characteristics and applications.
- ◆ Able to understand the Bearings
 - Purpose of bearings, loads, material, construction.
 - Types of bearings and their application.
- ◆ Able to understand the Transmissions
 - 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.
- ◆ Able to understand the Control Cables
 - Types of cables.
 - End fittings, turnbuckles and compensation devices.
 - Pulleys and cable system components.
 - Bowden cables.
 - Aircraft flexible control systems.

		<ul style="list-style-type: none"> ◆ Able to understand the Electrical Cables and Connectors <ul style="list-style-type: none"> • 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.
	6.2 Theoretical and practical aspects	<ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Corrosion • Fasteners • Pipes and Unions
	6.3 Professional approach	<ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Corrosion • Fasteners • Pipes and Unions ◆ Able to apply the knowledge in the aircraft maintenance task.

7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 6: Materials and Hardware.

1. Title	Human factors I	
2. Code	EMAMAG339A	
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u>	
	6.1 Knowledge	<ul style="list-style-type: none"> ◆ Able to understand the general of human factor ◆ Able to understand the human performance and limitations ◆ Able to understand the social psychology ◆ Able to understand the factors affecting performance ◆ Able to understand the physical environment ◆ Able to understand the tasks ◆ Able to understand the communication ◆ Able to understand the human error ◆ Able to understand the hazards in the workplace
	6.2 Theoretical and practical aspects	<ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Factors affecting performance • Communication

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Factors affecting performance • Communication ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 9: Human factors</p>

1. Title	Aviation legislation I
2. Code	EMAMAG340A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	2
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the aircraft maintenance licences <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. ◆ Able to understand the certifications <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures. • Certificates of : Release to Service. Maintenance • Review. Fitness for Flight. • Duplicate inspections. • Contributory certifications and reliance on other documentation and persons. • Certification - acceptance investigation and judgement procedures. ◆ Able to understand the aircraft, engine and VP propeller log books <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • HKAR-1 Airworthiness Procedures.

	<ul style="list-style-type: none"> • CAD Approval: light aircraft, large aircraft. • Worksheets. • Data to be entered in log books. • Condition reports - e.g. heavy landing checks, defect investigations, NDT and other inspections, mandatory and non-mandatory. • Maintenance records. • Cross-reference to other files / records. • Preservation of documents: AN(HK)O 1995. <ul style="list-style-type: none"> ◆ Able to understand the technical log <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures. • Technical Log - Air Operator's Certificates Requirements Document. ◆ Able to understand the aircraft documentation and requirements ◆ Able to understand the approvals <ul style="list-style-type: none"> • Design Organisations. • Maintenance Organisations. • AOC interface. • Maintenance Schedules and Programmes. • Stores: systems. release of parts. ◆ Able to understand the defect reporting <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • CAD382 The Mandatory Occurrence Reporting Scheme. • Defects which are to be reported. • Reportable accidents.
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	<ul style="list-style-type: none"> ◆ Able to understand the Hong Kong Aviation Requirements <ul style="list-style-type: none"> • HKAR-1: Airworthiness Procedures. • Airworthiness Notices. • Airworthiness Directives. • Mandatory Modifications and Inspections:- <ul style="list-style-type: none"> ▸ HK CAD ▸ UK CAA ▸ FAA ▸ Authorities other than above: aircraft, engines, equipment. • HKAR-145: Approved Maintenance Organisations. • HKAR-147: Approved Maintenance Training/ • Examinations • Air Operator's Certificates (AOC) Requirements Document. ◆ Able to understand the Joint Aviation Authorities Requirements <ul style="list-style-type: none"> • JAR-21. JAR-23. JAR-25. JAR-29 <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Aircraft maintenance licences • Technical log • Defect reporting <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft maintenance licences • Technical log
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	<ul style="list-style-type: none"> • Defect reporting ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 10: Aviation legislation

1. Title	Maintenance Practices I
2. Code	EMAMAG341A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works,e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	2
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the safety precautions-Aircraft and Workshop ◆ Able to understand the workshop practices ◆ Able to understand the tools <ul style="list-style-type: none"> • Common hand tool types. • Common power tool types. • Operation and use of precision measuring tools. • Lubrication equipment and methods. • Operation, function and use of electrical general test equipment. ◆ Able to understand the engineering drawings, diagrams and standards <ul style="list-style-type: none"> • Drawing types and diagrams, their symbols, dimensions, tolerances and projections. • Identifying title block information. • Microfilm, microfiche and computerized presentations. • Specification 100 of the Air Transport Association (ATA) of America.

- Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL.
- Wiring diagrams and schematic diagrams.
- ◆ Able to understand the fits and clearances
 - Drill sizes for bolt holes, classes of fits.
 - Common system of fits and clearances.
 - Schedule of fits and clearances for aircraft and engines.
 - Limits for bow, twist and wear.
 - Standard methods for checking shafts, bearings and other parts.
- ◆ Able to understand the electrical cables and connectors
 - Continuity, insulation and bonding techniques and testing.
 - Use of crimp tools: hand and hydraulic operated.
 - Testing of crimp joints.
 - Connector pin removal and insertion.
 - Co-axial cables: testing and installation precautions.
 - Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.
- ◆ Able to understand the riveting
 - Riveted joints, rivet spacing and pitch.
 - Tools used for riveting and dimpling.
 - Inspection of riveted joints.
- ◆ Able to understand the pipes and hoses
 - Bending and belling/flaring aircraft pipes.
 - Inspection and testing of aircraft pipes and hoses.

	<ul style="list-style-type: none"> • Installation and clamping of pipes. ◆ Able to understand the springs <ul style="list-style-type: none"> • Inspection and testing of springs. ◆ Able to understand the bearings <ul style="list-style-type: none"> • Testing, cleaning and inspection of bearings. • Lubrication requirements of bearings. • Defects in bearings and their causes. ◆ Able to understand the transmissions <ul style="list-style-type: none"> • Inspection of gears, backlash. • Inspection of belts and pulleys, chains and sprockets. • Inspection of screw jacks, lever devices, pushpull rod systems. ◆ Able to understand the control cables <ul style="list-style-type: none"> • Swaging of end fittings. • Inspection and testing of control cables. • Bowden cables. aircraft flexible control systems. ◆ Able to understand the aircraft handling and storage <ul style="list-style-type: none"> • Aircraft taxiing / towing and associated safety precautions. • Aircraft jacking, chocking, securing and associated safety precautions. • Aircraft storage methods. • Refuelling / defuelling procedures. • De-icing/anti-icing procedures. • Electrical, hydraulic and pneumatic ground supplies. • Effects of environmental conditions on aircraft handling and operation.
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	<ul style="list-style-type: none"> ◆ Able to understand the disassembly, inspection, repair and assembly techniques <ul style="list-style-type: none"> • Types of defects and visual inspection techniques. • Disassembly and re-assembly techniques. ◆ Able to understand the abnormal events <ul style="list-style-type: none"> • Inspections following lightning strikes and HIRF penetration. • Inspections following abnormal events such as heavy landings and flight through turbulence. ◆ Able to understand the maintenance procedures <ul style="list-style-type: none"> • Maintenance planning. • Modification procedures. • Stores procedures. • Certification / release procedures. • Interface with aircraft operation. • Maintenance Inspection / Quality Control • Quality Assurance. • Additional maintenance procedures. • Control of life limited components. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Safety precautions-Aircraft and Workshop • Workshop practices • Tools • Aircraft handling and storage • Disassembly, inspection, repair and assembly techniques • Abnormal events
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft handling and storage • Disassembly, inspection, repair and assembly techniques • Abnormal events ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Safety Precautions-Aircraft and Workshop • Workshop Practices • Tools ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 7: Maintenance practices</p>

1. Title	Basics Aerodynamics I
2. Code	EMAMAG342A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the physics of the Atmosphere ◆ Able to understand the aerodynamics <ul style="list-style-type: none"> • Airflow around a body. • Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash. vortices, stagnation. • Thrust, Weight, Aerodynamic Resultant. • Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall. • Aerofoil contamination including ice, snow, frost. ◆ Able to understand the theory of flight <ul style="list-style-type: none"> • Relationship between lift, weight, thrust and drag. • Glide ratio. • Steady state flights, performance. • Theory of the turn. • Influence of load factor : stall, flight envelope and structural limitations. • Lift augmentation.

	<ul style="list-style-type: none"> ◆ Able to understand the flight stability and dynamics <ul style="list-style-type: none"> • Longitudinal, lateral and directional stability (active and passive).
	<p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the basic elements of the subjects. (ii) Able to give a simple description of the whole subject, using common words and examples. (iii) Able to use the typical terms.
8. Remarks	Ref: HKAR-66 Module 8: Basic Aerodynamics.

1. Title	Mathematics II (Mechanics Repair and Maintenance)
2. Code	EMAMBG301A
3. Range	Mathematics is needed for a wide range of calculations relating to aircraft repair and maintenance works, e.g. applicable to repair and maintenance works in aircrafts, stores, airworthiness, documentation, analysis, and tools etc
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the principal element of the Arithmetic unit <ul style="list-style-type: none"> • Arithmetical terms and signs. • Methods of multiplication and division. • Fractions and decimals of numbers. • Factors and multiples in groups of numbers. • Meaning of weights. • Measurements and conversion factors. • Ratio and proportion in quantifying numbers. • Averages and percentages for groups of numbers. • Areas and volumes of objects, and squares, cubes, square roots and cube roots of numbers. ◆ Able to understand the principal element of the Algebra unit <ul style="list-style-type: none"> • Evaluating simple algebraic expressions, addition, subtraction, multiplication and division • Use of brackets • Simple algebraic fractions

	<ul style="list-style-type: none"> • Linear equations and their solutions • Indices and powers • Negative and fractional indices • Binary and other applicable numbering systems • Simultaneous equations and second degree equations with one unknown • Logarithms <p>◆ Able to understand the principal element of the Geometry unit</p> <ul style="list-style-type: none"> • Simple geometrical constructions • Graphical representation • Nature and uses of graphs • Graphs of equations/ functions • Simple trigonometry • Trigonometrical relationships • Use of tables • Rectangular and polar co-ordinates <p>6.2 Theoretical and practical aspects</p> <p>◆ Able to apply the following knowledge in the aircraft maintenance.</p> <ul style="list-style-type: none"> • Arithmetic • Algebra <ul style="list-style-type: none"> ▸ Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions. • Geometry <ul style="list-style-type: none"> ▸ Graphical representation ▸ Simple trigonometry. trigonometrical relationships, use of tables and rectangular and polar co-ordinates.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Arithmetic • Algebra <ul style="list-style-type: none"> ▸ Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions. • Geometry <ul style="list-style-type: none"> ▸ Graphical representation ▸ Simple trigonometry. trigonometrical relationships, use of tables and rectangular and polar co-ordinates. ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 1</p>

1. Title	Physics II (Mechanics Repair and Maintenance)
2. Code	EMAMBG302A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	3
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the Matter <ul style="list-style-type: none"> • Nature of matter : the chemical elements, structure of atoms, molecules. • Chemical compounds. • States: solid, liquid and gaseous. • Changes between states. ◆ Able to understand the Mechanics <ul style="list-style-type: none"> • Statics <ul style="list-style-type: none"> ▸ Forces, moments and couples, representation as vectors. ▸ Centre of gravity. ▸ Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion. ▸ Nature and properties of solid, fluid and gas. ▸ Pressure and buoyancy in liquids (barometers).

	<ul style="list-style-type: none"> • Kinetics <ul style="list-style-type: none"> › Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity). › Rotational movement: uniform circular motion (centrifugal/centripetal forces). › Periodic motion: pendular movement. › Simple theory of vibration, harmonics and resonance. › Velocity ratio, mechanical advantage and efficiency. • Dynamics <ul style="list-style-type: none"> › Mass. › Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency. › Momentum, conservation of momentum. › Impulse. › Gyroscopic principles. › Friction: nature and effects, coefficient of friction (rolling resistance). • Fluid dynamic <ul style="list-style-type: none"> › Specific gravity and density. › Viscosity, fluid resistance, effects of streamlining. effects of compressibility on fluids. › Static, dynamic and total pressure: Bernoulli's Theorem, venturi.
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	<ul style="list-style-type: none"> ◆ Able to understand the Thermodynamics <ul style="list-style-type: none"> • Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin. • Heat definition. • Heat capacity, specific heat. • Heat transfer: convection, radiation and conduction. • Volumetric expansion. • First and second law of thermodynamics. • Gases: ideal gases laws. specific heat at constant volume and constant pressure, work done by expanding gas. • Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps. • Latent heats of fusion and evaporation, thermal energy, heat of combustion. ◆ Able to understand the Optics (Light) <ul style="list-style-type: none"> • Nature of light. speed of light. • Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses. • Fibre optics. ◆ Able to understand the Wave Motion and Sound <ul style="list-style-type: none"> • Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves. • Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.
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	<p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Mechanics • Thermodynamics • Optics (Light) • Wave Motion and Sound <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Mechanics • Thermodynamics • Optics (Light) • Wave Motion and Sound ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 2: Physics

1. Title	Electronic fundamentals I
2. Code	EMAMBG303A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	2
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the semiconductors <ul style="list-style-type: none"> • Diode <ul style="list-style-type: none"> ▸ Diode symbols. ▸ Diode characteristics and properties. ▸ Diodes in series and parallel. ▸ Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes. ▸ Functional testing of diodes. • Transistors <ul style="list-style-type: none"> ▸ Transistor symbols. ▸ Component description and orientation. ▸ Transistor characteristics and properties. • Integrated Circuits <ul style="list-style-type: none"> ▸ Description and operation of logic circuits and linear circuits / operational amplifiers. ◆ Able to understand the printed circuit boards <ul style="list-style-type: none"> • Description and use of printed circuit boards.

	<ul style="list-style-type: none"> ◆ Able to understand the servomechanisms <ul style="list-style-type: none"> • Understanding of the following items: Open and closed loop systems, feedback, follow up, analogue transducers. • Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.
6.2	<p>Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Semiconductors <ul style="list-style-type: none"> ▸ Diode
6.3	<p>Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Semiconductors <ul style="list-style-type: none"> ▸ Diode ◆ Able to apply the knowledge in the aircraft maintenance task.

7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 4: Electronic fundamentals

1. Title	Mathematics II (Avionics Repair and Maintenance)
2. Code	EMAMBX301A
3. Range	Mathematics is needed for a wide range of calculations relating to aircraft repair and maintenance works, especially in avionics, e.g. applicable to repair and maintenance works in aircrafts, stores, airworthiness, documentation, analysis, and tools etc
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the principal element of the Arithmetic unit <ul style="list-style-type: none"> • Arithmetical terms and signs. • Methods of multiplication and division. • Fractions and decimals of numbers. • Factors and multiples in groups of numbers. • Meaning of weights. • Measurements and conversion factors. • Ratio and proportion in quantifying numbers. • Averages and percentages for groups of numbers. • Areas and volumes of objects, and squares, cubes, square roots and cube roots of numbers. ◆ Able to understand the principal element of the Algebra unit <ul style="list-style-type: none"> • Evaluating simple algebraic expressions, addition, subtraction, multiplication and division • Use of brackets • Simple algebraic fractions • Linear equations and their solutions

	<ul style="list-style-type: none"> • Indices and powers • Negative and fractional indices • Binary and other applicable numbering systems • Simultaneous equations and second degree equations with one unknown • Logarithms ◆ Able to understand the principal element of the Geometry unit <ul style="list-style-type: none"> • Simple geometrical constructions • Graphical representation • Nature and uses of graphs • Graphs of equations/ functions • Simple trigonometry • Trigonometrical relationships • Use of tables • Rectangular and polar co-ordinates 6.2 Theoretical and practical aspects <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Arithmetic • Algebra <ul style="list-style-type: none"> ▸ Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions. • Geometry <ul style="list-style-type: none"> ▸ Graphical representation ▸ Simple trigonometry. trigonometrical relationships, use of tables and rectangular and polar co-ordinates.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Arithmetic • Algebra <ul style="list-style-type: none"> ▸ Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions. • Geometry <ul style="list-style-type: none"> ▸ Graphical representation ▸ Simple trigonometry. trigonometrical relationships, use of tables and rectangular and polar co-ordinates. ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 1

1. Title	Physics II (Avionics Repair and Maintenance)	
2. Code	EMAMBX302A	
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.	
4. Level	3	
5. Credit	4	
6. Competency	<u>Performance Requirement</u>	
	6.1 Knowledge	<ul style="list-style-type: none"> ◆ Able to understand the Matter <ul style="list-style-type: none"> • Nature of matter : the chemical elements, structure of atoms, molecules. • Chemical compounds. • States: solid, liquid and gaseous. • Changes between states. ◆ Able to understand the Mechanics <ul style="list-style-type: none"> • Statics <ul style="list-style-type: none"> ▸ Forces, moments and couples, representation as vectors. ▸ Centre of gravity. ▸ Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion. ▸ Nature and properties of solid, fluid and gas. ▸ Pressure and buoyancy in liquids (barometers). • Kinetics <ul style="list-style-type: none"> ▸ Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity).

- Rotational movement: uniform circular motion (centrifugal/centripetal forces).
- Periodic motion: pendular movement.
- Simple theory of vibration, harmonics and resonance.
- Velocity ratio, mechanical advantage and efficiency.
- Dynamics
 - Mass.
 - Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency.
 - Momentum, conservation of momentum.
 - Impulse.
 - Gyroscopic principles.
 - Friction: nature and effects, coefficient of friction (rolling resistance).
- Fluid dynamic
 - Specific gravity and density.
 - Viscosity, fluid resistance, effects of streamlining. effects of compressibility on fluids.
 - Static, dynamic and total pressure: Bernoulli's Theorem, venturi.
- ◆ Able to understand the Thermodynamics
 - Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin.
 - Heat definition.
 - Heat capacity, specific heat.
 - Heat transfer: convection, radiation and conduction.
 - Volumetric expansion.
 - First and second law of thermodynamics.

	<ul style="list-style-type: none"> • Gases: ideal gases laws. specific heat at constant volume and constant pressure, work done by expanding gas. • Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps. • Latent heats of fusion and evaporation, thermal energy, heat of combustion. ◆ Able to understand the Optics (Light) <ul style="list-style-type: none"> • Nature of light. speed of light. • Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses. • Fibre optics. ◆ Able to understand the Wave Motion and Sound <ul style="list-style-type: none"> • Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves. • Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Dynamics <ul style="list-style-type: none"> ▸ Momentum, conservation of momentum. ▸ Impulse. ▸ Gyroscopic principles. ▸ Friction • Fluid dynamic <ul style="list-style-type: none"> ▸ Specific gravity and density. • Thermodynamics
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	<ul style="list-style-type: none"> • Optics (Light) • Wave Motion and Sound <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Dynamics <ul style="list-style-type: none"> ▸ Momentum, conservation of momentum. ▸ Impulse. ▸ Gyroscopic principles. ▸ Friction • Fluid dynamic <ul style="list-style-type: none"> ▸ Specific gravity and density. • Thermodynamics • Optics (Light) • Wave Motion and Sound ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 2: Physics

1. Title	Mathematics II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY301A
3. Range	Mathematics is needed for a wide range of calculations relating to simple light aeroplane repair and maintenance works, e.g. applicable to repair and maintenance works in aircrafts, stores, airworthiness, documentation, analysis, and tools etc
4. Level	3
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the principal element of the Arithmetic unit <ul style="list-style-type: none"> • Arithmetical terms and signs. • Methods of multiplication and division. • Fractions and decimals of numbers. • Factors and multiples in groups of numbers. • Meaning of weights. • Measurements and conversion factors. • Ratio and proportion in quantifying numbers. • Averages and percentages for groups of numbers. • Areas and volumes of objects, and squares, cubes, square roots and cube roots of numbers. ◆ Able to understand the principal element of the Algebra unit <ul style="list-style-type: none"> • Evaluating simple algebraic expressions, addition, subtraction, multiplication and division • Use of brackets • Simple algebraic fractions

	<ul style="list-style-type: none"> ◆ Able to understand the principal element of the Geometry unit <ul style="list-style-type: none"> • Simple geometrical constructions • Graphical representation • Nature and uses of graphs • Graphs of equations/ functions • Simple trigonometry • Trigonometrical relationships • Use of tables • Rectangular and polar co-ordinates <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Arithmetic • Algebra • Geometry <ul style="list-style-type: none"> ▸ Graphical representation ▸ Simple trigonometry. trigonometrical relationships, use of tables and rectangular and polar co-ordinates. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Arithmetic • Algebra • Geometry <ul style="list-style-type: none"> ▸ Graphical representation ▸ Simple trigonometry. trigonometrical relationships, use of tables and rectangular and polar co-ordinates. ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 1</p>

1. Title	Physics II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY302A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	3
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the Matter <ul style="list-style-type: none"> • Nature of matter : the chemical elements, structure of atoms, molecules. • Chemical compounds. • States: solid, liquid and gaseous. • Changes between states. ◆ Able to understand the Mechanics <ul style="list-style-type: none"> • Statics <ul style="list-style-type: none"> ▸ Forces, moments and couples, representation as vectors. ▸ Centre of gravity. ▸ Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion. ▸ Nature and properties of solid, fluid and gas. ▸ Pressure and buoyancy in liquids (barometers). • Kinetics <ul style="list-style-type: none"> ▸ Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity).

	<ul style="list-style-type: none"> ‣ Rotational movement: uniform circular motion (centrifugal/centripetal forces). ‣ Periodic motion: pendular movement. ‣ Simple theory of vibration, harmonics and resonance. ‣ Velocity ratio, mechanical advantage and efficiency. • Dynamics <ul style="list-style-type: none"> ‣ Mass. ‣ Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency. ‣ Momentum, conservation of momentum. ‣ Impulse. ‣ Gyroscopic principles. ‣ Friction: nature and effects, coefficient of friction (rolling resistance). • Fluid dynamic <ul style="list-style-type: none"> ‣ Specific gravity and density. ‣ Viscosity, fluid resistance, effects of streamlining. effects of compressibility on fluids. ‣ Static, dynamic and total pressure: Bernoulli's Theorem, venturi. ◆ Able to understand the Thermodynamics <ul style="list-style-type: none"> • Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin. • Heat definition. • Heat capacity, specific heat. • Heat transfer: convection, radiation and conduction. • Volumetric expansion.
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	<ul style="list-style-type: none"> • First and second law of thermodynamics. • Gases: ideal gases laws. specific heat at constant volume and constant pressure, work done by expanding gas. • Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps. • Latent heats of fusion and evaporation, thermal energy, heat of combustion. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Mechanics • Thermodynamics <ul style="list-style-type: none"> ▸ Temperature ▸ Heat definition <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Mechanics • Thermodynamics • Temperature • Heat definition ◆ Able to apply the knowledge in the aircraft maintenance task.
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7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 2: Physics

1. Title	Aeronautical rotating assembly balance	
2. Code	EMAMWS301A	
3. Range	The aeronautical rotating assembly balancing is usually carried out in an aircraft hangar,e.g. armatures, compressors, turbine assemblies	
4. Level	3	
5. Credit	4	
6. Competency	<u>Performance Requirement</u>	
	6.1 Preparation	<ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. static balance, dynamic balance. ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for balancing in accordance with the procedures,e.g. clean, inspect, install on balancer.
	6.2 Methods and procedures	<ul style="list-style-type: none"> ◆ Able to set the balancer to reference in accordance with the procedures. ◆ Able to operate the balancer in accordance with the procedures. ◆ Able to interpret the readings in accordance with the procedures. ◆ Able to adjust the weights to rectify out of

	<ul style="list-style-type: none"> ◆ balance condition in accordance with the procedures,e.g. add, remove, redistribute. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, inhibiting, blanking, packing. ◆ Able to complete the documentation in accordance with the procedures ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the balancing of aeronautical rotating assemblies. (ii) Able to balance the components. (iii) Able to complete all the requirements associated with the balancing task.
8. Remarks	Ref: NZQA - 3402

1. Title	Aeronautical component parts punching
2. Code	EMAMWS302A
3. Range	Aeronautical component parts punching are performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the component identity, serial and part numbering system. ◆ Understand the operation principles of punching machine. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to establish and document the tasks in accordance with the procedures. ◆ Able to set up the punching machine with safety working environment. ◆ Able to plan and verify the sequence of operations with procedures. ◆ Able to punch the component to shape in accordance with the procedures. ◆ Able to measure and check the component for conformity with specifications. ◆ Able to report, record and rectify the defects in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures ◆ Able to deburr the work piece in accordance to produces

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the parts for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures. <p>Range including:</p> <ul style="list-style-type: none"> • tools, equipment, safety equipment, publications <ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification ◆ Able to handle hazardous waste materials in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to shape the aeronautical component parts by punching according to the specify requirements.</p>
8. Remarks	Ref: NZQA - 4032

1. Title	Aeronautical sheet metal by rolling
2. Code	EMAMWS303A
3. Range	Sheet metal rolling is performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the characteristics of the sheet metals used in aircrafts. ◆ Understand the operation principles of rolling. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to fabricated/repaired items by rolling to meet specifications in accordance with the procedures. ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures. ◆ Able to deburr the work piece in accordance to produces <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the parts for storage, transit or use in accordance with the procedures.

	<ul style="list-style-type: none"> ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused items, parts and materials in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to form the sheet metal by rolling according to the specify requirements.</p>
8. Remarks	Ref: NZQA - 4033

1. Title	Aircraft flight control surfaces balancing
2. Code	EMAMWS304A
3. Range	Aircraft flight control surfaces balancing are performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the characteristics of the sheet metals used in aircrafts.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, safety equipment, publications.</p> <p style="padding-left: 150px;">♦ Able to set up the balancing equipment and mount the control surface in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to balance the control surface to meet specifications in accordance with the procedures,e.g. check balance, calculate adjustments, fit, remove and/or adjust balance weights.</p> <p style="padding-left: 150px;">♦ Able to prepare the item for storage, transit or use in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, work orders, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to statically balance the aircraft flight control surfaces. Balancing of helicopter rotary flight control surfaces is covered in separate unit standards.</p>
8. Remarks	Ref: NZQA - 4067

1. Title	Aeronautical sheet aluminum alloys slapping and beating
2. Code	EMAMWS305A
3. Range	Sheet aluminum alloys slapping and beating is performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the operation principles of slapping and beating. ◆ Understand the characteristics of the sheet aluminum alloys used in aircrafts. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to manufacture form blocks to meet task requirements in accordance with the procedures. ◆ Able to mark out and cut sheet metal to meet specifications in accordance with the procedures ◆ Able to form sheet metal to specifications using forming blocks and slapping and beating. ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures ◆ Able to deburr the work piece in accordance to produces

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the parts for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused items, parts and materials in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to shape the aeronautical sheet aluminum alloys by slapping and beating according to the specified requirements.</p>
8. Remarks	Ref: NZQA - 4068

1. Title	Cold work holes in aeronautical aluminum alloys
2. Code	EMAMWS306A
3. Range	Cold work holes in aeronautical aluminum alloys are performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the operation principles of cold work holes. ◆ Understand the characteristics of the aeronautical aluminum alloys. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures. ◆ Able to calibrate cold working equipment to meet task requirements in accordance with the procedures. ◆ Able to prepare and process holes cold working in accordance with the procedures, e.g. ream, de-burr. ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures ◆ Able to deburr the work piece in accordance to produces

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the parts for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle items, parts and materials in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to cold work holes in the aeronautical aluminum alloys to prepare for fasteners to be fitted using the split sleeve, sleeveless, high interference, low interference, or combination method in accordance with specified requirements.</p>
<p>8. Remarks</p>	<p>Ref: NZQA - 4069</p>

1. Title	Sheet Metal Cutting
2. Code	EMAMWS307A
3. Range	Sheet metal cutting is performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the characteristics of the sheet metals used in aircrafts. ◆ Understand the operation principles of cutting tools, including: <ul style="list-style-type: none"> • guillotines, hole saws, hacksaws, band saws, snips, nibblers, files, reamers, portable drills, hand punches, power punches, routers and drill presses <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to secure the material to prevent movement during cutting. ◆ Effective use of appropriate tools to cut the material to dimensions in accordance with the procedures ◆ Able to rectify the non-conformities accordance with procedures. ◆ Able to dress the material to remove sharp edges and stress raisers. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to deburr the work piece in accordance to produces

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the parts for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused items, parts and materials in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to shape the aeronautical sheet metal by cutting using guillotines, hole saws, hand-held hacksaws, power hacksaws, band saws, nibblers, files, reamers, portable drills, and drill presses.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.14)</p> <p>The Credit in this UoC is on the assumption of the person already possessed the basic workshop practices, use of tools and work</p>

1. Title	Aircraft flying bracing wires rig
2. Code	EMAMWS308A
3. Range	Aircraft flying bracing wires rigging are performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the characteristics of the flying bracing wires used in aircrafts. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, tools, equipment, safety equipment, materials ◆ Able to confirm the aircraft to be rigged is matched with the documentation. ◆ Able to make preparation for the ground and/or support equipment around the aircraft in accordance with the procedures. ◆ Able to jig the aircraft in accordance with the procedures. ◆ Able to determine the serviceability of flying wires in accordance with the procedures,e.g. inspect, troubleshoot, assess, and test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to determine the rectify method in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, rig, and adjust. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to return the work area in a condition enabling the next task to begin. <li>◆ Able to check and return the resources for serviceability in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle unused items, parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, work orders, release notes, log books, certification.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to rig the aircraft flying bracing wires.
8. Remarks	Ref: NZQA - 4077

1. Title	Aeronautical sheet metal shrinking and stretching	
2. Code	EMAMWS309A	
3. Range	Aeronautical sheet metal shrinking and stretching is performed in an aircraft hangar or workshop by using appropriate tools or machinery.	
4. Level	3	
5. Credit	8	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the operation principles of shrinking and stretching. ◆ Understand the characteristics of the aeronautical sheet metal used in aircrafts. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, heat treatment state, equipment, safety equipment, publications. ◆ Able to manufacture form blocks to meet task requirements in accordance with the procedures. ◆ Able to mark out and cut sheet metal to meet specifications in accordance with the procedures ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to form sheet metal to specifications by shrinking and stretching in accordance with the procedures. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures. 	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to deburr the work piece in accordance to produces. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the parts for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused items, parts and materials in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to shape the aeronautical sheet metals by shrinking and stretching according to the specify requirements.</p>
8. Remarks	Ref: NZQA - 4081

1. Title	Aeronautical sheet aluminum alloys forming by wheeling
2. Code	EMAMWS310A
3. Range	Aeronautical sheet aluminum alloys wheeling are performed in an aircraft hangar or workshop by using appropriate tools or machinery.
4. Level	3
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the characteristics of the aluminum alloys in aircrafts.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, heat treatment state, equipment, safety equipment, publications.</p> <p style="padding-left: 150px;">♦ Able to cut the sheet metal to meet specifications in accordance with the procedures,e.g. marked out, cut, and deburred.</p> <p style="padding-left: 150px;">♦ Able to form the sheet metal to specifications by wheeling.</p> <p style="padding-left: 150px;">♦ Able to rectify the non-conformities in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to deburr the work piece in accordance to produces.</p> <p style="padding-left: 150px;">♦ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the item for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, work orders, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to form the aeronautical sheet aluminum alloys by wheeling.</p>
8. Remarks	<p>Ref: NZQA - 4083</p>

1. Title	Defective electronic/ digital/ avionic components troubleshooting and repair
2. Code	EMAMWS311A
3. Range	Component overhaul in workshop.
4. Level	3
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the construction and working principles for electronic / digital / avionic components, including:</p> <ul style="list-style-type: none"> • operating concepts such as breakdown voltage, forward /reverse biased conditions of diodes • inter-conversion of binary, octal and hexadecimal numbering systems • avionic general test equipment <p>6.2 Troubleshooting and repair methods ♦ Use appropriate methods effectively to fix the defective components in accordance with the procedures</p> <p>6.3 Professional approach ♦ Able to follow in-house procedures to label the component and return it to supplies store / service.</p> <p>♦ Able to complete the task within the stipulated duration.</p>
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to troubleshoot and fix the defective electronic/ digital/ avionic components,</p> <p>(ii) Able to restore the normal function of the components.</p> <p>(iii) Able to prepare reports for the repair works.</p>

8. Remarks	(Ref: HKAR-66 Module 4, 5, 7.4, 7.18, 11.5, 12.7, 13.3, 13.4 & 13.8) The Credit in this UoC is on the assumption of the person already possessed basic knowledge in electronics and instrumentation.
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Competency Level 4

1. Title	Aircraft defects report
2. Code	EMAMAG401A
3. Range	Inspection or repair of aircraft.
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Air Navigation (Hong Kong) Order 1995 requirements and related reporting requirements</p> <ul style="list-style-type: none"> ◆ Understand the requirements of defects reporting, including: <ul style="list-style-type: none"> • incidents to be reported e.g. accidents involving damage to an aircraft or injury to a person • requirements by law and the reporting scheme set by the Civil Aviation Department e.g. content of the report and the due date for submission <p>6.2 Procedures and process</p> <ul style="list-style-type: none"> ◆ Able to use inspection tools and methods to inspect aircraft after abnormal events or aircraft failure in accordance with the procedures. ◆ Able to draft the defects report with the necessary information in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to submit the necessary information within the time limit as specified in law.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to perform thorough and appropriate inspection to the aircraft after abnormal events or aircraft failure.</p> <p>(ii) Able to draft the defects report within the specified time limit.</p>

8. Remarks	(Ref: HKAR-66 Module 10.7) The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the use of general inspection tools and aviation vocabulary.
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1. Title	Gas turbine engine I
2. Code	EMAMAG402A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the gas turbine engine fundamentals ◆ Able to understand the inlet ◆ Able to understand the compressors ◆ Able to understand the combustion section ◆ Able to understand the turbine section ◆ Able to understand the exhaust ◆ Able to understand the lubricants and fuels <ul style="list-style-type: none"> • Properties and specifications. • Fuel additives. • Safety precautions. ◆ Able to understand the lubrication systems <ul style="list-style-type: none"> • System operation/lay-out and components. ◆ Able to understand the fuel systems <ul style="list-style-type: none"> • Operation of engine control and fuel metering systems including electronic engine control (FADEC). • Systems lay-out and components.

- ◆ Able to understand the air systems
 - Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.
- ◆ Able to understand the starting and ignition systems
 - Operation of engine start systems and components.
 - Ignition systems and components.
 - Maintenance safety requirements.
- ◆ Able to understand the engine indication systems
 - Exhaust Gas Temperature/Interstage Turbine Temperature.
 - Engine Thrust indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems.
 - Oil pressure and temperature.
 - Fuel pressure and flow.
 - Engine speed.
 - Vibration measurement and indication.
 - Torque.
 - Power.
- ◆ Able to understand the turbo-prop engines
 - Gas coupled/free turbine and gear coupled turbines.
 - Reduction gears.
 - Integrated engine and propeller controls.
 - Overspeed safety devices.
- ◆ Able to understand the turbo-shaft engines
 - Arrangements, drive systems, reduction gearing, couplings, control systems.

	<ul style="list-style-type: none"> ◆ Able to understand the auxiliary power units (APUs) <ul style="list-style-type: none"> • Purpose, operation, protective systems. ◆ Able to understand the powerplant installation <ul style="list-style-type: none"> • Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains. ◆ Able to understand the fire protection systems <ul style="list-style-type: none"> • Operation of detection and extinguishing system. ◆ Able to understand the engine monitoring and ground operation <ul style="list-style-type: none"> • Procedures for starting and ground run-up. • Interpretation of engine power output and parameters. • Trend (including oil analysis, vibration and boroscope) monitoring. • Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer. • Compressor washing / cleaning. • Foreign Object Damage. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Inlet • Turbine Section
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Inlet • Turbine Section ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 15: Gas turbine engine</p>

1. Title	Piston engine I
2. Code	EMAMAG403A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the piston engine fundamentals ◆ Able to understand the engine performance ◆ Able to understand the engine construction ◆ Able to understand the engine fuel systems <ul style="list-style-type: none"> • Carburetors type, construction and principles of operation. • Carburetors icing and heating. • Fuel injection systems type, construction and principles of operation. ◆ Able to understand the starting and ignition systems <ul style="list-style-type: none"> • Starting systems. • Magneto types, construction and principles of operation. • Ignition harnesses and spark plugs. • Low and high tension systems. ◆ Able to understand the induction, exhaust and cooling systems <ul style="list-style-type: none"> • Construction and operation of induction systems, including alternate air systems • Exhaust systems and engine cooling systems.

	<ul style="list-style-type: none"> ◆ Able to understand the supercharging / turbocharging <ul style="list-style-type: none"> • Principles and purpose of supercharging and its effects on engine parameters. • Construction and operation of supercharging / turbocharging system. • System terminology. • Control systems. • System protection. ◆ Able to understand the lubricants and fuels <ul style="list-style-type: none"> • Properties and specifications. • Fuel additives. • Safety precautions. ◆ Able to understand the lubrication systems <ul style="list-style-type: none"> • System operation / lay-out and components. ◆ Able to understand the engine indication systems <ul style="list-style-type: none"> • Engine speed. • Cylinder head temperature. • Oil pressure and temperature. • Exhaust Gas Temperature. • Fuel pressure and flow. • Manifold pressure. ◆ Able to understand the powerplant installation <ul style="list-style-type: none"> • Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.
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	<ul style="list-style-type: none"> ◆ Able to understand the engine monitoring and ground operation <ul style="list-style-type: none"> • Procedures for starting and ground run-up. • Interpretation of engine power output and parameters. • Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer.
	<p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the basic elements of the subject. (ii) Able to give a simple description of the whole subject, using common words and examples. (iii) Able to use the typical terms.
8. Remarks	Ref: HKAR-66 Module 16: Piston engine.

1. Title	Aeroplane aerodynamics, structures and systems I
2. Code	EMAMAA401A
3. Range	The knowledge is needed for a wide range of aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the theory of aeroplane aerodynamics and flight controls <ul style="list-style-type: none"> • Operation and effect Roll control, Pitch control and Yaw control. • Control using elevons, ruddervators. • High lift devices, slots, slats, flaps, flaperons. • Drag inducing devices, spoilers, lift dumpers, speed brakes. • Effects of wing fences, saw tooth leading edges. • Boundary layer control using, vortex generators, stall wedges or leading edge devices. • Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels. ◆ Able to understand the theory of high speed flight

- ◆ Able to understand the general concept of the airframe structures
 - Airworthiness requirements for structural strength.
 - Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments.
- ◆ Able to understand the aeroplanes airframe structures
 - Fuselage (ATA 52/53/56)
 - Wings (ATA 57)
 - Stabilisers (ATA 55)
 - Flight control surfaces (ATA 55/57)
 - Nacelles/Pylons (ATA 54)
- ◆ Able to understand the air conditioning and cabin pressurisation (ATA 21)
 - Air supply
 - Air conditioning
 - Pressurisation
 - Safety and warning devices
- ◆ Able to understand the Instruments/Avionic Systems
 - Instrument Systems (ATA 31)
 - Avionic Systems
- ◆ Able to understand the electrical power (ATA 24)
 - Batteries Installation and Operation.
 - DC power generation.
 - AC power generation.
 - Emergency power generation.
 - Voltage regulation.

- Power distribution.
- Inverters, transformers, rectifiers.
- Circuit protection.
- External / Ground power.
- ◆ Able to understand the equipment and furnishings (ATA 25)
 - Emergency equipment requirements.
 - Cabin lay-out.
- ◆ Able to understand the fire protection (ATA 26)
 - Fire and smoke detection and warning systems.
 - Fire extinguishing systems.
 - System tests.
- ◆ Able to understand the flight controls (ATA 27)
 - Primary controls: aileron, elevator, rudder, spoiler.
 - Trim control.
 - Active load control.
 - High lift devices.
 - Lift dump, speed brakes.
 - System operation: manual, hydraulic, pneumatic,
 - electrical, fly-by-wire.
 - Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks.
 - Balancing and rigging.
 - Stall protection system.
- ◆ Able to understand the fuel systems (ATA 28)
 - System lay-out.
 - Fuel tanks.
 - Supply systems.

	<ul style="list-style-type: none"> • Dumping, venting and draining. • Cross-feed and transfer, Indications and warnings. • Refuelling and defuelling. • Longitudinal balance fuel systems. ◆ Able to understand the hydraulic power (ATA 29) <ul style="list-style-type: none"> • System lay-out. • Hydraulic fluids. • Hydraulic reservoirs and accumulators. • Pressure generation: electric, mechanical, pneumatic. • Emergency pressure generation. • Pressure Control. • Power distribution. • Indication and warning systems. • Interface with other systems. ◆ Able to understand the ice and rain protection (ATA 30) <ul style="list-style-type: none"> • Ice formation, classification and detection. • Anti-icing systems: electrical, hot air and chemical. • De-icing systems: electrical, pneumatic and chemical. • Rain repellent and removal. • Probe and drain heating. ◆ Able to understand the landing gear (ATA 32) <ul style="list-style-type: none"> • Construction, shock absorbing. • Extension and retraction systems: normal and emergency. • Indications and warning.
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	<ul style="list-style-type: none"> • Wheels, brakes, antiskid and autobraking. • Tyres. • Steering. ◆ Able to understand the lights system (ATA 33) <ul style="list-style-type: none"> • External: navigation, anti-collision, landing, taxiing, ice. • Internal: cabin, cockpit, cargo. • Emergency. ◆ Able to understand the oxygen system (ATA 35) <ul style="list-style-type: none"> • System lay-out: cockpit, cabin. • Sources, storage, charging and distribution. • Supply regulation. • Indications and warnings. ◆ Able to understand the pneumatic/vacuum (ATA 36) <ul style="list-style-type: none"> • System lay-out. • Sources: engine / APU, compressors, reservoirs, • ground supply. • Pressure control. • Distribution. • Indications and warnings. • Interfaces with other systems. ◆ Able to understand the Water/Waste (ATA 38) <ul style="list-style-type: none"> • Water system lay-out, supply, distribution, servicing and draining. • Toilet system lay-out, flushing and servicing. • Corrosion aspects.
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	<ul style="list-style-type: none"> ◆ Able to understand the On Board Maintenance Systems (ATA 45) <ul style="list-style-type: none"> • Central maintenance computers. • Data loading system. • Electronic library system. • Printing. • Structure monitoring (damage tolerance monitoring). <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Airworthiness requirements for structural strength • Emergency equipment requirements • Landing gear (ATA 32) • Lights (ATA 33) • Water/Waste (ATA 38) <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Airworthiness requirements for structural strength • Emergency equipment requirements • Landing gear (ATA 32) • Lights (ATA 33) • Water/Waste (ATA 38) ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 11: Aeroplane aerodynamics, structures and systems</p>

1. Title	Propeller I
2. Code	EMAMAA402A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the propeller fundamentals ◆ Able to understand the propeller construction ◆ Able to understand the propeller pitch control <ul style="list-style-type: none"> • Speed control and pitch change methods. • Feathering and reverse pitch. • Overspeed protection. ◆ Able to understand the propeller ice protection <ul style="list-style-type: none"> • Fluid and electrical de-icing equipment. ◆ Able to understand the propeller maintenance <ul style="list-style-type: none"> • Static and dynamic balancing. • Blade tracking. • Assessment of blade damage, erosion, corrosion impact damage and delamination. • Propeller treatment / repair schemes. • Propeller engine running process. <p>6.2 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects.

7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the basic elements of the subjects. (ii) Able to give a simple description of the whole subject, using common words and examples. (iii) Able to use the typical terms.
8. Remarks	Ref: HKAR-66 Module 17: Propeller.

1. Title	Helicopter aerodynamics, structures and systems I
2. Code	EMAMAH401A
3. Range	The knowledge is needed for a wide range of helicopter repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the theory of of flight - Rotary wing aerodynamics <ul style="list-style-type: none"> • Terminology. • Effects of gyroscopic precession. • Torque reaction and directional control. • Dissymmetry of lift, Blade tip stall. • Translating tendency and its correction. • Coriolis effect and compensation. • Vortex ring state, power setting, overpitching. • Auto-rotation. • Ground effect. ◆ Able to understand the flight control system <ul style="list-style-type: none"> • Cyclic control. • Collective control. • Swashplate. • Yaw control: Anti-Torque Control, Tail rotor, bleed air. • Main Rotor Head: Design and Operation features. • Blade Dampers: Function and construction.

	<ul style="list-style-type: none"> • Rotor Blades: Main and tail rotor blade construction and attachment. • Trim control, fixed and adjustable stabilisers. • System operation: manual, hydraulic, electrical and fly-by-wire. • Artificial feel. • Balancing and Rigging. ◆ Able to understand the blade tracking and vibration analysis <ul style="list-style-type: none"> • Rotor alignment. • Main and tail rotor tracking. • Static and dynamic balancing. • Vibration types, vibration reduction methods. • Ground resonance. ◆ Able to understand the transmissions <ul style="list-style-type: none"> • Gear boxes, main and tail rotors. • Clutches, free wheel units and rotor brake. ◆ Able to understand the airframe Structures <ul style="list-style-type: none"> • Airworthiness requirements for structural strength. • Construction methods of: ◆ Able to understand the air conditioning (ATA 21) <ul style="list-style-type: none"> • Air supply <ul style="list-style-type: none"> ▸ Sources of air supply including engine bleed, APU and ground cart. • Air conditioning <ul style="list-style-type: none"> ▸ Air conditioning systems. ▸ Distribution systems. ▸ Flow and temperature control system. ▸ Protection and warning devices.
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	<ul style="list-style-type: none"> ◆ Able to understand the Instruments/Avionic Systems <ul style="list-style-type: none"> • Instrument Systems (ATA 31) <ul style="list-style-type: none"> ▸ Pitot static: altimeter, air speed indicator, vertical speed indicator. ▸ Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator. ▸ Compasses: direct reading, remote reading. ▸ Compass compensation and adjustment. ▸ Vibration indicating systems - HUMS. ▸ Other aircraft system indication. • Avionic Systems <ul style="list-style-type: none"> ▸ Fundamentals of system lay-outs and operation of: ▸ Auto Flight (ATA 22). ▸ Communications (ATA 23). ▸ Navigation Systems (ATA 34). ◆ Able to understand the electrical power (ATA 24)1 <ul style="list-style-type: none"> • Batteries Installation and Operation. • DC power generation. • AC power generation. • Emergency power generation. • Voltage regulation. • Power distribution. • Inverters, transformers, rectifiers. • External / Ground power. ◆ Able to understand the equipment and furnishings (ATA 25) <ul style="list-style-type: none"> • Emergency equipment requirements. • Emergency flotation systems.
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	<ul style="list-style-type: none"> ◆ Able to understand the fire protection (ATA 26) <ul style="list-style-type: none"> • Fire and smoke detection and warning systems. • Fire extinguishing systems. • System tests. ◆ Able to understand the fuel systems (ATA 28) <ul style="list-style-type: none"> • System lay-out. • Fuel tanks. • Supply systems. • Dumping, venting and draining. • Cross-feed and transfer, Indications and warnings. • Refuelling and defuelling. ◆ Able to understand the hydraulic power (ATA 29) <ul style="list-style-type: none"> • System lay-out. • Hydraulic fluids. • Hydraulic reservoirs and accumulators. • Pressure generation: electric, mechanical, pneumatic. • Emergency pressure generation. • Pressure Control. • Power distribution. • Indication and warning systems. • Interface with other systems. ◆ Able to understand the ice and rain protection (ATA 30) <ul style="list-style-type: none"> • Ice formation, classification and detection. • Anti-icing and De-icing systems: electrical, hot air and chemical. • Rain repellent and removal. • Probe and drain heating.
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	<ul style="list-style-type: none"> ◆ Able to understand the landing gear (ATA 32) <ul style="list-style-type: none"> • Construction, shock absorbing. • Extension and retraction systems: normal and emergency. • Indications and warning. • Wheels, Tyres, brakes. • Steering. • Skids, floats. ◆ Able to understand the lights system (ATA 33) <ul style="list-style-type: none"> • External: navigation, anti-collision, landing, taxiing, ice. • Internal: cabin, cockpit, cargo. • Emergency. ◆ Able to understand the pneumatic/vacuum (ATA 36) <ul style="list-style-type: none"> • System lay-out. • Sources: engine, compressors, reservoirs, ground supply. • Pressure control. • Distribution. • Indications and warnings. • Interfaces with other systems. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Flight control system • Airframe structures • Equipment and furnishings (ATA 25) • Landing gear (ATA 32) • Lights (ATA 33)
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Flight control system • Airframe structures • Equipment and furnishings (ATA 25) • Landing gear (ATA 32) • Lights (ATA 33) ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 12: Helicopter aerodynamics, structures and systems</p>

1. Title	Aircraft air conditioning and pressurization systems maintenance
2. Code	EMAMBG401A
3. Range	Repair of air conditioning system is usually carried out on the aircraft in a hangar or workshop during the aircraft non-flight time.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the air conditioning system in aircraft, including : <ul style="list-style-type: none"> • cabin pressurization in aeroplanes • protection and warning devices of the system <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and for system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances obtained, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test the system to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to report and record defects in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. equipment, safety equipment. ◆ Able to unused leftover parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft air conditioning and pressurization systems. (ii) Able to locate the defects in air conditioning and pressurization systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.4 & 12.6)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3918</p>

1. Title	Aircraft mechanical flight control systems maintenance
2. Code	EMAMBG402A
3. Range	Repair of flight control system is usually carried out on the aircraft in a hangar or workshop during the aircraft non-flight time, e.g. from the cockpit control to the control surfaces may include but is not limited to - leading edge devices, flaps, ailerons, elevators or rudder, fixed and adjustable trimming devices cables, pulleys, fairleads, bellcranks, push-pull rods.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the flight control systems in aircraft, including : <ul style="list-style-type: none"> • knowledge of basic aerodynamics and theory of flight • different system operation : manual, hydraulic, pneumatic, electrical and fly-by-wire • balancing and rigging <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.

	<ul style="list-style-type: none"> ◆ Able to prepare the aircraft and systems for the application of power and for system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances obtained, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures,e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, rig, lubricate. ◆ Able to test the system to verify their serviceability in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. equipment, safety equipment. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft mechanical flight control system components. (ii) Able to locate the defects in mechanical flight control systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 8, 10, 11.1, 11.9, 13.1 & 13.7)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in computer technology, electrical theories and mechanics.</p> <p>Ref: NZQA - 3919</p>

1. Title	Aircraft fuel storage and distribution systems maintenance
2. Code	EMAMBG403A
3. Range	Repair of fuel storage and distribution system is usually carried out on the aircraft in a hangar or workshop during the aircraft non-flight time. This unit standard covers the system including fuel tanks and distribution system up to, but not including, the engine pumps, carburetors or fuel control units.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the fuel systems in aircraft, including : <ul style="list-style-type: none"> • knowledge of basic construction of the wings • indication and warning systems • longitudinal balance fuel systems <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.

	<ul style="list-style-type: none">◆ Able to prepare the aircraft and systems for the application of power and for system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances obtained, isolation tags, warning signs, purging tanks to achieve non-explosive atmosphere.◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.◆ Able to report and record defects in accordance with the procedures.◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, rig, lubricate.◆ Able to perform inspections in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to test the system to verify their serviceability in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. equipment, safety equipment. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft fuel storage and distribution systems. (ii) Able to locate the defects in fuel storage and distribution systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.

8. Remarks	(Ref: HKAR-66 Module 11.3.2, 11.10 & 12.11) The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools Ref: NZQA - 3920
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1. Title	Aircraft landing gear systems maintenance
2. Code	EMAMBG404A
3. Range	The maintenance work is carried out in an aircraft hangar or workshop during the aircraft non-flight time. Repair of landing gear and the related systems in aircraft, including the oleos, shock struts, locking mechanisms, extensions of retraction mechanism, axles, brake units, tyres, wheels.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the landing gear in aircraft, including : <ul style="list-style-type: none"> • indication and warning systems • wheels, brakes and tyres <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures,e.g. procedures, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and for system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for system operation, in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, rig, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the system to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to check the resources for serviceability and return to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of landing gear systems. (ii) Able to locate the defects in landing gear systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.13 & 12.14)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools</p> <p>Ref: NZQA - 3921</p>

1. Title	Aircraft hydraulic systems maintenance
2. Code	EMAMBG405A
3. Range	Repair of hydraulic power system is carried out in an aircraft hangar or workshop during the aircraft non-flight time. Aircraft hydraulic system is from the reservoir to actuators.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the hydraulic systems in aircraft, including : <ul style="list-style-type: none"> • knowledge of handling of hydraulic fluids • indication and warning systems • interface with other systems <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and for system operation in accordance with the procedures, e.g. depressurize systems, cockpit controls match component positions, clearances obtained, isolation tags, and warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. <li>◆ Able to determine the serviceability in accordance with the procedures,e.g. inspect, troubleshoot, assess, test. <li>◆ Able to report and record defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the system to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to follow instruction manuals to repair and maintain the system.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to check the resources for serviceability and return to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft hydraulic systems. (ii) Able to locate the defects in hydraulic systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.11 & 12.12)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools</p> <p>Ref: NZQA - 3922</p>

1. Title	Aircraft pneumatic/ vacuum systems maintenance
2. Code	EMAMBG406A
3. Range	Repair of pneumatic / vacuum systems in aircraft in an aircraft hangar or workshop during the aircraft non-flight time.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the pneumatic / vacuum systems in aircraft, including : <ul style="list-style-type: none"> • different sources : engine / APU, compressors, reservoirs and ground supply • indication and warning systems • interface with other system <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures,e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances obtained, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. ◆ Able to test the system to verify their serviceability in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. equipment, safety equipment. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft pneumatic systems. (ii) Able to locate the defects in pneumatic systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.16 & 12.16)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3924</p>

1. Title	Aircraft mechanical ice and rain protection systems maintenance
2. Code	EMAMBG407A
3. Range	Repair of ice and rain protection systems in aircraft in an aircraft hangar or workshop during the aircraft non-flight time. Mechanical ice and rain protection systems fitted to airfoils, intakes, and windscreens.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the ice and rain protection systems in aircraft, including: <ul style="list-style-type: none"> • knowledge of handling of rain repellent • anti-icing and de-icing systems <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances obtained, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. <li>◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. <li>◆ Able to report and record defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. <li>◆ Able to test the system to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to follow instruction manuals to repair and maintain the system.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to handle unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft mechanical ice and rain protection systems. (ii) Able to locate the defects in mechanical ice and rain protection systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.12 & 12.13)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3925</p>

1. Title	Aircraft water and waste systems maintenance
2. Code	EMAMBG408A
3. Range	Repair or servicing of water / waste systems in aircraft in an aircraft hangar or workshop during the aircraft non-flight time.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the water / waste systems in aircraft, including: <ul style="list-style-type: none"> • water system • toilet system • corrosion aspects <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances obtained, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the system to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, return of system/aircraft to normal, preparation for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft water and waste systems. (ii) Able to locate the defects in water and waste systems. (iii) Able to restore the system airworthiness. (iv) Able to complete all the requirements associated with the maintenance tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 6.4, 6.6, 7.9 & 11.17)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3927</p>

1. Title	Aircraft oxygen system components repairing and/or overhauling
2. Code	EMAMBG409A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop. Including: pumps, plumbing, valves, filters, reservoirs, bottles, regulators, masks, portable equipment, onboard generating equipment.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the aircraft oxygen system components. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures, e.g. confirm fault, repair, overhaul, modify. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identity with documentation. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair or overhaul.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task.◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to complete the task within the stipulated duration. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft oxygen system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.15)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the use of common tools and the operation of the system of cabin pressurization.</p> <p>Ref: NZQA - 3931</p>

1. Title	Aircraft engines inspection
2. Code	EMAMBG410A
3. Range	The inspection activities referred to in this UoC are those normally carried out on the aircraft in the hangar.
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the scope of inspection of engines, covering : <ul style="list-style-type: none"> • engine construction • criteria, tolerances and data specified by engine manufacturers ◆ Understand the uses of engine data to be collected. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to determine the requirement for inspection by reviewing maintenance documentation and procedures. ◆ Able to confirm the engine identity with documentation by comparing serial and part numbers. ◆ Able to make preparation for the engine for inspection in accordance with the procedures,e.g. clean, gain access. ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, test equipment, safety equipment, environmental conditions established.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to inspect the engine in accordance with the procedures, e.g. visual inspection, optically aided visual inspection. ◆ Able to report and record the defects found during inspection in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the inspection of aircraft engines. (ii) Able to inspect the engines. (iii) Able to complete all the requirements associated with the aircraft engines inspection.
8. Remarks	<p>(Ref: HKAR-66 Module 16.3 & 16.12)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the inspection skills.</p> <p>Ref: NZQA - 3403</p>

1. Title	Aircraft gas turbine auxiliary power units maintenance
2. Code	EMAMBG411A
3. Range	Maintenance of gas turbine auxiliary power units in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the auxiliary power units of gas turbine engines, including their protective systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for auxiliary power unit maintenance activities in accordance with the procedures. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to determine the serviceability in accordance with the procedures,e.g. inspect, troubleshoot, assess, test. <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the auxiliary power unit to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to follow instruction manuals to repair and maintain the system. <li>◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft gas turbine auxiliary power units. (ii) Able to locate the defects. (iii) Able to restore the airworthiness. (iv) Able to complete all the requirements associated with the maintenance task.
8. Remarks	<p>(Ref: HKAR-66 Module 15.18)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of gas turbine engines.</p> <p>Ref: NZQA - 3404</p>

1. Title	Aircraft engine fuel systems maintenance
2. Code	EMAMBG412A
3. Range	Repair of fuel systems in aircraft in an aircraft hangar or workshop during the aircraft grounded time. Engine fuel systems refer to between tank and distributors or injectors.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the fuel systems in aircraft, including : <ul style="list-style-type: none"> • knowledge of basic construction of the wings • indication and warning systems • longitudinal balance fuel systems <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for aircraft engine fuel systems maintenance activities in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to test the aircraft engine fuel system to verify their serviceability in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft engine fuel systems. (ii) Able to locate the defects in engine fuel systems. (iii) Able to restore the airworthiness of engine fuel systems. (iv) Able to complete all the requirements associated with the maintenance task.
8. Remarks	<p>(Ref: HKAR-66 Module 11.3.2, 11.10 & 12.11)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3405</p>

1. Title	Aircraft gas turbine engine lubrication systems maintenance
2. Code	EMAMBG413A
3. Range	Maintenance of gas turbine engine lubrication systems in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the lubrication systems of gas turbine engines, including: <ul style="list-style-type: none"> • properties and specifications of lubricants • operation of the systems • lay-out of the systems and their components <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for aircraft engine lubrication systems maintenance activities in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the aircraft engine lubrication system to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of engine lubrication systems. (ii) Able to locate the defects in engine lubrication systems. (iii) Able to restore the airworthiness of engine lubrication systems. (iv) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 2.2.3, 2.2.4, 15.9 & 15.10)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of gas turbine engines.</p> <p>Ref: NZQA - 3406</p>

1. Title	Aircraft fire protection systems maintenance
2. Code	EMAMBG414A
3. Range	Repair or servicing of fire protection systems in aircraft in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the fire protection systems in aircraft, including : <ul style="list-style-type: none"> • fire and smoke detection and warning systems • fire extinguishing systems <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for aircraft fire protection systems maintenance activities in accordance with the procedures.

	<ul style="list-style-type: none"> ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the aircraft fire protection system to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the work and maintaining the airworthiness of aircraft. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the systems e.g. replacement of fire bottles.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for maintenance of aircraft fire protection systems. (ii) Able to locate the defects in fire protection systems. (iii) Able to restore the airworthiness of fire protection systems. (iv) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 11.8 & 12.10)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3407</p>

1. Title	Aircraft gearboxes and/or transmissions maintenance
2. Code	EMAMBG415A
3. Range	Tasks that work on transmission systems including gears, belts & pulleys, chains & sprockets etc. in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Operating principles</p> <ul style="list-style-type: none"> ◆ Understand the operating principles and applications of different transmission systems, including : <ul style="list-style-type: none"> • gears : gear ratios, mesh patterns • belts and pulleys : tension and construction of different types e.g. flatbelts and powerbelts • chains and sprockets : tooth profile • screw jacks, lever devices and push-pull rod systems <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.

	<ul style="list-style-type: none"> ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for aircraft gearboxes and/or transmissions maintenance activities in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the aircraft gearboxes and/or transmissions to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to follow manufacturers' instruction or work manuals to perform the work. ◆ Able to adopt safety precautions according to the nature of the work.
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	<ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft gearboxes and/or transmissions. (ii) Able locate the defects in gearboxes and/or transmissions. (iii) Able to restore the airworthiness of gearboxes and/or transmissions. (iv) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 6.9 & 7.12)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3408</p>

1. Title	Aircraft reciprocating powerplants maintenance
2. Code	EMAMBG416A
3. Range	The maintenance activities referred to in this UoC are those normally carried out on the aircraft in the hangar. This UoC does not cover engine running and testing.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the working principle of the reciprocating powerplants.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, spare parts, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the powerplant to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to prepare the ground and/or support equipment for aircraft powerplant maintenance activities in accordance with the procedures.</p>

	<ul style="list-style-type: none">◆ Able to prepare the aircraft and powerplant for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs, other systems for the application of power, other personnel warned of power being applied, permission obtained to apply power.◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, assess.◆ Able to locate the non-conformities using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the non-conformities in accordance with the procedures.◆ Able to determine the method of rectifying non-conformities in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the non-conformities in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate.◆ Able to assess the powerplants to verify their serviceability in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to complete the servicing activities required as a consequence of the maintenance activity in accordance with the procedures. <li>◆ Able to perform the inspections in accordance with the procedures <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to complete the documentation in accordance with the procedures. <li>◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of powerplants. (ii) Able to locate the non-conformities in aircraft reciprocating powerplants. (iii) Able to restore the powerplant airworthiness. (iv) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 3410

1. Title	Aircraft gas turbine engine power augmentation or restoration systems maintenance
2. Code	EMAMBG417A
3. Range	Maintenance of engine power augmentation systems in an aircraft hangar or workshop during the aircraft grounded time. This unit of Competency covers water methanol or dematerialized water injection engine power augmentation or restoration systems.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the power augmentation systems of gas turbine engines, including : <ul style="list-style-type: none"> • water injection • afterburners <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for aircraft gas turbine engine power augmentation or restoration systems maintenance activities in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure replacement propeller and/or parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the aircraft gas turbine engine power augmentation or restoration systems to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration.
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	<ul style="list-style-type: none"> ◆ Able to follow instruction manuals to repair and maintain the power augmentation systems. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft gas turbine engine power augmentation or restoration systems. (ii) Able locate the defects in engine power augmentation or restoration systems. (iii) Able to restore the airworthiness of engine power augmentation or restoration systems. (iv) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 15.15)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of gas turbine engines.</p> <p>Ref: NZQA - 3411</p>

1. Title	Aircraft gas turbine powerplants maintenance
2. Code	EMAMBG418A
3. Range	The maintenance activities referred to in this UoC are those normally carried out on the aircraft in the hangar. This UoC does not cover engine running and testing.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ◆ Understand the working principle of the gas turbine engine.</p> <p>6.2 Methods and procedures ◆ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, spare parts, materials.</p> <p style="padding-left: 150px;">◆ Able to confirm the powerplant to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">◆ Able to prepare the ground and/or support equipment for powerplant maintenance activities in accordance with the procedures.</p>

	<ul style="list-style-type: none"> ◆ Able to prepare the aircraft and powerplant for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs, other systems for the application of power, other personnel warned of power being applied, permission obtained to apply power. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, assess. ◆ Able to locate the non-conformities using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the non-conformities in accordance with the procedures. ◆ Able to determine the method of rectifying non-conformities in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to complete the servicing activities required as a consequence of the maintenance activity in accordance with the procedures. ◆ Able to perform the inspections in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft gas turbine powerplants. (ii) Able to locate the non-conformities in aircraft gas turbine powerplants. (iii) Able to restore the powerplant airworthiness. (iv) Able to complete all the requirements associated with the maintenance task.
<p>8. Remarks</p>	<p>Ref: NZQA - 3413</p>

1. Title	Aircraft gas turbine powerplant ignition systems maintenance
2. Code	EMAMBG419A
3. Range	Maintenance of aircraft gas turbine engine ignition systems is usually carried out in an aircraft hangar or workshop during the aircraft grounded time. This unit of competency covers the aircraft gas turbine engine ignition systems
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the starting and ignition systems of gas turbine engines, including : <ul style="list-style-type: none"> • lay-out of the systems and their components • safety consideration in the work • procedures for starting and ground run-up <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for aircraft engine ignition systems maintenance activities in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the aircraft engine ignition systems to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the starting and ignition systems.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft engine ignition systems. (ii) Able locate the defects in engine ignition systems. (iii) Able to restore the airworthiness of engine ignition systems. (iv) Able to complete all the requirements associated with the maintenance task.
8. Remarks	<p>(Ref: HKAR-66 Module 14, 15.13, 15.21, 16.1, 16.5 & 16.12)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of gas turbine engines.</p> <p>Ref: NZQA - 4001</p>

1. Title	Aircraft transportation
2. Code	EMAMBG420A
3. Range	Aircraft transportation is usually carried out in an aircraft hangar during the aircraft grounded time.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to prepare the aircraft for transportation in accordance with the procedures, e.g. disassembled, inhibited, ground support equipment used, packed, cocooned, palletized, labeled. ◆ Able to load the items being transported aboard vehicle in accordance with the procedures, e.g. lifting equipment and vehicle positioning guidance, load distribution, load secured. ◆ Able to make preparation for the transportation vehicle in accordance with the procedures, e.g. dangerous goods procedures followed, driver verified as authorized, attendants and/or escorts arranged. ◆ Able to complete the documentation in accordance with the procedures, e.g. documentation - packing notes, dispatch documentation, waybills. information required- quantities, number of containers

	<ul style="list-style-type: none"> ◆ Able to prepare the aircraft for engine start in accordance with the procedures, e.g. fuel load and location. blanks, locks, chocks, covers, screens. special equipment and safety equipment removed, fitted and positioned as necessary. engine start equipment and aircraft positioned in approved area, area checked for FOD before starting. ◆ Able to obtain the environmental data in accordance with the procedures, e.g. barometric pressure, outside air temperature, wind speed and direction, humidity. ◆ Able to assemble and position the ground run team in accordance with the procedures.
6.2 Methods and procedures	<ul style="list-style-type: none"> ◆ Able to carry out the functional check of compass or system to be compensated in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration.

	<ul style="list-style-type: none"> ◆ Able to transport the aircraft and associated components and equipment by road, rail, sea, or air in accordance with the procedures, e.g. route determined, escorts and/or attendants positioned, dangerous goods procedures followed, vehicle speeds controlled, clearances maintained, fire fighting equipment positioned. ◆ Able to unload the aircraft from transportation vehicle in accordance with the procedures. ◆ Able to reassemble the aircraft in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the transportation of an aircraft (ii) Able to assist with the transportation of an aircraft by road, rail, sea, or air (iii) Able to transport and reassemble the aircraft at destination.
<p>8. Remarks</p>	<p>Ref: NZQA - 3917</p>

1. Title	Aircraft liquid oxygen systems maintenance
2. Code	EMAMBG421A
3. Range	Aircraft liquid oxygen systems maintenance is usually carried out on the aircraft in the hangar. Including: masks and release systems, pressure, demand and flow control converters and regulators, direct and remote reading quantity measuring systems, fixed installation storage, distribution systems.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft liquid oxygen systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft liquid oxygen systems in a serviceable condition by carrying out inspections, troubleshooting, repairs, modifications, component changes and testing.</p>
8. Remarks	Ref: NZQA - 22928

1. Title	Aircraft galley equipment maintenance
2. Code	EMAMBG422A
3. Range	Aircraft galley equipment maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft galley equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft buffet and galley equipment by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 3943

1. Title	Aircraft gaseous oxygen systems maintenance
2. Code	EMAMBG423A
3. Range	Aircraft gaseous oxygen systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft gaseous oxygen systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to make preparation for the maintenance of gaseous oxygen systems, e.g. masks and release systems, portable cylinders, pressure, demand and flow control converters and regulators, direct and remote reading oxygen quantity measuring systems, fixed installation storage, distribution systems. ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.

	<ul style="list-style-type: none">◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures.◆ Able to determine the serviceability in accordance with the procedures,e.g. inspect, troubleshoot, assess, test.◆ Able to report and record the defects in accordance with the procedures.◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to test the systems and to verify their serviceability in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft gaseous oxygen systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 11.15)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the use of common tools and the operation of the system of cabin pressurization.</p> <p>Ref: NZQA - 3944</p>

1. Title	Aircraft piston engine lubrication systems maintenance
2. Code	EMAMBG424A
3. Range	Maintenance of piston engine lubrication systems in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the lubrication systems of piston engines, including: <ul style="list-style-type: none"> • properties and specifications of lubricants • operation of the systems • lay-out of the systems and their components <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for aircraft engine lubrication systems maintenance activities in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the aircraft engine lubrication system to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system.
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of engine lubrication systems. (ii) Able to locate the defects in engine lubrication systems. (iii) Able to restore the airworthiness of engine lubrication systems. (iv) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 2.2.3, 2.2.4, 15.9 & 15.10)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of piston engines.</p> <p>Ref: NZQA - 3406</p>

1. Title	Aircraft piston powerplant ignition systems maintenance
2. Code	EMAMBG425A
3. Range	Maintenance of aircraft piston engine ignition systems is usually carried out in an aircraft hangar or workshop during the aircraft grounded time. This unit of competency covers the aircraft piston engine ignition systems
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the starting and ignition systems of piston engines, including: <ul style="list-style-type: none"> • procedures for starting and ground run-up • construction and operation of magneto and spark plugs etc <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for aircraft engine ignition systems maintenance activities in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the aircraft engine ignition systems to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the starting and ignition systems.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft engine ignition systems. (ii) Able locate the defects in engine ignition systems. (iii) Able to restore the airworthiness of engine ignition systems. (iv) Able to complete all the requirements associated with the maintenance task.
8. Remarks	<p>(Ref: HKAR-66 Module 14, 15.13, 15.21, 16.1, 16.5 & 16.12)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of piston engines.</p> <p>Ref: NZQA - 4001</p>

1. Title	Aircraft piston powerplants installation, operation and remove from a test bed
2. Code	EMAMBG426A
3. Range	The installation, operation and removal of aircraft powerplants from a test bed are usually carried out in an aircraft hangar. All powerplant run tasks are to be carried out under the control of an authorized powerplant runner in accordance with the procedures.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the construction and configuration of powerplants of piston engines</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to confirm the powerplants identity with documentation by comparing serial and part numbers.</p> <p style="padding-left: 150px;">♦ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, test equipment, safety equipment, environmental conditions determined.</p> <p style="padding-left: 150px;">♦ Able to set up the test equipment is set up in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to install the powerplant on a test bed in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to carry out powerplant run under control of authorized powerplant runner.</p>

	<ul style="list-style-type: none"> ◆ Able to make adjustments as directed by authorized personnel and in accordance with the procedures. ◆ Able to carry out maintenance as directed by authorized personnel and in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to remove the powerplant from test bed in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the powerplant for use, storage or transit in accordance with the procedures,e.g. lock, inhibit, blank, remove from test bed, prepare for transit. ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the operation of an aircraft powerplants on a test bed. (ii) Able to install the aircraft powerplants on a test bed, operate, make adjustments, and carry out maintenance as directed. (iii) Able to remove the aircraft powerplants from a test bed. (iv) Able to complete all the requirements associated with the testing task.
8. Remarks	<p>(Ref: HKAR-66 Module 7.5, 15.19 & 16.11)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 23160</p>

1. Title	Aircraft piston engine lubrication system components repair and/or overhaul
2. Code	EMAMBG427A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. pumps, valves, filters, reservoirs. This UoC covers reciprocating engine lubrication systems.
4. Level	4
5. Credit	8
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the lubrication systems of piston engines, including: <ul style="list-style-type: none"> • properties and specifications of lubricants • operation of the systems • lay-out of the systems and their components <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established, e.g. locate defects, repair, overhaul, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul. ◆ Able to determine and record the next task in accordance with the procedures. ◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate. ◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures.
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	<p>6.3 Test and adjustment</p>	<ul style="list-style-type: none"> ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to perform the inspections in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
	<p>6.4 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to complete the documentation in accordance with the procedures.

	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft engine lubrication system components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 2.2.3, 2.2.4, 15.9, 15.10, 16.8 & 16.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of piston engines.</p> <p>Ref: NZQA - 3419</p>

1. Title	Aircraft piston engine avionic ignition systems maintenance
2. Code	EMAMBG428A
3. Range	Reciprocating aircraft ignition systems maintenance activity is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of piston aircraft ignition systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, tools, equipment, safety equipment, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p> <p style="padding-left: 150px;">♦ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to determine the serviceability of the system.,e.g. inspect, troubleshoot, assess, test.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft reciprocating engine ignition systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 14, 15.13, 15.21, 16.1, 16.5 & 16.12))</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of piston engines.</p> <p>Ref: NZQA - 22522</p>

1. Title	Electrical fundamentals II (Mechanics Repair and Maintenance)
2. Code	EMAMBG429A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the electron theory <ul style="list-style-type: none"> • Structure and distribution of electrical charges within: atoms, molecules, ions, compounds. • Molecular structure of conductors, semiconductors and insulators. ◆ Able to understand the static electricity and conduction <ul style="list-style-type: none"> • Static electricity and distribution of electrostatic charges. • Electrostatic laws of attraction and repulsion. • Units of charge, Coulomb's Law. • Conduction of electricity in solids, liquids, gases and a vacuum. ◆ Able to understand the electrical terminology <ul style="list-style-type: none"> • The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.

- ◆ Able to understand the generation of electricity
 - Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.
- ◆ Able to understand the DC Sources of electricity
 - Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells. Cells connected in series and parallel.
 - Internal resistance and its effect on a battery.
 - Construction, materials and operation of thermocouples.
 - Operation of photo-cells.
- ◆ Able to understand the DC circuits
 - Ohms Law, Kirchoff's Voltage and Current Laws.
 - Calculations using the above laws to find resistance, voltage and current.
 - Significance of the internal resistance of a supply.
- ◆ Able to understand the resistance / resistor
 - Resistance and affecting factors.
 - Specific resistance.
 - Resistor colour code, values and tolerances, preferred values, wattage ratings.
 - Resistors in series and parallel.
 - Calculation of total resistance using series, parallel and series parallel combinations.

	<ul style="list-style-type: none"> › Operation and use of potentiometers and rheostats. › Operation of Wheatstone Bridge. • Positive and negative temperature coefficient conductance. <ul style="list-style-type: none"> › Fixed resistors, stability, tolerance and limitations, methods of construction. › Variable resistors, thermistors, voltage dependent resistors. › Construction of potentiometers and rheostats. › Construction of Wheatstone Bridge. ◆ Able to understand the power <ul style="list-style-type: none"> • Power, work and energy (kinetic and potential). • Dissipation of power by a resistor. • Power formula. • Calculations involving power, work and energy. ◆ Able to understand the capacitance / capacitor <ul style="list-style-type: none"> • Operation and function of a capacitor. • Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating. • Capacitor types, construction and function. • Capacitor colour coding. • Calculations of capacitance and voltage in series and parallel circuits. • Exponential charge and discharge of a capacitor, time constants. • Testing of capacitors.
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- ◆ Able to understand the magnetism
 - Theory of magnetism.
 - Properties of a magnet.
 - Action of a magnet suspended in the Earth's
 - Magnetic field.
 - Magnetisation and demagnetisation.
 - Magnetic shielding.
 - Various types of magnetic material.
 - Electromagnets construction and principles of operation.
 - Hand clasp rules to determine: magnetic field around current carrying conductor.
 - Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents.
 - Precautions for care and storage of magnets.
- ◆ Able to understand the inductance / inductor
 - Faraday's Law.
 - Action of inducing a voltage in a conductor moving in a magnetic field.
 - Induction principles.
 - Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns.
 - Mutual induction.
 - The effect the rate of change of primary current and mutual inductance has on induced voltage.

- Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other.
- Lenz's Law and polarity determining rules.
- Back emf, self induction.
- Saturation point.
- Principle uses of inductors.
- ◆ Able to understand the DC motor / generator theory
 - Basic motor and generator theory.
 - Construction and purpose of components in DC generator.
 - Operation of, and factors affecting output and direction of current flow in DC generators.
 - Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors.
 - Series wound, shunt wound and compound motors.
 - Starter Generator construction.
- ◆ Able to understand the AC theory
 - Sinusoidal waveform: phase, period, frequency, cycle.
 - Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power.
 - Triangular/Square waves.
 - Single / 3 phase principles.

- ◆ Able to understand the Resistive (R), Capacitive (C) and Inductive (L) Circuits
 - Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel.
 - Power dissipation in L, C and R circuits.
 - Impedance, phase angle, power factor and current calculations.
 - True power, apparent power and reactive power calculations.
- ◆ Able to understand the transformers
 - Transformer construction principles and operation.
 - Transformer losses and methods for overcoming them.
 - Transformer action under load and no-load conditions.
 - Power transfer, efficiency, polarity markings.
 - Primary and Secondary current, voltage, turns ratio, power, efficiency.
 - Auto transformers.
- ◆ Able to understand the filters
 - Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.
- ◆ Able to understand the AC generators
 - Rotation of loop in a magnetic field and waveform produced.
 - Operation and construction of revolving armature and revolving field type AC generators.
 - Single phase, two phase and three phase alternators.

	<ul style="list-style-type: none"> • Three phase star and delta connections advantages and uses. • Calculation of line and phase voltages and currents. • Calculation of power in a three phase system. • Permanent Magnet Generators. ◆ Able to understand the AC motors <ul style="list-style-type: none"> • Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase. • Methods of speed control and direction of rotation. • Methods of producing a rotating field: capacitor, inductor, shaded or split pole. ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Static Electricity and Conduction • Electrical Terminology • DC Sources of Electricity • DC Circuits • Resistance / Resistor • Resistance and affecting factors • Power • Capacitance / Capacitor • Magnetism • Inductance / Inductor • DC Motor / Generator Theory • AC Theory • Resistive (R), Capacitive (C) and Inductive (L) Circuits
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	<ul style="list-style-type: none"> • Transformers • AC Generators • AC Motors <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Static Electricity and Conduction • Electrical Terminology • DC Sources of Electricity • DC Circuits • Resistance / Resistor • Resistance and affecting factors • Power • Capacitance / Capacitor • Magnetism • Inductance / Inductor • DC Motor / Generator Theory • AC Theory • Resistive (R), Capacitive (C) and Inductive (L) Circuits • Transformers • AC Generators • AC Motors ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 3: Electrical fundamentals</p>

1. Title	Digital techniques and electronic instrument systems II (Mechanics Repair and Maintenance)
2. Code	EMAMBG430A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the electronic instrument systems <ul style="list-style-type: none"> • Typical systems arrangements and cockpit layout of electronic instrument systems. ◆ Able to understand the numbering systems <ul style="list-style-type: none"> • Numbering systems: binary, octal and hexadecimal. • Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa. ◆ Able to understand the data conversion <ul style="list-style-type: none"> • Analogue Data, Digital Data. • Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types. ◆ Able to understand the data buses <ul style="list-style-type: none"> • Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications.

	<ul style="list-style-type: none"> ◆ Able to understand the logic circuits <ul style="list-style-type: none"> • Identification of common logic gate symbols, tables and equivalent circuits. • Applications used for aircraft systems, schematic diagrams. ◆ Able to understand the basic computer structure <ul style="list-style-type: none"> • Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM). • Computer technology (as applied in aircraft systems). ◆ Able to understand the fibre optics <ul style="list-style-type: none"> • Advantages and disadvantages of fibre optic data transmission over electrical wire propagation. • Fibre optic data bus. • Fibre optic related terms. • Terminations. • Couplers, control terminals, remote terminals. • Application of fibre optics in aircraft systems. ◆ Able to understand the electronic displays <ul style="list-style-type: none"> • Principles of operation of common types of displays used in modern aircraft, including • Cathode Ray Tubes, Light Emitting Diodes and • Liquid Crystal Display.
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	<ul style="list-style-type: none"> ◆ Able to understand the electrostatic sensitive devices <ul style="list-style-type: none"> • Special handling of components sensitive to electrostatic discharges. • Awareness of risks and possible damage, component and personnel anti-static protection devices. ◆ Able to understand the software management control <ul style="list-style-type: none"> • Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes. ◆ Able to understand the electromagnetic environment <ul style="list-style-type: none"> • Influence of the following phenomena on maintenance practices for electronic system: <ul style="list-style-type: none"> • EMC - Electromagnetic Compatibility • EMI - Electromagnetic Interference • HIRF - High Intensity Radiated Field • Lightning / lightning protection. ◆ Able to understand the typical electronic / digital aircraft systems <ul style="list-style-type: none"> • General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) testing such as: <ul style="list-style-type: none"> ▸ ACARS - ARINC Communication Addressing and Reporting System ▸ ECAM - Electronic Centralised Aircraft Monitoring ▸ EFIS - Electronic Flight Instrument System
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	<ul style="list-style-type: none"> › EICAS - Engine Indication and Crew Alerting System › FBW - Fly by Wire › FMS - Flight Management System › GPS - Global Positioning System › IRS - Inertial Reference System › TCAS - Traffic Alert Collision Avoidance System
<p>6.2 Theoretical and practical aspects</p>	<ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Electronic Instrument Systems • Data Buses • Logic Circuits • Basic Computer Structure • Electronic Displays • Electrostatic Sensitive Devices • Software Management Control • Electromagnetic Environment • Typical Electronic / Digital Aircraft Systems
<p>6.3 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Electronic Instrument Systems • Data Buses • Logic Circuits • Basic Computer Structure • Electronic Displays • Electrostatic Sensitive Devices • Software Management Control

	<ul style="list-style-type: none"> • Electromagnetic Environment • Typical Electronic / Digital Aircraft Systems <p>◆ Able to apply the knowledge in the aircraft maintenance task.</p>
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 5: Digital techniques and electronic instrument systems

1. Title	Materials and hardware II (Mechanics Repair and Maintenance)
2. Code	EMAMBG431A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the Aircraft Materials - Ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common alloy steels used in aircraft. • Heat treatment and application of alloys steels. • Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance. ◆ Able to understand the Aircraft Materials – Non-ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common non-ferrous materials used in aircraft. • Heat treatment and application of nonferrous materials. • Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.

	<ul style="list-style-type: none"> ◆ Able to understand the Aircraft Materials – Composite and Non-metallic <ul style="list-style-type: none"> • Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft. • Sealants and bonding agents. • The detection of defects in composite material. • Repair of composite material. ◆ Able to understand the corrosion <ul style="list-style-type: none"> • Chemical fundamentals. <ul style="list-style-type: none"> ▸ Formation by: galvanic action process, microbiological, stress. • Types of corrosion and their identification. <ul style="list-style-type: none"> ▸ Causes of corrosion. ▸ Material types, susceptibility to corrosion. ◆ Able to understand the Fasteners <ul style="list-style-type: none"> • Screw threads <ul style="list-style-type: none"> ▸ Screw nomenclature. ▸ Thread forms, dimensions and tolerances for standard threads used in aircraft. ▸ Measuring screw threads. • Bolts, studs and screws <ul style="list-style-type: none"> ▸ Bolt types: specification, identification and marking of aircraft bolts, international standards. ▸ Nuts: self locking, anchor, standard types. ▸ Machine screws: aircraft specifications.
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	<ul style="list-style-type: none"> <ul style="list-style-type: none"> ▸ Studs: types and uses, insertion and removal. ▸ Self tapping screws, dowels. • Locking devices <ul style="list-style-type: none"> ▸ Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins. • Aircraft rivets <ul style="list-style-type: none"> ▸ Types of solid and blind rivets: specifications and identification, heat treatment. ◆ Able to understand the Pipes and Unions <ul style="list-style-type: none"> • Identification of, and types of rigid and flexible pipes and their connectors used in aircraft. • Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes. ◆ Able to understand the Springs <ul style="list-style-type: none"> • Types of springs, materials, characteristics and applications. ◆ Able to understand the Bearings <ul style="list-style-type: none"> • Purpose of bearings, loads, material, construction. • Types of bearings and their application. ◆ Able to understand the Transmissions <ul style="list-style-type: none"> • 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.
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	<ul style="list-style-type: none"> ◆ Able to understand the Control Cables <ul style="list-style-type: none"> • Types of cables. • End fittings, turnbuckles and compensation devices. • Pulleys and cable system components. • Bowden cables. • Aircraft flexible control systems. ◆ Able to understand the Electrical Cables and Connectors <ul style="list-style-type: none"> • 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. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Aircraft Materials – Ferrous • Characteristics, properties and identification • Aircraft Materials - Non-Ferrous • Characteristics, properties and identification • Aircraft Materials - Composite and Non-Metallic • Corrosion • Types of corrosion and their identification. • Causes of corrosion. • Material types, susceptibility to corrosion. • Fasteners • Pipes and Unions • Springs
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	<ul style="list-style-type: none"> • Bearings • Transmissions • Control Cables • Electrical Cables and Connectors <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft Materials – Ferrous <ul style="list-style-type: none"> ▸ Characteristics, properties and identification • Aircraft Materials - Non-Ferrous <ul style="list-style-type: none"> ▸ Characteristics, properties and identification • Aircraft Materials - Composite and Non-Metallic • Fasteners • Pipes and Unions • Springs • Bearings • Transmissions • Control Cables • Electrical Cables and Connectors ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Corrosion <ul style="list-style-type: none"> ▸ Types of corrosion and their identification.
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	<ul style="list-style-type: none"> ▸ Causes of corrosion. ▸ Material types, susceptibility to corrosion. ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
8. Remarks	Ref: HKAR-66 Module 6: Materials and Hardware.

1. Title	Human factors II (Mechanics Repair and Maintenance)
2. Code	EMAMBG432A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the general of human factor <ul style="list-style-type: none"> • The need to take human factors into account. • Incidents attributable to human factors / human error. • ‘Murphy’s’ law. ◆ Able to understand the human performance and limitations <ul style="list-style-type: none"> • Vision. • Hearing. • Information processing. • Attention and perception. • Memory. • Claustrophobia and physical access. ◆ Able to understand the social psychology <ul style="list-style-type: none"> • Responsibility: individual and group. • Motivation and de-motivation. • Peer pressure. • ‘Culture’ issues. • Team working. • Management, supervision and leadership.

- ◆ Able to understand the factors affecting performance
 - Fitness / health.
 - Stress: domestic and work related.
 - Time pressure and deadlines.
 - Workload: overload and underload.
 - Sleep and fatigue, shiftwork.
 - Alcohol, medication, drug abuse.
- ◆ Able to understand the physical environment
 - Noise and fumes.
 - Illumination.
 - Climate and temperature.
 - Motion and vibration.
 - Working environment.
- ◆ Able to understand the tasks
 - Physical work.
 - Repetitive tasks.
 - Visual inspection.
 - Complex systems.
- ◆ Able to understand the communication
 - Within and between teams.
 - Work logging and recording.
 - Keeping up to date, currency.
 - Dissemination of information.
- ◆ Able to understand the human error
 - Error models and theories.
 - Types of error in maintenance tasks.
 - Implications of errors (i.e. accidents).
 - Avoiding and managing errors.
- ◆ Able to understand the hazards in the workplace
 - Recognising and avoiding hazards.
 - Dealing with emergencies.

	<p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • General of human factor • Human performance and limitations • Factors affecting performance • Communication • Human error • Hazards in the workplace <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • General of human factor • Human performance and limitations • Factors affecting performance • Communication • Human error • Hazards in the workplace ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 9: Human factors

1. Title	Aviation legislation II (Mechanics Repair and Maintenance)
2. Code	EMAMBG433A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Able to understand the aircraft maintenance licences</p> <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • Responsibilities: by statutory law and by the need to fly aircraft in a satisfactory condition, i.e. common / civil / constitutional law. • Penalties - under statutory law and resulting from civil law suits. • HKAR-66: Licensing of Maintenance Personnel • (Certifying Staff - Maintenance). • Categories - applicability. • Area and extent of limitations and privileges within • Categories. • Overlap of Category applicability. • Relevant Airworthiness Notices.

	<ul style="list-style-type: none"> ◆ Able to understand the certifications <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures. • Certificates of : Release to Service. Maintenance • Review. Fitness for Flight. • Duplicate inspections. • Contributory certifications and reliance on other documentation and persons. • Certification - acceptance investigation and judgement procedures. ◆ Able to understand the aircraft, engine and VP propeller log books <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • HKAR-1 Airworthiness Procedures. • CAD Approval: light aircraft, large aircraft. • Worksheets. • Data to be entered in log books. • Condition reports - e.g. heavy landing checks, defect investigations, NDT and other inspections, mandatory and non-mandatory. • Maintenance records. • Cross-reference to other files / records. • Preservation of documents: AN(HK)O 1995. ◆ Able to understand the technical log <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures. • Technical Log - Air Operator's Certificates Requirements Document.
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	<ul style="list-style-type: none"> ◆ Able to understand the aircraft documentation and requirements <ul style="list-style-type: none"> • Type Certification. Supplementary Type Certification. • Weight schedule. • External, and internal markings and signs, e.g. nationality and registration, no smoking and fasten seat belt, placards and requirements, doors and exits. • Certificate of Airworthiness Categories, purposes of flight. • Certificate of Registration. • Noise Certificate. • Air Operator’s Certificate. • Schedule 5 requirements for equipment. • Radio station licence and approval. • Change of ownership. • Maintenance checks and inspections. • Maintenance records. Maintenance documentation. • Continuing airworthiness. • Master Minimum Equipment Lists, Minimum • Equipment Lists, Dispatch Deviation Lists. • Service Bulletins, manufacturers service information. • Modifications and repairs. • Test flights. • ETOPS: maintenance and dispatch requirements. • All Weather Operation (AWO): CAT 2/3 operations and minimum equipment requirements.
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	<ul style="list-style-type: none"> • Reduced Vertical Separation Minima (RVSM) requirements. ◆ Able to understand the approvals <ul style="list-style-type: none"> • Design Organisations. • Maintenance Organisations. • AOC interface. • Maintenance Schedules and Programmes. • Stores: systems. release of parts. ◆ Able to understand the defect reporting <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • CAD382 The Mandatory Occurrence Reporting Scheme. • Defects which are to be reported. • Reportable accidents. ◆ Able to understand the Hong Kong Aviation Requirements <ul style="list-style-type: none"> • HKAR-1: Airworthiness Procedures. • Airworthiness Notices. • Airworthiness Directives. • Mandatory Modifications and Inspections:- <ul style="list-style-type: none"> ▸ HK CAD ▸ UK CAA ▸ FAA ▸ Authorities other than above: aircraft, engines, equipment. • HKAR-145: Approved Maintenance Organisations. • HKAR-147: Approved Maintenance Training/ • Examinations • Air Operator's Certificates (AOC) Requirements Document.
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	<ul style="list-style-type: none"> ◆ Able to understand the Joint Aviation Authorities Requirements <ul style="list-style-type: none"> • JAR-21. JAR-23. JAR-25. JAR-29 <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books • Technical log • Aircraft documentation and requirements • Approvals • Defect reporting • Hong Kong aviation requirements <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books • Technical log • Aircraft documentation and requirements • Approvals • Defect reporting • Hong Kong aviation requirements ◆ Able to apply the knowledge in the aircraft maintenance task.
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7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 10: Aviation legislation

1. Title	Maintenance Practices II (Mechanics Repair and Maintenance)
2. Code	EMAMBG434A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the safety precautions-Aircraft and Workshop <ul style="list-style-type: none"> • Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards. ◆ Able to understand the workshop practices <ul style="list-style-type: none"> • Care of tools, control of tools, use of workshop materials. • Dimensions, allowances and tolerances, standards of workmanship. • Calibration of tools and equipment, calibration standards. ◆ Able to understand the tools <ul style="list-style-type: none"> • Common hand tool types. • Common power tool types. • Operation and use of precision measuring tools. • Lubrication equipment and methods.

- Operation, function and use of electrical general test equipment.
- ◆ Able to understand the avionic general test equipment
 - Operation, function and use of avionic general test equipment.
- ◆ Able to understand the engineering drawings, diagrams and standards
 - Drawing types and diagrams, their symbols, dimensions, tolerances and projections.
 - Identifying title block information.
 - Microfilm, microfiche and computerized presentations.
 - Specification 100 of the Air Transport Association (ATA) of America.
 - Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL.
 - Wiring diagrams and schematic diagrams.
- ◆ Able to understand the fits and clearances
 - Drill sizes for bolt holes, classes of fits.
 - Common system of fits and clearances.
 - Schedule of fits and clearances for aircraft and engines.
 - Limits for bow, twist and wear.
 - Standard methods for checking shafts, bearings and other parts.
- ◆ Able to understand the electrical cables and connectors
 - Continuity, insulation and bonding techniques and testing.
 - Use of crimp tools: hand and hydraulic operated.
 - Testing of crimp joints.

- Connector pin removal and insertion.
- Co-axial cables: testing and installation precautions.
- Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.
- ◆ Able to understand the riveting
 - Riveted joints, rivet spacing and pitch.
 - Tools used for riveting and dimpling.
 - Inspection of riveted joints.
- ◆ Able to understand the pipes and hoses
 - Bending and belling/flaring aircraft pipes.
 - Inspection and testing of aircraft pipes and hoses.
 - Installation and clamping of pipes.
- ◆ Able to understand the springs
 - Inspection and testing of springs.
- ◆ Able to understand the bearings
 - Testing, cleaning and inspection of bearings.
 - Lubrication requirements of bearings.
 - Defects in bearings and their causes.
- ◆ Able to understand the transmissions
 - Inspection of gears, backlash.
 - Inspection of belts and pulleys, chains and sprockets.
 - Inspection of screw jacks, lever devices, pushpull rod systems.
- ◆ Able to understand the control cables
 - Swaging of end fittings.
 - Inspection and testing of control cables.
 - Bowden cables. aircraft flexible control systems.

	<ul style="list-style-type: none"> ◆ Able to understand the sheet metal work <ul style="list-style-type: none"> • Marking out and calculation of bend allowance. • Sheet metal working, including bending and forming. • Inspection of sheet metal work. ◆ Able to understand the welding, brazing, soldering and bonding <ul style="list-style-type: none"> • Soldering methods. inspection of soldered joints. • Welding and brazing methods. <ul style="list-style-type: none"> ▸ Inspection of welded and brazed joints. ▸ Bonding methods and inspection of bonded joints. ◆ Able to understand the aircraft weight and balance <ul style="list-style-type: none"> • Centre of Gravity / Balance limits calculation: use of relevant documents. • Preparation of aircraft for weighing. <ul style="list-style-type: none"> - Aircraft weighing. ◆ Able to understand the aircraft handling and storage <ul style="list-style-type: none"> • Aircraft taxiing / towing and associated safety precautions. • Aircraft jacking, chocking, securing and associated safety precautions. • Aircraft storage methods. • Refuelling / defuelling procedures. • De-icing/anti-icing procedures. • Electrical, hydraulic and pneumatic ground supplies. • Effects of environmental conditions on aircraft handling and operation.
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	<ul style="list-style-type: none"> ◆ Able to understand the disassembly, inspection, repair and assembly techniques <ul style="list-style-type: none"> • Types of defects and visual inspection techniques. <ul style="list-style-type: none"> ▸ Corrosion removal, assessment and re-protection. • General repair methods, Structural Repair Manual. <ul style="list-style-type: none"> ▸ Ageing, fatigue and corrosion control programmes. • Non-destructive inspection techniques including: penetrant, radiographic, eddy current, ultrasonic and boroscope methods. • Disassembly and re-assembly techniques. • Trouble shooting techniques. ◆ Able to understand the abnormal events <ul style="list-style-type: none"> • Inspections following lightning strikes and HIRF penetration. • Inspections following abnormal events such as heavy landings and flight through turbulence. ◆ Able to understand the maintenance procedures <ul style="list-style-type: none"> • Maintenance planning. • Modification procedures. • Stores procedures. • Certification / release procedures. • Interface with aircraft operation. • Maintenance Inspection / Quality Control / • Quality Assurance. • Additional maintenance procedures. • Control of life limited components.
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	<p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Safety Precautions-Aircraft and Workshop • Workshop Practices • Tools • Avionic General Test Equipment • Engineering Drawings, Diagrams and Standards • Fits and Clearances • Electrical Cables and Connectors • Riveting • Pipes and Hoses • Springs • Bearings • Transmissions • Control Cables • Sheet Metal Work • Welding, Brazing, Soldering and Bonding • Aircraft Weight and Balance • Aircraft Handling and Storage • Disassembly, Inspection, Repair and Assembly Techniques • Abnormal Events • Maintenance Procedures
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Avionic General Test Equipment • Engineering Drawings, Diagrams and Standards • Fits and Clearances • Electrical Cables and Connectors • Riveting • Pipes and Hoses • Springs • Bearings • Transmissions • Control Cables • Sheet Metal Work • Welding, Brazing, Soldering and Bonding • Aircraft Weight and Balance • Aircraft Handling and Storage • Disassembly, Inspection, Repair and Assembly Techniques • Abnormal Events • Maintenance Procedures ◆ Able to apply the knowledge in the aircraft maintenance task.
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	<ul style="list-style-type: none"> ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Safety Precautions-Aircraft and Workshop • Workshop Practices • Tools • Disassembly, Inspection, Repair and Assembly Techniques <ul style="list-style-type: none"> ▸ Types of defects and visual inspection techniques. ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
8. Remarks	Ref: HKAR-66 Module 7: Maintenance practices

1. Title	Basics Aerodynamics II (Mechanics Repair and Maintenance)
2. Code	EMAMBG435A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the physics of the Atmosphere <ul style="list-style-type: none"> • International Standard Atmosphere (ISA), application to aerodynamics. ◆ Able to understand the aerodynamics <ul style="list-style-type: none"> • Airflow around a body. • Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash. vortices, stagnation. • The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio. • Thrust, Weight, Aerodynamic Resultant. • Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall. • Aerofoil contamination including ice, snow, frost.

	<ul style="list-style-type: none"> ◆ Able to understand the theory of flight <ul style="list-style-type: none"> • Relationship between lift, weight, thrust and drag. • Glide ratio. • Steady state flights, performance. • Theory of the turn. • Influence of load factor : stall, flight envelope and structural limitations. • Lift augmentation. ◆ Able to understand the flight stability and dynamics <ul style="list-style-type: none"> • Longitudinal, lateral and directional stability • (active and passive). <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Physics of the Atmosphere • Aerodynamics • Theory of Flight • Flight Stability and Dynamics <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Physics of the Atmosphere • Aerodynamics • Theory of Flight • Flight Stability and Dynamics ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 8: Basic Aerodynamics.</p>

1. Title	Aircraft fixed pitch and/or ground adjustable propellers maintenance
2. Code	EMAMBA401A
3. Range	The maintenance activities referred to in this unit standard are those normally carried out on the aircraft in a hangar.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the component to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and component for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for aircraft propellers maintenance activities in accordance with the procedures.

	<p>6.2 Methods and procedures</p>	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures,e.g. inspect, troubleshoot, assess, test. ◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures,e.g. vibration, performance, over speed, damage. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to determine the method of rectifying defects in accordance with the procedures. ◆ Able to procure the replacement propeller and/or parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the propeller defects in accordance with the procedures,e.g. repair, replace, modify, adjust, dynamically balance. ◆ Able to test the propellers to verify their serviceability in accordance with the procedures. ◆ Able to perform the inspections in accordance with the procedures.
	<p>6.3 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.

	<ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous, replaced propeller.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft fixed pitch and/or ground adjustable propellers. (ii) Able to locate defects in aircraft propellers. (iii) Able to restore the airworthiness of aircraft propellers. (iv) Able to complete all the requirements associated with the task. (v) Able to fit and remove, and disassemble propellers for shipment
8. Remarks	Ref: NZQA - 23159

1. Title	Aircraft propellers assembly after shipment
2. Code	EMAMBA402A
3. Range	Assemble aircraft propellers after shipment in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Construction</p> <ul style="list-style-type: none"> ◆ Understand the construction and operating principles of the propellers, including : <ul style="list-style-type: none"> • Blade element theory • construction of propellers • mechanism of pitch control <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to confirm the propeller identity with documentation by comparing the serial and part numbers. ◆ Able to make preparation for the work area and, obtain and check the resources for serviceability in accordance with the procedures,e.g. propeller kit, publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to make preparation for the propeller component parts for assembly in accordance with the procedures,e.g. clean, inspect. ◆ Able to assemble the propeller in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the system. ◆ Able to prepare the propeller for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the assembly of aircraft propellers after shipment. (ii) Able to assemble the propellers. (iii) Able to complete all the requirements associated with the assembly of aircraft propellers.
8. Remarks	<p>(Ref: HKAR-66 Module 7.5 & 17)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the basic aerodynamics.</p> <p>Ref: NZQA - 3401</p>

1. Title	Aircraft variable pitch propellers and propeller systems maintenance
2. Code	EMAMBA403A
3. Range	Assembly work or repair of propellers and propeller systems in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Construction of propellers</p> <ul style="list-style-type: none"> ◆ Understand the construction and operating principles of the propellers, including : <ul style="list-style-type: none"> • Blade element theory • construction of propellers • mechanism of pitch control <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

- ◆ Able to prepare the ground and/or support equipment for aircraft propellers and propeller systems maintenance activities in accordance with the procedures.
- ◆ Able to conduct propeller maintenance, e.g. static and dynamic balance, blade tracking, pitch control systems, ice protection systems, assessment of damages.
- ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, assess, test.
- ◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures, e.g. vibration, performance, over speed, damage.
- ◆ Able to report and record the defects in accordance with the procedures.
- ◆ Able to rectify the propellers and propeller systems defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, dynamically balance.
- ◆ Able to procure replacement propeller and/or parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.
- ◆ Able to test the propellers and propeller systems to verify their serviceability in accordance with the procedures.
- ◆ Able to perform inspections in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to handle the leftover parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous, replaced propeller. ◆ Able to complete the documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft variable pitch propellers and propeller systems. (ii) Able locate the defects in propellers and propeller systems. (iii) Able to restore the airworthiness of propellers and propeller systems. (iv) Able to complete all the requirements associated with the task. (v) Able to fit and remove, and disassemble the propellers for shipment.

8. Remarks	(Ref: HKAR-66 Module 7.5 & 17) The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the basic aerodynamics. Ref: NZQA - 3409 Ref: NZQA - 3408
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1. Title	Aircraft gas turbine engine thrust reverser systems maintenance
2. Code	EMAMBA404A
3. Range	The aircraft gas turbine engine thrust reverser systems maintenance in this UoC are those normally carried out on the aircraft in the hangar.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the working principle of the gas turbine engine.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p> <p style="padding-left: 150px;">♦ Able to prepare the ground and/or support equipment for gas turbine engine thrust reverser systems maintenance activities in accordance with the procedures.</p>

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to determine the method of rectifying defects in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test the gas turbine engine thrust reverser systems to verify their serviceability in accordance with the procedures. ◆ Able to perform the inspections in accordance with the procedures.
6.3 Professional approach	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the power augmentation systems.

	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, systems and aircraft left for next activity. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft gas turbine engine thrust reverser systems. (ii) Able locate the defects in engine thrust reverser systems. (iii) Able to restore the airworthiness of engine thrust reverser systems. (iv) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 3412

1. Title	Ground run propeller driven gas turbine engines up to 300 horsepower (hp) or equivalent
2. Code	EMAMBA405A
3. Range	<p>Ground run propeller driven gas turbine engines up to 300 horsepower (hp) or equivalent are usually carried out outside an aircraft hangar during the aircraft non-flight time.</p> <p>Approval to ground run specific aircraft and engine types should be obtained from the responsible authority for maintaining the engine. This UoC covers generic procedures for ground running aircraft engines, e.g. gas turbine, single and/or multi engine (examples are - Tomahawk, Seneca, Nomad).</p> <p>Foreign object Damage (FOD) stand for anything that can find its way into an aircraft engine or flight control mechanisms that could possibly cause damage to aircraft, equipment or people.</p>
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the working principle of the propeller driven gas turbine engines.</p> <p>6.2 Methods and procedures ♦ Able to obtain the resources and check them for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials.</p> <p style="padding-left: 150px;">♦ Able to determine the ground run task is by reviewing maintenance documentation.</p> <p style="padding-left: 150px;">♦ Able to confirm the aircraft is matched with the registration and documentation.</p>

	<ul style="list-style-type: none">◆ Able to prepare the aircraft for engine start in accordance with the procedures, e.g. fuel load and location. blanks, locks, chocks, covers, screens. special equipment and safety equipment removed, fitted and positioned as necessary. engine start equipment and aircraft positioned in approved area, area checked for FOD before starting.◆ Able to obtain the environmental data in accordance with the procedures, e.g. barometric pressure, outside air temperature, wind speed and direction, humidity.◆ Able to assemble and position the ground run team in accordance with the procedures.◆ Able to obtain the engine start and ground run clearances in accordance with the procedures, e.g. from ground crew and/or from control tower.◆ Able to start, run and shut down the engine or engines to meet the determined task requirements or specifications in accordance with the procedures.◆ Able to record the engine performance parameters in accordance with the procedures.◆ Able to complete the post ground run checks in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements and current code of practice. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to carry out engine ground run. ◆ Able to prepare the aircraft for next maintenance task or for operation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to complete the ground run documentation in accordance with the procedures. ◆ Able to check the resources are for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the ground run of propeller driven gas turbine engines up to 300 hp or equivalent. (ii) Able to carry out the engine ground run. (iii) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 23165</p>

1. Title	Ground run propeller driven piston engines up to 300 horsepower (hp) or equivalent
2. Code	EMAMBA406A
3. Range	<p>Ground run propeller driven piston engines up to 300 horsepower (hp) or equivalent are usually carried out outside an aircraft hangar during the aircraft non-flight time.</p> <p>Approval to ground run specific aircraft and engine types should be obtained from the responsible authority for maintaining the engine.</p> <p>This UoC covers generic procedures for ground running aircraft engines, e.g. reciprocating turbine, single and/or multi engine (examples are - Tomahawk, Seneca, Nomad).</p> <p>Foreign object Damage (FOD) stand for anything that can find its way into an aircraft engine or flight control mechanisms that could possibly cause damage to aircraft, equipment or people.</p>
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the working principle of the propeller driven piston engines.</p> <p>6.2 Methods and procedures ♦ Able to obtain the resources and check them for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials.</p> <p style="padding-left: 100px;">♦ Able to determine the ground run task is by reviewing maintenance documentation.</p> <p style="padding-left: 100px;">♦ Able to confirm the aircraft is matched with the registration and documentation.</p>

	<ul style="list-style-type: none">◆ Able to prepare the aircraft for engine start in accordance with the procedures, e.g. fuel load and location. blanks, locks, chocks, covers, screens. special equipment and safety equipment removed, fitted and positioned as necessary. engine start equipment and aircraft positioned in approved area, area checked for FOD before starting.◆ Able to obtain the environmental data in accordance with the procedures, e.g. barometric pressure, outside air temperature, wind speed and direction, humidity.◆ Able to assemble and position the ground run team in accordance with the procedures.◆ Able to obtain the engine start and ground run clearances in accordance with the procedures, e.g. from ground crew and/or from control tower.◆ Able to start, run and shut down the engine or engines to meet the determined task requirements or specifications in accordance with the procedures.◆ Able to record the engine performance parameters in accordance with the procedures.◆ Able to complete the post ground run checks in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements and current code of practice. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to carry out engine ground run. ◆ Able to prepare the aircraft for next maintenance task or for operation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to complete the ground run documentation in accordance with the procedures. ◆ Able to check the resources are for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the ground run of propeller driven piston engines up to 300 hp or equivalent. (ii) Able to carry out the engine ground run. (iii) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 23165</p>

1. Title	Aircraft compasses compensation	
2. Code	EMAMBX401A	
3. Range	Aircraft compasses compensation is usually carried out in an aircraft hangar during the aircraft grounded time.	
4. Level	4	
5. Credit	2	
6. Competency	<u>Performance Requirement</u>	
	6.1 Preparation	<ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain the resources and check them for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials, personnel. ◆ Able to confirm the compass to be swung is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. clearances, ground locks, isolation tags, warning signs, aircraft positioned at approved site.
	6.2 Determine compass deviations and adjust compass	<ul style="list-style-type: none"> ◆ Able to carry out the functional check of compass or system to be compensated in accordance with the procedures. ◆ Able to carry out compass swing in accordance with the procedures, e.g. aircraft compass aligned externally to landing compass. ◆ Able to determine and record the deviations in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to adjust the compass or system in accordance with the procedures. ◆ Able to carry out and compass readjust the check swing in accordance with the procedures. ◆ Able to understand the legislative requirements and current code of practice. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to carry out aircraft compasses compensation. ◆ Able to return the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to complete the documentation in accordance with the procedures, e.g. work cards, deviation cards, compass log book, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the compass swing. (ii) Able to determine the compass deviations. (iii) Able to adjust the compass. (iv) Able to compensate the aircraft compasses. (v) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 3904

1. Title	Aircraft high frequency (HF) communications systems maintenance
2. Code	EMAMBX402A
3. Range	Aircraft HF communications systems maintenance activity is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft HF communications systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, heat treatment state, equipment, safety equipment, publications.</p> <p style="padding-left: 100px;">♦ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 100px;">♦ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p> <p style="padding-left: 100px;">♦ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to determine the serviceability of the system by:</p> <ul style="list-style-type: none"> • Inspection and locate the defects

	<ul style="list-style-type: none"> • Troubleshooting • Assessing the system • Carry out test <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft HF communications systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22509

1. Title	Aircraft very high frequency (VHF) communications systems maintenance
2. Code	EMAMBX403A
3. Range	Aircraft VHF communications systems maintenance activity is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft VHF communications systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, heat treatment state, equipment, safety equipment, publications.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p> <p style="padding-left: 150px;">♦ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.</p>

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability of the system by: <ul style="list-style-type: none"> • Inspection and locate the defects • Troubleshooting • Assessing the system • Carry out test ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.
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	<ul style="list-style-type: none"> ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft VHF communications systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22510

1. Title	Aircraft intercommunications systems maintenance
2. Code	EMAMBX404A
3. Range	Aircraft intercommunications systems maintenance is usually carried out on the aircraft in the hangar. Including: microphones, headsets, audio selector panels
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft intercommunications systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to determine the serviceability in accordance with the procedures,e.g. inspect, troubleshoot, assess, test. <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures ,e.g. repair, replace, modify, adjust, calibrate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to complete the system maintenance within an stipulated duration.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft intercommunication systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22511

1. Title	Aircraft public address systems maintenance
2. Code	EMAMBX405A
3. Range	Aircraft public address systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft public address systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft public address systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22512

1. Title	Maintain aircraft emergency locator beacon systems
2. Code	EMAMBX406A
3. Range	Aircraft emergency locator beacon systems maintenance activity is usually carried out on the aircraft in the hangar. The range may include - Emergency Locator Transmitter, Personal/Portable Locator Transmitter, Underwater Locator Beacon.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ◆ Understand the operation principles of aircraft emergency locator beacon systems.</p> <p>6.2 Methods and procedures ◆ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials.</p> <p style="padding-left: 100px;">◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 100px;">◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.</p> <p style="padding-left: 100px;">◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to determine the serviceability of the system by: <ul style="list-style-type: none"> • Inspection and locate the defects • Troubleshooting • Assessing the system • Carry out test ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin.
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	<ul style="list-style-type: none"> ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, including: ◆ labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft emergency locator beacon systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22513

1. Title	Aircraft in-flight entertainment systems maintenance
2. Code	EMAMBX407A
3. Range	Aircraft in-flight entertainment systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft in-flight entertainment systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft in-flight entertainment systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22514

1. Title	Aircraft direct current generating systems maintenance
2. Code	EMAMBX408A
3. Range	Aircraft direct current generating systems maintenance is usually carried out on the aircraft in the hangar. This Unit of Competency includes the generating and regulating systems but does not include the distribution system.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft direct current generating systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft direct current generating systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22515

1. Title	Maintain aircraft alternating current generating systems
2. Code	EMAMBX409A
3. Range	Aircraft alternating current generating systems maintenance is usually carried out on the aircraft in the hangar. This Unit of Competency includes the generating and regulating systems but does not include the distribution system
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft alternating current generating systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft alternating current generating systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22516

1. Title	Aircraft electrical motors and actuators maintenance
2. Code	EMAMBX410A
3. Range	Aircraft electrical motors and actuators maintenance activity is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	7
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for motors and generators, including : <ul style="list-style-type: none"> • different types: AC / DC, series wound / shunt wound / compound motors etc. • applications and uses <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability of the system,e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin.
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	<ul style="list-style-type: none"> ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft electrical motors and actuators by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 3.12, 3.17 & 3.18)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in electric circuits.</p> <p>Ref: NZQA - 22517</p>

1. Title	Aircraft batteries and charging system maintenance
2. Code	EMAMBX411A
3. Range	Aircraft batteries and charging systems maintenance activity is usually carried out on the aircraft in the hangar. Including: lead-acid and nickel-cadmium battery systems.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft batteries and charging systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p> <p style="padding-left: 150px;">♦ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.</p>

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability of the system by: <ul style="list-style-type: none"> • Inspection and locate the defects • Troubleshooting • Assessing the system • Carry out test ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.
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	<ul style="list-style-type: none"> ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft batteries and charging systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22518

1. Title	Aircraft power distribution systems maintenance
2. Code	EMAMBX412A
3. Range	Aircraft power distribution systems maintenance activity is usually carried out on the aircraft in the hangar. This unit standard does not include the generating and regulating system
4. Level	4
5. Credit	7
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the power supply systems in aircraft, including : <ul style="list-style-type: none"> • electrical fundamentals e.g. generation of electricity and AC/DC sources of electricity • external and ground power • protection and distribution systems <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. ◆ Able to determine the serviceability of the system,e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin.
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	<ul style="list-style-type: none"> ◆ Able to check and return the resources for serviceability in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft power distribution systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 3, 6.11, 11.6, 12.8 & 13.5)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the use of general electrical tools e.g. multimeters.</p> <p>Ref: NZQA - 22519</p>

1. Title	Aircraft lighting systems maintenance
2. Code	EMAMBX413A
3. Range	Aircraft lighting systems maintenance activity is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of aircraft lighting systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p> <p style="padding-left: 150px;">♦ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to determine the serviceability of the system, e.g. inspect, troubleshoot, assess, test</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, included: ◆ labels, work cards, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft lighting systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 3.4 - 3.8, 3.13, 3.14, 11.14, 12.15 & 13.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p>

1. Title	Aircraft fire protection and detection systems maintenance	
2. Code	EMAMBX414A	
3. Range	Repair or servicing of fire protection systems in aircraft in an aircraft hangar or workshop during the aircraft grounded time.	
4. Level	4	
5. Credit	4	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the fire protection systems in aircraft, including : <ul style="list-style-type: none"> • fire and smoke detection and warning systems • fire extinguishing systems <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain the resources and check it for serviceability or status in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures. 	

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, and test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test the system to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive
6.3 Professional approach	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to follow instruction manuals to repair and maintain the systems e.g. replacement of fire bottles.

	<ul style="list-style-type: none"> ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to check the resources for serviceability and return it to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft fire protection and detection systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 11.8 & 12.10)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 22521</p>

1. Title	Aircraft gas turbine engine avionic ignition systems maintenance
2. Code	EMAMBX415A
3. Range	Aircraft gas turbine ignition systems maintenance activity is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the operation principles of gas turbine aircraft ignition systems.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, tools, equipment, safety equipment, materials.</p> <p style="padding-left: 150px;">♦ Able to confirm the system to be maintained is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.</p> <p style="padding-left: 150px;">♦ Able to prepare the ground and/or support equipment for system operation in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to determine the serviceability of the system,e.g. inspect, troubleshoot, assess, test.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to test and verify the system for serviceability. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the system maintenance within the stipulated duration. ◆ Able to return the aircraft, system and work area in a state enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to handle unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft gas turbine engine ignition systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 14, 15.13, 15.21, 16.1, 16.5 & 16.12))</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of turbine engines.</p> <p>Ref: NZQA - 22522</p>

1. Title	Aircraft temperature datum systems maintenance
2. Code	EMAMBX416A
3. Range	Aircraft temperature datum systems maintenance is usually carried out on the aircraft in the hangar, e.g. engine monitoring and/or air conditioning systems.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft temperature datum systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft temperature datum systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22523

1. Title	Aircraft inertial navigation systems maintenance
2. Code	EMAMBX417A
3. Range	Aircraft inertial navigation systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft inertial navigation systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft inertial navigation systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22524

1. Title	Aircraft weather radar systems maintenance
2. Code	EMAMBX418A
3. Range	Aircraft inertial navigation systems maintenance is usually carried out on the aircraft in the hangar. Range weather radar and/or microburst detection and/or windshear detection.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft weather radar systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft weather radar systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22525

1. Title	Aircraft radio and/or radar altimeter systems maintenance
2. Code	EMAMBX419A
3. Range	Aircraft radio and/or radar altimeter systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft weather radar systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft radio altimeters and/or radar altimeter systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22526

1. Title	Aircraft ground proximity warning systems maintenance
2. Code	EMAMBX420A
3. Range	Aircraft ground proximity warning systems maintenance is usually carried out on the aircraft in the hangar. Including: ground proximity warning systems, terrain warning systems.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft ground proximity warning systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft ground proximity warning systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22529

1. Title	Aircraft traffic alert and collision avoidance systems maintenance
2. Code	EMAMBX421A
3. Range	Aircraft traffic alert and collision avoidance systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft traffic alert and collision avoidance systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures. ,e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures,e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft Traffic Alert and Collision Avoidance Systems (TCAS) by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22528

1. Title	Aircraft monitoring instrument systems maintenance
2. Code	EMAMBX422A
3. Range	Aircraft monitoring instrument systems maintenance is usually carried out on the aircraft in the hangar. Including: temperature, quantity, pressure, rotation, position, vibration indication.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft monitoring instrument systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft monitoring instrument systems by carrying out inspections, troubleshooting, repairs, modifications, component changes and testing.</p>
8. Remarks	Ref: NZQA - 22529

1. Title	Aircraft electrical system indicators and clocks maintenance
2. Code	EMAMBX423A
3. Range	Aircraft electrical system indicators and clocks maintenance is usually carried out on the aircraft in the hangar. Including: gauges, displays, warning indicators.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electrical system indicators and clocks. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft electrical system indicators and clocks by carrying out inspections, troubleshooting, repairs, modifications, component changes and testing.</p>
8. Remarks	Ref: NZQA - 22530

1. Title	Aircraft flight data recording and/or cockpit voice recording systems maintenance
2. Code	EMAMBX424A
3. Range	Aircraft flight data recording and/or cockpit voice recording systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft flight data recording and/or cockpit voice recording systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft flight data recording and/or cockpit voice recording systems by carrying out inspections, troubleshooting, repairs, modifications, component changes and testing.</p>
8. Remarks	Ref: NZQA - 22531

1. Title	Aircraft pitot static systems maintenance
2. Code	EMAMBX425A
3. Range	Aircraft pitot static systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	7
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft pitot static systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft pitot static systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22532

1. Title	Aircraft gyroscopic instrument systems maintenance
2. Code	EMAMBX426A
3. Range	Aircraft gyroscopic instrument systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft gyroscopic instrument systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft gyroscopic instrument systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22533

1. Title	Aircraft position indication systems maintenance
2. Code	EMAMBX427A
3. Range	Aircraft position indication systems maintenance is usually carried out on the aircraft in the hangar. Including: ratiometers.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft position indication systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft position indication systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22534

1. Title	Aircraft infrared imaging and/or detection systems maintenance
2. Code	EMAMBX428A
3. Range	Aircraft position indication systems maintenance is usually carried out on the aircraft in the hangar. Including: ratiometers.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft infrared imaging and/or detection systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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6.3 Professional approach

	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft infrared imaging and/or detection systems by carrying out inspections, troubleshooting, repairs, modifications, component changes and testing.</p>
8. Remarks	Ref: NZQA - 22535

1. Title	Aircraft night vision systems maintenance
2. Code	EMAMBX429A
3. Range	Aircraft night vision systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft night vision systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft night vision systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22536

1. Title	Aircraft head-up display systems maintenance
2. Code	EMAMBX430A
3. Range	Aircraft head-up display systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft head-up display systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft head-up display systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22537

1. Title	Aircraft fiber optic cabling maintenance
2. Code	EMAMBX431A
3. Range	Aircraft fiber optic cabling maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	2
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft fiber optic cabling. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft fiber optic cabling by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 2.4, 2.5, 5.4 & 5.10)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in general physics.</p> <p>Ref: NZQA - 22538</p>

1. Title	Aircraft landing approach aid systems maintenance
2. Code	EMAMBX432A
3. Range	Aircraft landing approach aid systems maintenance is usually carried out on the aircraft in the hangar. Including: very high frequency omnidirectional radio range and instrument landing systems (including localizer, glide slope, marker beacon systems).
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft landing approach aid systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft landing approach systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22540

1. Title	Aircraft distance measuring equipment system maintenance
2. Code	EMAMBX433A
3. Range	Aircraft distance measuring equipment systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft distance measuring equipment systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to determine the serviceability in accordance with the procedures,e.g. inspect, troubleshoot, assess, test. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft distance measuring equipment (DME) systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22541

1. Title	Aircraft Automatic Direction Finding systems maintenance	
2. Code	EMAMBX434A	
3. Range	Aircraft Automatic Direction Finding systems maintenance is usually carried out on the aircraft in the hangar.	
4. Level	4	
5. Credit	4	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft Automatic Direction Finding systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. 	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft Automatic Direction Finding (ADF) systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22542

1. Title	Aircraft microwave systems maintenance
2. Code	EMAMBX435A
3. Range	Aircraft microwave systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft microwave systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft microwave systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 22544

1. Title	Aircraft wiring loom and harness assemblies maintenance
2. Code	EMAMBX436A
3. Range	Aircraft wiring loom and harness assemblies maintenance is usually carried out on the aircraft in the hangar. This unit of competency excludes fiber optic conductors and cabling.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft wiring loom and harness system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the damaged aircraft wiring loom and harness assemblies to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing, installing on aircraft and documenting the work.</p>
8. Remarks	Ref: NZQA - 22545

1. Title	Aircraft autopilot systems maintenance
2. Code	EMAMBX437A
3. Range	Aircraft autopilot systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft autopilot systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures,e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft autopilot systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 3945

1. Title	Aircraft global positioning satellite navigation systems maintenance
2. Code	EMAMBX438A
3. Range	Aircraft global positioning satellite navigation systems maintenance is usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft global positioning satellite navigation systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. <li>◆ Able to report and record the defects in accordance with the procedures. <li>◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. <li>◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. <li>◆ Able to test the systems and to verify their serviceability in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft global positioning satellite navigation systems (GPS) in a serviceable condition by carrying out inspections, troubleshooting, repairs, modifications and testing.</p>
8. Remarks	Ref: NZQA - 3948

1. Title	Aircraft compass systems maintenance
2. Code	EMAMBX439A
3. Range	Aircraft compass systems maintenance is usually carried out on the aircraft in the hangar. Including: direct reading, remote reading, integrated.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft compass systems. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to confirm the system to be maintained is matched with the aircraft registration and documentation. ◆ Able to prepare the aircraft and systems for the application of power and system operation in accordance with the procedures, e.g. cockpit controls match component positions, clearances, isolation tags, warning signs. ◆ Able to prepare the ground and/or support equipment for systems operation in accordance with the procedures. ◆ Able to determine the serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to rectify the defects by the approved method in accordance with the procedures, e.g. repair, replace, modify, adjust, calibrate, lubricate. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to test the systems and to verify their serviceability in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to leave the aircraft, system and work area in a state which enables the next task to begin in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to maintain the aircraft compass systems by carrying out inspections, troubleshooting, repairs, modifications, component changes, and testing.</p>
8. Remarks	Ref: NZQA - 4022

1. Title	Electrical fundamentals II (Avionics Repair and Maintenance)
2. Code	EMAMBX440A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	4
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the electron theory <ul style="list-style-type: none"> • Structure and distribution of electrical charges within: atoms, molecules, ions, compounds. • Molecular structure of conductors, semiconductors and insulators. ◆ Able to understand the static electricity and conduction <ul style="list-style-type: none"> • Static electricity and distribution of electrostatic charges. • Electrostatic laws of attraction and repulsion. • Units of charge, Coulomb's Law. • Conduction of electricity in solids, liquids, gases and a vacuum. ◆ Able to understand the electrical terminology <ul style="list-style-type: none"> • The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.

	<ul style="list-style-type: none"> ◆ Able to understand the generation of electricity <ul style="list-style-type: none"> • Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion. ◆ Able to understand the DC Sources of electricity <ul style="list-style-type: none"> • Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells. Cells connected in series and parallel. • Internal resistance and its effect on a battery. • Construction, materials and operation of thermocouples. • Operation of photo-cells. ◆ Able to understand the DC circuits <ul style="list-style-type: none"> • Ohms Law, Kirchoff's Voltage and Current Laws. • Calculations using the above laws to find resistance, voltage and current. • Significance of the internal resistance of a supply. ◆ Able to understand the resistance / resistor <ul style="list-style-type: none"> • Resistance and affecting factors. <ul style="list-style-type: none"> ▸ Specific resistance. ▸ Resistor colour code, values and tolerances, preferred values, wattage ratings. ▸ Resistors in series and parallel. ▸ Calculation of total resistance using series, parallel and series parallel combinations.
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	<ul style="list-style-type: none"> ‣ Operation and use of potentiometers and rheostats. ‣ Operation of Wheatstone Bridge. • Positive and negative temperature coefficient conductance. <ul style="list-style-type: none"> ‣ Fixed resistors, stability, tolerance and limitations, methods of construction. ‣ Variable resistors, thermistors, voltage dependent resistors. ‣ Construction of potentiometers and rheostats. ‣ Construction of Wheatstone Bridge. ◆ Able to understand the power <ul style="list-style-type: none"> • Power, work and energy (kinetic and potential). • Dissipation of power by a resistor. • Power formula. • Calculations involving power, work and energy. ◆ Able to understand the capacitance / capacitor <ul style="list-style-type: none"> • Operation and function of a capacitor. • Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating. • Capacitor types, construction and function. • Capacitor colour coding. • Calculations of capacitance and voltage in series and parallel circuits. • Exponential charge and discharge of a capacitor, time constants. • Testing of capacitors.
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- ◆ Able to understand the magnetism
 - Theory of magnetism.
 - Properties of a magnet.
 - Action of a magnet suspended in the Earth's
 - Magnetic field.
 - Magnetisation and demagnetisation.
 - Magnetic shielding.
 - Various types of magnetic material.
 - Electromagnets construction and principles of operation.
 - Hand clasp rules to determine: magnetic field around current carrying conductor.
 - Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents.
 - Precautions for care and storage of magnets.
- ◆ Able to understand the inductance / inductor
 - Faraday's Law.
 - Action of inducing a voltage in a conductor moving in a magnetic field.
 - Induction principles.
 - Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns.
 - Mutual induction.
 - The effect the rate of change of primary current and mutual inductance has on induced voltage.

	<ul style="list-style-type: none"> • Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other. • Lenz's Law and polarity determining rules. • Back emf, self induction. • Saturation point. • Principle uses of inductors. <p>◆ Able to understand the DC motor / generator theory</p> <ul style="list-style-type: none"> • Basic motor and generator theory. • Construction and purpose of components in DC generator. • Operation of, and factors affecting output and direction of current flow in DC generators. • Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors. • Series wound, shunt wound and compound motors. • Starter Generator construction. <p>◆ Able to understand the AC theory</p> <ul style="list-style-type: none"> • Sinusoidal waveform: phase, period, frequency, cycle. • Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power. • Triangular/Square waves. • Single / 3 phase principles.
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- ◆ Able to understand the Resistive (R), Capacitive (C) and Inductive (L) Circuits
 - Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel.
 - Power dissipation in L, C and R circuits.
 - Impedance, phase angle, power factor and current calculations.
 - True power, apparent power and reactive power calculations.
- ◆ Able to understand the transformers
 - Transformer construction principles and operation.
 - Transformer losses and methods for overcoming them.
 - Transformer action under load and no-load conditions.
 - Power transfer, efficiency, polarity markings.
 - Primary and Secondary current, voltage, turns ratio, power, efficiency.
 - Auto transformers.
- ◆ Able to understand the filters
 - Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.
- ◆ Able to understand the AC generators
 - Rotation of loop in a magnetic field and waveform produced.
 - Operation and construction of revolving armature and revolving field type AC generators.
 - Single phase, two phase and three phase alternators.

	<ul style="list-style-type: none"> • Three phase star and delta connections advantages and uses. • Calculation of line and phase voltages and currents. • Calculation of power in a three phase system. • Permanent Magnet Generators. ◆ Able to understand the AC motors <ul style="list-style-type: none"> • Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase. • Methods of speed control and direction of rotation. • Methods of producing a rotating field: capacitor, inductor, shaded or split pole. ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Static Electricity and Conduction • Electrical Terminology • DC Sources of Electricity • DC Circuits • Resistance / Resistor • Resistance and affecting factors • Power • Capacitance / Capacitor • Magnetism • Inductance / Inductor • DC Motor / Generator Theory • AC Theory • Resistive (R), Capacitive (C) and Inductive (L) Circuits
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6.2 Theoretical and practical aspects

	<ul style="list-style-type: none"> • Transformers • AC Generators • AC Motors <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Static Electricity and Conduction • Electrical Terminology • DC Sources of Electricity • DC Circuits • Resistance / Resistor • Resistance and affecting factors • Power • Capacitance / Capacitor • Magnetism • Inductance / Inductor • DC Motor / Generator Theory • AC Theory • Resistive (R), Capacitive (C) and Inductive (L) Circuits • Transformers • AC Generators • AC Motors ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 3: Electrical fundamentals</p>

1. Title	Digital techniques and electronic instrument systems II (Avionics Repair and Maintenance)
2. Code	EMAMBX441A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	4
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the electronic instrument systems <ul style="list-style-type: none"> • Typical systems arrangements and cockpit layout of electronic instrument systems. ◆ Able to understand the numbering systems <ul style="list-style-type: none"> • Numbering systems: binary, octal and hexadecimal. • Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa. ◆ Able to understand the data conversion <ul style="list-style-type: none"> • Analogue Data, Digital Data. • Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types. ◆ Able to understand the data buses <ul style="list-style-type: none"> • Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications. ◆ Able to understand the logic circuits

- Identification of common logic gate symbols, tables and equivalent circuits
- Applications used for aircraft systems, schematic diagrams.
- Interpretation of logic diagrams.
- ◆ Able to understand the basic computer structure
 - Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM).
 - Computer technology (as applied in aircraft systems).
 - Computer related terminology.
 - Operation, layout and interface of the major components in a micro computer including their associated bus systems.
 - Information contained in single and multiaddress instruction words.
 - Memory associated terms.
 - Operation of typical memory devices.
 - Operation, advantages and disadvantages of the various data storage systems.
- ◆ Able to understand the microprocessors
 - Functions performed and overall operation of a microprocessor.
 - Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.
- ◆ Able to understand the multiplexing
 - Operation, application and identification in logic diagrams of multiplexers and demultiplexers.

	<ul style="list-style-type: none"> ◆ Able to understand the Integrated Circuits <ul style="list-style-type: none"> • Operation and use of encoders and decoders. • Function of encoder types. • Uses of medium, large and very large scale integration. ◆ Able to understand the fibre optics <ul style="list-style-type: none"> • Advantages and disadvantages of fibre optic data transmission over electrical wire propagation. • Fibre optic data bus. • Fibre optic related terms. • Terminations. • Couplers, control terminals, remote terminals. • Application of fibre optics in aircraft systems. ◆ Able to understand the electronic displays <ul style="list-style-type: none"> • Principles of operation of common types of displays used in modern aircraft, including • Cathode Ray Tubes, Light Emitting Diodes and • Liquid Crystal Display. ◆ Able to understand the electrostatic sensitive devices <ul style="list-style-type: none"> • Special handling of components sensitive to electrostatic discharges. • Awareness of risks and possible damage, component and personnel anti-static protection devices. ◆ Able to understand the software management control
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- Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.
- ◆ Able to understand the electromagnetic environment
 - Influence of the following phenomena on maintenance practices for electronic system:
 - EMC - Electromagnetic Compatibility
 - EMI - Electromagnetic Interference
 - HIRF - High Intensity Radiated Field
 - Lightning / lightning protection.
- ◆ Able to understand the typical electronic / digital aircraft systems
 - General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In
 - Test Equipment) testing such as:
 - ACARS - ARINC Communication Addressing and Reporting System
 - ECAM - Electronic Centralised Aircraft Monitoring
 - EFIS - Electronic Flight Instrument System
 - EICAS - Engine Indication and Crew Alerting System
 - FBW - Fly by Wire
 - FMS - Flight Management System
 - GPS - Global Positioning System
 - IRS - Inertial Reference System
 - TCAS - Traffic Alert Collision Avoidance System

	<p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the digital techniques and electronic instrument systems knowledge in the aircraft maintenance. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the subjects. ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Electronic Instrument Systems ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.

8. Remarks	Ref: HKAR-66 Module 5: Digital techniques and electronic instrument systems
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1. Title	Materials and hardware II (Avionics Repair and Maintenance)
2. Code	EMAMBX442A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the Aircraft Materials - Ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common alloy steels used in aircraft. • Heat treatment and application of alloys steels. • Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance. ◆ Able to understand the Aircraft Materials - Non-ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common non-ferrous materials used in aircraft. • Heat treatment and application of nonferrous materials. • Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.

- ◆ Able to understand the Aircraft Materials – Composite and Non-metallic
 - Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft.
 - Sealants and bonding agents.
- ◆ Able to understand the corrosion
 - Chemical fundamentals.
 - Formation by: galvanic action process, microbiological, stress.
 - Types of corrosion and their identification.
 - Causes of corrosion.
 - Material types, susceptibility to corrosion.
- ◆ Able to understand the Fasteners
 - Screw threads
 - Screw nomenclature.
 - Thread forms, dimensions and tolerances for standard threads used in aircraft.
 - Measuring screw threads.
 - Bolts, studs and screws
 - 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
 - Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.
- Aircraft rivets
 - Types of solid and blind rivets: specifications and identification, heat treatment.
- ◆ Able to understand the Pipes and Unions
 - Identification of, and types of rigid and flexible pipes and their connectors used in aircraft.
 - Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.
- ◆ Able to understand the Springs
 - Types of springs, materials, characteristics and applications.
- ◆ Able to understand the Bearings
 - Purpose of bearings, loads, material, construction.
 - Types of bearings and their application.
- ◆ Able to understand the Transmissions
 - 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.
- ◆ Able to understand the Control Cables
 - Types of cables.
 - End fittings, turnbuckles and compensation devices.

	<ul style="list-style-type: none"> • Pulleys and cable system components. • Bowden cables. • Aircraft flexible control systems. <p>◆ Able to understand the Electrical Cables and Connectors</p> <ul style="list-style-type: none"> • 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. <p>6.2 Theoretical and practical aspects</p> <p>◆ Able to apply the following knowledge in the aircraft maintenance.</p> <ul style="list-style-type: none"> • Aircraft Materials - Composite and Non-Metallic • Corrosion <ul style="list-style-type: none"> ▸ Types of corrosion and their identification. ▸ Causes of corrosion. ▸ Material types, susceptibility to corrosion. • Fasteners <ul style="list-style-type: none"> ▸ Screw threads ▸ Bolts, studs and screws ▸ Locking devices • Pipes and Unions <ul style="list-style-type: none"> ▸ Identification of, and types of rigid and flexible pipes and their connectors used in aircraft. • Bearings • Transmissions • Electrical Cables and Connectors
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft Materials - Composite and Non-Metallic • Corrosion <ul style="list-style-type: none"> ▸ Types of corrosion and their identification. ▸ Causes of corrosion. ▸ Material types, susceptibility to corrosion. • Fasteners <ul style="list-style-type: none"> ▸ Screw threads ▸ Bolts, studs and screws ▸ Locking devices • Pipes and Unions <ul style="list-style-type: none"> ▸ Identification of, and types of rigid and flexible pipes and their connectors used in aircraft. • Bearings • Transmissions • Electrical Cables and Connectors ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 6: Materials and Hardware.</p>

1. Title	Maintenance Practices II (Avionics Repair and Maintenance)
2. Code	EMAMBX443A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	4
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the safety precautions-Aircraft and Workshop <ul style="list-style-type: none"> • Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards. ◆ Able to understand the workshop practices <ul style="list-style-type: none"> • Care of tools, control of tools, use of workshop materials. • Dimensions, allowances and tolerances, standards of workmanship. • Calibration of tools and equipment, calibration standards. ◆ Able to understand the tools <ul style="list-style-type: none"> • Common hand tool types. • Common power tool types. • Operation and use of precision measuring tools.

- Lubrication equipment and methods.
- Operation, function and use of electrical general test equipment.
- ◆ Able to understand the avionic general test equipment
 - Operation, function and use of avionic general test equipment.
- ◆ Able to understand the engineering drawings, diagrams and standards
 - Drawing types and diagrams, their symbols, dimensions, tolerances and projections.
 - Identifying title block information.
 - Microfilm, microfiche and computerized presentations.
 - Specification 100 of the Air Transport Association (ATA) of America.
 - Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL.
 - Wiring diagrams and schematic diagrams.
- ◆ Able to understand the fits and clearances
 - Drill sizes for bolt holes, classes of fits.
 - Common system of fits and clearances.
 - Schedule of fits and clearances for aircraft and engines.
 - Limits for bow, twist and wear.
 - Standard methods for checking shafts, bearings and other parts.
- ◆ Able to understand the electrical cables and connectors
 - Continuity, insulation and bonding techniques and testing.
 - Use of crimp tools: hand and hydraulic operated.

- Testing of crimp joints.
- Connector pin removal and insertion.
- Co-axial cables: testing and installation precautions.
- Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.
- ◆ Able to understand the welding, brazing, soldering and bonding
 - Soldering methods. inspection of soldered joints.
- ◆ Able to understand the aircraft weight and balance
 - Centre of Gravity / Balance limits calculation: use of relevant documents.
- ◆ Able to understand the aircraft handling and storage
 - Aircraft taxiing / towing and associated safety precautions.
 - Aircraft jacking, chocking, securing and associated safety precautions.
 - Aircraft storage methods.
 - Refuelling / defuelling procedures.
 - De-icing/anti-icing procedures.
 - Electrical, hydraulic and pneumatic ground supplies.
 - Effects of environmental conditions on aircraft handling and operation.
- ◆ Able to understand the disassembly, inspection, repair and assembly techniques
 - Types of defects and visual inspection techniques.
 - Corrosion removal, assessment and re-protection.

	<ul style="list-style-type: none"> • Non-destructive inspection techniques including: penetrant, radiographic, eddy current, ultrasonic and boroscope methods. • Disassembly and re-assembly techniques. • Trouble shooting techniques. ◆ Able to understand the abnormal events <ul style="list-style-type: none"> • Inspections following lightning strikes and HIRF penetration. ◆ Able to understand the maintenance procedures <ul style="list-style-type: none"> • Maintenance planning. • Modification procedures. • Stores procedures. • Certification / release procedures. • Interface with aircraft operation. • Maintenance Inspection / Quality Control / • Quality Assurance. • Additional maintenance procedures. • Control of life limited components. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Safety Precautions-Aircraft and Workshop • Workshop Practices • Tools • Avionic General Test Equipment • Engineering Drawings, Diagrams and Standards • Electrical Cables and Connectors • Soldering • Aircraft Balance
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	<ul style="list-style-type: none"> • Aircraft Handling and Storage • Disassembly, Inspection, Repair and Assembly Techniques <ul style="list-style-type: none"> ▸ Types of defects and visual inspection techniques. ▸ Disassembly and re-assembly techniques. ▸ Trouble shooting techniques • Abnormal Events <ul style="list-style-type: none"> ▸ Inspections following lightning strikes and HIRF penetration. • Maintenance Procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Engineering Drawings, Diagrams and Standards • Electrical Cables and Connectors • Soldering • Aircraft Balance • Aircraft Handling and Storage • Disassembly, Inspection, Repair and Assembly Techniques <ul style="list-style-type: none"> ▸ Types of defects and visual inspection techniques. ▸ Disassembly and re-assembly techniques. ▸ Trouble shooting techniques • Abnormal Events <ul style="list-style-type: none"> ▸ Inspections following lightning strikes and HIRF penetration. • Maintenance Procedures
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	<ul style="list-style-type: none"> ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Safety Precautions-Aircraft and Workshop • Workshop Practices • Tools • Avionic General Test Equipment ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
8. Remarks	Ref: HKAR-66 Module 7: Maintenance practices

1. Title	Basics Aerodynamics II (Avionics Repair and Maintenance)
2. Code	EMAMBX444A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the physics of the Atmosphere <ul style="list-style-type: none"> • International Standard Atmosphere (ISA), application to aerodynamics. ◆ Able to understand the aerodynamics <ul style="list-style-type: none"> • Airflow around a body. • Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash. vortices, stagnation. • The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio. • Thrust, Weight, Aerodynamic Resultant. • Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall. • Aerofoil contamination including ice, snow, frost.

	<ul style="list-style-type: none"> ◆ Able to understand the theory of flight <ul style="list-style-type: none"> • Relationship between lift, weight, thrust and drag. • Glide ratio. • Steady state flights, performance. • Theory of the turn. • Influence of load factor : stall, flight envelope and structural limitations. • Lift augmentation. ◆ Able to understand the flight stability and dynamics <ul style="list-style-type: none"> • Longitudinal, lateral and directional stability • (active and passive). <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Physics of the Atmosphere • Aerodynamics • Theory of Flight • Flight Stability and Dynamics <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Physics of the Atmosphere • Aerodynamics • Theory of Flight • Flight Stability and Dynamics ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 8: Basic Aerodynamics.</p>

1. Title	Human factors II (Avionics Repair and Maintenance)
2. Code	EMAMBX445A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the general of human factor <ul style="list-style-type: none"> • The need to take human factors into account. • Incidents attributable to human factors / human error. • ‘Murphy’s’ law. ◆ Able to understand the human performance and limitations <ul style="list-style-type: none"> • Vision. • Hearing. • Information processing. • Attention and perception. • Memory. • Claustrophobia and physical access. ◆ Able to understand the social psychology <ul style="list-style-type: none"> • Responsibility: individual and group. • Motivation and de-motivation. • Peer pressure. • ‘Culture’ issues. • Team working. • Management, supervision and leadership.

	<ul style="list-style-type: none"> ◆ Able to understand the factors affecting performance <ul style="list-style-type: none"> • Fitness / health. • Stress: domestic and work related. • Time pressure and deadlines. • Workload: overload and underload. • Sleep and fatigue, shiftwork. • Alcohol, medication, drug abuse. ◆ Able to understand the physical environment <ul style="list-style-type: none"> • Noise and fumes. • Illumination. • Climate and temperature. • Motion and vibration. • Working environment. ◆ Able to understand the tasks <ul style="list-style-type: none"> • Physical work. • Repetitive tasks. • Visual inspection. • Complex systems. ◆ Able to understand the communication <ul style="list-style-type: none"> • Within and between teams. • Work logging and recording. • Keeping up to date, currency. • Dissemination of information. ◆ Able to understand the human error <ul style="list-style-type: none"> • Error models and theories. • Types of error in maintenance tasks. • Implications of errors (i.e. accidents). • Avoiding and managing errors. ◆ Able to understand the hazards in the workplace <ul style="list-style-type: none"> • Recognising and avoiding hazards. • Dealing with emergencies.
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	<p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • General of human factor • Human performance and limitations • Factors affecting performance • Communication • Human error • Hazards in the workplace <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • General of human factor • Human performance and limitations • Factors affecting performance • Communication • Human error • Hazards in the workplace ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 9: Human factors

1. Title	Aviation legislation II (Avionics Repair and Maintenance)
2. Code	EMAMBX446A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, especially in avionics, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	4
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the aircraft maintenance licences <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • Responsibilities: by statutory law and by the need to fly aircraft in a satisfactory condition, i.e. common / civil / constitutional law. • Penalties - under statutory law and resulting from civil law suits. • HKAR-66: Licensing of Maintenance Personnel • (Certifying Staff - Maintenance). • Categories - applicability. • Area and extent of limitations and privileges within • Categories. • Overlap of Category applicability. • Relevant Airworthiness Notices. ◆ Able to understand the certifications <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures.

- Certificates of : Release to Service. Maintenance
- Review. Fitness for Flight.
- Duplicate inspections.
- Contributory certifications and reliance on other documentation and persons.
- Certification - acceptance investigation and judgement procedures.
- ◆ Able to understand the aircraft, engine and VP propeller log books
 - Air Navigation (Hong Kong) Order 1995 requirements.
 - HKAR-1 Airworthiness Procedures.
 - CAD Approval: light aircraft, large aircraft.
 - Worksheets.
 - Data to be entered in log books.
 - Condition reports - e.g. heavy landing checks, defect investigations, NDT and other inspections, mandatory and non-mandatory.
 - Maintenance records.
 - Cross-reference to other files / records.
 - Preservation of documents: AN(HK)O 1995.
- ◆ Able to understand the technical log
 - Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures.
 - Technical Log - Air Operator's Certificates Requirements Document.
- ◆ Able to understand the aircraft documentation and requirements
 - Type Certification. Supplementary Type Certification.

- Weight schedule.
- External, and internal markings and signs, e.g. nationality and registration, no smoking and fasten seat belt, placards and requirements, doors and exits.
- Certificate of Airworthiness Categories, purposes of flight.
- Certificate of Registration.
- Noise Certificate.
- Air Operator's Certificate.
- Schedule 5 requirements for equipment.
- Radio station licence and approval.
- Change of ownership.
- Maintenance checks and inspections.
- Maintenance records. Maintenance documentation.
- Continuing airworthiness.
- Master Minimum Equipment Lists, Minimum
- Equipment Lists, Dispatch Deviation Lists.
- Service Bulletins, manufacturers service information.
- Modifications and repairs.
- Test flights.
- ETOPS: maintenance and dispatch requirements.
- All Weather Operation (AWO): CAT 2/3 operations and minimum equipment requirements.
- Reduced Vertical Separation Minima (RVSM) requirements.
- ◆ Able to understand the approvals
 - Design Organisations.
 - Maintenance Organisations.

	<ul style="list-style-type: none"> • AOC interface. • Maintenance Schedules and Programmes. • Stores: systems. release of parts. ◆ Able to understand the defect reporting <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • CAD382 The Mandatory Occurrence Reporting Scheme. • Defects which are to be reported. • Reportable accidents. ◆ Able to understand the Hong Kong Aviation Requirements <ul style="list-style-type: none"> • HKAR-1: Airworthiness Procedures. • Airworthiness Notices. • Airworthiness Directives. • Mandatory Modifications and Inspections:- <ul style="list-style-type: none"> ▸ HK CAD ▸ UK CAA ▸ FAA ▸ Authorities other than above: aircraft, engines, equipment. • HKAR-145: Approved Maintenance Organisations. • HKAR-147: Approved Maintenance Training/ <ul style="list-style-type: none"> • Examinations • Air Operator's Certificates (AOC) Requirements Document. ◆ Able to understand the Joint Aviation Authorities Requirements <ul style="list-style-type: none"> • JAR-21. JAR-23. JAR-25. JAR-29
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	<p>6.2 Theoretical and practical aspects</p> <p>6.3 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books • Technical log • Aircraft documentation and requirements • Approvals • Defect reporting • Hong Kong aviation requirements ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books • Technical log • Aircraft documentation and requirements • Approvals • Defect reporting • Hong Kong aviation requirements ◆ Able to apply the knowledge in the aircraft maintenance task.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 10: Aviation legislation</p>

1. Title	Electronic fundamentals II (Avionics Repair and Maintenance)
2. Code	EMAMBX447A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the semiconductors <ul style="list-style-type: none"> • Diode <ul style="list-style-type: none"> ▸ Diode symbols. ▸ Diode characteristics and properties. ▸ Diodes in series and parallel. ▸ Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes. ▸ Functional testing of diodes. ▸ Materials, electron configuration, electrical properties. ▸ P and N type materials: effects of ▸ impurities on conduction, majority and minority carriers. ▸ PN junction in a semiconductor, ▸ development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions. ▸ Diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation.

- › Operation and function of diodes in the following circuits: clippers, clampers, full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers.
 - › Detailed operation and characteristics of the following devices: silicon controlled rectifier (thyristor), light emitting diode, Schottky diode, photo conductive diode, varactor diode, varistor, rectifier diodes, Zener diode.
- Transistors
 - › Transistor symbols.
 - › Component description and orientation.
 - › Transistor characteristics and properties.
 - › Construction and operation of PNP and NPN transistors.
 - › Base, collector and emitter configurations.
 - › Testing of transistors.
 - › Basic application of other transistor types and their uses.
 - › Application of transistors: classes of amplifier (A, B, C).
 - › Simple circuits including: bias, decoupling, feedback and stabilisation.
 - › Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flipflop circuits.
- Integrated Circuits
 - › Description and operation of logic circuits and linear circuits.

	<ul style="list-style-type: none"> ▸ Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator. ▸ Operation and amplifier stages connecting methods: resistive capacitive, inductive (transformer), inductive resistive (IR), direct. ▸ Advantages and disadvantages of positive and negative feedback. ◆ Able to understand the printed circuit boards <ul style="list-style-type: none"> • Description and use of printed circuit boards. ◆ Able to understand the servomechanisms <ul style="list-style-type: none"> • Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue transducer, null, damping, feedback, deadband. • Construction, operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters. • Servomechanism defects, reversal of synchro leads, hunting.
6.2 Theoretical and practical aspects	<ul style="list-style-type: none"> ◆ Able to apply the electronic fundamentals knowledge in the aircraft maintenance.
6.3 Professional approach	<ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the subjects.

	<p style="text-align: center;">◆ Able to apply the knowledge in the aircraft maintenance task.</p>
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 4: Electronic fundamentals

1. Title	Electrical fundamentals II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY401A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the electron theory <ul style="list-style-type: none"> • Structure and distribution of electrical charges within: atoms, molecules, ions, compounds. • Molecular structure of conductors, semiconductors and insulators. ◆ Able to understand the static electricity and conduction <ul style="list-style-type: none"> • Static electricity and distribution of electrostatic charges. • Electrostatic laws of attraction and repulsion. • Units of charge, Coulomb's Law. • Conduction of electricity in solids, liquids, gases and a vacuum. ◆ Able to understand the electrical terminology <ul style="list-style-type: none"> • The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.

- ◆ Able to understand the generation of electricity
 - Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.
- ◆ Able to understand the DC Sources of electricity
 - Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells. Cells connected in series and parallel.
 - Internal resistance and its effect on a battery.
 - Construction, materials and operation of thermocouples.
 - Operation of photo-cells.
- ◆ Able to understand the DC circuits
 - Ohms Law, Kirchoff's Voltage and Current Laws.
 - Calculations using the above laws to find resistance, voltage and current.
 - Significance of the internal resistance of a supply.
- ◆ Able to understand the resistance / resistor
 - Resistance and affecting factors.
 - Specific resistance.
 - Resistor colour code, values and tolerances, preferred values, wattage ratings.
 - Resistors in series and parallel.
 - Calculation of total resistance using series, parallel and series parallel combinations.

	<ul style="list-style-type: none"> › Operation and use of potentiometers and rheostats. › Operation of Wheatstone Bridge. • Positive and negative temperature coefficient conductance. <ul style="list-style-type: none"> › Fixed resistors, stability, tolerance and limitations, methods of construction. › Variable resistors, thermistors, voltage dependent resistors. › Construction of potentiometers and rheostats. › Construction of Wheatstone Bridge. ◆ Able to understand the power <ul style="list-style-type: none"> • Power, work and energy (kinetic and potential). • Dissipation of power by a resistor. • Power formula. • Calculations involving power, work and energy. ◆ Able to understand the capacitance / capacitor <ul style="list-style-type: none"> • Operation and function of a capacitor. • Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating. • Capacitor types, construction and function. • Capacitor colour coding. • Calculations of capacitance and voltage in series and parallel circuits. • Exponential charge and discharge of a capacitor, time constants. • Testing of capacitors.
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- ◆ Able to understand the magnetism
 - Theory of magnetism.
 - Properties of a magnet.
 - Action of a magnet suspended in the Earth's
 - Magnetic field.
 - Magnetisation and demagnetisation.
 - Magnetic shielding.
 - Various types of magnetic material.
 - Electromagnets construction and principles of operation.
 - Hand clasp rules to determine: magnetic field around current carrying conductor.
 - Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents.
 - Precautions for care and storage of magnets.
- ◆ Able to understand the inductance / inductor
 - Faraday's Law.
 - Action of inducing a voltage in a conductor moving in a magnetic field.
 - Induction principles.
 - Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns.
 - Mutual induction.
 - The effect the rate of change of primary current and mutual inductance has on induced voltage.

	<ul style="list-style-type: none"> • Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other. • Lenz's Law and polarity determining rules. • Back emf, self induction. • Saturation point. • Principle uses of inductors. <p>◆ Able to understand the DC motor / generator theory</p> <ul style="list-style-type: none"> • Basic motor and generator theory. • Construction and purpose of components in DC generator. • Operation of, and factors affecting output and direction of current flow in DC generators. • Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors. • Series wound, shunt wound and compound motors. • Starter Generator construction. <p>◆ Able to understand the AC theory</p> <ul style="list-style-type: none"> • Sinusoidal waveform: phase, period, frequency, cycle. • Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power. • Triangular/Square waves. • Single / 3 phase principles.
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- ◆ Able to understand the Resistive (R), Capacitive (C) and Inductive (L) Circuits
 - Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel.
 - Power dissipation in L, C and R circuits.
 - Impedance, phase angle, power factor and current calculations.
 - True power, apparent power and reactive power calculations.
- ◆ Able to understand the transformers
 - Transformer construction principles and operation.
 - Transformer losses and methods for overcoming them.
 - Transformer action under load and no-load conditions.
 - Power transfer, efficiency, polarity markings.
 - Primary and Secondary current, voltage, turns ratio, power, efficiency.
 - Auto transformers.
- ◆ Able to understand the filters
 - Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.
- ◆ Able to understand the AC generators
 - Rotation of loop in a magnetic field and waveform produced.
 - Operation and construction of revolving armature and revolving field type AC generators.
 - Single phase, two phase and three phase alternators.

	<ul style="list-style-type: none"> • Three phase star and delta connections advantages and uses. • Calculation of line and phase voltages and currents. • Calculation of power in a three phase system. • Permanent Magnet Generators. ◆ Able to understand the AC motors <ul style="list-style-type: none"> • Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase. • Methods of speed control and direction of rotation. • Methods of producing a rotating field: capacitor, inductor, shaded or split pole. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Electrical Terminology • DC Sources of Electricity • DC Circuits • Magnetism • DC Motor / Generator Theory • AC Theory • AC Generators <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Static Electricity and Conduction • Electrical Terminology • DC Sources of Electricity • DC Circuits
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	<ul style="list-style-type: none"> • Resistance / Resistor • Resistance and affecting factors • Power • Capacitance / Capacitor • Magnetism • Inductance / Inductor • DC Motor / Generator Theory • AC Theory • Resistive (R), Capacitive (C) and Inductive (L) Circuits • Transformers • AC Generators • AC Motors <p>◆ Able to apply the knowledge in the aircraft maintenance task.</p>
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 3: Electrical fundamentals</p>

1. Title	Materials and hardware II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY402A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the Aircraft Materials - Ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common alloy steels used in aircraft. • Heat treatment and application of alloys steels. ◆ Able to understand the Aircraft Materials – Non-ferrous <ul style="list-style-type: none"> • Characteristics, properties and identification of common non-ferrous materials used in aircraft. • Heat treatment and application of nonferrous materials. ◆ Able to understand the Aircraft Materials – Composite and Non-metallic <ul style="list-style-type: none"> • Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft. • Sealants and bonding agents.

- The detection of defects in composite material.
- Repair of composite material.
- ◆ Able to understand the corrosion
 - Chemical fundamentals.
 - Formation by: galvanic action process, microbiological, stress.
 - Types of corrosion and their identification.
 - Causes of corrosion.
 - Material types, susceptibility to corrosion.
- ◆ Able to understand the Fasteners
 - Screw threads
 - Screw nomenclature.
 - Thread forms, dimensions and tolerances for standard threads used in aircraft.
 - Measuring screw threads.
 - Bolts, studs and screws
 - 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

- Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.
- Aircraft rivets
 - Types of solid and blind rivets: specifications and identification, heat treatment.
- ◆ Able to understand the Pipes and Unions
 - Identification of, and types of rigid and flexible pipes and their connectors used in aircraft.
 - Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.
- ◆ Able to understand the Springs
 - Types of springs, materials, characteristics and applications.
- ◆ Able to understand the Bearings
 - Purpose of bearings, loads, material, construction.
 - Types of bearings and their application.
- ◆ Able to understand the Transmissions
 - 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.
- ◆ Able to understand the Control Cables
 - Types of cables.
 - End fittings, turnbuckles and compensation devices.
 - Pulleys and cable system components.

	<ul style="list-style-type: none"> • Bowden cables. • Aircraft flexible control systems. ◆ Able to understand the Electrical Cables and Connectors <ul style="list-style-type: none"> • 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. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Aircraft Materials – Ferrous • Aircraft Materials - Non-Ferrous • Aircraft Materials - Composite and Non-Metallic • Corrosion <ul style="list-style-type: none"> ▸ Types of corrosion and their identification. ▸ Causes of corrosion. ▸ Material types, susceptibility to corrosion. • Fasteners • Pipes and Unions • Springs • Bearings • Transmissions • Control Cables • Electrical Cables and Connectors
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft Materials – Ferrous • Aircraft Materials - Non-Ferrous • Aircraft Materials - Composite and Non-Metallic • Fasteners • Pipes and Unions • Springs • Bearings • Transmissions • Control Cables • Electrical Cables and Connectors ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Corrosion <ul style="list-style-type: none"> ▸ Types of corrosion and their identification. ▸ Causes of corrosion. ▸ Material types, susceptibility to corrosion. ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 6: Materials and Hardware.</p>

1. Title	Maintenance Practices II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY403A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the safety precautions-Aircraft and Workshop <ul style="list-style-type: none"> • Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards. ◆ Able to understand the workshop practices <ul style="list-style-type: none"> • Care of tools, control of tools, use of workshop materials. • Dimensions, allowances and tolerances, standards of workmanship. • Calibration of tools and equipment, calibration standards. ◆ Able to understand the tools <ul style="list-style-type: none"> • Common hand tool types. • Common power tool types. • Operation and use of precision measuring tools.

- Lubrication equipment and methods.
- Operation, function and use of electrical general test equipment.
- ◆ Able to understand the avionic general test equipment
 - Operation, function and use of avionic general test equipment.
- ◆ Able to understand the engineering drawings, diagrams and standards
 - Drawing types and diagrams, their symbols, dimensions, tolerances and projections.
 - Identifying title block information.
 - Microfilm, microfiche and computerized presentations.
 - Specification 100 of the Air Transport Association (ATA) of America.
 - Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL.
 - Wiring diagrams and schematic diagrams.
- ◆ Able to understand the fits and clearances
 - Drill sizes for bolt holes, classes of fits.
 - Common system of fits and clearances.
 - Schedule of fits and clearances for aircraft and engines.
 - Limits for bow, twist and wear.
 - Standard methods for checking shafts, bearings and other parts.
- ◆ Able to understand the electrical cables and connectors
 - Continuity, insulation and bonding techniques and testing.
 - Use of crimp tools: hand and hydraulic operated.

- Testing of crimp joints.
- Connector pin removal and insertion.
- Co-axial cables: testing and installation precautions.
- Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.
- ◆ Able to understand the riveting
 - Riveted joints, rivet spacing and pitch.
 - Tools used for riveting and dimpling.
 - Inspection of riveted joints.
- ◆ Able to understand the pipes and hoses
 - Bending and belling/flaring aircraft pipes.
 - Inspection and testing of aircraft pipes and hoses.
 - Installation and clamping of pipes.
- ◆ Able to understand the springs
 - Inspection and testing of springs.
- ◆ Able to understand the bearings
 - Testing, cleaning and inspection of bearings.
 - Lubrication requirements of bearings.
 - Defects in bearings and their causes.
- ◆ Able to understand the transmissions
 - Inspection of gears, backlash.
 - Inspection of belts and pulleys, chains and sprockets.
 - Inspection of screw jacks, lever devices, pushpull rod systems.
- ◆ Able to understand the control cables
 - Swaging of end fittings.
 - Inspection and testing of control cables.

- Bowden cables. aircraft flexible control systems.
- ◆ Able to understand the sheet metal work
 - Marking out and calculation of bend allowance.
 - Sheet metal working, including bending and forming.
 - Inspection of sheet metal work.
- ◆ Able to understand the welding, brazing, soldering and bonding
 - Soldering methods. inspection of soldered joints.
 - Welding and brazing methods.
 - Inspection of welded and brazed joints.
 - Bonding methods and inspection of bonded joints.
- ◆ Able to understand the aircraft weight and balance
 - Centre of Gravity / Balance limits calculation: use of relevant documents.
 - Preparation of aircraft for weighing.
 - Aircraft weighing.
- ◆ Able to understand the aircraft handling and storage
 - Aircraft taxiing / towing and associated safety precautions.
 - Aircraft jacking, chocking, securing and associated safety precautions.
 - Aircraft storage methods.
 - Refuelling / defuelling procedures.
 - De-icing/anti-icing procedures.
 - Electrical, hydraulic and pneumatic ground supplies.

	<ul style="list-style-type: none"> • Effects of environmental conditions on aircraft handling and operation. ◆ Able to understand the disassembly, inspection, repair and assembly techniques <ul style="list-style-type: none"> • Types of defects and visual inspection techniques. <ul style="list-style-type: none"> ▸ Corrosion removal, assessment and re-protection. • General repair methods, Structural Repair Manual. <ul style="list-style-type: none"> ▸ Ageing, fatigue and corrosion control programmes. • Non-destructive inspection techniques including: penetrant, radiographic, eddy current, ultrasonic and boroscope methods. • Disassembly and re-assembly techniques. • Trouble shooting techniques. ◆ Able to understand the abnormal events <ul style="list-style-type: none"> • Inspections following lightning strikes and HIRF penetration. • Inspections following abnormal events such as heavy landings and flight through turbulence. ◆ Able to understand the maintenance procedures <ul style="list-style-type: none"> • Maintenance planning. • Modification procedures. • Stores procedures. • Certification / release procedures. • Interface with aircraft operation. • Maintenance Inspection / Quality Control / Quality Assurance.
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	<p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> • Additional maintenance procedures. • Control of life limited components. <p>◆ Able to apply the following knowledge in the aircraft maintenance.</p> <ul style="list-style-type: none"> • Safety Precautions-Aircraft and Workshop • Workshop Practices • Tools • Avionic General Test Equipment • Engineering Drawings, Diagrams and Standards • Fits and Clearances • Electrical Cables and Connectors • Riveting • Pipes and Hoses • Springs • Bearings • Transmissions • Control Cables • Sheet Metal Work • Welding, Brazing, Soldering and Bonding • Aircraft Weight and Balance • Aircraft Handling and Storage • Disassembly, Inspection, Repair and Assembly Techniques • Abnormal Events • Maintenance Procedures <p>6.3 Professional approach</p> <p>◆ Able to understand the principal elements of the subjects.</p> <p>◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects.</p> <ul style="list-style-type: none"> • Avionic General Test Equipment
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	<ul style="list-style-type: none"> • Engineering Drawings, Diagrams and Standards • Fits and Clearances • Electrical Cables and Connectors • Riveting • Pipes and Hoses • Springs • Bearings • Transmissions • Control Cables • Sheet Metal Work • Welding, Brazing, Soldering and Bonding • Aircraft Weight and Balance • Aircraft Handling and Storage • Disassembly, Inspection, Repair and Assembly Techniques • Abnormal Events • Maintenance Procedures <ul style="list-style-type: none"> ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Safety Precautions-Aircraft and Workshop • Workshop Practices • Tools • Disassembly, Inspection, Repair and Assembly Techniques <ul style="list-style-type: none"> ▸ Types of defects and visual inspection techniques. ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 7: Maintenance practices</p>

1. Title	Basics Aerodynamics II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY404A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the physics of the Atmosphere <ul style="list-style-type: none"> • International Standard Atmosphere (ISA), application to aerodynamics. ◆ Able to understand the aerodynamics <ul style="list-style-type: none"> • Airflow around a body. • Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash. vortices, stagnation. • The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio. • Thrust, Weight, Aerodynamic Resultant. • Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall. • Aerofoil contamination including ice, snow, frost.

	<ul style="list-style-type: none"> ◆ Able to understand the theory of flight <ul style="list-style-type: none"> • Relationship between lift, weight, thrust and drag. • Glide ratio. • Steady state flights, performance. • Theory of the turn. • Influence of load factor : stall, flight envelope and structural limitations. • Lift augmentation. ◆ Able to understand the flight stability and dynamics <ul style="list-style-type: none"> • Longitudinal, lateral and directional stability • (active and passive). <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Physics of the Atmosphere • Aerodynamics • Theory of Flight • Flight Stability and Dynamics <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Physics of the Atmosphere • Aerodynamics • Theory of Flight • Flight Stability and Dynamics ◆ Able to apply the knowledge in the aircraft maintenance task.
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7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 8: Basic Aerodynamics.

1. Title	Human factors II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY405A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the general of human factor <ul style="list-style-type: none"> • The need to take human factors into account. • Incidents attributable to human factors / human error. • ‘Murphy’s’ law. ◆ Able to understand the human performance and limitations <ul style="list-style-type: none"> • Vision. • Hearing. • Information processing. • Attention and perception. • Memory. • Claustrophobia and physical access. ◆ Able to understand the social psychology <ul style="list-style-type: none"> • Responsibility: individual and group. • Motivation and de-motivation. • Peer pressure. • ‘Culture’ issues. • Team working. • Management, supervision and leadership.

	<ul style="list-style-type: none"> ◆ Able to understand the factors affecting performance <ul style="list-style-type: none"> • Fitness / health. • Stress: domestic and work related. • Time pressure and deadlines. • Workload: overload and underload. • Sleep and fatigue, shiftwork. • Alcohol, medication, drug abuse. ◆ Able to understand the physical environment <ul style="list-style-type: none"> • Noise and fumes. • Illumination. • Climate and temperature. • Motion and vibration. • Working environment. ◆ Able to understand the tasks <ul style="list-style-type: none"> • Physical work. • Repetitive tasks. • Visual inspection. • Complex systems. ◆ Able to understand the communication <ul style="list-style-type: none"> • Within and between teams. • Work logging and recording. • Keeping up to date, currency. • Dissemination of information. ◆ Able to understand the human error <ul style="list-style-type: none"> • Error models and theories. • Types of error in maintenance tasks. • Implications of errors (i.e. accidents). • Avoiding and managing errors. ◆ Able to understand the hazards in the workplace <ul style="list-style-type: none"> • Recognising and avoiding hazards. • Dealing with emergencies.
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	<p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • General of human factor • Human performance and limitations • Factors affecting performance • Communication • Human error • Hazards in the workplace <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • General of human factor • Human performance and limitations • Factors affecting performance • Communication • Human error • Hazards in the workplace ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 9: Human factors

1. Title	Aviation legislation II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY406A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the aircraft maintenance licences <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • Responsibilities: by statutory law and by the need to fly aircraft in a satisfactory condition, i.e. common / civil / constitutional law. • Penalties - under statutory law and resulting from civil law suits. • HKAR-66: Licensing of Maintenance Personnel • (Certifying Staff - Maintenance). • Categories - applicability. • Area and extent of limitations and privileges within • Categories. • Overlap of Category applicability. • Relevant Airworthiness Notices.

	<ul style="list-style-type: none"> ◆ Able to understand the certifications <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures. • Certificates of : Release to Service. Maintenance • Review. Fitness for Flight. • Duplicate inspections. • Contributory certifications and reliance on other documentation and persons. • Certification - acceptance investigation and judgement procedures. ◆ Able to understand the aircraft, engine and VP propeller log books <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • HKAR-1 Airworthiness Procedures. • CAD Approval: light aircraft, large aircraft. • Worksheets. • Data to be entered in log books. • Condition reports - e.g. heavy landing checks, defect investigations, NDT and other inspections, mandatory and non-mandatory. • Maintenance records. • Cross-reference to other files / records. • Preservation of documents: AN(HK)O 1995.
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- ◆ Able to understand the technical log
 - Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures.
 - Technical Log - Air Operator's Certificates Requirements Document.
- ◆ Able to understand the aircraft documentation and requirements
 - Type Certification. Supplementary Type Certification.
 - Weight schedule.
 - External, and internal markings and signs, e.g. nationality and registration, no smoking and fasten seat belt, placards and requirements, doors and exits.
 - Certificate of Airworthiness Categories, purposes of flight.
 - Certificate of Registration.
 - Noise Certificate.
 - Air Operator's Certificate.
 - Schedule 5 requirements for equipment.
 - Radio station licence and approval.
 - Change of ownership.
 - Maintenance checks and inspections.
 - Maintenance records. Maintenance documentation.
 - Continuing airworthiness.
 - Master Minimum Equipment Lists, Minimum
 - Equipment Lists, Dispatch Deviation Lists.
 - Service Bulletins, manufacturers service information.
 - Modifications and repairs.

	<ul style="list-style-type: none"> • Test flights. • ETOPS: maintenance and dispatch requirements. • All Weather Operation (AWO): CAT 2/3 operations and minimum equipment requirements. • Reduced Vertical Separation Minima (RVSM) requirements. ◆ Able to understand the approvals <ul style="list-style-type: none"> • Design Organisations. • Maintenance Organisations. • AOC interface. • Maintenance Schedules and Programmes. • Stores: systems. release of parts. ◆ Able to understand the defect reporting <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • CAD382 The Mandatory Occurrence Reporting Scheme. • Defects which are to be reported. • Reportable accidents. ◆ Able to understand the Hong Kong Aviation Requirements <ul style="list-style-type: none"> • HKAR-1: Airworthiness Procedures. • Airworthiness Notices. • Airworthiness Directives. • Mandatory Modifications and Inspections:- <ul style="list-style-type: none"> › HK CAD › UK CAA › FAA › Authorities other than above: aircraft, engines, equipment.
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	<ul style="list-style-type: none"> • HKAR-145: Approved Maintenance Organisations. • HKAR-147: Approved Maintenance Training/ • Examinations • Air Operator's Certificates (AOC) Requirements Document. <p>◆ Able to understand the Joint Aviation Authorities Requirements</p> <ul style="list-style-type: none"> • JAR-21. JAR-23. JAR-25. JAR-29 <p>6.2 Theoretical and practical aspects</p> <p>◆ Able to apply the following knowledge in the aircraft maintenance.</p> <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books • Technical log • Aircraft documentation and requirements • Approvals • Defect reporting • Hong Kong aviation requirements <p>6.3 Professional approach</p> <p>◆ Able to understand the principal elements of the subjects.</p> <p>◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects.</p> <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books • Technical log • Aircraft documentation and requirements • Approvals
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	<ul style="list-style-type: none"> • Defect reporting • Hong Kong aviation requirements ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 10: Aviation legislation

1. Title	Design tooling used to fabricate and repair aeronautical composite components
2. Code	EMAMWS401A
3. Range	The aeronautical composite components tooling design
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Design tooling</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures. ◆ Able to obtain and check the resources for the serviceability and condition for usage in accordance with the procedures, e.g. equipment, materials and publications. ◆ Able to produce tooling manufacturing sketches and/or drawings to meet specifications, e.g. types of tooling, tooling configurations, materials to be used, material and resin characteristics, tolerance build-ups, spring-back allowance, flanged tools, thermal expansion, controlled surfaces, release agents, backup structures, substrate fabrication, prototype, production and/or master tooling, measurements, vendor drawings. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to obtain certification for completed task in accordance with the procedures.

1. Title	Manufacture tooling used to fabricate and repair aeronautical composite components
2. Code	EMAMWS402A
3. Range	The aeronautical composite components tooling design
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Plan manufacturing tasks</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures. ◆ Able to determine the procedure for manufacturing tooling in accordance with the procedures. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. materials, tools, equipment, safety equipment, publications. ◆ Able to produce the tooling manufacturing sketches, in the absence of approved drawings, to meet specifications <p>6.2 Manufacture or repair composite tooling</p> <ul style="list-style-type: none"> ◆ Able to cut the materials to meet specification, e.g. marking out, wastage minimized. ◆ Able to manufacture or repair the tooling to meet specifications, e.g. cut, formed, joined, inspected, finished. ◆ Able to rectify the manufacturing defects in accordance with the procedures. ◆ Able to make preparation for the tooling for use in accordance with the procedures, e.g. check shape against drawing and master, release agent applied.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to make preparation for the tooling for use in accordance with the procedures, e.g. check shape against drawing and master, release agent applied. ◆ Able to make preparation for the tooling for storage or transit in accordance with the procedures, e.g. release agent removed, documentation completed, packed, dispatched. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to understand the legislative requirements and the current code of practice in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation of next activity, return of aircraft and systems to normal. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures. Range tools, equipment, safety equipment, procedures. ◆ Able to handle the unused items, parts, and materials are disposed of in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to plan the manufacturing tasks. (ii) Able to manufacture or repair the composite tooling. (iii) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 4021

1. Title	Composite aeronautical components fabrication and repair at room temperature
2. Code	EMAMWS403A
3. Range	Composite aeronautical component repair and fabrication are usually carried out on the aircraft in the hangar. Room temperature is that where materials are cured below 65 degrees Celsius (150 degrees Fahrenheit)
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures. ◆ Able to set up the work environment in accordance with the procedures, e.g. publications, materials, tooling, equipment, safety equipment, environmental conditions established ◆ Able to plan the fabrication and repair task in accordance with the procedures, e.g. inspection, damage determination ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials ◆ Able to produce the repair or manufacturing sketches to meet specifications. ◆ Able to make preparation for the component in accordance with manufacturer's instructions, e.g. cleaned, disassembled, support tooling attached, damage removed, surface prepared.

	<p>6.2 Lay up fabrication and repair materials</p> <ul style="list-style-type: none"> ◆ Able to assemble, prepare, position and support the tooling for lay up. ◆ Able to make preparation for the equipment for use in accordance with manufacturer's instructions, e.g. operate, calibrate ◆ Able to secure the work area to prevent disruption to lay up process. ◆ Able to make preparation for the materials in accordance with the procedures. ◆ Able to apply the materials in accordance with the procedures. ◆ Able to apply and control the pressure in accordance with specifications. ◆ Able to control the cure time and temperature in accordance with specifications. ◆ Able to remove the tooling and support equipment without causing damage. ◆ Able to verify the component serviceability in accordance with the procedures, e.g. inspecting, troubleshooting, obtaining specialist advice. ◆ Able to initiate the further fabrication and/or repair work for non-conforming work in accordance with the procedures. ◆ Able to seal the composite material edges in accordance with the procedures. ◆ Able to finish the component and restore the surface in accordance with specifications and procedures, e.g. potting and filling, surface finishing, edge trimming and sealing. ◆ Able to perform inspections in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to complete the task within the stipulated duration. ◆ Able to handle the unused items, parts, and materials are disposed of in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for fabrication and repair of composite aeronautical components at room temperature. (ii) Able to lay up the fabrication and repair materials. (iii) Able to restore the components and prepare components for use. (iv) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA – 4023

1. Title	Composite aeronautical components fabrication and repair at elevated temperature
2. Code	EMAMWS404A
3. Range	Composite aeronautical components repair and fabrication are usually carried out on the aircraft in the hangar. Elevated temperature is that where materials are cured above 65 degrees Celsius (150 degrees Fahrenheit)
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures. ◆ Able to set up the work environment in accordance with the procedures, e.g. publications, materials, tooling, equipment, safety equipment, environmental conditions established ◆ Able to plan the fabrication and repair task in accordance with the procedures, e.g. inspection, damage determination ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials ◆ Able to produce the repair or manufacturing sketches to meet specifications. ◆ Able to make preparation for the component in accordance with manufacturer's instructions, e.g. cleaned, disassembled, support tooling attached, damage removed, surface prepared.

	<p>6.2 Lay up fabrication and repair materials</p> <ul style="list-style-type: none"> ◆ Able to assemble, prepare, position and support the tooling for lay up. ◆ Able to make preparation for the equipment for use in accordance with manufacturer's instructions, e.g. operate, calibrate ◆ Able to secure the work area to prevent disruption to lay up process. ◆ Able to make preparation for the materials in accordance with the procedures. ◆ Able to apply the materials in accordance with the procedures. ◆ Able to fabricate and prepare the test coupon in accordance with specifications and procedures. ◆ Able to apply and control the pressure in accordance with specifications. ◆ Able to control the cure time and temperature in accordance with specifications. ◆ Able to remove the tooling and support equipment without causing damage. ◆ Able to verify the component serviceability in accordance with the procedures, e.g. inspecting, troubleshooting, obtaining specialist advice. ◆ Able to initiate the further fabrication and/or repair work for non-conforming work in accordance with the procedures. ◆ Able to seal the composite material edges in accordance with the procedures. ◆ Able to finish the component and restore the surface in accordance with specifications and procedures, e.g. potting and filling, surface finishing, edge trimming and sealing.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to complete the task within the stipulated duration. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers’ publications and the maintenance organizations’ approved maintenance practices and requirements. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, procedures. ◆ Able to handle the unused items, parts, and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for fabrication and repair of composite aeronautical components at elevated temperature. (ii) Able to lay up the fabrication and repair materials. (iii) Able to restore the components and prepare components for use. (iv) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 4024

1. Title	Aeronautical graphic artwork production
2. Code	EMAMWS405A
3. Range	Maintenance and design of aircraft parts, e.g. charts, posters, cards, certificates, maps, graphs and forms using manual, electronic and micrographic means.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Layout and presentation principles</p> <ul style="list-style-type: none"> ◆ Understand the layout and presentation principles of engineering drawings, including: <ul style="list-style-type: none"> • drawing types and uses of symbols • dimensions, tolerances and projections ◆ Able to accept and document the job in accordance with the procedures. ◆ Able to establish and record the job specification and production methods in accordance with the procedures, e.g. customer requirements, manual, electronic and micrographic equipment capabilities. ◆ Able to research and apply the industry specifications to meet job specifications in accordance with the procedures. ◆ Able to assembly, position and prepare the materials and equipment for graphic artwork production

	<p>6.2 Produce draft and final aeronautical graphic artwork and confirm with customer.</p>	<ul style="list-style-type: none"> ◆ Use drawing tools effectively to produce engineering drawing, with the application of knowledge in: <ul style="list-style-type: none"> • basic mathematical calculation • symbols • graphical presentation skills ◆ Able to produce sketches in accordance with the procedures. ◆ Able to produce draft graphic artwork in accordance with standards and job specifications. ◆ Able to produce requested number of copies in accordance with job specifications, e.g. manual, electronic, micrographic. ◆ Able to dispatch copies in accordance with job specifications and procedures, e.g. packed, dispatched. ◆ Able to complete and archive documentation in accordance with the procedures. ◆ Able to obtain certification for completed task in accordance with the procedures.
	<p>6.3 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to use different means to produce engineering drawings, including different drawing, types and diagrams. ◆ Able to complete the task within the stipulated duration. ◆ Able to clean, prepare and store the equipment for future use in accordance with the procedures. ◆ Able to handle hazardous waste materials in accordance with the procedures. ◆ Able to left the work area in a condition that enables the next task to begin.

7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the production of aeronautical graphic artwork. (ii) Able to produce draft aeronautical graphic artwork and confirm with customer. (iii) Able to produce final aeronautical graphic artwork. (iv) Able to prepare the equipment and work area for future use.
8. Remarks	<p>(Ref: HKAR-66 Module 1 & 7.5)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of drawing tools.</p> <p>Ref: NZQA - 4016</p>

1. Title	Aeronautical components repairing and fabricating by using boring machines
2. Code	EMAMWS406A
3. Range	Aeronautical components repair and/or fabrications using boring machines are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to establish and record the task in accordance with the procedures. ◆ Able to prepare the work area and obtain resources in accordance with the procedures, e.g. publications, materials, tooling, equipment, spares, safety equipment, environmental conditions. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to prepare the machine in accordance with the procedures, e.g. maintained, setup, made safe to work on, guards, isolation procedures, protective equipment. ◆ Able to plan and verify the sequence of operations in accordance with the procedures. ◆ Able to bore the component to shape in accordance with the procedures. ◆ Able to measure and check the component for conformity with specifications. ◆ Able to report, record and rectify the defects in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive ◆ Able to prepare the components for use, storage or transit in accordance with the procedures, e.g. surface protection, packing ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, certification. ◆ Able to complete the task within the stipulated duration. ◆ Able to clean, prepare and store the tools and equipment for future use in accordance with the procedures. ◆ Able to handle the hazardous waste materials in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to return the work area in a condition enabling next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to repair and fabricate the aeronautical component parts using boring machines (overarm, horizontal, bed, vertical, universal) and a range of aeronautical materials.</p>
8. Remarks	Ref: NZQA - 4025

1. Title	Aeronautical component parts repairing by flame spraying
2. Code	EMAMWS407A
3. Range	The aeronautical component parts repairs by flame spraying are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to establish and record the task in accordance with the procedures. ◆ Able to prepare the work area and obtain resources in accordance with the procedures, e.g. publications, materials, tooling, equipment, spares, safety equipment, environmental conditions. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to set up and make safe the equipment to work on in accordance with the procedures, e.g. guards, isolation procedures, protective equipment. ◆ Able to maintain the equipment in accordance with the procedures. ◆ Able to plan and verify the sequence of operations in accordance with the procedures. ◆ Able to flame spray the component in accordance with the procedures. ◆ Able to measure and check the component for conformity with specifications, e.g. dimensional accuracy, profile, surface finish.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report, record and rectify the defects in accordance with the procedures. ◆ Able to handle the unserviceable parts and materials in accordance with the procedures, e.g. identification labeling, destruction and dispatch. ◆ Able to prepare the components for use, storage or transit in accordance with the procedures, e.g. surface protection, packing. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, certification ◆ Able to complete the task within the stipulated duration. ◆ Able to clean, prepare and store the tools and equipment for future use in accordance with the procedures. ◆ Able to handle the hazardous waste materials in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to return the work area in a condition enabling next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to shape the aeronautical component parts by flame spraying.</p>
8. Remarks	Ref: NZQA - 4027

1. Title	Aeronautical components repairing and/or fabricating by using precision grinding machines
2. Code	EMAMWS408A
3. Range	The aeronautical component repairs and/or fabrication using precision grinding machines are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to establish and record the task in accordance with the procedures, e.g. repair, fabricate, modify ◆ Able to prepare the work area and obtain resources in accordance with the procedures, e.g. publications, materials, tooling, equipment, spares, safety equipment, environmental conditions. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to plan and verify the sequence of operations in accordance with the procedures. ◆ Able to ground the components to shape in accordance with the procedures. ◆ Able to prepare the machines in accordance with the procedures, e.g. maintained, set up, made safe to work on, guards positioned, isolation procedures complied with, protective equipment ◆ Able to measure and check the components for conformity with specifications.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to assess the serviceability of component parts in accordance with the procedures,e.g. dimensional and angular accuracy, profile, surface finish. ◆ Able to report, record and rectify the non-conforming components in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to prepare the components for use, storage or transit in accordance with the procedures,e.g. surface protection, packing. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. ◆ Able to handle the hazardous waste materials in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the fabrication and/or repair of aeronautical components using precision grinding machines. (ii) Able to set up precision grinding machines. (iii) Able to grind the components. (iv) Able to prepare the components for use. (v) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 4028

1. Title	Aeronautical components repairing and/or fabricating by using milling machines
2. Code	EMAMWS409A
3. Range	The aeronautical component repairs and/or fabrication using milling machines are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to establish and record the task in accordance with the procedures, e.g. repair, fabricate, modify ◆ Able to prepare the work area and obtain resources in accordance with the procedures, e.g. publications, materials, tooling, equipment, spares, safety equipment, environmental conditions. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to prepare the machines in accordance with the procedures, e.g. maintained, set up, made safe to work on, guards positioned, isolation procedures complied with, protective equipment ◆ Able to plan and verify the sequence of operations in accordance with the procedures. ◆ Able to mill the components to shape in accordance with the procedures. ◆ Able to measure and check the components for conformity with specifications.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to assess the serviceability of component parts in accordance with the procedures,e.g. dimensional and angular accuracy, profile, surface finish, mismatch of cuts. ◆ Able to report, record and rectify the non-conforming components in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to prepare the components for use, storage or transit in accordance with the procedures,e.g. surface protection, packing. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, certification. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to clean, prepare and store the tools and equipment are for future use in accordance with the procedures. ◆ Able to handle the hazardous waste materials in accordance with the procedures. ◆ Able to return the work area in a condition enabling next task to begin, in accordance with the procedures
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to repair and fabricate the aeronautical component parts including cams, racks, and gears using milling machines and a range of aeronautical materials.
8. Remarks	Ref: NZQA - 4029

1. Title	Reference lines of sight and planes establishing and maintaining by using optical tooling
2. Code	EMAMWS410A
3. Range	Establish and maintain reference lines of sight and planes by optical tooling are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Prepare to use optical tooling</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain resources and check them for serviceability or status in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to setup optical tooling in accordance with the procedures. <p>6.2 Align and measure items and locate positions</p> <ul style="list-style-type: none"> ◆ Able to align and evaluate the machine tools in accordance with the procedures,e.g. level, run out, wear ◆ Able align the work positioned on machine tools in accordance with the procedures,e.g. drill presses, lathes, milling machines. ◆ Able to establish the jig positions in accordance with the procedures. ◆ Able to locate the specific positions in accordance with the procedures,e.g. attachment points on structures being fabricated, hard points on damaged structures, relative surfaces and moving parts on machine tools.

	<ul style="list-style-type: none"> ◆ Able to establish the position of specific points where direct measurements cannot be made,e.g. on and along compound angles, on different planes. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive <p>6.3 Prepare area for next task</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check the resources for serviceability and return them in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to establish and maintain reference lines of sight and planes in three dimensions including establishing the position of a specific point on a structure or in space, establishing the position of jig components, aligning machine tools, aligning work positioned on machine tools, and measuring structures using precision optical tooling such as theodolites, telescopes, prisms, and mirrors.</p>
8. Remarks	Ref: NZQA - 4031

1. Title	Aeronautical components repairing and/or fabricating by using turning machines
2. Code	EMAMWS411A
3. Range	The aeronautical component repairs and/or fabrication using turning machines are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Prepare to fabricate and/or repair components using turning machines</p> <ul style="list-style-type: none"> ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to determine and record the task in accordance with the procedures, e.g. repair, fabricate, modify. ◆ Able to prepare the work area and obtain resources in accordance with the procedures, e.g. publications, materials, toolings, equipment, spares, safety equipment, environmental conditions. <p>6.2 Methods and procedures of aeronautical component repairs and/or fabrication using turning machines</p> <ul style="list-style-type: none"> ◆ Able to prepare the machines in accordance with the procedures, e.g. maintained, set up, made safe to work on, guards positioned, isolation procedures complied with, protective equipment ◆ Able to plan and verify the sequence of operations in accordance with the procedures. ◆ Able to turn the components to shape in accordance with the procedures. ◆ Able to measure and check the components for conformity with specifications.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to report, record and rectify the non-conforming components in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to prepare the components for use, storage or transit in accordance with the procedures,e.g. surface protection, packing. <li>◆ Able to complete the documentation in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. <li>◆ Able to handle the hazardous waste materials in accordance with the procedures.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the fabrication and/or repair of aeronautical components using turning machines. (ii) Able to prepare the turning machines and plan sequence. (iii) Able to turn the aeronautical components. (iv) Able to prepare the aeronautical components for use. (v) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 4034</p>

1. Title	Aeronautical components peen
2. Code	EMAMWS412A
3. Range	The aeronautical components peening are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Prepare to peen component</p> <ul style="list-style-type: none"> ◆ Able to establish the task by reviewing documentation and procedures. ◆ Able to match the component identification with documentation by comparing serial and part numbers. ◆ Able to prepare the work area and obtain resources in accordance with the procedures, e.g. publications, materials, tooling, equipment, spares, safety equipment, environmental conditions. <p>6.2 Methods and procedures of aeronautical component peening</p> <ul style="list-style-type: none"> ◆ Able to establish the safety of machine in accordance with the procedures, e.g. guards, isolation procedures, protective equipment. ◆ Able to mask the component in accordance with the procedures, e.g. holes, protected areas. ◆ Able to prepare the Almen test strip in accordance with the procedures, e.g. air pressure, media type and weight, Almen strip type, time and distance. ◆ Able to measure the Almen strip curvature is measured in accordance with the procedures. ◆ Able to set the machine for task requirement in accordance with the procedures, e.g. air pressure, distance, time.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to peen the component in accordance with the procedures, e.g. time, distance. ◆ Able to remove the masking from component in accordance with the procedures. ◆ Able to measure and check the component for conformity with specifications, e.g. dimensional and/or angular accuracy, profile, surface finish. ◆ Able to report, record and rectify the defects in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. ◆ Able to handle the hazardous waste materials in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to modify the stress condition of the aeronautical component parts by shot and/or bead peening.</p>
8. Remarks	Ref: NZQA - 4066

1. Title	Aeronautical NDT inspections by eddy current methods	
2. Code	EMAMWS413A	
3. Range	Eddy current methods aeronautical NDT inspections are usually carried out in a specialist bay or workshop	
4. Level	4	
5. Credit	9	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the eddy current methods NDT inspections. <p>6.2 Inspection methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to match the identification of part with documentation by comparing serial and/or part numbers. ◆ Able to prepare the part for inspection in accordance with the procedures,e.g. clean surface finish. ◆ Able to set up and calibrate the eddy current equipment in accordance with the procedures,e.g. reference standard, probe, instrument. ◆ Able to operate the eddy current equipment in accordance with the procedures. 	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to inspect the part in accordance with the procedures, e.g. inspection equipment, standards, specifications, precision measuring equipment. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the inspected part for storage or transit in accordance with the procedures, e.g. post-test clean, inhibit, blank, and pack. ◆ Able to handle the unused material in accordance with the procedures, e.g. serviceable, unserviceable, waste, hazardous. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, log books. ◆ Able to return the work environment in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to carry out aeronautical NDT (non destructive testing) inspections using eddy current equipment by preparing the work area and equipment, inspecting the part, and completing the post inspection tasks.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.15 & 7.18)</p> <p>Candidates must pass the following vision examinations:</p> <p>1 Near vision acuity</p> <p>The examination should assure natural or corrected near-distance acuity in at least one eye to show that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at a distance of not less than 12 inches (30.5cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.</p> <p>2 Color contrast differentiation</p> <p>The examination should demonstrate that the applicant is capable of distinguishing and differentiating contrast among colors used in the method.</p> <p>Ref: NZQA - 4084</p>

1. Title	Aeronautical NDT inspections by radiographic gamma ray methods
2. Code	EMAMWS414A
3. Range	Radiographic gamma ray methods aeronautical NDT inspections are usually carried out in a specialist bay or workshop
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the radiographic gamma ray NDT inspections. <p>6.2 Inspection methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established, area secured. ◆ Able to match the identification of part with documentation by comparing serial and/or part numbers. ◆ Able to prepare the part for radiography in accordance with the procedures, e.g. clean surface finish. ◆ Able to set up and calibrate the Gamma ray equipment in accordance with the procedures, e.g. orientation, distance, film placement, film identification marking. ◆ Able to expose the film in accordance with the procedures, e.g. control density, sensitivity.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to process the film in accordance with the procedures, e.g. manual, automatic. ◆ Able to inspect the radiograph in accordance with the procedures, e.g. inspection equipment, standards, specifications, precision measuring equipment, relevant and non relevant indications. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the inspected part for storage or transit in accordance with the procedures, e.g. post-test clean, inhibit, blank, and pack. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused materials in accordance with the procedures, e.g. serviceable, unserviceable, waste, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, log books.
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	<p>◆ Able to return the work environment in a state which enables the next task to begin in accordance with the procedures.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to carry out aeronautical NDT (non destructive testing) inspections using radiographic gamma ray methods by preparing the part for radiography, producing the radiograph, and completing the post inspection tasks.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.15 & 7.18)</p> <p>Candidates must pass the following vision examinations:</p> <p>1 Near vision acuity</p> <p>The examination should assure natural or corrected near-distance acuity in at least one eye to show that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at a distance of not less than 12 inches (30.5cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.</p> <p>2 Color contrast differentiation</p> <p>The examination should demonstrate that the applicant is capable of distinguishing and differentiating contrast among colors used in the method.</p> <p>Ref: NZQA - 4085</p>

1. Title	Aeronautical NDT inspections by liquid penetrant methods	
2. Code	EMAMWS415A	
3. Range	Liquid penetrant methods aeronautical NDT inspections are usually carried out in a specialist bay or workshop	
4. Level	4	
5. Credit	9	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the liquid penetrant methods NDT inspections. <p>6.2 Inspection methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established, immediate area secured. ◆ Able to match the identification of part with documentation by comparing serial and/or part numbers. ◆ Able to prepare the part for inspection in accordance with the procedures, e.g. clean surface finish. ◆ Able to set up the inspection equipment is set up in accordance with the procedures, e.g. dark room, optical aids. ◆ Able to apply penetrant, and observe dwell time in accordance with the procedures, e.g. brush, spray, dip, flow. 	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to remove penetrant in accordance with the procedures,e.g. water wash, solvent, hydrophilic, lipophilic. <li>◆ Able to apply developer, and observe dwell time in accordance with the procedures,e.g. powder, aqueous and/or non aqueous wet, water soluble and/or suspendible. <li>◆ Able to inspect part in accordance with the procedures,e.g. inspection equipment, standards, specifications, precision measuring equipment. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the inspected part for storage or transit in accordance with the procedures,e.g. post-test clean, inhibit, blank, pack. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused materials in accordance with the procedures,e.g. serviceable, unserviceable, waste, hazardous.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, log books. ◆ Able to return the work environment in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to carry out aeronautical NDT (non destructive testing) inspections using liquid penetrant methods by preparing the part for inspection, inspecting the part, and completing the post inspection tasks.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.15 & 7.18)</p> <p>Candidates must pass the following vision examinations:</p> <p>1 Near vision acuity</p> <p>The examination should assure natural or corrected near-distance acuity in at least one eye to show that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at a distance of not less than 12 inches (30.5cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.</p> <p>2 Color contrast differentiation</p> <p>The examination should demonstrate that the applicant is capable of distinguishing and differentiating contrast among colors used in the method.</p> <p>Ref: NZQA - 4086</p>

1. Title	Aeronautical NDT inspections by magnetic particle methods
2. Code	EMAMWS416A
3. Range	Magnetic particle methods aeronautical NDT inspections are usually carried out in a specialist bay or workshop
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the magnetic particle methods NDT inspections. <p>6.2 Inspection methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to match the identification of part with documentation by comparing serial and/or part numbers. ◆ Able to prepare the part for inspection in accordance with the procedures, e.g. lean surface finish. ◆ Able to set up the inspection equipment is set up in accordance with the procedures. ◆ Able to magnetize the part in accordance with the procedures, e.g. alternating current (AC), direct current (DC), half wave DC, current flow, direct or indirect induction, circular, longitudinal.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to apply the particles, and observe the dwell time in accordance with the procedures,e.g. brush, spray, dip, flow. ◆ Able to inspect the part in accordance with the procedures,e.g. inspection equipment, standards, specifications, precision measuring equipment. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the inspected part for storage or transit in accordance with the procedures,e.g. post-test clean, inhibit, blank, pack. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused materials in accordance with the procedures,e.g. serviceable, unserviceable, waste, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, log books.
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	<p>◆ Able to return the work environment in a state which enables the next task to begin in accordance with the procedures.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to carry out aeronautical NDT (non destructive testing) inspections using magnetic particle methods by preparing the work area and equipment, inspecting the part, and completing the post inspection tasks.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.15 & 7.18)</p> <p>Candidates must pass the following vision examinations:</p> <p>1 Near vision acuity</p> <p>The examination should assure natural or corrected near-distance acuity in at least one eye to show that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at a distance of not less than 12 inches (30.5cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.</p> <p>2 Color contrast differentiation</p> <p>The examination should demonstrate that the applicant is capable of distinguishing and differentiating contrast among colors used in the method.</p> <p>Ref: NZQA - 4087</p>

1. Title	Aeronautical NDT inspections by ultrasonic testing methods
2. Code	EMAMWS417A
3. Range	Ultrasonic testing methods aeronautical NDT inspections are usually carried out in a specialist bay or workshop
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the magnetic particle methods NDT inspections. <p>6.2 Inspection methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to match the identification of part with documentation by comparing serial and/or part numbers. ◆ Able to prepare the part for inspection in accordance with the procedures, e.g. clean surface finish. ◆ Able to set up the inspection equipment is set up in accordance with the procedures, e.g. reference standard, probe, instrument. ◆ Able to operate the ultrasonic equipment in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to inspect the part in accordance with the procedures,e.g. inspection equipment, standards, specifications, precision measuring equipment. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the inspected part for storage or transit in accordance with the procedures,e.g. post-test clean, inhibit, blank, pack. <li>◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, log books. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused materials in accordance with the procedures,e.g. serviceable, unserviceable, waste, hazardous. <li>◆ Able to return the work environment in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to carry out aeronautical NDT (non destructive testing) inspections using ultrasonic testing methods by preparing the part for inspection, inspecting the part, and completing the post inspection tasks.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.15 & 7.18)</p> <p>Candidates must pass the following vision examinations:</p> <p>1 Near vision acuity</p> <p>The examination should assure natural or corrected near-distance acuity in at least one eye to show that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at a distance of not less than 12 inches (30.5cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.</p> <p>2 Color contrast differentiation</p> <p>The examination should demonstrate that the applicant is capable of distinguishing and differentiating contrast among colors used in the method.</p> <p>Ref: NZQA - 4088</p>

1. Title	Optically aided aeronautical NDT inspections
2. Code	EMAMWS418A
3. Range	Optically aided aeronautical NDT inspections are usually carried out in a specialist bay or workshop
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the magnetic particle methods NDT inspections. <p>6.2 Inspection methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to match the identification of part with documentation by comparing serial and/or part numbers. ◆ Able to prepare the part for inspection in accordance with the procedures, e.g. clean surface finish. ◆ Able to set up and calibrated the inspection equipment is set up in accordance with the procedures, e.g. lighting, optical aids. ◆ Able to inspect the part in accordance with the procedures, e.g. inspection equipment, standards, specifications, precision measuring equipment.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the inspected part for storage or transit in accordance with the procedures, e.g. inhibit, blank, pack ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused materials in accordance with the procedures, e.g. serviceable, unserviceable, waste, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, log books. ◆ Able to return the work environment in a state which enables the next task to begin in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirements of this UoC is:</p> <p>(i) Able to carry out optically aided aeronautical NDT (non destructive testing) inspections by preparing the part for inspection, inspecting the part, and completing the post inspection tasks.</p>

8. Remarks	<p>(Ref: HKAR-66 Module 7.15 & 7.18)</p> <p>Candidates must pass the following vision examinations:</p> <p>1 Near vision acuity</p> <p>The examination should assure natural or corrected near-distance acuity in at least one eye to show that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at a distance of not less than 12 inches (30.5cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.</p> <p>2 Color contrast differentiation</p> <p>The examination should demonstrate that the applicant is capable of distinguishing and differentiating contrast among colors used in the method.</p> <p>Ref: NZQA - 4089</p>
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1. Title	Aeronautical NDT inspections by radiographic x-ray methods
2. Code	EMAMWS419A
3. Range	Radiographic x-ray methods aeronautical NDT inspections are usually carried out in a specialist bay or workshop
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the radiographic x-ray methods aeronautical NDT inspections. <p>6.2 Inspection methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established, area secured. ◆ Able to match the identification of part with documentation by comparing serial and/or part numbers. ◆ Able to prepare the part for radiography in accordance with the procedures, e.g. clean surface finish. ◆ Able to set up and calibrated the inspection equipment is set up in accordance with the procedures, e.g. orientation, distance, film placement, film identification marking. ◆ Able to expose the film in accordance with the procedures, e.g. control density, sensitivity.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to process the film in accordance with the procedures,e.g. manual, automatic. <li>◆ Able to inspect the radiograph in accordance with the procedures,e.g. inspection equipment, standards, specifications, precision measuring equipment, relevant and non relevant indications. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the inspected part for storage or transit in accordance with the procedures,e.g. post-test clean, inhibit, blank, pack <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused materials in accordance with the procedures,e.g. serviceable, unserviceable, waste, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, log books.
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	<p>◆ Able to return the work environment in a state which enables the next task to begin in accordance with the procedures.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to carry out aeronautical NDT (non destructive testing) inspections using radiographic x-ray methods by preparing the part for radiography, producing the radiograph, and completing the post inspection tasks.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.15 & 7.18)</p> <p>Candidates must pass the following vision examinations:</p> <p>1 Near vision acuity</p> <p>The examination should assure natural or corrected near-distance acuity in at least one eye to show that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at a distance of not less than 12 inches (30.5cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.</p> <p>2 Color contrast differentiation</p> <p>The examination should demonstrate that the applicant is capable of distinguishing and differentiating contrast among colors used in the method.</p> <p>Ref: NZQA - 4090</p>

1. Title	Aircraft incubators repair
2. Code	EMAMWS420A
3. Range	Aircraft incubators repair activity is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principle</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft incubators. <p>6.2 Repair methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. tools, materials, equipment, safety equipment, publications. ◆ Able to repair the incubator to meet specifications in accordance with the procedures. ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to test the incubator to meet specifications in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration.

	<ul style="list-style-type: none"> ◆ Able to prepare the incubator for use, storage, or transit in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair of incubator in aircraft. (ii) Able to repair the incubator. (iii) Able to complete all the requirements associated with the repair task.
8. Remarks	Ref: NZQA - 4002

1. Title	Aircraft carpets fabrication and repair
2. Code	EMAMWS421A
3. Range	Fabricate and/or repair aircraft carpets are usually carried out on the aircraft in the hangar.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the methods and procedures of fabricating and/or repairing aircraft carpets.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, equipment, safety equipment, publications.</p> <p style="padding-left: 100px;">♦ Able to fabricate the pattern to meet task requirements in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to fabricate and/or repair carpet to meet specifications in accordance with the procedures, e.g. mark out, cut, use cutting equipment, join carpet using a heat joining iron, sew, overlock, whip.</p> <p style="padding-left: 100px;">♦ Able to fit and/or remove the carpet from the aircraft in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to rectify the non-conformities in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the documentation in accordance with procedure. Able to prepare the carpet for storage, transit or use in accordance with the procedures. ◆ Able to check the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle leftover items, parts and materials in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft carpets. (ii) Able to locate the non-conformities. (iii) Able to restore the aircraft carpets airworthiness. (iv) Able to complete all the requirements associated with the maintenance task.
<p>8. Remarks</p>	<p>(Ref: HKAR-66 Module 11.7, 12.9 & 13.6)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 4003</p>

1. Title	Aircrew flying clothing and associated equipment maintenance and/or repair
2. Code	EMAMWS422A
3. Range	Aircraft flying clothing and associated equipment maintaining and repair activity is usually carried out in a specialist bay or workshop, e.g. flying overalls, helmets, oxygen masks
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principle</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft flying clothing and associated equipment. <p>6.2 Repair and maintenance methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, maintain, modify ◆ Able to confirm the item identity with documentation by comparing serial and part numbers. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment. ◆ Able to prepare the item for maintenance and/or repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out maintenance or repair.

	<ul style="list-style-type: none"> ◆ Able to determine and document the next task in accordance with the procedures, e.g. locate non-conformities, repair, maintain, test, adjust, complete the task. ◆ Able to locate the non-conformities using troubleshooting techniques appropriate to the non-conformity indications in accordance with the procedures. ◆ Able to report and record the located non-conformities in accordance with the procedures. ◆ Able to disassemble the item in accordance with the procedures, e.g. clean, label, preserve, segregate. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to assemble the item in accordance with the procedures. ◆ Able to report and record the non-conformities found during disassembly in accordance with the procedures, e.g. inspection includes - use standards, specifications, precision measuring equipment. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the non-conformities in accordance with the procedures, e.g. repair, replace, modify, adjust.
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	<ul style="list-style-type: none"> ◆ Able to perform the inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to prepare the item for testing in accordance with the procedures. ◆ Able to test and adjust the item in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after test in accordance with the procedures,e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the item for use, storage, or transit in accordance with the procedures,e.g. locking, packing, shelf-life requirement ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance and/or repair of aircrew flying clothing and associated equipment. (ii) Able to locate the non-conformities. (iii) Able to maintain and/or repair the item. (iv) Able to test and adjust the item. (v) Able to complete all the requirements associated with the maintenance and/or repair task.
8. Remarks	<p>(Ref: HKAR-66 Module 11.7, 12.9 & 13.6)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 4004</p>

1. Title	Inflatable aeronautical safety equipment maintenance
2. Code	EMAMWS423A
3. Range	Inflatable aeronautical safety equipment maintenance activity is usually carried out in a specialist bay or workshop,e.g. life jackets, escape slides, life rafts, associated components
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principle</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the inflatable aeronautical safety equipment. <p>6.2 Maintenance methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to match the equipment identity with documentation. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment. ◆ Able to prepare the item for maintenance in accordance with the procedures,e.g. unpack, safety locking pins fitted and removed. ◆ Able to determine the equipment serviceability in accordance with the procedures. ◆ Able to report and record the non-conformities found in accordance with the procedures. ◆ Able to determine the method of rectifying non-conformity in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the equipment non-conformities in accordance with the procedures, e.g. repair, replace, modify, adjust, lubricate. ◆ Able to test the equipment to verify their serviceability in accordance with the procedures, e.g. functionally test, document adjustments and performance. ◆ Able to pack the equipment in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the equipment for use, storage, or transit in accordance with the procedures, e.g. locking, packing, shelf-life requirement
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	<ul style="list-style-type: none"> ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of inflatable aeronautical safety equipment. (ii) Able to locate the non-conformities. (iii) Able to restore the equipment airworthiness. (iv) Able to complete all the requirements associated with the maintenance task.
8. Remarks	<p>(Ref: HKAR-66 Module 11.7, 12.9 & 13.6)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 4005</p>

1. Title	Aircraft cabin and crew seats maintenance
2. Code	EMAMWS424A
3. Range	Aircraft cabin and crew seats maintenance activity is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Construction and mechanism of the aircraft cabin and crew seats</p> <ul style="list-style-type: none"> ◆ Understand the construction and mechanism of the aircraft cabin and crew seats. <p>6.2 Maintenance methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. publications, tools, equipment, safety equipment, materials. ◆ Able to match the seat identification with documentation. ◆ Able to prepare the seat for maintenance task in accordance with the procedures. ◆ Able to report and record the non-conformities in accordance with the procedures. ◆ Able to determine the seat serviceability in accordance with the procedures, e.g. inspect, troubleshoot, assess, test. ◆ Able to determine the method of rectifying non-conformity in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the non-conformities in accordance with the procedures,e.g. repair, replace, modify, adjust, lubricate. ◆ Able to test the seat to verify their serviceability in accordance with the procedures,e.g. functionally test, document adjustments and performance. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the maintenance of aircraft cabin and crew seats. (ii) Able to locate the non-conformities. (iii) Able to restore the aircraft cabin and crew seat airworthiness. (iv) Able to complete all the requirements associated with the maintenance task.
8. Remarks	Ref: NZQA - 4007

1. Title	Aircraft interiors plastic trim application
2. Code	EMAMWS425A
3. Range	Aircraft interiors plastic trim is usually applied in a specialist bay or workshop. Aircraft interior panels include: partitions, window surrounds.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the method and procedure of applying the aircraft interiors plastic trim.</p> <p>6.2 Applying methods and procedures</p> <ul style="list-style-type: none"> ♦ Able to review the maintenance documents and procedures to decide on maintenance task. ♦ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures, e.g. tools, materials, equipment, safety equipment, publications. ♦ Able to fabricate the pattern to meet task requirements in accordance with the procedures. ♦ Able to cut the trim to meet task requirements in accordance with the procedures. ♦ Able to prepare the surfaces in accordance with the procedures, e.g. clean, apply adhesive. ♦ Able to apply the trim to meet specifications in accordance with the procedures, e.g. adhesive cured, pressure applied, temperature controlled, excess trim removed. ♦ Able to rectify the non-conformities in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the completed item for storage, transit or use in accordance with the procedures <li>◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, specifications, drawings. <li>◆ Able to handle the unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the application of plastic trim to aircraft interior panels. (ii) Able to apply plastic trim to the surface. (iii) Able to complete all the requirements associated with the application task.
8. Remarks	<p>(Ref: HKAR-66 Module 11.7, 12.9 & 13.6)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 4009</p>

1. Title	Fabric items for aircraft interiors fabrication and/or repair
2. Code	EMAMWS426A
3. Range	Aircraft interiors fabric items fabrication and/or repair activity is usually carried out on the aircraft in the hangar, e.g. seat covers, curtains, insulation blankets
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the methods and procedures of fabricating and/or repairing aircraft interiors fabric items.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, equipment, safety equipment, publications, patterns, templates.</p> <p style="padding-left: 100px;">♦ Able to fabricate and/or repair the interiors fabric items to meet specifications in accordance with the procedures, e.g. lay out, mark out, cut, sew, pleat, fit eyelets.</p> <p style="padding-left: 100px;">♦ Able to rectify the non-conformities in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the item for storage, transit or use in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the fabrication and/or repair of aircraft fabric items. (ii) Able to fabricate and/or repair aircraft fabric items. (iii) Able to complete all the requirements associated with the fabrication and/or repair task of aircraft fabric items

8. Remarks	(Ref: HKAR-66 Module 11.7, 12.9 & 13.6) The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools. Ref: NZQA - 4010
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1. Title	Aircraft seat belts and harness assemblies fabrication and/or repair
2. Code	EMAMWS427A
3. Range	Aircraft seat belts and harness assemblies are usually fabricated and/or repaired on the aircraft in the hangar, e.g. seat belts, harness assemblies, freight nets, quick release fittings
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the methods and procedures of fabricating and/or repairing aircraft seat belts and harness assemblies.</p> <p>6.2 Methods and procedures for fabricating and/or repairing ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p> ♦ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, equipment, safety equipment, publications, patterns, templates.</p> <p> ♦ Able to fabricate and/or repair the seat belts and harness assemblies to meet specifications in accordance with the procedures, e.g. clean, inspect, mark out, sew, test.</p> <p> ♦ Able to rectify the non-conformities in accordance with the procedures.</p> <p> ♦ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the item for storage, transit or use in accordance with the procedures, e.g. packing, shelf-life requirements ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the fabrication and/or repair of aircraft seat belt and harness assembly. (ii) Able to fabricate and/or repair seat belt and harness assembly. (iii) Able to complete all the requirements associated with the fabrication and/or repair task.

8. Remarks	(Ref: HKAR-66 Module 11.7, 12.9 & 13.6) The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools. Ref: NZQA - 4011
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1. Title	Aircraft brake units repairing and/or overhauling
2. Code	EMAMWS428A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the aircraft brake units. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the brake unit identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to make preparation for the brake unit for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the brake unit in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust.◆ Able to make preparation for the brake unit for testing in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the brake unit in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to make preparation for the brake unit for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification.
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	<ul style="list-style-type: none"> ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft brake units. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the brake units. (iv) Able to test and adjust brake units. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	Ref: NZQA - 3932

1. Title	Aircraft hydraulic system components repair and/or overhaul	
2. Code	EMAMWS429A	
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop. Aircraft hydraulic system components are from the reservoir to actuators. Including: pumps, actuators, valves, filters, accumulators, reservoirs, hydro-mechanical anti-skid components.	
4. Level	4	
5. Credit	9	
6. Competency	<u>Performance Requirement</u>	
	6.1 Working principles	<ul style="list-style-type: none"> ◆ Understand the construction and working principles for the hydraulic systems in aircraft, including : <ul style="list-style-type: none"> • knowledge of handling of hydraulic fluids • indication and warning systems • interface with other systems
	6.2 Method and procedures	<ul style="list-style-type: none"> ◆ Able to review the documents and procedures,e.g. confirm fault, repair, overhaul, modify. ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established.

	<ul style="list-style-type: none">◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections in accordance with the procedures. <li>◆ Able to prepare the component for test in accordance with the procedures. <li>◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. <li>◆ Able to perform inspections after the test in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the leftover parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous <li>◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
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	<p>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft hydraulic system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the hydraulic system components. (iv) Able to test and adjust the hydraulic system components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.11 & 12.12)</p> <p>The Credit in this UoC is on the assumption of learner already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3933</p>

1. Title	Aircraft liquid oxygen system components repair and/or overhaul
2. Code	EMAMWS430A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. Pressure, demand and flow control converters and regulators. direct and remote reading oxygen quantity measuring system components. fixed installation oxygen storage and distribution system components
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the liquid oxygen system components. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.

	<ul style="list-style-type: none"> ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task. ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store. ◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to prepare the component for test in accordance with the procedures. <li>◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. <li>◆ Able to perform inspections after the test in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the leftover parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification.
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	<ul style="list-style-type: none"> ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft liquid oxygen system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	Ref: NZQA - 3934

1. Title	Aircraft mechanical ice and rain protection system components repair and/or overhaul
2. Code	EMAMWS431A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop,e.g. pumps, reservoirs, valves, filters, plumbing, distributors, heating elements.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the ice and rain protection systems in aircraft, including : <ul style="list-style-type: none"> • knowledge of handling of rain repellent • anti-icing and de-icing systems <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to review the documents and procedures,e.g. confirm fault, repair, overhaul, modify. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair and/or overhaul. ◆ Able to confirm the component identity with documentation.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to report and record the defects found during disassembly in accordance with the procedures, e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair and/or overhaul, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the leftover parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft mechanical ice and rain protection system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.12 & 12.13)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3935</p>

1. Title	Aircraft wheel assemblies repair and/or overhaul
2. Code	EMAMWS432A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. wheels and tyres
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the aircraft wheel. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the assembly identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to make preparation for the assembly for repair and/or overhaul in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the aircraft wheel assembly in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust.◆ Able to assemble the aircraft wheel in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft wheel assemblies. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the wheel assemblies. (iv) Able to test and balance the assemblies. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	Ref: NZQA - 3936

1. Title	Aircraft mechanical air conditioning and pressurization components repair and/or overhaul
2. Code	EMAMWS433A
3. Range	Repair and/or overhaul activity and pressurization components is usually carried out in a specialist bay or workshop, e.g. compressors and blowers, cold air units, filters, water separators, humidifiers, heat exchangers, temperature control valves, pressure sensors, cabin pressure controllers, pressure relief valves, discharge and outflow valves, flow control valves, safety relief valves, ducting and piping, punka louvers and distribution nozzles, ground test connections, combustion heaters, vapor cycle system components, exhaust shroud heaters.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the air conditioning and pressurization components in aircraft. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identity with documentation. ◆ Able to review the documents and procedures, e.g. confirm fault, repair, overhaul, modify.

	<ul style="list-style-type: none">◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.
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	<ul style="list-style-type: none"> ◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft mechanical air conditioning, pressurization components and liquid oxygen system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
<p>8. Remarks</p>	<p>(Ref: HKAR-66 Module 11.4 & 12.6)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3937</p>

1. Title	Aircraft fuel distribution system components repair and/or overhaul
2. Code	EMAMWS434A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. pumps, valves, filters, mechanical indicating components.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the fuel distribution system components in aircraft. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair and/or overhaul. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures, e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair and/or overhaul, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification.
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	<ul style="list-style-type: none"> ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft fuel distribution system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.3.2, 11.10 & 12.11)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3938</p>

1. Title	Aircraft landing gear system components repair and/or overhaul
2. Code	EMAMWS435A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. oleos or shock struts, actuators, locking mechanisms, axles, steering system components. This Unit of Competency does not include wheels, tyres, or brakes
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the landing gear system components in aircraft. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures, e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair and/or overhaul, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the task within the stipulated duration. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft landing gear system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 11.13 & 12.14)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3939</p>

1. Title	Aircraft pneumatic power supply system components repair and/or overhaul
2. Code	EMAMWS436A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop,e.g. from the compressor to the actuators including - compressors, actuators, plumbing, filters, valves, reservoirs
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the pneumatic power supply system components in aircraft. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.

	<ul style="list-style-type: none"> ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task. ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store. ◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft pneumatic power supply system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	Ref: NZQA - 3940

1. Title	Aircraft water and waste systems components repair and/or overhaul
2. Code	EMAMWS437A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. pumps, reservoirs, valves, filters, plumbing.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for the water and waste system components in aircraft. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair and/or overhaul.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task.◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair and/or overhaul, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. <li>◆ Able to perform inspections after the test in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification.
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	<p>◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft water and waste system components. (ii) Able to locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair and/or overhaul tasks.
8. Remarks	<p>(Ref: HKAR-66 Module 6.4, 6.6, 7.9 & 11.17)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3941</p>

1. Title	Aircraft flexible fuel tanks repair
2. Code	EMAMWS438A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the construction and working principles for aircraft fuel system. <p>6.2 Method and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the documents and procedures,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair and/or overhaul, test, adjust, complete the task

	<ul style="list-style-type: none">◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to report and record the defects found during disassembly in accordance with the procedures, e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, shelf-life requirement, certification. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair of aircraft flexible fuel tanks. (ii) Able to locate the defects. (iii) Able to repair the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the repair tasks.
8. Remarks	Ref: NZQA - 3942

1. Title	Removal of coatings from aeronautical components by using plastic media blasting
2. Code	EMAMWS439A
3. Range	Aeronautical components coatings removal by means of plastic media blasting is usually carried out in the hangar.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the aircraft coatings removal methods and procedures.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. materials, equipment, safety equipment, clothing, publications, hazard warning signs.</p> <p style="padding-left: 150px;">♦ Able to identify the aircraft, aircraft components or aeronautical equipment is matched with the documentation.</p> <p style="padding-left: 150px;">♦ Able to establish the working Environment in accordance with the procedures, e.g. temperature, lighting, ventilation, work area secured.</p> <p style="padding-left: 150px;">♦ Able to make preparation for the ground equipment in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to apply masking to aircraft, aircraft components or aeronautical equipment in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to remove coating using plastic media blasting in accordance with the procedures. <li>◆ Able to wash or clean the aircraft, aircraft components or aeronautical equipment in accordance with the procedures. <li>◆ Able to remove the aircraft, aircraft components or aeronautical equipment masking in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the removing coating system within the stipulated duration. <li>◆ Able to check the resources for serviceability in accordance with the procedures. <li>◆ Able to handle or recycle waste and surplus materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. <li>◆ Able to complete the documentation in accordance with procedure.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the remove of coatings. (ii) Able to remove the coatings from aircraft, aircraft components, or aeronautical equipment by plastic media blasting in cabinets or by using open blasting machines. (iii) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 4013

1. Title	Coating systems application on aircraft and aeronautical equipment
2. Code	EMAMWS440A
3. Range	Apply coating systems to aircraft and aeronautical equipment is usually carried out in the hangar. Any of the following coating systems and drying or curing methods may be used: solvent evaporation, oxidation, polymerization.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the aircraft coatings methods and procedures.</p> <p>6.2 Application ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, equipment, safety equipment, clothing, publications.</p> <p style="padding-left: 100px;">♦ Able to confirm the aircraft, aircraft components or aeronautical equipment identification is matched with the documentation.</p> <p style="padding-left: 100px;">♦ Able to posit the ground equipment in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to establish the working environment in accordance with the procedures, e.g. temperature, lighting, ventilation, hazard warning signs.</p>

	<ul style="list-style-type: none"> ◆ Able to make preparation for the aircraft, aircraft components or aeronautical equipment in accordance with the procedures,e.g. degreased, chemically treated, masked, stencils fabricated and applied. ◆ Able to make preparation for the coating system materials in accordance with the procedures,e.g. viscosity, cleanliness, ingredients mixed, color checked. ◆ Able to apply the coating system in accordance with the procedures,e.g. primer, top coats. ◆ Able to confirm the color scheme is matched with the specifications. ◆ Able to remove the masking from aircraft, aircraft components or aeronautical equipment in accordance with the procedures. ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to obtain the inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the removing coating system within the stipulated duration.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability in accordance with the procedures. ◆ Able to handle or recycle the waste and surplus materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the application of coating systems. (ii) Able to apply coating systems by spraying method to aircraft, aircraft components, or aeronautical equipment. (iii) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 2.1, 6.4 & 7.18)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in inspection methods of engineering materials.</p> <p>Ref: NZQA - 4014</p>

1. Title	Aircraft gas turbine powerplants installation, operation and remove from a test bed
2. Code	EMAMWS441A
3. Range	The installation, operation and removal of aircraft powerplants from a test bed are usually carried out in an aircraft hangar. All powerplant run tasks are to be carried out under the control of an authorized powerplant runner in accordance with the procedures.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the construction and configuration of powerplants of gas turbine engines.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to confirm the powerplants identity with documentation by comparing serial and part numbers.</p> <p style="padding-left: 150px;">♦ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, test equipment, safety equipment, environmental conditions determined.</p> <p style="padding-left: 150px;">♦ Able to set up the test equipment is set up in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to install the powerplant on a test bed in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to carry out powerplant run under control of authorized powerplant runner.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to make adjustments as directed by authorized personnel and in accordance with the procedures. ◆ Able to carry out maintenance as directed by authorized personnel and in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to remove the powerplant from test bed in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the powerplant for use, storage or transit in accordance with the procedures,e.g. lock, inhibit, blank, remove from test bed, prepare for transit. ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the operation of an aircraft powerplants on a test bed. (ii) Able to install the aircraft powerplants on a test bed, operate, make adjustments, and carry out maintenance as directed. (iii) Able to remove the aircraft powerplants from a test bed. (iv) Able to complete all the requirements associated with the testing task.
8. Remarks	<p>(Ref: HKAR-66 Module 7.5, 15.19 & 16.11)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 23160</p>

1. Title	Aircraft gas turbine compressor sections repair and/or overhaul
2. Code	EMAMWS442A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop. Including: intakes, rotating and stationary assemblies, frames, sumps, seals, bearings.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft gas turbine compressor <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the compressor section identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to make preparation for the compressor section for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul. ◆ Able to determine and record the next task in accordance with the procedures.

	<ul style="list-style-type: none"> ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to report and record the defects found during disassembly in accordance with the procedures. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, labeling.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft gas turbine compressor sections. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the compressor components. (iv) Able to complete all the requirements associated with the repair and/or overhaul task.
8. Remarks	<p>(Ref: HKAR-66 Module 14.1, 15.1 - 15.7)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of turbine engines.</p> <p>Ref: NZQA - 23161</p>

1. Title	Aircraft gas turbine combustion sections repair and/or overhaul
2. Code	EMAMWS443A
3. Range	Repair and/or overhaul activity is usually carried out in a specialist bay or workshop. Including: combustion chambers, combustion liners, fuel nozzles, associated manifolds.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft gas turbine combustion sections <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the combustion section identity with documentation. ◆ Able to determine and record the next task in accordance with the procedures. ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established.

	<ul style="list-style-type: none"> ◆ Able to make preparation for the combustion section for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store. ◆ Able to report and record the defects found during disassembly in accordance with the procedures. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, inhibiting, blanking, packing, labeling.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft gas turbine combustion sections. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the combustion section components. and complete the repair and/or overhaul task. (iv) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>(Ref: HKAR-66 Module 14.1, 15.1 - 15.7)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of turbine engines.</p>

1. Title	Aircraft powerplant turbine sections repair and/or overhaul
2. Code	EMAMWS444A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop,e.g. intakes, rotating and stationary assemblies, frames, sumps, seals, bearings.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft powerplant turbine engine. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the turbine section identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to determine and record the next task in accordance with the procedures. ◆ Able to make preparation for the turbine section for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.

	<ul style="list-style-type: none"> ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to report and record the defects found during disassembly in accordance with the procedures. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to perform inspections in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.
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	<ul style="list-style-type: none"> ◆ Able to complete the task within the stipulated duration. ◆ Able to make preparation for the turbine section for use, storage or transit in accordance with the procedures,e.g. locking, inhibiting, blanking, packing, labeling. ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft powerplant turbine sections. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the turbine section components. (iv) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 23163

1. Title	Aircraft gas turbine engines assembly and disassembly
2. Code	EMAMWS445A
3. Range	The disassembly and assembly activity is usually carried out in a specialist bay or workshop, e.g. intake, fan, compressor, combustion, turbine and exhaust modules. removal and installation of internal and external gearboxes, engine mounted accessories and components, oil and fuel systems.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the engine identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to make preparation for engine disassembly and assembly in accordance with the procedures, e.g. clean, inspect. ◆ Able to determine and record the next task in accordance with the procedures, e.g. disassemble, assemble, complete the task <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to disassemble the engine in accordance with the procedures, e.g. clean, label, preserve, segregate, store.

	<ul style="list-style-type: none"> ◆ Able to report and record the defects found during disassembly in accordance with the procedures. ◆ Able to perform inspections after disassemble in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures. ◆ Able to assemble the engines in accordance with the procedures. ◆ Able to perform inspections after assemble in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to make preparation for the engine for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, labeling. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation is completed in accordance with the procedures. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the disassembly and assembly of aircraft gas turbine engines. (ii) Able to disassemble aircraft gas turbine engines. (iii) Able to assemble aircraft gas turbine engines. (iv) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 23163

1. Title	Aircraft fixed pitch propeller assembly repair and/or overhaul
2. Code	EMAMWS446A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop. This unit standard covers aircraft fixed pitch wooden and metal propellers
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Construction of propellers</p> <ul style="list-style-type: none"> ◆ Understand the construction and operating principles of the propellers, including : <ul style="list-style-type: none"> • Blade element theory • construction of propellers • mechanism of pitch control <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the propeller identity with documentation by comparing serial and part numbers. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to make preparation for the combustion section for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task.◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the propeller in accordance with the procedures,e.g. clean, label, preserve, segregate.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. dimensions, damage, corrosion, blade angles, surface finish, contouring.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. replace parts, modify, blend, scurf, contour, adjust angles and/or dimensions, balance, polish, straighten bent or twisted blades.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the propeller for testing in accordance with the procedures. ◆ Able to test and adjust the propeller in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance ◆ Able to perform inspections after the test in accordance with the procedures. ◆ Able to prepare the propeller for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft fixed pitch propeller assemblies. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the propellers. (iv) Able to test and adjust the propellers. (v) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>(Ref: HKAR-66 Module 7.5 & 17)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the basic aerodynamics.</p> <p>Ref: NZQA - 3414</p>

1. Title	Aircraft gas turbine engine fuel system components repair and/or overhaul
2. Code	EMAMWS447A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. pumps, filters, actuators, valves, burners, nozzles, atomizers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the fuel systems of gas turbine engines, including : <ul style="list-style-type: none"> • properties and specifications of fuels • fuel additives • operation of engine control and fuel metering systems • lay-out of the systems and their components <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established.

	<ul style="list-style-type: none"> ◆ Able to make preparation for the combustion section for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task. ◆ Able to make preparation for the combustion section for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul. ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the propeller in accordance with the procedures,e.g. clean, label, preserve, segregate. ◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. dimensions, damage, corrosion, blade angles, surface finish, contouring.
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	<ul style="list-style-type: none"> ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. replace parts, modify, blend, scurf, contour, adjust angles and/or dimensions, balance, polish, straighten bent or twisted blades. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the propeller for testing in accordance with the procedures. ◆ Able to test and adjust the propeller in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after the test in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to prepare the propeller for use, storage or transit in accordance with the procedures,e.g. locking, inhibiting, blanking, packing ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft gas turbine engine fuel system components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 14, 15.9 & 15.11)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of gas turbine engines.</p> <p>Ref: NZQA - 3415</p>

1. Title	Aircraft reciprocating engine fuel system components repair and/or overhaul
2. Code	EMAMWS448A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. pumps (engine driven), fuel distribution manifold, filters, carburetors (float and pressure), fuel injectors or nozzles. This unit standard covers fuel system engine mounted components.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the fuel systems of piston engines, including : <ul style="list-style-type: none"> • operation of carburetors and fuel injection systems • lay-out of the systems and their components <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identity with documentation.

- ◆ Able to make preparation for the combustion section for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.
- ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task.
- ◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.
- ◆ Able to report and record defects found during troubleshooting in accordance with the procedures.
- ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate.
- ◆ Able to determine and record the rectification action in accordance with the procedures.
- ◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.
- ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.
- ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to assemble the component in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures. <li>◆ Able to prepare the component for test in accordance with the procedures. <li>◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. <li>◆ Able to perform inspections after the test in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft reciprocating engine fuel system components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 16.4)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of reciprocating engines.</p> <p>Ref: NZQA - 3416</p>

1. Title	Aircraft gas turbine engine fuel control units repair and/or overhaul
2. Code	EMAMWS449A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft gas turbine engine fuel control units <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to report and record defects found during troubleshooting in accordance with the procedures. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.

	<ul style="list-style-type: none">◆ Able to locate defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. <li>◆ Able to perform inspections after the test in accordance with the procedures. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing <li>◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures. <li>◆ Able to leave the work area in a state which enables the next task to begin in accordance with the procedures.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft reciprocating engine fuel system components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 3417</p>

1. Title	Aircraft gearboxes and transmissions repair and/or overhaul
2. Code	EMAMWS450A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. gear trains, cases/housings, oil pumps, valves, filters, drive shafts and couplings.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the operating principles and applications of different transmission systems, including : <ul style="list-style-type: none"> • gears : gear ratios, mesh patterns • belts and pulleys : tension and construction of different types e.g. flat belts and power belts • chains and sprockets : tooth profile • screw jacks, lever devices and push-pull rod systems <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established.

- ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.
- ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task.
- ◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.
- ◆ Able to report and record the defects found during troubleshooting in accordance with the procedures.
- ◆ Able to determine and record the rectification action in accordance with the procedures.
- ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate.
- ◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.
- ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.
- ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.

	<p>6.3 Test and adjustment</p> <ul style="list-style-type: none"> <li>◆ Able to assemble the component in accordance with the procedures. <li>◆ Able to perform inspections in accordance with the procedures. <li>◆ Able to prepare the component for test in accordance with the procedures. <li>◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. <li>◆ Able to perform the inspections in accordance with the procedures. <p>6.4 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft gearbox and transmission components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 6.9 & 7.12)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the manipulation of common tools.</p> <p>Ref: NZQA - 3418</p>

1. Title	Aircraft gas turbine engine lubrication system components repair and/or overhaul
2. Code	EMAMWS451A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. pumps, valves, filters, reservoirs. This UoC covers gas turbine engine lubrication systems.
4. Level	4
5. Credit	8
6. Competency	<u>Performance Requirement</u>
	<p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the lubrication systems of gas turbine engines, including: <ul style="list-style-type: none"> • properties and specifications of lubricants • operation of the systems • lay-out of the systems and their components <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established, e.g. locate defects, repair, overhaul, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.◆ Able to determine and record the next task in accordance with the procedures.◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.
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	<p>6.3 Test and adjustment</p>	<ul style="list-style-type: none"> ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to perform the inspections in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
	<p>6.4 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to complete the documentation in accordance with the procedures.

	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft engine lubrication system components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 2.2.3, 2.2.4, 15.9, 15.10, 16.8 & 16.9)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of gas turbine engines.</p> <p>Ref: NZQA - 3419</p>

1. Title	Aircraft reciprocating engines repair and/or overhaul
2. Code	EMAMWS452A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. crank cases, crankshafts, piston and connecting rods, valves and valve timing components, lubrication system components, intake and exhaust system components.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair or overhaul. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, overhaul, test, adjust, complete the task.

	<p>6.2 Methods and procedures</p>	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate. ◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. inspect, use standards, specifications, precision measuring equipment. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures.
	<p>6.3 Test and adjustment</p>	<ul style="list-style-type: none"> ◆ Able to prepare the component for test in accordance with the procedures.

	<p>6.4 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform the inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft reciprocating engines. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 3420</p>

1. Title	Aircraft gas turbine engine power augmentation or restoration system components repair and/or overhaul
2. Code	EMAMWS453A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the power augmentation systems of gas turbine engines, including : <ul style="list-style-type: none"> • water injection • afterburners <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, overhaul, test, adjust, complete the task.◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate.◆ Able to report and record the defects found during disassembly in accordance with the procedures, e.g. inspect, use standards, specifications, precision measuring equipment.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures.
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	<p>6.3 Test and adjustment</p>	<ul style="list-style-type: none"> ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform the inspections in accordance with the procedures
	<p>6.4 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to complete the documentation in accordance with the procedures.

	<p>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft gas turbine engine power augmentation or restoration system components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
8. Remarks	<p>(Ref: HKAR-66 Module 15.15)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the constructional arrangement and operation of gas turbine engines.</p> <p>Ref: NZQA - 3421</p>

1. Title	Aircraft gas turbine engine thrust reverser system components repair and/or overhaul
2. Code	EMAMWS454A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the component identity with documentation. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, overhaul, test, adjust, complete the task.

	<p>6.2 Methods and procedures</p>	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects found during troubleshooting in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate. ◆ Able to report and record the defects found during disassembly in accordance with the procedures, e.g. inspect, use standards, specifications, precision measuring equipment. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to perform inspections in accordance with the procedures.
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	<ul style="list-style-type: none"> ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft gas turbine engine thrust reverser system components. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
8. Remarks	Ref: NZQA - 3422

1. Title	Aircraft variable pitch propeller assembly repair and/or overhaul
2. Code	EMAMWS455A
3. Range	The repair and/or overhaul activity is usually carried out in a specialist bay or workshop, e.g. blades, hubs, spinners, pitch change units and mechanisms, de-icing component.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the construction and operating principles of the propellers, including : <ul style="list-style-type: none"> • Blade element theory • construction of propellers • mechanism of pitch control <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, overhaul, modify. ◆ Able to confirm the propeller identity with documentation by comparing serial and part numbers. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, overhaul, test, adjust, complete the task. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established.

	<ul style="list-style-type: none">◆ Able to prepare the propeller for repair and/or overhaul in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair or overhaul.◆ Able to locate the defects using troubleshooting techniques appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects found during troubleshooting in accordance with the procedures.◆ Able to disassemble the propeller in accordance with the procedures,e.g. clean, label, preserve, segregate.◆ Able to report and record the defects found during disassembly in accordance with the procedures,e.g. blade angles, dimensions, surface finish, corrosion, contouring, damage.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the spare parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. replace parts, modify, blend, scurf, contour, adjust angles and dimensions, balance, polish, straighten bent or twisted blades, repair pitch control components.
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	<p>6.3 Test and adjustment</p>	<ul style="list-style-type: none"> ◆ Able to assemble the propeller in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to prepare the propeller for testing in accordance with the procedures. ◆ Able to test and adjust the propeller in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform the inspections in accordance with the procedures.
	<p>6.4 Professional approach</p>	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the propeller for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications.

	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or overhaul of aircraft variable pitch propeller assemblies. (ii) Able locate the defects. (iii) Able to repair and/or overhaul the components. (iv) Able to test and adjust the components. (v) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>(Ref: HKAR-66 Module 7.5 & 17)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the basic aerodynamics.</p> <p>Ref: NZQA - 3424</p>

1. Title	Aircraft reciprocating powerplants test on a test bed
2. Code	EMAMWS456A
3. Range	The aircraft reciprocating powerplant testing is usually carried out in an aircraft hangar on a test bed.
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the powerplant identity with documentation by comparing serial and part numbers. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, test equipment, safety equipment, environmental conditions determined. ◆ Able to prepare the powerplant for testing in accordance with the procedures, e.g. clean, inspect, install on test bed. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects found during testing in accordance with the procedures, e.g. vibrations, out of limits performance parameters, leaks. ◆ Able to test and adjust the powerplant in accordance with the procedures, e.g. record data, evaluate data, determine adjustments, troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.

	<ul style="list-style-type: none"> ◆ Able to rectify the defects in accordance with the procedures,e.g. vibrations, out of limits performance parameters, leaks. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to take action for abnormal and emergency occurrences in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the powerplant for use, storage or transit in accordance with the procedures,e.g. lock, inhibit, blank, remove from test bed, prepare for transit. ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the testing of aircraft reciprocating powerplants. (ii) Able to test aircraft reciprocating powerplants on a test bed. (iii) Able to complete all the requirements associated with the testing task.
8. Remarks	Ref: NZQA - 20635

1. Title	Aircraft turbo-prop or turbo-shaft powerplants test on a test bed
2. Code	EMAMWS457A
3. Range	The aircraft turbo-prop or turbo-shaft powerplant testing is usually carried out in an aircraft hangar on a test bed.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the powerplant identity with documentation by comparing serial and part numbers. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, test equipment, safety equipment, environmental conditions determined. ◆ Able to prepare the powerplant for testing in accordance with the procedures, e.g. clean, inspect, install on test bed. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to take action for abnormal and emergency occurrences in accordance with the procedures. ◆ Able to test and adjust the powerplant in accordance with the procedures, e.g. record data, evaluate data, determine adjustments, troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to report and record the defects found during testing in accordance with the procedures,e.g. vibrations, out of limits performance parameters, leaks. ◆ Able to rectify the defects in accordance with the procedures,e.g. vibrations, out of limits performance parameters, leaks. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to prepare the powerplant for use, storage or transit in accordance with the procedures,e.g. lock, inhibit, blank, remove from test bed, prepare for transit. ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the testing of aircraft turbo-prop or turbo-shaft powerplants. (ii) Able to test the aircraft turbo-prop or turbo-shaft powerplants on a test bed. (iii) Able to complete all the requirements associated with the testing task.
8. Remarks	Ref: NZQA - 20636

1. Title	Aircraft turbo-fan or turbo-jet powerplants test on a test bed
2. Code	EMAMWS458A
3. Range	The aircraft turbo-fan or turbo-jet powerplant testing is usually carried out in an aircraft hangar on a test bed.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the powerplant identity with documentation by comparing serial and part numbers. ◆ Able to make preparation for the work area and obtain and check the resources in accordance with the procedures, e.g. publications, materials, tools, test equipment, safety equipment, environmental conditions determined. ◆ Able to prepare the powerplant for testing in accordance with the procedures, e.g. clean, inspect, install on test bed. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the powerplant in accordance with the procedures, e.g. record data, evaluate data, determine adjustments, troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to report and record the defects found during testing in accordance with the procedures, e.g. vibrations, out of limits performance parameters, leaks.

	<ul style="list-style-type: none"> ◆ Able to rectify the defects in accordance with the procedures,e.g. vibrations, out of limits performance parameters, leaks. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to take action for abnormal and emergency occurrences in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the powerplant for use, storage or transit in accordance with the procedures,e.g. lock, inhibit, blank, remove from test bed, prepare for transit. ◆ Able to complete the task in the work area in accordance with the procedures,e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment.
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	<ul style="list-style-type: none"> ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for testing of aircraft turbo-fan or turbo-jet powerplants. (ii) Able to test the aircraft turbo-fan or turbo-jet powerplants on a test bed. (iii) Able to complete all the requirements associated with the testing task.
8. Remarks	Ref: NZQA - 20637

1. Title	Aeronautical component parts repairing and fabricating by brazing and soldering
2. Code	EMAMWS459A
3. Range	Fabrication or repair of aeronautical component parts in an aircraft hangar or workshop during the aircraft non-flight time. This is carried out on site in aircraft or in a laboratory/workshop environment.
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the principles concerning soldering and brazing, including : <ul style="list-style-type: none"> • uses and application of soldering and brazing • soldering and brazing methods <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to establish and document the task in accordance with the procedures. ◆ Able to make preparation for the work area and obtain the resources in accordance with the procedures, e.g. publications, materials, tooling, equipment, safety equipment, environmental conditions ◆ Able to execute soldering effectively to join aeronautical component in fabrication or repair work <ul style="list-style-type: none"> • suitable temperature • suitable time • suitable additives • suitable soldering iron tip • suitable handling of components

6.3 Professional approach

- ◆ Able to execute brazing effectively to join aeronautical component in fabrication or repair work
- ◆ Able to make preparation for equipment in accordance with the procedures, e.g. set up, made safe to work on, guards, isolation procedures, protective equipment.
- ◆ Able to maintain equipment in accordance with the procedures.
- ◆ Able to plan and verify the sequence of operations in accordance with the procedures.
- ◆ Able to solder or braze the component in accordance with the procedures.
- ◆ Able to measure and check the component for conformity with specifications, e.g. dimensional and angular accuracy, profile, surface finish, mis-match of cuts.
- ◆ Able to report, record and rectify the defects in accordance with the procedures
- ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.
- ◆ Able to complete the task within the stipulated duration.
- ◆ Able to solder and braze the components which can function according to their specifications.
- ◆ Able to prepare the components for use, storage or transit in accordance with the procedures, e.g. surface protection, packing.

	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, certification. ◆ Able to clean, prepare and store the tools and equipment for future use in accordance with the procedures. ◆ Able to handle the hazardous waste materials in accordance with the procedures. ◆ Able to leave the work area in a condition enabling next task to begin, in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to fabricate or repair aeronautical component by soldering and brazing. (ii) Able to clearly explain the soldering and brazing process. (iii) Able to prepare reports to record the soldering and brazing process.
8. Remarks	<p>(Ref: HKAR-66 Module 6.1-6.3 & 7.15)</p> <p>The Credit in this UoC is on the assumption of the person already possessed basic knowledge in soldering.</p> <p>Ref: NZQA - 4026</p>

1. Title	Aircraft external fabric covering applying and/or repair
2. Code	EMAMWS460A
3. Range	Apply and/or repair of aircraft external fabric covering are performed in an aircraft hangar or workshop by using appropriate tools or machines.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the material characteristics of the external fabric covering. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the component identification is matched with the documentation ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, safety equipment, publications. ◆ Able to cut the patterns and fabric to shape to meet the job requirements in accordance with the procedures. ◆ Able to jig the component to meet task requirements in accordance with the procedures ◆ Able to remove and repair or apply the fabric in accordance with the procedures,e.g. lacing, sewing, rejuvenating. ◆ Able to apply dope in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the item for storage, transit or use in accordance with the procedures. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to handle unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, work orders, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to apply and/or repair external fabric coverings over aircraft structures.</p>
8. Remarks	Ref: NZQA - 4071

1. Title	Aeronautical sheet metal folding	
2. Code	EMAMWS461A	
3. Range	Aeronautical sheet metal folding is performed in an aircraft hangar or workshop by using appropriate tools or machinery.	
4. Level	4	
5. Credit	3	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the characteristics of the sheet metals used in aircrafts. ◆ Understand the operation principles of folding tools, including: <ul style="list-style-type: none"> • folders, bend brakes, bend bars <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures, e.g. tools, materials, heat treatment state, equipment, safety equipment, publications. ◆ Able to make preparation for the material to meet the task requirements in accordance with the procedures. Including: <ul style="list-style-type: none"> • bend allowance calculation • marking out • cutting • deburring ◆ Able to shape material by folding to meet specifications in accordance with the procedures, e.g. folders, bend brakes, bend bars 	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the parts for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check and return the resources for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, including: <ul style="list-style-type: none"> • labels, work cards, work orders, release notes, log books, certification
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to fold aeronautical sheet metals using folders, bend brakes, and bend bars according to the specify requirements.</p>
8. Remarks	Ref: NZQA - 4072

1. Title	Aeronautical metals and components head treatment
2. Code	EMAMWS462A
3. Range	Aeronautical metals and components heat treatments are performed in an aircraft hangar or workshop by using appropriate tools or machines.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the knowledge of heat treatments.</p> <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ♦ Able to review the maintenance documents and procedures to decide on maintenance task. ♦ Able to make preparation for the work area and obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, safety equipment, environmental conditions established ♦ Able to set up equipment in accordance with the procedures, e.g. oven, salt bath, temperature stabilized, quenching tank prepared. ♦ Able to confirm the component identification is matched with the documentation. ♦ Able to prepare the component for heat treating in accordance with the procedures. ♦ Able to rack the item in oven or bath in accordance with the procedures. ♦ Able to control the soak time, temperature and ramp rate in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to remove and quench the item in accordance with the procedures. <li>◆ Able to control the heat treated state of item in accordance with the procedures,e.g. temperature, time. <li>◆ Able to test the heat treated item in accordance with the procedures,e.g. hardness, conductivity, tensile strength. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to return the work area in a condition enabling the next task to begin. <li>◆ Able to check and return the resources for serviceability in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, certification.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to carry out heat treatment to the aeronautical metals and components.
8. Remarks	Ref: NZQA - 4073

1. Title	Aircraft metal and composite structures visually inspection	
2. Code	EMAMWS463A	
3. Range	<p>Aeronautical metals and composite structures visually inspection are performed in an aircraft hangar or workshop by using appropriate tools or machines.</p> <p>Structures including: metal and composite structures, main frames, auxiliary structures, plates/skin, attached fittings, aerodynamic fairings, flight control surfaces, doors, rigid integral fuel tanks.</p> <p>Structural components do not need to be removed to meet the intent of this UoC.</p>	
4. Level	4	
5. Credit	5	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Preparation</p> <ul style="list-style-type: none"> ◆ Able to determine the inspection requirement by reviewing maintenance documentation and procedures. ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, cleaning materials, tools, safety equipment, illumination, magnifying glass, mirror. ◆ Able to clean the structural area to be inspected in accordance with the procedures. <p>6.2 Visually inspection</p> <ul style="list-style-type: none"> ◆ Able to visually inspect the structures in accordance with the procedures. ◆ Able to locate and identify the defects in accordance with the procedures, e.g. cracking, corrosion, distortion, leaks, fretting, stress, scoring, loose fasteners, damage to protective finish, wear delamination. 	

	<ul style="list-style-type: none"> ◆ Able to inspect the aircraft after an abnormal occurrence in accordance with the procedures, e.g. heavy landing, bird strike, lightning strike, extreme turbulence, foreign object damage, corrosive substance spillage, flap down over speed. Evidence is required for a minimum of three types of occurrence. ◆ Able to report and record the defects found during inspection in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the visual inspections of metal and composite aircraft structures. (ii) Able to visually inspect the aircraft metal and composite structures.
8. Remarks	Ref: NZQA - 4074

1. Title	Aircraft metal structure repair and/or fabrication
2. Code	EMAMWS464A
3. Range	Aircraft metal structure repair and/or modify are usually performed in an aircraft hangar or workshop by using appropriate tools or machines. Aircraft structure refers to - aircraft metal structures such as fuselages, empennages, wings, flight control surfaces, doors and panels.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the knowledge of aircraft metal structure.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, safety equipment, publications.</p> <p style="padding-left: 100px;">♦ Able to support the structure to maintain alignment in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to disassemble the structure to meet task requirements in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to assess the damage and locate the defects in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to modify and repair the structure in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to maintain the structural alignment during the repair or modification procedure in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to rectify the defects resulting from the repair or modification procedure in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to handle unused items, parts and materials in accordance with the procedures ◆ Able to check the resources for serviceability and returned to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the repair and/or modification of aircraft structure. (ii) Able to repair and/or modify the aircraft structure. (iii) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 4075</p>

1. Title	Aeronautical wooden structural components repair and fabrication
2. Code	EMAMWS465A
3. Range	Aircraft metal structure repair and/or modify are usually performed in an aircraft hangar or workshop by using appropriate tools or machines. Aircraft structure refers to - aircraft metal structures such as fuselages, empennages, wings, flight control surfaces, doors and panels.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the characteristic of the aeronautical wooden structural components.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 100px;">♦ Able obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, safety equipment, publications.</p> <p style="padding-left: 100px;">♦ Able to select the material to meet specifications in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to jig the component to meet task requirements in accordance with the procedures.</p> <p style="padding-left: 100px;">♦ Able to fabricate or repair the item to meet specifications in accordance with the procedures,e.g. shaping, joining, splicing, gluing, clamping.</p> <p style="padding-left: 100px;">♦ Able to rectify the non-conformities in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the item for storage, transit or use in accordance with the procedures. ◆ Able to check the resources for serviceability and return the resources in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to handle the unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to fabricate and repair the aeronautical wooden structural components including spars, longerons, stringers, ribs, and plywood skin.</p>
8. Remarks	Ref: NZQA - 4076

1. Title	Aircraft metal components assembly by using fasteners	
2. Code	EMAMWS466A	
3. Range	Assembly of parts in an aircraft hangar or workshop.	
4. Level	4	
5. Credit	9	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Types of fasteners and basic aerodynamics</p> <ul style="list-style-type: none"> ◆ Understand the various types of fasteners, covering: <ul style="list-style-type: none"> • screw nomenclature • identification and differentiation of different types • uses and applications, including compatibility with different engineering materials ◆ Understand the concept of basic aerodynamics <p>6.2 Assembly methods using different fasteners</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to make preparation for the work area, obtain and check the resources for serviceability or status, and set up in accordance with the procedures, e.g. publications, materials, fasteners, heat treatment states, tools, safety equipment, jigs, patterns, fixtures, environmental conditions. ◆ Able to prepare the component parts for assembly in accordance with the procedures. Range clean, inspect, mark out, align. 	

	<ul style="list-style-type: none">◆ Able to prepare the fastener holes in accordance with the procedures, e.g. determine physical clearance. drill, ream, countersink, deburr, dimple. Able to make preparation for surfaces of parts in accordance with the procedures, e.g. clean, chemically convert, apply jointing compound, paint.◆ Able to assemble parts in accordance with the procedures, e.g. adjust to fit, fit skin clamps and/or alignment rivets, align fastener holes.◆ Able to install fasteners in accordance with the procedures, e.g. blind and solid shank rivets, blind and solid bolts, special fasteners.◆ Able to rectify the defects in accordance with the procedures, e.g. misalignment, deflections, malformed fasteners, stress raisers, foreign objects.◆ Able to apply sealant in accordance with the procedures, e.g. weather proofing, sealing.◆ Able to perform inspections in accordance with the procedures.◆ Able to apply correct methods to assemble engineering parts, ensuring :<ul style="list-style-type: none">• sufficient strength at the joint e.g. application of correct fasteners• streamlining of the assembly
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing. ◆ Able to return resources to service or storage and check the resources are for serviceability in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the assembly of components. (ii) Able to assemble the components. (iii) Able to complete all the requirements associated with the assembly task.

8. Remarks	<p>(Ref: HKAR-66 Module 6.1-6.5, 7.5, 7.18 & 8)</p> <p>The Credit in this UoC is on the assumption of the person already possessed the basic workshop practices, use of tools and work safety.</p> <p>(Ref: HKAR-66 Module 11.1 - 11.3, 12.1, 12.3, 12.5, 13.1 & 13.2)</p> <p>The Credit in this UoC is on the assumption of the person already possessed foundation knowledge in the use of general assembly tools.</p> <p>NZQA - 4078</p>
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1. Title	Aeronautical sheet metal forming by rubber pressing
2. Code	EMAMWS467A
3. Range	Rubber pressing are performed in an aircraft hangar or workshop by using appropriate tools or machines.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the characteristic of the aeronautical sheet metal.</p> <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ♦ Able to review the maintenance documents and procedures to decide on maintenance task. ♦ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, tools, materials, equipment, safety equipment. ♦ Able to cut the material to meet specifications in accordance with the procedures, e.g. marking out, cutting. ♦ Able to centrally locate the form blocks in press. ♦ Able to locate the material in form blocks to ensure final shape meets specifications. ♦ Able to press the item to meet specifications in accordance with the procedures. ♦ Able to rectify the non-conformities in accordance with the procedures. ♦ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the item for storage, transit or use in accordance with the procedures. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check the resources for serviceability and return the resources in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused items, parts and materials in accordance with the procedures. ,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to form the aeronautical sheet metal by rubber pressing.</p>
8. Remarks	<p>Ref: NZQA - 4079</p>

1. Title	Aeronautical metal components assembly by bonding	
2. Code	EMAMWS468A	
3. Range	Aeronautical metal components bonding are performed in an aircraft hangar or workshop by using appropriate tools or machines.	
4. Level	4	
5. Credit	9	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the characteristic of the aeronautical metal components.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able to make preparation for the work area, and obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, heat treatment state, tools, safety equipment, jigs, patterns, fixtures, environmental conditions established.</p> <p style="padding-left: 150px;">♦ Able to prepare the component parts and test pieces for assembly in accordance with the procedures,e.g. clean, inspect, mark out, align.</p> <p style="padding-left: 150px;">♦ Able to prepare the fastener holes in accordance with the procedures,e.g. drill, ream, clearance, countersink, deburr, dimple.</p> <p style="padding-left: 150px;">♦ Able to assemble and bond the component parts and test pieces are in accordance with the procedures,e.g. surfaces prepared, fit alignment fasteners, apply bonding agent, adjust to fit.</p>	

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to apply the pressure and/or temperature to parts in accordance with the procedures,e.g. clamp, vacuum bag, heat source, thermocouples. <li>◆ Able to rectify the non-conformities in accordance with the procedures,e.g. test piece peel strength, damage, misalignment, foreign objects, stress raisers, continuity. <li>◆ Able to apply sealant in accordance with the procedures,e.g. for weatherproofing, tank sealing, pressure sealing. <li>◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, inhibiting, blanking, packing.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and return the resources in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused items, parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin, in accordance with the procedures
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to assemble the aeronautical metal components by bonding parts together using bonding agents.</p>
8. Remarks	Ref: NZQA - 4080

1. Title	Aircraft plastic transparencies repair
2. Code	EMAMWS469A
3. Range	Aircraft plastic transparencies repairing are performed in an aircraft hangar or workshop by using appropriate tools or machines.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the characteristic of the plastic transparencies.</p> <p>6.2 Methods and procedures ♦ Able to review the maintenance documents and procedures to decide on maintenance task.</p> <p style="padding-left: 150px;">♦ Able obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, tools, materials, equipment, safety equipment.</p> <p style="padding-left: 150px;">♦ Able to confirm the transparency to be repaired is matched with the aircraft registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to determine the method of rectifying defects in accordance with the procedures.</p> <p style="padding-left: 150px;">♦ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.</p> <p style="padding-left: 150px;">♦ Able to rectify the transparency defects in accordance with the procedures,e.g. replace, modify, blend, patch, stop drill, stitch, polish, seal.</p> <p style="padding-left: 150px;">♦ Able to form the Plastic patches are to shape in accordance with the procedures.</p>

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to return the work area in a condition enabling the next task to begin. ◆ Able to check the resources for serviceability and return the resources in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused items, parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to form the aeronautical sheet metal by rubber pressing.</p>
8. Remarks	<p>Ref: NZQA - 4082</p>

1. Title	Analysis of data collected from engine indication systems in piston engines for troubleshooting engine defects
2. Code	EMAMWS470A
3. Range	Troubleshooting engine defects in piston engines in an aircraft hangar or workshop during the aircraft grounded time.
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 General mathematical calculation</p> <ul style="list-style-type: none"> ◆ Understand the theories and principles in basic mathematics for solving engineering problems, covering : <ul style="list-style-type: none"> • Arithmetic • Algebra • Geometry <p>6.2 Data analysis</p> <ul style="list-style-type: none"> ◆ Able to use mathematical solving skills and ability of analysis of engine data to troubleshoot engine defects in accordance with the procedures <ul style="list-style-type: none"> • examples of engine data : exhaust gas temperature, engine speed and oil pressure and temperature <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to use objective judgment to troubleshoot the problems in engines in accordance with the procedures. ◆ Able to complete the task within the stipulated duration.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to apply mathematical calculation to assist in analysis of data collected from engine indicating systems.</p> <p>(ii) Able to clearly explain analyzed engine data and describe the working conditions of the engines.</p>

8. Remarks	(Ref: HKAR-66 Module 1, 14.2 & 16.10) The Credit in this UoC is on the assumption of the person already possessed basic knowledge in the significance of engine parameters.
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1. Title	Aeronautical components, tooling and machine tools inspection and calibration by using optical tooling
2. Code	EMAMWS471A
3. Range	Inspect and calibrate aeronautical components, tooling, and machine tools by optical tooling are usually carried out on the aircraft in the hangar,e.g. examples of precision optical tooling - test stands, theodolites, telescopes, prisms, mirrors
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Prepare to use optical tooling to inspect and calibrate aeronautical components, tooling, and machine tools</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain and check the resources for serviceability or status in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to setup the optical tooling in accordance with the procedures. <p>6.2 Inspect and calibrate</p> <ul style="list-style-type: none"> ◆ Able to inspect and calibrate the tooling in accordance with the procedures,e.g. field, test stand, alignment standards, measurement systems, datum identification. ◆ Able to perform inspections in accordance with the procedures. ◆ Able to inspect and calibrate the items in accordance with the procedures,e.g. tooling, structures, systems, components, machinery.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. activities may include - tool control, cleanliness, tidiness, return of publications, preparation for next activity, return of aircraft and systems to normal. ◆ Able to complete the documentation in accordance with the procedures
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for using the optical tools to inspect and calibrate aeronautical components, tooling, and machine tools. (ii) Able to inspect and calibrate the items. (iii) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 4030</p>

1. Title	Aeronautical component parts repair and/or fabrication by welding
2. Code	EMAMWS472A
3. Range	Fabrication or repair of aeronautical component parts in an aircraft hangar or workshop during the aircraft non-flight time. This is carried out on site in aircraft or in a laboratory/workshop environment.
4. Level	4
5. Credit	8
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Understand the principles concerning welding, including : <ul style="list-style-type: none"> • uses and application of welding • relation between welding parameters and weld quality <p>6.2 Weld aeronautical materials, e.g. pipe, sheet metal, plate metal</p> <ul style="list-style-type: none"> ◆ Able to confirm the component identity with documentation by comparing serial and part numbers. ◆ Able to review the documents and procedures, e.g. repair, fabricate ◆ Able to make preparation for the work area and obtain the resources in accordance with the procedures, e.g. publications, materials, tools, safety equipment, environmental conditions established. ◆ Able to isolate, minimize or eliminate hazards in accordance with the procedures, e.g. electrical, radiation (arc, flame), fire, explosion, ventilation, compressed gas, confined space, chemical.

	<ul style="list-style-type: none">◆ Able to set up and maintain equipment in accordance with the procedures, e.g. power source, shielding gas supply, torch assembly, purge equipment.◆ Able to identify and prepare parent metal for welding in accordance with the procedures, e.g. cleaning, edge preparation, surface preparation (e.g.: grinding, filing), preheating.◆ Able to execute welding effectively to join aeronautical materials in fabrication or repair work.◆ Able to identify weld requirements from specifications.◆ Able to use control measures to minimize distortion in accordance with the procedures, e.g. avoid over welding, fit-up, clean, joint preparation, weld sequence, heat sinks.◆ Able to deposit welds to meet specifications in accordance with the procedures.◆ Able to purge joint in accordance with the procedures.◆ Able to cool joint in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to identify non-conformities in accordance with the procedures.◆ Able to rectify the non-conformities in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the welded part for use, storage or transit in accordance with the procedures, e.g. inhibiting, blanking, packing. ◆ Able to check the resources for serviceability and return the resources in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release note, log books, certification. ◆ Able to left the work environment in a state which enables the next task to begin in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to fabricate and repair the aeronautical components using gas tungsten arc and/or plasma arc welding processes.</p> <p>This unit standard supplements general engineering unit standards enabling people to meet aeronautical welding standards.</p>

8. Remarks	(Ref: HKAR-66 Module 6.1-6.3 & 7.15) The Credit in this UoC is on the assumption of the person already possessed basic knowledge in soldering. Ref: NZQA - 4035
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1. Title	Aircraft passenger address system components repair
2. Code	EMAMAV401A
3. Range	Aircraft passenger address system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. audio tapedecks, CD players, PA amplifiers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft passenger address system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

- ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.
- ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.
- ◆ Able to determine and record the rectification action in accordance with the procedures.
- ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.
- ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.
- ◆ Able to assemble the component in accordance with the procedures.
- ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.
- ◆ Able to prepare the component for test in accordance with the procedures.
- ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
- ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft passenger address components to serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
<p>8. Remarks</p>	<p>Ref: NZQA - 22546</p>

1. Title	Aircraft passenger entertainment system components repair
2. Code	EMAMAV402A
3. Range	Aircraft passenger entertainment system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. multiplex components may include - multiplexer, column tuner and decoder, seat electronics unit, passenger service decoder, passenger control unit.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft passenger entertainment system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to assemble the component in accordance with the procedures.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to complete the task within the stipulated duration. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft passenger address components to serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22547

1. Title	Aircraft high frequency (HF) communication system components repair
2. Code	EMAMAV403A
3. Range	Aircraft high frequency (HF) communication system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft high frequency (HF) communication system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.◆ Able to perform inspections after test in accordance with the procedures,e.g. independent, progressive.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft HF radio communication system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22548

1. Title	Repair aircraft very high frequency (VHF) communication system components
2. Code	EMAMAV404A
3. Range	Aircraft very high frequency (VHF) communication system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft very high frequency (VHF) communication system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to assemble the component in accordance with the procedures.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft VHF radio communication system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22549

1. Title	Aircraft ultra high frequency (UHF) communication system components repair
2. Code	EMAMAV405A
3. Range	Aircraft ultra high frequency (UHF) communication system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft ultra high frequency (UHF) communication system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to assemble the component in accordance with the procedures.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft UHF radio communication system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22550

1. Title	Aircraft video tape players repair
2. Code	EMAMAV406A
3. Range	The aircraft video tape players repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft video tape players. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to keep the aircraft video tape players in a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22551

1. Title	Aircraft in-flight entertainment video display repair
2. Code	EMAMAV407A
3. Range	The aircraft in-flight entertainment video display repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft in-flight entertainment video display. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to keep the aircraft in-flight entertainment video display units in a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22552

1. Title	Aircraft galley heating equipment repair
2. Code	EMAMAV408A
3. Range	Aircraft galley heating equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. ovens, water heaters.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft galley heating equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft galley heating equipment to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22553

1. Title	Aircraft galley chilling equipment repair
2. Code	EMAMAV409A
3. Range	Aircraft galley chilling equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. chillers, refrigerators.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft galley chilling equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft galley chilling equipment to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22554

1. Title	Aircraft lead-acid batteries repair
2. Code	EMAMAV410A
3. Range	Aircraft lead-acid batteries repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft lead-acid batteries. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the battery identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the battery in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the battery in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the battery for test in accordance with the procedures.◆ Able to test and adjust the battery in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to repair the aircraft lead-acid batteries by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, charging, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22555

1. Title	Aircraft nickel-cadmium batteries repair
2. Code	EMAMAV411A
3. Range	Aircraft nickel-cadmium repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft nickel-cadmium batteries. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the battery identification is matched with the documentation. ◆ Able to prepare the battery for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the battery in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the battery in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to prepare the battery for test in accordance with the procedures. ◆ Able to test and adjust the battery in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to repair the aircraft nickel-cadmium batteries by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, charging, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22556

1. Title	Aircraft digital computer equipment repair
2. Code	EMAMAV412A
3. Range	Aircraft digital computer equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft digital computer equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft digital computer equipment that is tested on automatic test equipment to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22557

1. Title	Aircraft digital computer peripheral equipment repair
2. Code	EMAMAV413A
3. Range	Aircraft digital computer peripheral equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. data loaders, keyboards and other input/output devices.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the digital computer peripheral equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft computer system peripheral components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22558

1. Title	Electromechanical air data instruments repair
2. Code	EMAMAV414A
3. Range	<p>Electromechanical air data instruments repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.</p> <p>Range controllers. engine pressure ratio transducers. air data computers. Total Air Temperature, Static Air Temperature and True Air Speed computers. altimeters. altitude encoders. airspeed indicators. Machmeters. vertical speed indicators.</p>
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the electromechanical air data instruments. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task.,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures.,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes.
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	<ul style="list-style-type: none"> ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft electromechanical air data instruments to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22559

1. Title	Mechanical air data instruments repair
2. Code	EMAMAV415A
3. Range	Mechanical air data instruments repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. controllers. Static Air Temperature and True Air Speed computers. barometric altimeters. airspeed indicators. Machmeters. vertical speed indicators.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the mechanical air data instruments. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft mechanical air data instruments to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22560

1. Title	Aircraft pressure sensing digital air data computers repair
2. Code	EMAMAV416A
3. Range	Aircraft pressure sensing digital air data computers repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft pressure sensing digital air data computers. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft pressure sensing digital air data computers to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22561

1. Title	Aircraft electronic instrument displays repair
2. Code	EMAMAV417A
3. Range	Aircraft electronic instrument displays repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electronic instrument displays. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to assemble the component in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft electronic instrument displays to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22562

1. Title	Aircraft electronic multifunction displays repair
2. Code	EMAMAV418A
3. Range	Aircraft electronic multifunction displays repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electronic multifunction displays. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft multifunction displays to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22563

1. Title	Aircraft electronic character and/or symbol generators repair
2. Code	EMAMAV419A
3. Range	Aircraft electronic character and/or symbol generators repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electronic character and/or symbol generators. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft electronic character and/or symbol generators to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22564

1. Title	Aircraft electronic power control and distribution system components repair
2. Code	EMAMAV420A
3. Range	Aircraft electronic character and/or symbol generators repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electronic power control and distribution system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures,e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft electronic power control and distribution system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22565

1. Title	Aircraft solid state invertors repair
2. Code	EMAMAV421A
3. Range	Aircraft solid state invertors repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft solid state invertors. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to assemble the component in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures,e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures,e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft solid state invertors to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22566

1. Title	Aircraft transformer rectifier units repair	
2. Code	EMAMAV422A	
3. Range	Aircraft transformer rectifier units repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.	
4. Level	4	
5. Credit	5	
6. Competency	<p>6.1 Working principles</p> <p>6.2 Methods and procedures</p>	<ul style="list-style-type: none"> ◆ Performance Requirement ◆ Understand the working principles for the aircraft transformer rectifier units. ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to assemble the component in accordance with the procedures.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft transformer rectifier units to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	<p>Ref: NZQA - 22567 (Ref: HKAR-66 Module 3.15) The Credit in this UoC is on the assumption of the person already possessed basic knowledge in electric circuits.</p>

1. Title	Aircraft electromechanical regulators repair
2. Code	EMAMAV423A
3. Range	Aircraft electromechanical regulators repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. voltage regulators, reverse, current cutouts, current limiters.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electromechanical regulators. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft electromechanical regulators to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22568

1. Title	Aircraft primary airborne radar transceivers repair
2. Code	EMAMAV424A
3. Range	Aircraft primary airborne radar transceivers repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft primary airborne radar transceivers. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft primary airborne radar system transmitter-receivers (transceivers) to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
<p>8. Remarks</p>	<p>Ref: NZQA - 22569</p>

1. Title	Aircraft primary radar antenna drive units and control panels repair
2. Code	EMAMAV425A
3. Range	Aircraft primary radar antenna drive units and control panels repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft primary radar antenna drive units and control panels. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft primary airborne radar system antenna drive units, waveguides, waveguide switches, and control panels, to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22570

1. Title	Aircraft distance measuring equipment repair
2. Code	EMAMAV426A
3. Range	Aircraft distance measuring equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. controllers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft distance measuring equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft distance measuring equipment transmitter-receivers to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22571

1. Title	Aircraft tactical Air Navigation system components repair
2. Code	EMAMAV427A
3. Range	Aircraft tactical air navigation system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. controllers
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft tactical air navigation system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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b	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft tactical air navigation system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22572

1. Title	Aircraft transponder system components repair
2. Code	EMAMAV428A
3. Range	Aircraft transponder system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. controllers
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft transponder system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release note. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft secondary surveillance radar transmitter-receivers, Traffic Collision Avoidance System computers or transponders (Identification Friend or Foe) to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22573

1. Title	Aircraft very high frequency (VHF) omnidirectional range system components repair
2. Code	EMAMAV429A
3. Range	Aircraft very high frequency (VHF) omnidirectional range system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. controllers
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft very high frequency (VHF) omnidirectional range system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to assemble the component in accordance with the procedures.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft very high frequency omnidirectional range finding receivers to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
<p>8. Remarks</p>	<p>Ref: NZQA - 22574</p>

1. Title	Aircraft instrument landing system components repair
2. Code	EMAMAV430A
3. Range	Aircraft instrument landing system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. controllers
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft instrument landing system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft instrument landing system receivers to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22575

1. Title	Aircraft automatic direction finder system components repair
2. Code	EMAMAV431A
3. Range	Aircraft automatic direction finder system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. controllers
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft automatic direction finder system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task ,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft automatic direction finder receivers to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22576

1. Title	Aircraft fiber optic conductors and harness assemblies Repair and/or fabrication
2. Code	EMAMAV432A
3. Range	Aircraft fiber optic conductors and harness assemblies repair and/or fabricate activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft fiber optic conductors and harness assemblies. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to obtain the resources check them for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, safety equipment, publications. ◆ Able to repair and/or fabricate Conductors and harness assemblies are in accordance with the procedures,e.g. conductor preparation, conductor marking and labeling, crimping, potting, lacing, plugs and connectors removed and fitted ◆ Able to confirm the component identification is matched to the documentation in accordance with the procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to rectify the non-conformities in accordance with the procedures. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to repair and/or fabricate the aircraft fiber optic conductors and harness assemblies.</p>
<p>8. Remarks</p>	<p>Ref: NZQA - 22577</p>

1. Title	Aircraft audio system components repair
2. Code	EMAMAV433A
3. Range	Aircraft audio system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. microphones, audio amplifiers, headphones, speakers, audio switching units, audio controllers, junction boxes, handsets
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft audio system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft audio system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22929

1. Title	Aircraft LORAN navigation system components repair
2. Code	EMAMAV434A
3. Range	Aircraft LORAN navigation system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. receiver processor units, control display units, antennas
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft LORAN navigation system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft LORAN navigation system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22930

1. Title	Aircraft electronic engine control system components repair
2. Code	EMAMAV435A
3. Range	Aircraft electronic engine control system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. synchrophasers, synchronisers, temperature datum controllers, sensors, control position transmitters
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electronic engine control system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft engine control system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22931

1. Title	Aircraft compass system components repair
2. Code	EMAMAV436A
3. Range	Aircraft compass system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. compensators, slaving and accessory amplifiers, direct reading compasses.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft compass system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft compass system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22932

1. Title	Aircraft flight data recording equipment repair
2. Code	EMAMAV437A
3. Range	Aircraft flight data recording equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. flight data recorders.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft flight data recording equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft flight data recording equipment to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22933

1. Title	Aircraft electrical and electronic switching equipment repair
2. Code	EMAMAV438A
3. Range	Aircraft electrical and electronic switching equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. switches, solenoids, contactors, relays, circuit breakers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electrical and electronic switching equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft electrical and electronic switching equipment to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22934

1. Title	Aircraft gyroscopic instrument system components repair and/or recondition
2. Code	EMAMAV439A
3. Range	Aircraft gyroscopic instrument system components repair and/or recondition activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. air driven and/or electrical, may include - rate, rate gyros, displacement gyros, directional gyros, vertical gyros, turn and slip indicators, artificial horizons, directional indicators, turn coordinators.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft gyroscopic instrument system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. <li>◆ Able to perform inspections after test in accordance with the procedures,e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures,e.g. locking, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures,e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures,e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous.
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	<ul style="list-style-type: none"> ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft gyroscopic instrument system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22935

1. Title	Aircraft ground proximity warning system components repair
2. Code	EMAMAV440A
3. Range	Aircraft ground proximity warning system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft ground proximity warning system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft ground proximity warning system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22936

1. Title	Aircraft reciprocating engine ignition system components repair
2. Code	EMAMAV441A
3. Range	Aircraft reciprocating engine ignition system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. magnetos, ignition harnesses, spark plugs, capacitive discharge ignitors.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft reciprocating engine ignition system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft reciprocating engine ignition system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22937

1. Title	Aircraft radio and radar altimeter system components repair
2. Code	EMAMAV442A
3. Range	Aircraft radio and radar altimeter system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. transmitter-receivers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft radio and radar altimeter system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft radio and radar altimeter system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22938

1. Title	Aircraft direct reading instrument system components repair
2. Code	EMAMAV443A
3. Range	Aircraft direct reading instrument system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. pressure gauges, voltmeters, ammeters, clocks, accelerometers, thermometers, tachometers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft direct reading instrument system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft direct reading instrument system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22939

1. Title	Aircraft remote reading quantitative instruments and components repair
2. Code	EMAMAV444A
3. Range	Aircraft remote reading quantitative instruments and components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. quantity indicators and transmitters, flow indicators and transmitters, electromechanical indicators, position indicators and transmitters, temperature indicators and transmitters, pressure indicators and transmitters, tacho generators and instruments.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft remote reading quantitative instruments and components. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair.

	<ul style="list-style-type: none"> ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task. ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes
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	<ul style="list-style-type: none"> ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to return the aircraft remote reading quantitative instruments and components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22940

1. Title	Aircraft gas turbine engine ignition system components repair
2. Code	EMAMAV445A
3. Range	Aircraft gas turbine engine ignition system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. high energy igniter units, ignition control units, harnesses, igniters.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft gas turbine engine ignition system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures,e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to complete the task within the stipulated duration. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the gas turbine engine ignition system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22941

1. Title	Aircraft electrical rotating machines repair and/or recondition	
2. Code	EMAMAV446A	
3. Range	Aircraft electrical rotating machines repair and/or recondition activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. AC and DC motors, generators, alternators, actuators, inverters.	
4. Level	4	
5. Credit	9	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electrical rotating machines. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task. 	

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft electrical rotating machines to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22943

1. Title	Aircraft remote reading flight instruments and components repair
2. Code	EMAMAV447A
3. Range	Aircraft remote reading flight instruments and components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. horizontal situation indicators, attitude and direction/flight director indicators, automatic direction finder indicators, instrument landing systems indicators, radio magnetic indicators, omnidirectional bearing indicators, vertical speed indicators, altimeters, air speed indicators/machmeters, bearing distance heading indicators.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft remote reading flight instruments and components. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair.

	<ul style="list-style-type: none">◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures,e.g. clean, label, preserve, segregate, store.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures,e.g. identify, inspect.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to rectify the defects in accordance with the procedures,e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive.◆ Able to prepare the component for test in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance. ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes.
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	<ul style="list-style-type: none"> ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <ul style="list-style-type: none"> (i) Able to return the aircraft remote reading flight instruments and components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 22968

1. Title	Aircraft wiring loom and harness assemblies Repair and/or fabrication
2. Code	EMAMAV448A
3. Range	Aircraft wiring loom and harness assemblies repair and/or fabricate activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft wiring loom and harness assemblies. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task. ◆ Able to confirm the component identification is matched to the documentation in accordance with the procedures. ◆ Able to obtain the resources check them for serviceability or status in accordance with the procedures,e.g. tools, materials, equipment, safety equipment, publications. ◆ Able to find and analyze the defects in accordance with the procedures. ◆ Able to repair and/or fabricate the Harness assemblies and wiring looms accordance with procedures,e.g. wire stripping, wire marking and labeling, crimping, soldering, potting, lacing, plugs and connectors removed and fitted, corrosion/contamination control, vibration and flexing control

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to repair and/or fabricate the aircraft wiring loom and harness assemblies.</p>
8. Remarks	Ref: NZQA - 3955

1. Title	Aircraft electric cabin heating system components repair
2. Code	EMAMAV449A
3. Range	Aircraft electric cabin heating system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. bimetallic and resistive temperature sensors, controllers, electric heaters.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electric cabin heating system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft electric cabin heating system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 22942

1. Title	Commercial aviation optical system components repair
2. Code	EMAMAV450A
3. Range	Commercial aviation optical system components repair and overhaul activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. head up displays, cathode ray tube displays, liquid crystal displays, low light television, digital and analogue video cameras and recorders.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the commercial aviation optical system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the commercial aviation optical system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3956

1. Title	Aircraft navigation computing system components repair
2. Code	EMAMAV451A
3. Range	Aircraft navigation computing system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. dead reckoning, area navigation computers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft navigation computing system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft navigation computing system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3964

1. Title	Aircraft electrical anti-icing and de-icing system components repair
2. Code	EMAMAV452A
3. Range	Aircraft electrical anti-icing and de-icing system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. leading edge heaters, propeller heaters, pitot heaters, intake cowls, control units, sensors.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft electrical anti-icing and de-icing system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft electrical anti-icing and de-icing system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 3965

1. Title	Aircraft automatic electronic braking system components repair
2. Code	EMAMAV453A
3. Range	Aircraft automatic electronic braking system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. sensors, controllers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft automatic electronic braking system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft automatic electronic braking system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 3966

1. Title	Aircraft autopilot system components repair and/or recondition
2. Code	EMAMAV454A
3. Range	Aircraft autopilot system components repair and/or recondition activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. include a representative range of autopilot system components, such as - flight control computers, position transmitters, controllers, control column sensors, servos, accelerometers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft autopilot system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g.locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g.tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g.serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft autopilot system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting.</p>
8. Remarks	Ref: NZQA - 3967

1. Title	Aircraft fire detection and protection system components repair
2. Code	EMAMAV455A
3. Range	Aircraft fire detection and protection system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. fire wires, bimetallic strips, smoke sensors, resistive temperature sensors, squibs, controllers.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft fire detection and protection system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g.confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g.publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g.clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g.locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedure, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g.independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g.locking, inhibiting, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g.tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g.labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft fire detection and protection system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3978

1. Title	Aircraft global positioning system components repair
2. Code	EMAMAV456A
3. Range	Aircraft global positioning system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g.controls, displays, antennas.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft global positioning system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g.publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the component for repair in accordance with the procedures, e.g.clean, inspect, assess economics of carrying out repair. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to determine and record the next task in accordance with the procedure, e.g.locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g.clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g.identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g.repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g.independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g.troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g.independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g.locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g.serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft global positioning system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 3979

1. Title	Aircraft inertial navigation system components repair
2. Code	EMAMAV457A
3. Range	Aircraft inertial navigation system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft, e.g. inertial sensor unit, control display unit.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft inertial navigation system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task, e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures, e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures, e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures, e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g.clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g.identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g.repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g.independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g.troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedure, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft inertial navigation system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3981

1. Title	Aircraft lighting system components repair
2. Code	EMAMAV458A
3. Range	Aircraft lighting system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. anti-collision, navigation, high intensity, cockpit and cabin, instrument and console, landing, warning, lighting control.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft lighting system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task ,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store. ◆ Able to determine and record the rectification action in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust. ◆ Able to assemble the component in accordance with the procedures. ◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive. ◆ Able to prepare the component for test in accordance with the procedures. ◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	The integral outcome requirement of this UoC is: (i) Able to return the aircraft lighting system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.
8. Remarks	Ref: NZQA - 3982

1. Title	Aircraft pitot static systems components repair
2. Code	EMAMAV459A
3. Range	Aircraft pitot static system components repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft,e.g. pitot pressure heads, static vents, drain traps, heaters, pipelines, filters.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft pitot static system. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, duplicate, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft pitot static system components to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3984

1. Title	Aeronautical electronic test equipment repair	
2. Code	EMAMAV460A	
3. Range	<p>Aeronautical electronic test equipment repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.</p> <p>Range aircraft built-in and portable electronic test equipment.</p>	
4. Level	4	
5. Credit	9	
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aeronautical electronic test equipment. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task ,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task. 	

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aeronautical electronic test equipment to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3994

1. Title	Aircraft cockpit voice recorders and area microphones repair
2. Code	EMAMAV461A
3. Range	Aircraft cockpit voice recorders and area microphones repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aircraft cockpit voice recorders and area microphones. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none">◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures.◆ Able to report and record the defects in accordance with the procedures.◆ Able to disassemble the component in accordance with the procedures, e.g. clean, label, preserve, segregate, store.◆ Able to determine and record the rectification action in accordance with the procedures.◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect.◆ Able to rectify the defects in accordance with the procedures, e.g. repair, replace, modify, adjust.◆ Able to assemble the component in accordance with the procedures.◆ Able to perform inspections in accordance with the procedures, e.g. independent, duplicate, progressive.◆ Able to prepare the component for test in accordance with the procedures.◆ Able to test and adjust the component in accordance with the procedures, e.g. troubleshoot, functionally test, calibrate, adjust, document adjustments and performance.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> <li>◆ Able to perform inspections after test in accordance with the procedures, e.g. independent, progressive. <li>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. <li>◆ Able to complete the task within the stipulated duration. <li>◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement. <li>◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. <li>◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. <li>◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. <li>◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
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7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the aircraft cockpit voice recorders and area microphone units to a serviceable condition by disassembling, checking for and reporting damage, repairing, modifying or replacing parts, reassembling, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3996

1. Title	Avionic printed circuit boards repair
2. Code	EMAMAV462A
3. Range	Avionic printed circuit boards repair activity is usually carried out in a specialist bay or workshop on components that have been removed from the aircraft.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the avionic printed circuit boards. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to confirm the component identification is matched with the documentation. ◆ Able to prepare the component for repair in accordance with the procedures,e.g. clean, inspect, assess economics of carrying out repair. ◆ Able to determine and record the next task in accordance with the procedures,e.g. locate defects, repair, test, adjust, complete the task.

	<ul style="list-style-type: none"> ◆ Able to locate the defects using troubleshooting techniques and inspection procedures appropriate to the defects indications in accordance with the procedures. ◆ Able to inspect the circuit board for damage in accordance with the procedures, e.g. burns, track damage, pad damage ◆ Able to report and record the defects in accordance with the procedures. ◆ Able to prevent electro-static damage in accordance with the procedures. ◆ Able to remove and apply the conformal coatings in accordance with the procedures. ◆ Able to procure the replacement parts and verify their authenticity and serviceability in accordance with the procedures, e.g. identify, inspect. ◆ Able to replace parts in accordance with the procedures. ◆ Able to test the repaired printed circuit board in accordance with the procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the component for use, storage or transit in accordance with the procedures, e.g. locking, inhibiting, blanking, packing, shelf-life requirement.
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	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes, log books, certification. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to return the avionic printed circuit boards to a serviceable condition by checking for and reporting damage, repairing or replacing parts, testing and documenting the work.</p>
8. Remarks	Ref: NZQA - 3999

1. Title	Aeronautical printed circuit boards etching
2. Code	EMAMAV463A
3. Range	Aeronautical printed circuit boards etching is usually carried out in a specialist bay or workshop.
4. Level	4
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Working principles</p> <ul style="list-style-type: none"> ◆ Understand the working principles for the aeronautical printed circuit boards etching. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to review the maintenance documents and procedures to decide on maintenance task,e.g. confirm fault, repair, modify ◆ Able to prepare the work area, obtain and check the resources for serviceability or status in accordance with the procedures,e.g. publications, materials, tools, equipment, safety equipment, environmental conditions established. ◆ Able to prepare the board substrate material for fabrication in accordance with the procedures,e.g. clean, inspect, check specification. ◆ Able to mask the substrate material in accordance with the procedures,e.g. clean, photo-sensitize, expose, develop. ◆ Able to inspect the masked board in accordance with the procedures,e.g. inspect using standards, specifications, precision measuring equipment.

	<ul style="list-style-type: none"> ◆ Able to rectify the non-conformities found during masking in accordance with the procedures,e.g. repair, rework. ◆ Able to prepare the board and etchant bath for etching in accordance with the procedures,e.g. clean, check bath temperature and chemical composition. ◆ Able to etch the board in accordance with the procedures,e.g. time, temperature. ◆ Able to inspect the etched board in accordance with the procedures,e.g. remove resist, visual inspection. ◆ Able to finish the etched board to required standard in accordance with the procedures,e.g. drill eyelet holes, tin, serial number. ◆ Able to perform inspections in accordance with the procedures,e.g. independent, progressive.
6.3 Professional approach	<ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to prepare the board for use, storage or transit in accordance with the procedures,e.g. inhibiting, packing.

	<ul style="list-style-type: none"> ◆ Able to check the resources for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment, publications. ◆ Able to handle the unused parts and materials in accordance with the procedures, e.g. serviceable, unserviceable, surplus, waste, scrap, hazardous. ◆ Able to complete the documentation in accordance with the procedures, e.g. labels, work cards, release notes. ◆ Able to return the work area in a state which enables the next task to begin in accordance with the procedures.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC is:</p> <p>(i) Able to fabricate the aeronautical printed circuit boards by masking, etching and documenting the work.</p>
8. Remarks	Ref: NZQA - 4065

1. Title	Avionic repair skills
2. Code	EMAMAV464A
3. Range	Avionic repair skills are usually applied in a specialist bay or workshop.
4. Level	4
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Test semiconductor devices</p> <ul style="list-style-type: none"> ◆ Able to identify the semiconductor devices and match circuit specifications. ◆ Able to establish the serviceability of semiconductor devices in accordance with standard industry practices, e.g. diodes, transistors, using ohmmeter to detect open and short circuits. ◆ Able to identify the semiconductor device terminals and match information contained in circuit specifications <p>6.2 Repair avionic printed wiring assemblies</p> <ul style="list-style-type: none"> ◆ Able to remove and install the printed wiring components in accordance with standard industry practices. ◆ Able to solder the printed wiring components in accordance with standard industry practices, e.g. using large iron, soldering station, continuous vacuum extractor, rework and repair station. ◆ Able to rework and repair the printed circuit boards in accordance with standard industry practices, e.g. single-sided, double-sided, multilayer, flexible.

	<p>6.3 Test avionic components</p> <p>6.4 Apply avionic repair procedures</p>	<ul style="list-style-type: none"> ◆ Able to determine the testing task in accordance with standard industry practices,e.g. avionic equipment identified, test procedures determined. ◆ Able to select the test equipment in terms of the task requirements,e.g. analogue and digital multimeter, logic probe, oscilloscope, frequency counter, signal generator, capacitance meter. ◆ Able to operate the test equipment in accordance with manufacturer’s instructions,e.g. analogue and digital multimeter, logic probe, oscilloscope, frequency counter, signal generator, capacitance meter. ◆ Able to test the avionic components for serviceability in accordance with manufacturer’s specifications. ◆ Able to demonstrate the repair procedures meet standard industry practices,e.g. disassembly, inspection, repair, assembly, calibration.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <p>(i) Able to test the semiconductor devices.</p> <p>(ii) Able to repair the avionic printed wiring assemblies.</p> <p>(iii) Able to test the avionic components.</p> <p>(iv) Able to apply the avionic repair procedures.</p>	
8. Remarks	Ref: NZQA - 7246	

Competency Level 5

1. Title	Maintenance tasks planning and scheduling
2. Code	EMAMCM501A
3. Range	Maintenance schedules for aircraft maintenance tasks should be planned and scheduled to yield the optimal outcome between idling and safety of the aircraft.
4. Level	5
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Factors affecting schedule of maintenance tasks</p> <ul style="list-style-type: none"> ◆ Understand the factors affecting the schedule of maintenance tasks : <ul style="list-style-type: none"> • maintenance procedures • scope of work • the role of human factors • limitation of resources • quality assurance of tasks <p>6.2 Planning and scheduling methods</p> <ul style="list-style-type: none"> ◆ Able to schedule the required engineering work by evaluating the requirements of tasks and constraints of available resources in accordance with the procedures <ul style="list-style-type: none"> • set up guidelines to manage human errors • plan and prepare for ad-hoc tasks <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to take into account the requirements set out by aviation legislation that can affect the maintenance tasks.
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to plan and schedule the maintenance tasks effectively, with optimization of available resources.</p> <p>(ii) Able to describe and quote examples to illustrate the principles and techniques in scheduling maintenance tasks.</p> <p>(iii) Able to prepare reports for different maintenance plans and schedules.</p>

8. Remarks	(Ref: HKAR-66 Module 7.20, 9 & 10) The Credit in this UoC is on the assumption of the person already possessed profound knowledge in the operation of aircraft maintenance and tasks scheduling.
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1. Title	Maintenance of quality control for maintenance tasks
2. Code	EMAMCM502A
3. Range	Management of maintenance tasks for aircraft.
4. Level	5
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Requirements ♦ Understand the requirements of quality standard for maintenance tasks, including :</p> <ul style="list-style-type: none"> • duplicate inspection for flight control systems or vital points • criteria to meet the requirements of airworthiness <p>6.2 Methods ♦ Able to conduct quality control in accordance with the procedures</p> <ul style="list-style-type: none"> • clearly define expected target/milestones and make known to all staff involved • provide ample training and supervision to staff • respond promptly to rectify any non-conformance <p>6.3 Professional approach ♦ Able to maintain quality assurance of maintenance tasks in accordance with the procedures</p> <ul style="list-style-type: none"> • aviation legislation • airworthiness requirements • in-house exposition
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to maintain quality control for the maintenance tasks.</p> <p>(ii) Able to prepare reports to list out the strategies used to manage the quality standards of tasks.</p>

8. Remarks	(Ref: HKAR-66 Module 7.20 & 10) The Credit in this UoC is on the assumption of the person already possessed profound knowledge in the operation of aircraft maintenance.
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1. Title	Granting aircraft certificates
2. Code	EMAMAG501A
3. Range	Final inspection and approval of maintenance work of aircraft.
4. Level	5
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Requirements ♦ Understand the requirements for granting various certificates, including:</p> <ul style="list-style-type: none"> • Certificates of : Release to Service. Maintenance Review and Fitness for Flight • knowledge of Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures <p>6.2 Acceptance investigation and judgment procedures ♦ Able to conduct investigation and judgment procedures to confirm the maintenance tasks are satisfactory for granting of relevant certificates in accordance with the procedures.</p> <p>6.3 Professional approach ♦ Able to ensure the various requirements are fulfilled</p> <ul style="list-style-type: none"> • aviation legislation • airworthiness requirement
7. Assessment Criteria	<p>The integral outcome requirements of this UoC are:</p> <p>(i) Able to inspect the work of maintenance tasks and grant aircraft certificates accordingly.</p> <p>(ii) Able to prepare reports to support the granting of certificates.</p>
8. Remarks	<p>(Ref: HKAR-66 Module 7.20 & 10.2)</p> <p>The Credit in this UoC is on the assumption of the person already possessed profound knowledge in the operation of aircraft maintenance and the conditions needed to prove an aircraft is airworthy.</p>

1. Title	Gas turbine engine II (Mechanics Repair and Maintenance)
2. Code	EMAMBG501A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the gas turbine engine fundamentals <ul style="list-style-type: none"> • Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle. • The relationship between force, work, power, energy, velocity, acceleration. • Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop. ◆ Able to understand the engine performance <ul style="list-style-type: none"> • Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption. • Engine efficiencies. • By-pass ratio and engine pressure ratio. • Pressure, temperature and velocity of the gas flow. • Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations.

	<ul style="list-style-type: none"> ◆ Able to understand the inlet <ul style="list-style-type: none"> • Compressor inlet ducts. • Effects of various inlet configurations. • Ice protection. ◆ Able to understand the compressors <ul style="list-style-type: none"> • Axial and centrifugal types. • Constructional features and operating principles and applications. • Fan balancing. • Operation. • Causes and effects of compressor stall and surge. • Methods of air flow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades. • Compressor ratio. ◆ Able to understand the combustion section <ul style="list-style-type: none"> • Constructional features and principles of operation. ◆ Able to understand the turbine section <ul style="list-style-type: none"> • Operation and characteristics of different turbine blade types. • Blade to disk attachment. • Nozzle guide vanes. • Causes and effects of turbine blade stress and creep. ◆ Able to understand the exhaust <ul style="list-style-type: none"> • Constructional features and principles of operation. • Convergent, divergent and variable area nozzles. • Engine noise reduction. • Thrust reversers.
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- ◆ Bearings and Seals
 - Constructional features and principles of operation.
- ◆ Able to understand the lubricants and fuels
 - Properties and specifications.
 - Fuel additives.
 - Safety precautions.
- ◆ Able to understand the lubrication systems
 - System operation/lay-out and components.
- ◆ Able to understand the fuel systems
 - Operation of engine control and fuel metering systems including electronic engine control (FADEC).
 - Systems lay-out and components.
- ◆ Able to understand the air systems
 - Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.
- ◆ Able to understand the starting and ignition systems
 - Operation of engine start systems and components.
 - Ignition systems and components.
 - Maintenance safety requirements.
- ◆ Able to understand the engine indication systems
 - Exhaust Gas Temperature / Interstage Turbine Temperature.
 - Engine Thrust indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems.
 - Oil pressure and temperature.
 - Fuel pressure and flow.

- Engine speed.
- Vibration measurement and indication.
- Torque.
- Power.
- ◆ Power Augmentation Systems
 - Operation and applications.
 - Water injection, water methanol.
 - Afterburner systems.
- ◆ Able to understand the turbo-prop engines
 - Gas coupled/free turbine and gear coupled turbines.
 - Reduction gears.
 - Integrated engine and propeller controls.
 - Overspeed safety devices.
- ◆ Able to understand the turbo-shaft engines
 - Arrangements, drive systems, reduction gearing, couplings, control systems.
- ◆ Able to understand the auxiliary power units (APUs)
 - Purpose, operation, protective systems.
- ◆ Able to understand the powerplant installation
 - Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.
- ◆ Able to understand the fire protection systems
 - Operation of detection and extinguishing system.
- ◆ Able to understand the engine monitoring and ground operation
 - Procedures for starting and ground run-up.

	<ul style="list-style-type: none"> • Interpretation of engine power output and parameters. • Trend (including oil analysis, vibration and boroscope) monitoring. • Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer. • Compressor washing / cleaning. • Foreign Object Damage. ◆ Engine Storage and Preservation <ul style="list-style-type: none"> • Preservation and depreservation for the engine and accessories / systems. ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Gas turbine engine fundamentals • Engine performance • Inlet • Compressors • Combustion section • Turbine section • Exhaust • Bearings and seals • Lubricants and fuels • Lubrication systems • Fuel systems • Air systems • Starting and ignition systems • Engine indication systems • Turbo-prop engines • Turbo-shaft engines • Auxiliary Power Units (APUs) • Powerplant installation • Fire protection systems • Engine monitoring and Ground operation • Engine storage and preservation <p>6.2 Theoretical and practical aspects</p>
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6.3 Professional approach

- ◆ Able to understand the principal elements of the subjects.
- ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects.
 - Gas turbine engine fundamentals
 - Engine performance
 - Inlet
 - Compressors
 - Combustion section
 - Turbine section
 - Exhaust
 - Bearings and seals
 - Lubricants and fuels
 - Lubrication systems
 - Fuel systems
 - Air systems
 - Starting and ignition systems
 - Engine indication systems
 - Turbo-prop engines
 - Turbo-shaft engines
 - Auxiliary Power Units (APUs)
 - Powerplant installation
 - Fire protection systems
 - Engine monitoring and Ground operation
 - Engine storage and preservation
- ◆ Able to apply the knowledge in the aircraft maintenance task.
- ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subject.
 - Engine monitoring and Ground operation
- ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.

<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 15: Gas turbine engine</p>

1. Title	Piston engine II (Mechanics Repair and Maintenance)
2. Code	EMAMBG502A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the piston engine fundamentals <ul style="list-style-type: none"> • Mechanical, thermal and volumetric efficiencies. • Operating cycles. • Piston displacement and compression ratio. • Engine configuration and firing order. ◆ Able to understand the engine performance <ul style="list-style-type: none"> • Power calculation and measurement. • Factors affecting engine power. • Mixtures / leaning, pre-ignition. ◆ Able to understand the engine construction <ul style="list-style-type: none"> • Crank case, crank shaft, cam shaft and sumps. • Accessory gearbox. • Cylinder and piston assemblies. • Connecting rods, inlet and exhaust manifolds. • Valve mechanisms. • Propeller reduction gearboxes.

	<ul style="list-style-type: none"> ◆ Able to understand the engine fuel systems <ul style="list-style-type: none"> • Carburetors type, construction and principles of operation. • Carburetors icing and heating. • Fuel injection systems type, construction and principles of operation. ◆ Able to understand the starting and ignition systems <ul style="list-style-type: none"> • Starting systems. • Magneto types, construction and principles of operation. • Ignition harnesses and spark plugs. • Low and high tension systems. ◆ Able to understand the induction, exhaust and cooling systems <ul style="list-style-type: none"> • Construction and operation of induction systems, including alternate air systems • Exhaust systems and engine cooling systems. ◆ Able to understand the supercharging / turbocharging <ul style="list-style-type: none"> • Principles and purpose of supercharging and its effects on engine parameters. • Construction and operation of supercharging / turbocharging system. • System terminology. • Control systems. • System protection. ◆ Able to understand the lubricants and fuels <ul style="list-style-type: none"> • Properties and specifications. • Fuel additives. • Safety precautions. ◆ Able to understand the lubrication systems <ul style="list-style-type: none"> • System operation / lay-out and components.
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	<ul style="list-style-type: none"> ◆ Able to understand the engine indication systems <ul style="list-style-type: none"> • Engine speed. • Cylinder head temperature. • Oil pressure and temperature. • Exhaust Gas Temperature. • Fuel pressure and flow. • Manifold pressure. ◆ Able to understand the powerplant installation <ul style="list-style-type: none"> • Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains. ◆ Able to understand the engine monitoring and ground operation <ul style="list-style-type: none"> • Procedures for starting and ground run-up. • Interpretation of engine power output and parameters. • Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer. ◆ Able to understand the engine storage and preservation <ul style="list-style-type: none"> • Preservation and depreservation for the engine and accessories / systems. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Engine fundamental. • Engine performance. • Engine construction. • Engine fuel system. • Carburetors.
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	<ul style="list-style-type: none"> • Fuel injection systems. • Starting and ignition systems. • Induction, exhaust and cooling systems. • Supercharging / turbocharging. • Lubricants and fuels. • Engine indication system. • Powerplant installation. • Engine monitoring and ground operation. • Engine Storage and Preservation <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the subjects ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Engine monitoring and ground operation.. ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 16: Piston engine.</p>

1. Title	Ground run propeller driven gas turbine engines over 300 horsepower (hp) or equivalent
2. Code	EMAMBA501A
3. Range	<p>Ground run propeller driven gas turbine engines over 300 horsepower (hp) or equivalent are usually carried out outside an aircraft hangar during the aircraft grounded time.</p> <p>Approval to ground run specific aircraft and engine types is obtained from the responsible authority for maintaining the engine.</p> <p>This UoC covers generic procedures for ground running aircraft engines, e.g. gas turbine, single and/or multi engine (examples are - Mustang, C-130 Hercules, Beech 1900).</p> <p>Foreign object Damage (FOD) stand for anything that can find its way into an aircraft engine or flight control mechanisms that could possibly cause damage to aircraft, equipment or people.</p>
4. Level	5
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the working principle of the propeller driven gas turbine engines.</p> <p>6.2 Methods and procedures ♦ Able to determine the ground run task is by reviewing maintenance documentation.</p> <p style="padding-left: 150px;">♦ Able to confirm the aircraft is matched with the registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to obtain the resources and check them for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials.</p>

	<ul style="list-style-type: none">◆ Able to prepare the aircraft for engine start in accordance with the procedures, e.g. fuel load and location. blanks, locks, chocks, covers, screens. special equipment and safety equipment removed, fitted and positioned as necessary. engine start equipment and aircraft positioned in approved area, area checked for FOD before starting.◆ Able to obtain the environmental data in accordance with the procedures, e.g. barometric pressure, outside air temperature, wind speed and direction, humidity.◆ Able to assemble and position the ground run team in accordance with the procedures.◆ Able to obtain the engine start and ground run clearances in accordance with the procedures, e.g. from ground crew and/or from control tower.◆ Able to start, run and shut down the engine or engines to meet the determined task requirements or specifications in accordance with the procedures.◆ Able to record the engine performance parameters in accordance with the procedures.◆ Able to complete the post ground run checks in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to carry out engine ground run. ◆ Able to prepare the aircraft for next maintenance task or for operation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources are for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the ground run documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the ground run of propeller driven gas turbine engines over 300 hp or equivalent. (ii) Able to carry out the engine ground run. (iii) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 23166</p>

1. Title	Ground run propeller driven piston engines over 300 horsepower (hp) or equivalent
2. Code	EMAMBA502A
3. Range	<p>Ground run propeller driven piston engines over 300 horsepower (hp) or equivalent are usually carried out outside an aircraft hangar during the aircraft grounded time.</p> <p>Approval to ground run specific aircraft and engine types is obtained from the responsible authority for maintaining the engine.</p> <p>This UoC covers generic procedures for ground running aircraft engines, e.g. reciprocating engine, single and/or multi engine (examples are - Mustang, C-130 Hercules, Beech 1900).</p> <p>Foreign object Damage (FOD) stand for anything that can find its way into an aircraft engine or flight control mechanisms that could possibly cause damage to aircraft, equipment or people.</p>
4. Level	5
5. Credit	9
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the working principle of the propeller driven piston engines.</p> <p>6.2 Methods and procedures ♦ Able to determine the ground run task is by reviewing maintenance documentation.</p> <p style="padding-left: 150px;">♦ Able to confirm the aircraft is matched with the registration and documentation.</p> <p style="padding-left: 150px;">♦ Able to obtain the resources and check them for serviceability or status in accordance with the procedures, e.g. tools, equipment, safety equipment, publications, materials.</p>

	<ul style="list-style-type: none">◆ Able to prepare the aircraft for engine start in accordance with the procedures, e.g. fuel load and location. blanks, locks, chocks, covers, screens. special equipment and safety equipment removed, fitted and positioned as necessary. engine start equipment and aircraft positioned in approved area, area checked for FOD before starting.◆ Able to obtain the environmental data in accordance with the procedures, e.g. barometric pressure, outside air temperature, wind speed and direction, humidity.◆ Able to assemble and position the ground run team in accordance with the procedures.◆ Able to obtain the engine start and ground run clearances in accordance with the procedures, e.g. from ground crew and/or from control tower.◆ Able to start, run and shut down the engine or engines to meet the determined task requirements or specifications in accordance with the procedures.◆ Able to record the engine performance parameters in accordance with the procedures.◆ Able to complete the post ground run checks in accordance with the procedures.
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to complete the task within the stipulated duration. ◆ Able to follow instruction manuals to carry out engine ground run. ◆ Able to prepare the aircraft for next maintenance task or for operation in accordance with the procedures. ◆ Able to complete the task in the work area in accordance with the procedures, e.g. tool control, cleanliness, tidiness, return of publications, preparation for next activity. ◆ Able to check the resources are for serviceability and return them to service or storage in accordance with the procedures, e.g. tools, equipment, safety equipment. ◆ Able to complete the ground run documentation in accordance with the procedures.
<p>7. Assessment Criteria</p>	<p>The integral outcome requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to make preparation for the ground run of propeller driven piston engines over 300 hp or equivalent. (ii) Able to carry out the engine ground run. (iii) Able to complete all the requirements associated with the task.
<p>8. Remarks</p>	<p>Ref: NZQA - 23166</p>

1. Title	Propeller II (Mechanics Repair and Maintenance)
2. Code	EMAMBA503A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the propeller fundamentals <ul style="list-style-type: none"> • Blade element theory. • High / low blade angle, reverse angle, angle of attack, rotational speed. • Propeller slip. • Aerodynamic, centrifugal, and thrust forces. • Torque. • Relative airflow on blade angle of attack. • Vibration and resonance. ◆ Able to understand the propeller construction <ul style="list-style-type: none"> • Construction methods and materials used in composite and metal propellers. • Blade station, blade face, blade shank, blade back and hub assembly. • Fixed pitch, controllable pitch, and constant speeding propeller. • Propeller / spinner installation. ◆ Able to understand the propeller pitch control <ul style="list-style-type: none"> • Speed control and pitch change methods. • Feathering and reverse pitch.

	<ul style="list-style-type: none"> • Overspeed protection. ◆ Able to understand the propeller Synchronising <ul style="list-style-type: none"> • Synchronising and synchrophasing equipment. ◆ Able to understand the propeller ice protection <ul style="list-style-type: none"> • Fluid and electrical de-icing equipment. ◆ Able to understand the propeller maintenance <ul style="list-style-type: none"> • Static and dynamic balancing. • Blade tracking. • Assessment of blade damage, erosion, corrosion impact damage and delamination. • Propeller treatment / repair schemes. • Propeller engine running process. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Propeller fundamental. • Propeller construction. • Propeller pitch contro. • Ppropeller Synchronising. • Propeller ice protection. • Propeller maintenance. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the subjects ◆ Able to apply the knowledge in the aircraft maintenance task.
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	<ul style="list-style-type: none"> ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Propeller maintenance. ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
8. Remarks	Ref: HKAR-66 Module 17: Propeller.

1. Title	Aeroplane aerodynamics, structures and systems II (Mechanics Repair and Maintenance)
2. Code	EMAMBA504A
3. Range	The knowledge is needed for a wide range of aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the theory of aeroplane aerodynamics and flight controls <ul style="list-style-type: none"> • Operation and effect of of: <ul style="list-style-type: none"> ▸ Roll control: ailerons and spoilers. ▸ Pitch control: elevators, stabilators, variable incidence stabilisers and canards. ▸ Yaw control, rudder limiters. • Control using elevons, ruddervators. • High lift devices, slots, slats, flaps, flaperons. • Drag inducing devices, spoilers, lift dumpers, speed brakes. • Effects of wing fences, saw tooth leading edges. • Boundary layer control using, vortex generators, stall wedges or leading edge devices. • Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels.

- ◆ Able to understand the theory of high speed flight
 - Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule.
 - Factors affecting airflow in engine intakes of high speed aircraft.
 - Effects of sweepback on critical Mach number.
- ◆ Able to understand the general concept of the airframe structures
 - Airworthiness requirements for structural strength.
 - Structural classification, primary, secondary and tertiary.
 - Fail safe, safe life, damage tolerance concepts.
 - Zonal and station identification systems.
 - Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue.
 - Drains and ventilation provisions.
 - System installation provisions.
 - Lightning strike protection provision.
 - Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments.

- Structure assembly techniques: riveting, bolting, bonding.
- Methods of surface protection, such as chromating, anodising, painting.
- Surface cleaning.
- Airframe symmetry: methods of alignment and symmetry checks.
- ◆ Able to understand the aeroplanes airframe structures
 - Fuselage (ATA 52/53/56)
 - Construction and pressurisation sealing.
 - Wing, stabiliser, pylon and undercarriage attachments.
 - Seat installation and cargo loading system.
 - Doors: construction, mechanisms, operation and safety devices.
 - Windows and windscreen construction and mechanisms.
 - Wings (ATA 57)
 - Construction.
 - Fuel storage.
 - Landing gear, pylon, control surface and high lift/drag attachments.
 - Stabilisers (ATA 55)
 - Construction.
 - Control surface attachment.
 - Flight control surfaces (ATA 55/57)
 - Construction and attachment.
 - Balancing - mass and aerodynamic.
 - Nacelles/Pylons (ATA 54)
 - Construction.
 - Firewalls.
 - Engine mounts.

- ◆ Able to understand the air conditioning and cabin pressurisation (ATA 21)
 - Air supply
 - Sources of air supply including engine bleed, APU and ground cart.
 - Air conditioning
 - Air conditioning systems.
 - Air cycle and vapour cycle machines.
 - Distribution systems.
 - Flow, temperature and humidity control system.
 - Pressurisation
 - Pressurisation systems.
 - Control and indication including control and safety valves.
 - Cabin pressure controllers.
 - Safety and warning devices
 - Protection and warning devices.
- ◆ Able to understand the Instruments/Avionic Systems
 - Instrument Systems (ATA 31)
 - Pitot static: altimeter, air speed indicator, vertical speed indicator.
 - Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator.
 - Compasses: direct reading, remote reading.
 - Compass compensation and adjustment.
 - Angle of attack indication, stall warning systems.
 - Other aircraft system indication.

- Avionic Systems
 - › Fundamentals of system lay-outs and operation of:
 - › Auto Flight (ATA 22).
 - › Communications (ATA 23).
 - › Navigation Systems (ATA 34).
- ◆ Able to understand the electrical power (ATA 24)
 - Batteries Installation and Operation.
 - DC power generation.
 - AC power generation.
 - Emergency power generation.
 - Voltage regulation.
 - Power distribution.
 - Inverters, transformers, rectifiers.
 - Circuit protection.
 - External / Ground power.
- ◆ Able to understand the equipment and furnishings (ATA 25)
 - Emergency equipment requirements.
 - › Seats, harnesses and belts.
 - Cabin lay-out.
 - › Equipment lay-out.
 - › Cabin Furnishing Installation.
 - › Cabin entertainment equipment.
 - › Galley installation.
 - › Cargo handling and retention equipment.
 - › Airstairs.
- ◆ Able to understand the fire protection (ATA 26)
 - Fire and smoke detection and warning systems.
 - Fire extinguishing systems.
 - System tests.

- ◆ Able to understand the flight controls (ATA 27)
 - Primary controls: aileron, elevator, rudder, spoiler.
 - Trim control.
 - Active load control.
 - High lift devices.
 - Lift dump, speed brakes.
 - System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire.
 - Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks.
 - Balancing and rigging.
 - Stall protection system.
- ◆ Able to understand the fuel systems (ATA 28)
 - System lay-out.
 - Fuel tanks.
 - Supply systems.
 - Dumping, venting and draining.
 - Cross-feed and transfer, Indications and warnings.
 - Refuelling and defuelling.
 - Longitudinal balance fuel systems.
- ◆ Able to understand the hydraulic power (ATA 29)
 - System lay-out.
 - Hydraulic fluids.
 - Hydraulic reservoirs and accumulators.
 - Pressure generation: electric, mechanical, pneumatic.
 - Emergency pressure generation.
 - Pressure Control.
 - Power distribution.
 - Indication and warning systems.
 - Interface with other systems.

- ◆ Able to understand the ice and rain protection (ATA 30)
 - Ice formation, classification and detection.
 - Anti-icing systems: electrical, hot air and chemical.
 - De-icing systems: electrical, pneumatic and chemical.
 - Rain repellent and removal.
 - Probe and drain heating.
- ◆ Able to understand the landing gear (ATA 32)
 - Construction, shock absorbing.
 - Extension and retraction systems: normal and emergency.
 - Indications and warning.
 - Wheels, brakes, antiskid and autobraking.
 - Tyres.
 - Steering.
- ◆ Able to understand the lights system (ATA 33)
 - External: navigation, anti-collision, landing, taxiing, ice.
 - Internal: cabin, cockpit, cargo.
 - Emergency.
- ◆ Able to understand the oxygen system (ATA 35)
 - System lay-out: cockpit, cabin.
 - Sources, storage, charging and distribution.
 - Supply regulation.
 - Indications and warnings.
- ◆ Able to understand the pneumatic/vacuum (ATA 36)
 - System lay-out.

	<ul style="list-style-type: none"> • Sources: engine / APU, compressors, reservoirs, • ground supply. • Pressure control. • Distribution. • Indications and warnings. • Interfaces with other systems. ◆ Able to understand the Water/Waste (ATA 38) <ul style="list-style-type: none"> • Water system lay-out, supply, distribution, servicing and draining. • Toilet system lay-out, flushing and servicing. • Corrosion aspects. ◆ Able to understand the On Board Maintenance Systems (ATA 45) <ul style="list-style-type: none"> • Central maintenance computers. • Data loading system. • Electronic library system. • Printing. • Structure monitoring (damage tolerance monitoring). ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Theory of flight. • General concepts of airframe structures • Aeroplanes airframe structures • Air conditioning and cabin pressurisation (ATA 21) • Instrument systems (ATA 31) • Electrical power (ATA 24) • Equipment and furnishings (ATA 25) • Fire protection (ATA 26) • Flight controls (ATA 27) • Fuel systems (ATA 28)
6.2 Theoretical and practical aspects	

	<ul style="list-style-type: none"> • Hydraulic power (ATA 29). • Ice and rain protection (ATA 30). • Landing gear (ATA 32). • Lights (ATA 33). • Oxygen (ATA 35). • Pneumatic/Vacuum (ATA 36). • Water/Waste (ATA 38). • On board maintenance systems (ATA 45). <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aeroplane aerodynamics and flight controls. • High speed flight. • General concepts of airframe structures • Aeroplanes airframe structures • Air supply of air conditioning. • Instrument systems (ATA 31). • Equipment and furnishings (ATA 25). • On board maintenance systems (ATA 45). ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Air conditioning and cabin pressurisation (ATA 21). <ul style="list-style-type: none"> ▸ Air conditioning. ▸ Pressurisation. ▸ Safety and warning devices. • Electrical power (ATA 24). • Fire protection (ATA 26).
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	<ul style="list-style-type: none"> • Flight controls (ATA 27). • Fuel systems (ATA 28). • Hydraulic power (ATA 29). • Ice and rain protection (ATA 30). • Landing gear (ATA 32). • Lights (ATA 33). • Oxygen (ATA 35). • Pneumatic/Vacuum (ATA 36). • Water/Waste (ATA 38). <p>◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.</p>
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
8. Remarks	Ref: HKAR-66 Module 11: Aeroplane aerodynamics, structures and systems

1. Title	Wooden aeroplanes (Mechanics Repair and Maintenance)
2. Code	EMAMBA505A
3. Range	The knowledge is needed for a wide range of aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the wooden structures. <ul style="list-style-type: none"> • Construction methods of wooden airframe structures. • Characteristics, properties and types of wood and glue used in aeroplanes. • Preservation and maintenance of wooden structure. • Types of defects in wood material and wooden structures. • The detection of defects in wooden structure. • Repair of wooden structure. ◆ Able to understand the aeroplane covering. <ul style="list-style-type: none"> • Characteristics, properties and types of fabrics and fibreglass used in aeroplanes. • Types of defects in fabric and fibreglass. • Repair of fabric and fibreglass covering. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Wooden structures. • Aeroplane covering

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Wooden structures. • Aeroplane covering ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 19: Wooden aeroplanes

1. Title	Helicopter aerodynamics, structures and systems II (Mechanics Repair and Maintenance)
2. Code	EMAMBH501A
3. Range	The knowledge is needed for a wide range of helicopter repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	3
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the theory of of flight - Rotary wing aerodynamics <ul style="list-style-type: none"> • Terminology. • Effects of gyroscopic precession. • Torque reaction and directional control. • Dissymmetry of lift, Blade tip stall. • Translating tendency and its correction. • Coriolis effect and compensation. • Vortex ring state, power setting, overpitching. • Auto-rotation. • Ground effect. ◆ Able to understand the flight control system <ul style="list-style-type: none"> • Cyclic control. • Collective control. • Swashplate. • Yaw control: Anti-Torque Control, Tail rotor, bleed air. • Main Rotor Head: Design and Operation features. • Blade Dampers: Function and construction.

- Rotor Blades: Main and tail rotor blade construction and attachment.
- Trim control, fixed and adjustable stabilisers.
- System operation: manual, hydraulic, electrical and fly-by-wire.
- Artificial feel.
- Balancing and Rigging.
- ◆ Able to understand the blade tracking and vibration analysis
 - Rotor alignment.
 - Main and tail rotor tracking.
 - Static and dynamic balancing.
 - Vibration types, vibration reduction methods.
 - Ground resonance.
- ◆ Able to understand the transmissions
 - Gear boxes, main and tail rotors.
 - Clutches, free wheel units and rotor brake.
- ◆ Able to understand the airframe Structures
 - Airworthiness requirements for structural strength.
 - Structural classification: primary, secondary and tertiary.
 - Fail safe, safe life, damage tolerance concepts.
 - Zonal and station identification systems.
 - Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue.
 - Drains and ventilation provisions.
 - System installation provisions.
 - Lightning strike protection provision

	<ul style="list-style-type: none"> • .Construction methods of: <ul style="list-style-type: none"> ▸ stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning and anti-corrosive protection. ▸ Pylon, stabiliser and undercarriage attachments. ▸ Seat installation. ▸ Doors: construction, mechanisms, operation and safety devices. ▸ Windows and windscreen construction. ▸ Fuel storage. ▸ Firewalls. ▸ Engine mounts. ▸ Structure assembly techniques: riveting, bolting, bonding. ▸ Methods of surface protection, such as chromating, anodising, painting. ▸ Surface cleaning. ▸ Airframe symmetry: methods of alignment and symmetry checks. ◆ Able to understand the air conditioning (ATA 21) <ul style="list-style-type: none"> • Air supply <ul style="list-style-type: none"> ▸ Sources of air supply including engine bleed, APU and ground cart. • Air conditioning <ul style="list-style-type: none"> ▸ Air conditioning systems. ▸ Distribution systems. ▸ Flow and temperature control system. ▸ Protection and warning devices.
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- ◆ Able to understand the Instruments/Avionic Systems
 - Instrument Systems (ATA 31)
 - Pitot static: altimeter, air speed indicator, vertical speed indicator.
 - Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator.
 - Compasses: direct reading, remote reading.
 - Compass compensation and adjustment.
 - Vibration indicating systems - HUMS.
 - Other aircraft system indication.
 - Avionic Systems
 - Fundamentals of system lay-outs and operation of:
 - Auto Flight (ATA 22).
 - Communications (ATA 23).
 - Navigation Systems (ATA 34).
- ◆ Able to understand the electrical power (ATA 24)
 - Batteries Installation and Operation.
 - DC power generation.
 - AC power generation.
 - Emergency power generation.
 - Voltage regulation.
 - Power distribution.
 - Inverters, transformers, rectifiers.
 - External / Ground power.
- ◆ Able to understand the equipment and furnishings (ATA 25)
 - Emergency equipment requirements.
 - Seats, harnesses and belts.
 - Lifting systems.

- Emergency flotation systems.
 - › Cabin lay-out, cargo retention.
 - › Equipment lay-out.
 - › Cabin Furnishing Installation.
- ◆ Able to understand the fire protection (ATA 26)
 - Fire and smoke detection and warning systems.
 - Fire extinguishing systems.
 - System tests.
- ◆ Able to understand the fuel systems (ATA 28)
 - System lay-out.
 - Fuel tanks.
 - Supply systems.
 - Dumping, venting and draining.
 - Cross-feed and transfer, Indications and warnings.
 - Refuelling and defuelling.
- ◆ Able to understand the hydraulic power (ATA 29)
 - System lay-out.
 - Hydraulic fluids.
 - Hydraulic reservoirs and accumulators.
 - Pressure generation: electric, mechanical, pneumatic.
 - Emergency pressure generation.
 - Pressure Control.
 - Power distribution.
 - Indication and warning systems.
 - Interface with other systems.
- ◆ Able to understand the ice and rain protection (ATA 30)
 - Ice formation, classification and detection.

	<ul style="list-style-type: none"> • Anti-icing and De-icing systems: electrical, hot air and chemical. • Rain repellent and removal. • Probe and drain heating. ◆ Able to understand the landing gear (ATA 32) <ul style="list-style-type: none"> • Construction, shock absorbing. • Extension and retraction systems: normal and emergency. • Indications and warning. • Wheels, Tyres, brakes. • Steering. • Skids, floats. ◆ Able to understand the lights system (ATA 33) <ul style="list-style-type: none"> • External: navigation, anti-collision, landing, taxiing, ice. • Internal: cabin, cockpit, cargo. • Emergency. ◆ Able to understand the pneumatic/vacuum (ATA 36) <ul style="list-style-type: none"> • System layout. • Sources: engine, compressors, reservoirs, ground supply. • Pressure control. • Distribution. • Indications and warnings. • Interfaces with other systems. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Theory of flight - Rotary wing aerodynamics • Flight control system • Blade tracking and vibration analysis • Transmissions
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	<ul style="list-style-type: none"> • Airframe structures • Air conditioning (ATA 21) • Instruments systems (ATA 31) • Electrical power (ATA 24) • Equipment and furnishings (ATA 25) • Emergency equipment requirements. • Fire protection (ATA 26) • Fuel systems (ATA 28) • Hydraulic power (ATA 29) • Ice and rain protection (ATA 30) • Landing gear (ATA 32) • Lights (ATA 33) • Pneumatic/Vacuum (ATA 36) <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Theory of flight - Rotary wing aerodynamics • Airframe structures • Instruments systems (ATA 31) • Equipment and furnishings (ATA 25) <ul style="list-style-type: none"> ▸ Emergency equipment requirements. ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Flight control system • Blade tracking and vibration analysis • Transmissions • Air conditioning (ATA 21)
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	<ul style="list-style-type: none"> • Electrical power (ATA 24) • Fire protection (ATA 26) • Fuel systems (ATA 28) • Hydraulic power (ATA 29) • Ice and rain protection (ATA 30) • Landing gear (ATA 32) • Lights (ATA 33) • Pneumatic/Vacuum (ATA 36) <p>◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.</p>
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to mechanics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 12: Helicopter aerodynamics, structures and systems</p>

1. Title	Aircraft System (Avionics Repair and Maintenance)
2. Code	EMAMBX501A
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	4
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the theory of aeroplane aerodynamics and flight controls <ul style="list-style-type: none"> • Operation and effect of: <ul style="list-style-type: none"> ▸ Roll control: ailerons and spoilers. ▸ Pitch control: elevators, stabilators, variable incidence stabilisers and canards. ▸ Yaw control, rudder limiters. • Control using elevons, ruddervators. • High lift devices, slots, slats, flaps, flaperons. • Drag inducing devices, spoilers, lift dumpers, speed brakes. • Operation and effect of trim tabs, servo tabs, control surface bias. ◆ Able to understand the theory of high speed flight <ul style="list-style-type: none"> • Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number. ◆ Able to understand the rotary wing aerodynamics <ul style="list-style-type: none"> • Terminology.

- Operation and effect of cyclic, collective and anti-torque controls.
- ◆ Able to understand the general concept of the airframe structures
 - Fundamentals of structural systems.
 - Zonal and station identification systems.
 - Electrical bonding.
 - Lightning strike protection provision.
- ◆ Able to understand the autoflight (ATA 22)
 - Fundamentals of automatic flight control including working principles and current terminology.
 - Command signal processing.
 - Modes of operation: roll, pitch and yaw channels.
 - Yaw dampers.
 - Stability Augmentation System in helicopters.
 - Automatic trim control.
 - Autopilot navigation aids interface.
 - Flight Management System (FMS). navigation database.
 - Autothrottle systems.
 - Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions, downgrade and upgrade procedures.
- ◆ Able to understand the communication / navigation (ATA 23 / 34)
 - Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter.

- Principles and methods used to minimise the effects of interference.
- Standing wave ratio and its calculation.
- Working principles of following systems:
 - › Very High Frequency (VHF) communication.
 - › High Frequency (HF) communication.
 - › Audio Systems.
 - › Emergency Locator Transmitters.
 - › Cockpit Voice Recorder.
 - › Very High Frequency Omni-directional Range (VOR).
 - › Automatic Direction Finding (ADF).
 - › Instrument Landing System (ILS).
 - › Microwave Landing System (MLS).
 - › Flight Director systems.
 - › Distance Measuring Equipment (DME).
 - › Satellite Communication (SATCOM).
 - › Doppler navigation.
 - › Area navigation, RNAV systems.
 - › Global Positioning System (GPS), Global Navigation Satellite Systems (GNSS).
 - › Inertial Navigation/Reference System.
 - › Air Traffic Control (ATC) transponder, secondary surveillance radar.
 - › Traffic Alert and Collision Avoidance System (TCAS).
 - › Weather avoidance radar.
 - › Radio altimeter.
 - › ARINC Communication Addressing and Reporting System (ACARS).
- ◆ Able to understand the electrical power (ATA 24)
 - Batteries Installation and Operation.

- DC power generation.
- AC power generation.
- Emergency power generation.
- Voltage regulation.
- Power distribution.
- Inverters, transformers, rectifiers.
- Circuit protection.
- External / Ground power.
- ◆ Able to understand the equipment and furnishings (ATA 25)
 - Electronic emergency equipment requirements.
 - Cabin entertainment equipment.
- ◆ Able to understand the flight controls (ATA 27)
 - Primary controls: aileron, elevator, rudder, spoiler.
 - Trim control.
 - Active load control.
 - High lift devices.
 - Lift dump, speed brakes.
 - System operation: manual, hydraulic, pneumatic.
 - Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks.
 - Stall protection system.
 - System operation: electrical, fly wire.
- ◆ Able to understand the instrument systems (ATA 31)
 - Classification.
 - Atmosphere.
 - Terminology.
 - Pressure measuring devices and systems.
 - Pitot static systems.
 - Altimeters.

- Vertical speed indicators.
- Airspeed indicators.
- Machmeters.
- Altitude reporting / alerting systems.
- Air data computers.
- Instrument pneumatic systems.
- Direct reading pressure and temperature gauges.
- Temperature indicating systems.
- Fuel quantity indicating systems.
- Gyroscopic principles.
- Artificial horizons.
- Slip indicators.
- Directional gyros.
- Ground Proximity Warning Systems.
- Compass systems, compensation and adjustment.
- Flight Data Recording systems..
- Electronic Flight Instrument Systems.
- Instrument warning systems including master
- warning systems and centralised warning panels.
- Stall warning systems and angle of attack
- indicating systems.
- Windshear Detection and Warning System.
- Vibration measurement and indication.
- ◆ Able to understand the lights system (ATA 33)
 - External: navigation, anti-collision, landing, taxiing, ice.
 - Internal: cabin, cockpit, cargo.
 - Emergency.

	<ul style="list-style-type: none"> ◆ Able to understand the On Board Maintenance Systems (ATA 45) <ul style="list-style-type: none"> • Central maintenance computers. • Data loading system. • Electronic library system. • Printing. • Structure monitoring (damage tolerance monitoring). <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • General concepts of airframe structures <ul style="list-style-type: none"> ▸ Zonal and station identification systems. • Autoflight (ATA 22) • Communication / Navigation (ATA 23 / 34) • Aeroplanes airframe structures • Electrical power (ATA 24) • Equipment and furnishings (ATA 25) • Flight controls (ATA 27) <ul style="list-style-type: none"> ▸ System operation. • Instrument systems (ATA 31) • Lights (ATA 33). • On board maintenance systems (ATA 45). <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • General concepts of airframe structures • Zonal and station identification systems. • Flightcontrols (ATA 27) <ul style="list-style-type: none"> ▸ System operation. • On board maintenance systems (ATA 45)
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	<ul style="list-style-type: none"> ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Autoflight (ATA 22) • Communication / Navigation (ATA 23 / 34) • Electrical power (ATA 24). • Equipment and furnishings (ATA 25) • Instrument systems (ATA 31) • Lights (ATA 33). ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
8. Remarks	Ref: HKAR-66 Module 13: Aircraft aerodynamics, structures and systems

1. Title	Propulsion system (Avionics Repair and Maintenance)	
2. Code	EMAMBX502A	
3. Range	The knowledge is needed for a wide range of aircraft repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u>	
	6.1 Knowledge	<ul style="list-style-type: none"> ◆ Able to understand the turbine engines <ul style="list-style-type: none"> • Constructional arrangement and operation of turbojet, turbofan, turboshaft and turbopropeller engines. • Electronic Engine control and fuel metering systems (FADEC). ◆ Able to understand the engine indicating systems. <ul style="list-style-type: none"> • Exhaust gas temperature / Interstage turbine temperature systems. • Engine speed. • Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems. • Oil pressure and temperature. • Fuel pressure, temperature and flow. • Manifold pressure. • Engine torque. • Propeller speed.
	6.2 Theoretical and practical aspects	<ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Turbine engines. • Engine indicating system.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Electronic Engine control and fuel metering systems (FADEC). • Engine indicating systems. ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to avionics repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 14: Propulsion system</p>

1. Title	Wooden aeroplanes (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY501A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the wooden structures. <ul style="list-style-type: none"> • Construction methods of wooden airframe structures. • Characteristics, properties and types of wood and glue used in aeroplanes. • Preservation and maintenance of wooden structure. • Types of defects in wood material and wooden structures. • The detection of defects in wooden structure. • Repair of wooden structure. ◆ Able to understand the aeroplane covering. <ul style="list-style-type: none"> • Characteristics, properties and types of fabrics and fibreglass used in aeroplanes. • Types of defects in fabric and fibreglass. • Repair of fabric and fibreglass covering. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Wooden structures. • Aeroplane covering

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • wooden structures. • aeroplane covering ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theoretical fundamentals of the subjects. (ii) Able to give a general description of the subjects using, as appropriate, typical examples. (iii) Able to use mathematical formulae in conjunction with physical laws describing the subjects. (iv) Able to read and understand sketches, drawings and schematics describing the subjects. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using detailed procedures.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 19: Wooden aeroplanes</p>

1. Title	Aeroplane aerodynamics, structures and systems II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY502A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the theory of aeroplane aerodynamics and flight controls <ul style="list-style-type: none"> • Operation and effect of of: <ul style="list-style-type: none"> ▸ Roll control: ailerons and spoilers. ▸ Pitch control: elevators, stabilators, variable incidence stabilisers and canards. ▸ Yaw control, rudder limiters. • Control using elevons, ruddervators. • High lift devices, slots, slats, flaps, flaperons. • Drag inducing devices, spoilers, lift dumpers, speed brakes. • Effects of wing fences, saw tooth leading edges. • Boundary layer control using, vortex generators, stall wedges or leading edge devices. • Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels.

- ◆ Able to understand the general concept of the airframe structures
 - Airworthiness requirements for structural strength.
 - Structural classification, primary, secondary and tertiary.
 - Fail safe, safe life, damage tolerance concepts.
 - Zonal and station identification systems.
 - Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue.
 - Drains and ventilation provisions.
 - System installation provisions.
 - Lightning strike protection provision.
 - Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments.
 - Structure assembly techniques: riveting, bolting, bonding.
 - Methods of surface protection, such as chromating, anodising, painting.
 - Surface cleaning.
 - Airframe symmetry: methods of alignment and symmetry checks.
- ◆ Able to understand the aeroplanes airframe structures
 - Fuselage (ATA 52/53/56)
 - Construction and pressurisation sealing.

- Wing, stabiliser, pylon and undercarriage attachments.
- Seat installation and cargo loading system.
- Doors: construction, mechanisms, operation and safety devices.
- Windows and windscreen construction and mechanisms.
- Wings (ATA 57)
 - Construction.
 - Fuel storage.
 - Landing gear, pylon, control surface and high lift/drag attachments.
- Stabilisers (ATA 55)
 - Construction.
 - Control surface attachment.
- Flight control surfaces (ATA 55/57)
 - Construction and attachment.
 - Balancing - mass and aerodynamic.
- Nacelles/Pylons (ATA 54)
 - Construction.
 - Firewalls.
 - Engine mounts.
- ◆ Able to understand the Instruments/Avionic Systems
 - Instrument Systems (ATA 31)
 - Pitot static: altimeter, air speed indicator, vertical speed indicator.
 - Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator.
 - Compasses: direct reading, remote reading.

- Compass compensation and adjustment.
- Angle of attack indication, stall warning systems.
- Other aircraft system indication.
- Avionic Systems
 - Fundamentals of system lay-outs and operation of:
 - Auto Flight (ATA 22).
 - Communications (ATA 23).
 - Navigation Systems (ATA 34).
- ◆ Able to understand the electrical power (ATA 24)
 - Batteries Installation and Operation.
 - DC power generation.
 - AC power generation.
 - Emergency power generation.
 - Voltage regulation.
 - Power distribution.
 - Inverters, transformers, rectifiers.
 - Circuit protection.
 - External / Ground power.
- ◆ Able to understand the equipment and furnishings (ATA 25)
 - Emergency equipment requirements.
 - Seats, harnesses and belts.
- ◆ Able to understand the fire protection (ATA 26)
 - Fire and smoke detection and warning systems.
 - Fire extinguishing systems.
 - System tests.
- ◆ Able to understand the flight controls (ATA 27)

	<ul style="list-style-type: none"> • Primary controls: aileron, elevator, rudder, spoiler. • Trim control. • Active load control. • High lift devices. • Lift dump, speed brakes. • System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire. • Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. • Balancing and rigging. • Stall protection system. ◆ Able to understand the fuel systems (ATA 28) <ul style="list-style-type: none"> • System lay-out. • Fuel tanks. • Supply systems. • Dumping, venting and draining. • Cross-feed and transfer, Indications and warnings. • Refuelling and defuelling. • Longitudinal balance fuel systems. ◆ Able to understand the hydraulic power (ATA 29) <ul style="list-style-type: none"> • System lay-out. • Hydraulic fluids. • Hydraulic reservoirs and accumulators. • Pressure generation: electric, mechanical, pneumatic. • Emergency pressure generation. • Pressure Control. • Power distribution. • Indication and warning systems. • Interface with other systems.
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	<ul style="list-style-type: none"> ◆ Able to understand the ice and rain protection (ATA 30) <ul style="list-style-type: none"> • Ice formation, classification and detection. • Anti-icing systems: electrical, hot air and chemical. • De-icing systems: electrical, pneumatic and chemical. • Rain repellent and removal. • Probe and drain heating. ◆ Able to understand the landing gear (ATA 32) <ul style="list-style-type: none"> • Construction, shock absorbing. • Extension and retraction systems: normal and emergency. • Indications and warning. • Wheels, brakes, antiskid and autobraking. • Tyres. • Steering. ◆ Able to understand the lights system (ATA 33) <ul style="list-style-type: none"> • External: navigation, anti-collision, landing, taxiing, ice. • Internal: cabin, cockpit, cargo. • Emergency. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • General concepts of airframe structures • Aeroplanes airframe structures • Instrument systems (ATA 31) • Electrical power (ATA 24) • Equipment and furnishings (ATA 25) • Emergency equipment requirements • Fire protection (ATA 26)
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> • Flight controls (ATA 27) • Fuel systems (ATA 28) • Hydraulic power (ATA 29). • Ice and rain protection (ATA 30). • Landing gear (ATA 32). • Lights (ATA 33). <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • General concepts of airframe structures • Aeroplanes airframe structures • Instrument systems (ATA 31). • Electrical power (ATA 24). • Emergency equipment requirements • Fire protection (ATA 26). ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Flight controls (ATA 27). • Fuel systems (ATA 28). • Hydraulic power (ATA 29). • Ice and rain protection (ATA 30). • Landing gear (ATA 32). • Lights (ATA 33). ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 11: Aeroplane aerodynamics, structures and systems</p>

1. Title	Piston engine II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY503A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the piston engine fundamentals <ul style="list-style-type: none"> • Mechanical, thermal and volumetric efficiencies. • Operating cycles. • Piston displacement and compression ratio. • Engine configuration and firing order. ◆ Able to understand the engine performance <ul style="list-style-type: none"> • Power calculation and measurement. • Factors affecting engine power. • Mixtures / leaning, pre-ignition. ◆ Able to understand the engine construction <ul style="list-style-type: none"> • Crank case, crank shaft, cam shaft and sumps. • Accessory gearbox. • Cylinder and piston assemblies. • Connecting rods, inlet and exhaust manifolds. • Valve mechanisms. • Propeller reduction gearboxes.

	<ul style="list-style-type: none"> ◆ Able to understand the engine fuel systems <ul style="list-style-type: none"> • Carburetors type, construction and principles of operation. • Carburetors icing and heating. • Fuel injection systems type, construction and principles of operation. ◆ Able to understand the starting and ignition systems <ul style="list-style-type: none"> • Starting systems. • Magneto types, construction and principles of operation. • Ignition harnesses and spark plugs. • Low and high tension systems. ◆ Able to understand the induction, exhaust and cooling systems <ul style="list-style-type: none"> • Construction and operation of induction systems, including alternate air systems • Exhaust systems and engine cooling systems. ◆ Able to understand the supercharging / turbocharging <ul style="list-style-type: none"> • Principles and purpose of supercharging and its effects on engine parameters. • Construction and operation of supercharging / turbocharging system. • System terminology. • Control systems. • System protection. ◆ Able to understand the lubricants and fuels <ul style="list-style-type: none"> • Properties and specifications. • Fuel additives. • Safety precautions. ◆ Able to understand the lubrication systems <ul style="list-style-type: none"> • System operation / lay-out and components.
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	<ul style="list-style-type: none"> ◆ Able to understand the engine indication systems <ul style="list-style-type: none"> • Engine speed. • Cylinder head temperature. • Oil pressure and temperature. • Exhaust Gas Temperature. • Fuel pressure and flow. • Manifold pressure. ◆ Able to understand the powerplant installation <ul style="list-style-type: none"> • Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains. ◆ Able to understand the engine monitoring and ground operation <ul style="list-style-type: none"> • Procedures for starting and ground run-up. • Interpretation of engine power output and parameters. • Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer. ◆ Able to understand the engine storage and preservation <ul style="list-style-type: none"> • Preservation and depreservation for the engine and accessories / systems. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Engine fundamental. • Engine performance. • Engine construction. • Engine fuel system. • Carburetors.
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	<ul style="list-style-type: none"> • Fuel injection systems. • Starting and ignition systems. • Induction, exhaust and cooling systems. • Supercharging / turbocharging. • Lubricants and fuels. • Engine indication system. • Powerplant installation. • Engine monitoring and ground operation. • Engine Storage and Preservation <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the subjects ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Engine monitoring and ground operation.. ◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.
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<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
<p>8. Remarks</p>	<p>Ref: HKAR-66 Module 16: Piston engine.</p>

1. Title	Propeller II (Simple Light Aeroplane Repair and Maintenance)
2. Code	EMAMBY504A
3. Range	The knowledge is needed for a wide range of simple light aeroplane repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	5
5. Credit	5
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the propeller fundamentals <ul style="list-style-type: none"> • Blade element theory. • High / low blade angle, reverse angle, angle of attack, rotational speed. • Propeller slip. • Aerodynamic, centrifugal, and thrust forces. • Torque. • Relative airflow on blade angle of attack. • Vibration and resonance. ◆ Able to understand the propeller construction <ul style="list-style-type: none"> • Construction methods and materials used in composite and metal propellers. • Blade station, blade face, blade shank, blade back and hub assembly. • Fixed pitch, controllable pitch, and constant speeding propeller. • Propeller / spinner installation. ◆ Able to understand the propeller pitch control <ul style="list-style-type: none"> • Speed control and pitch change methods. • Feathering and reverse pitch. • Overspeed protection.

	<ul style="list-style-type: none"> ◆ Able to understand the propeller Synchronising <ul style="list-style-type: none"> • Synchronising and synchrophasing equipment. ◆ Able to understand the propeller ice protection <ul style="list-style-type: none"> • Fluid and electrical de-icing equipment. ◆ Able to understand the propeller maintenance <ul style="list-style-type: none"> • Static and dynamic balancing. • Blade tracking. • Assessment of blade damage, erosion, corrosion impact damage and delamination. • Propeller treatment / repair schemes. • Propeller engine running process. <p>6.2 Theoretical and practical aspects</p> <ul style="list-style-type: none"> ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Propeller fundamental. • Propeller construction. • Propeller pitch contro. • Ppropeller Synchronising. • Propeller ice protection. • Propeller maintenance. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the subjects ◆ Able to apply the knowledge in the aircraft maintenance task. ◆ Able to understand the detailed knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Propeller maintenance.
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	<p>◆ Able to combine and apply the separate elements of knowledge in a logical and comprehensive manner.</p>
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the theory of the subjects and interrelationships with other subjects. (ii) Able to give a detailed description of the subject using theoretical fundamentals and specific examples. (iii) Able to understand and be able to use mathematical formulae related to the subject. (iv) Able to read, understand and prepare sketches, simple drawings and schematics describing the subject. (v) Able to apply the knowledge relating to simple light aeroplane repair and maintenance in a practical manner using manufacturer's instructions. (vi) Able to interpret results from various sources and measurements and apply corrective action where appropriate.
8. Remarks	Ref: HKAR-66 Module 17: Propeller.

Competency Level 6

1. Title	Long-term maintenance forecast planning for an aircraft fleet and major aircraft components
2. Code	EMAMMG601A
3. Range	The range applicable to all elements of this UoC covers long-term maintenance plans for an aircraft fleet, individual aircraft, and major components such as engines and propellers. Long-term – in excess of three months.
4. Level	6
5. Credit	40
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Understand the process and procedures of long-term maintenance planning.</p> <p>6.2 Methods and procedures ♦ Able to establish maintenance requirements for the long-term maintenance of an aircraft fleet and major components.</p> <ul style="list-style-type: none"> • Future maintenance requirements are identified from, and are consistent with, the approved maintenance programme. • Present maintenance status is established from, and is consistent with, maintenance records. • Special requirements that may affect future maintenance programmes are identified. <ul style="list-style-type: none"> ▸ Range ageing aircraft, airworthiness authority requirements, modifications, structural inspection programmes, special maintenance requirements.

	<ul style="list-style-type: none"> ◆ Able to produce maintenance forecast plan. <ul style="list-style-type: none"> • Future fleet and/or aircraft utilization is consistent with operator supplied data. • Calculated expiry of future maintenance requirements is within the parameters of the maintenance philosophy being applied and consistent with utilization. <ul style="list-style-type: none"> ▸ Range block maintenance, equalized maintenance, phase maintenance. • Maintenance activities are scheduled within the limits of available capacity and estimated expiry dates. • A maintenance forecast plan is produced in accordance with enterprise procedures. ◆ Able to update maintenance forecast plan. <ul style="list-style-type: none"> • Factors and/or circumstances which may impact on the maintenance forecast plan are identified. • Changes made to the maintenance forecast plan reflect altered circumstances. • Maintenance forecast plan is amended in accordance with enterprise procedures. <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task. ◆ Able to carry out the task in accordance with enterprise procedures, the enterprise being the organization carrying out the work. Enterprise procedures referred to in this unit standard are the applicable procedures found in the following: <ul style="list-style-type: none"> • enterprise exposition;
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	<ul style="list-style-type: none"> • manufacturer publications; • Government and local body legislation; • airworthiness authority requirements.
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <p>(i) Able to establish maintenance requirements;</p> <p>(ii) Able to produce and update maintenance forecast plans for the long-term maintenance of an aircraft fleet and major aircraft components.</p>
8. Remarks	Ref: NZQA - 10803

1. Title	Quality Assurance
2. Code	EMAMMG602A
3. Range	The knowledge of Quality Assurance is applicable to a wide range of aircraft and helicopter repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the quality levels for the repair and maintenance tasks; ensure that quality of work output is maintained; control the standards of tools, equipment and publications; and ensure compliance with tool control procedures <p>6.2 Quality Assurance</p> <ul style="list-style-type: none"> ◆ Able to ensure the required quality levels are identified from, and consistent with, agreed customer requirements, e.g. instructions, maintenance specifications, contractual agreements, cost constraints, knowledge of customer expectations. ◆ Able to ensure the required quality levels are identified and are consistent with internal policy and procedures. ◆ Able to comply with the airworthiness authority requirements and identify which are relevant to the tasks being carried out.

	<ul style="list-style-type: none">◆ Able to inspect and/or quality control checks are carried out to ascertain the quality of work produced in accordance with enterprise procedures◆ Able to ensure the worksite procedures are monitored to determine whether required quality levels are being achieved in accordance with enterprise procedures◆ Able to control the costs in accordance with cost constraints◆ Able to inspect the materials and spares to identify non-compliance with airworthiness standards in accordance with enterprise procedures.◆ Able to take appropriate action to rectify non-compliances in accordance with enterprise procedures◆ Able to check tools, equipment, and publications to identify non-compliance with approved standards in accordance with enterprise procedures◆ Able to ensure the non-compliances relating to tools, equipment, and publications are rectified in accordance with enterprise procedures◆ Able to ensure the checks of tool and control procedures which identify non-compliance are rectified with enterprise procedures are carried out.◆ Able to ensure the non-compliance with tool control procedures is rectified
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	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to comply with the working procedure, guidelines and other relevant legislation ◆ Able to consider site conditions and environment in the workplace ◆ Able to continuously improve the quality ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the concept of quality assurance. (ii) Able to give a general description of quality assurance and illustrate with examples. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	

1. Title	Project Management
2. Code	EMAMMG603A
3. Range	The knowledge is applicable to a wide range of aircraft and helicopter repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Able to understand different factors in project management including</p> <ul style="list-style-type: none"> • Technical capability • Resources • Changes of environment or due to external factors • Social, ordinance, and rules & regulations, practices • Contractors and sub-contractors <p>6.2 Project Management ♦ Able to set up a project management system to ensure</p> <ul style="list-style-type: none"> • the tasks are clearly defined • the tasks are completed within budget and on time • quality of the project • tasks are sequenced to maximize the use of resources • proper documentation

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to comply with the working procedure, guidelines and other relevant legislation ◆ Able to consider site conditions and environment in the workplace ◆ Able to improve the system ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the concept of project management. (ii) Able to give a general description of project management and illustrate with examples. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	

1. Title	Risk Assessment
2. Code	EMAMMG604A
3. Range	The knowledge is applicable to a wide range of aircraft and helicopter repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand HAZOP(Hazard and Operability Studies) 、 QRA(Quality Risk Assessment) 、 FMEA(Failure Modes and Effects Analysis) and FTA(Fault Tree Analysis) ◆ Able to understand factors affecting risk assessment such as occupational health, management system and factory and industry undertaking ordinance etc ◆ Able to understand the control of risk assessment and risk management <p>6.2 Risk Assessment</p> <ul style="list-style-type: none"> ◆ Able to apply HAZOP(Hazard and Operability), FTA(Fault Tree Analysis), Incident Analysis and other considerations to <ul style="list-style-type: none"> • Identify potential risks • Analysis risks • Evaluate risks • Alleviate or eliminate risks • Able to document and present risk assessment

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to comply with the working procedure, guidelines and other relevant legislation ◆ Able to consider site conditions and environment in the workplace ◆ Able to identify the potential risks from previous accident reports ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to acquire the knowledge of risk assessment. (ii) Able to give a general description of risk assessment and illustrate with examples. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	

1. Title	Safety Management System
2. Code	EMAMMG605A
3. Range	The knowledge of the system is applicable to a wide range of aircraft and helicopter repair and maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Able to understand the occupational safety systems and their operation including</p> <ul style="list-style-type: none"> • Objectives of the system • Monitoring mechanism • Training • Under emergency conditions • Review <p>6.2 Safety Management Systems ♦ Able to set up and operate a safety management system for the organization to ensure</p> <ul style="list-style-type: none"> • the objectives are achievable • a committee is formed to implement different functions • the implementation of a management and monitoring mechanism • the implementation of training schemes • the proper responses under emergency situations • review is to take place

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to comply with the working procedure, guidelines and other relevant legislation ◆ Able to consider site conditions and environment in the workplace ◆ Able to improve the system ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand safety management systems. (ii) Able to give a general description of safety management systems and illustrate with examples. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	

1. Title	Aircraft legislation
2. Code	EMAMMG606A
3. Range	The knowledge is needed for wide ranges of aircraft legislation establish and implying works,e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, safety, health and tools etc.
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Able to understand the aircraft maintenance licences</p> <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • Responsibilities: by statutory law and by the need to fly aircraft in a satisfactory condition, i.e. common / civil / constitutional law. • Penalties - under statutory law and resulting from civil law suits. • HKAR-66: Licensing of Maintenance Personnel • (Certifying Staff - Maintenance). • Categories - applicability. • Area and extent of limitations and privileges within • Categories. • Overlap of Category applicability. • Relevant Airworthiness Notices.

	<ul style="list-style-type: none"> ◆ Able to understand the aircraft, engine and VP propeller log books <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • HKAR-1 Airworthiness Procedures. • CAD Approval: light aircraft, large aircraft. • Worksheets. • Data to be entered in log books. • Condition reports - e.g. heavy landing checks, defect investigations, NDT and other inspections, mandatory and non-mandatory. • Maintenance records. • Cross-reference to other files / records. • Preservation of documents: AN(HK)O 1995. ◆ Able to understand the technical log <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. HKAR-1 Airworthiness Procedures. • Technical Log - Air Operator's Certificates Requirements Document. ◆ Able to understand the aircraft documentation and requirements <ul style="list-style-type: none"> • Type Certification. Supplementary Type Certification. • Weight schedule. • External, and internal markings and signs, e.g. nationality and registration, no smoking and fasten seat belt, placards and requirements, doors and exits.
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	<ul style="list-style-type: none"> • Certificate of Airworthiness Categories, purposes of flight. • Certificate of Registration. • Noise Certificate. • Air Operator’s Certificate. • Schedule 5 requirements for equipment. • Radio station licence and approval. • Change of ownership. • Maintenance checks and inspections. • Maintenance records. Maintenance documentation. • Continuing airworthiness. • Master Minimum Equipment Lists, Minimum • Equipment Lists, Dispatch Deviation Lists. • Service Bulletins, manufacturers service information. • Modifications and repairs. • Test flights. • ETOPS: maintenance and dispatch requirements. • All Weather Operation (AWO): CAT 2/3 operations and minimum equipment requirements. • Reduced Vertical Separation Minima (RVSM) requirements. ◆ Able to understand the approvals <ul style="list-style-type: none"> • Design Organisations. • Maintenance Organisations. • AOC interface. • Maintenance Schedules and Programmes. • Stores: systems. release of parts.
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	<ul style="list-style-type: none"> ◆ Able to understand the defect reporting <ul style="list-style-type: none"> • Air Navigation (Hong Kong) Order 1995 requirements. • CAD382 The Mandatory Occurrence Reporting Scheme. • Defects which are to be reported. • Reportable accidents. ◆ Able to understand the Hong Kong Aviation Requirements <ul style="list-style-type: none"> • HKAR-1: Airworthiness Procedures. • Airworthiness Notices. • Airworthiness Directives. • Mandatory Modifications and Inspections:- <ul style="list-style-type: none"> ▸ HK CAD ▸ UK CAA ▸ FAA ▸ Authorities other than above: aircraft, engines, equipment. • HKAR-145: Approved Maintenance Organisations. • HKAR-147: Approved Maintenance Training/ <ul style="list-style-type: none"> • Examinations • Air Operator's Certificates (AOC) Requirements Document. ◆ Able to understand the Joint Aviation Authorities Requirements <ul style="list-style-type: none"> • JAR-21. JAR-23. JAR-25. JAR-29 ◆ Able to apply the following knowledge in the aircraft maintenance. <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books <p>6.2 Theoretical and practical aspects</p>
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	<ul style="list-style-type: none"> • Technical log • Aircraft documentation and requirements • Approvals • Defect reporting • Hong Kong aviation requirements <p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to understand the principal elements of the subjects. ◆ Able to understand the general knowledge of the theoretical and practical aspects of the following subjects. <ul style="list-style-type: none"> • Aircraft maintenance licences • Certifications • Aircraft, Engine and VP propeller log books • Technical log • Aircraft documentation and requirements • Approvals • Defect reporting • Hong Kong aviation requirements ◆ Able to apply the knowledge in the aircraft maintenance task.
7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the current legislation in the aircraft industry. (ii) Able to give a general description of the aircraft legislation and explain with examples. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
8. Remarks	Ref: HKAR-66 Module 10: Aviation legislation

1. Title	Liability of Flight Schedule
2. Code	EMAMMG607A
3. Range	The knowledge of the liability of flight schedule is applicable to a wide range of aircraft and helicopter flights, e.g. applicable to aircrafts and helicopter
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Able to understand the importance of flight schedule including</p> <ul style="list-style-type: none"> • to the customers • to the public image of the organization • to the repair and maintenance works • to the staff roster • to the financial implications <p>6.2 Flight Schedule ♦ Able to organize and manage the followings</p> <ul style="list-style-type: none"> • an optimal flight schedule • quality services to customers • facilitation of repair and maintenance works • a good schedule for pilots, crew members, ground personnel and technical staff • alternative schedule in case of mishaps • minimal financial loss <p>6.3 Professional approach ♦ Able to comply with the working procedure, guidelines and other relevant legislation</p> <ul style="list-style-type: none"> ♦ Able to consider site conditions and environment in the workplace ♦ Able to improve the system ♦ Able to apply the knowledge in the aircraft maintenance task.

7. Assessment Criteria	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand liability of flight schedule. (ii) Able to give a general description the ability of flight schedule and illustrate with examples. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
8. Remarks	

1. Title	Safety assessment
2. Code	EMAMMG608A
3. Range	The safety assessment is applicable to a wide range of aircraft and helicopter maintenance works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, hangars, workshops, workplaces, safety, health and tools etc.
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the knowledge of the following areas in the aircraft maintenance industry. <ul style="list-style-type: none"> • Emergency Egress • Work Environment • Ergonomics • Emergency Information • Fire Prevention • Electrical Systems • Employee Behavior ◆ Able to understand the legislation related to the safety in the aircraft maintenance industry. <p>6.2 Method and procedure</p> <ul style="list-style-type: none"> ◆ Able to establish the procedure of safety assessment in accordance with enterprise procedures. ◆ Able to create the documentation of safety assessment in accordance with enterprise procedures. ◆ Able to arrange the safety assessment regularly in accordance with enterprise procedures.

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to carry out the safety assessment regularly in accordance with enterprise procedures. ◆ Able to complete the report of the safety assessment in accordance with enterprise. ◆ Able to comply with the working procedure, guidelines and other relevant legislation. ◆ Able to consider site conditions and environment in the safety assessment. ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand the knowledge of the safety in the aircraft maintenance industry. (ii) Able to give a general description of the knowledge and explain the working procedure. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	

1. Title	Incident and Accident Investigation
2. Code	EMAMMG609A
3. Range	The investigation is applicable to a wide range of aircraft and helicopter on the incident or accident associated with engineering works, e.g. applicable to aircrafts, analysis, machineries, airworthiness, airframes, avionics, materials, tests, documentation, hangars, workshops, workplaces, safety, health and tools etc.
4. Level	6
5. Credit	12
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge ♦ Able to understand the preparation, responses and procedures to carry out an incident/accident investigation</p> <ul style="list-style-type: none"> • Domestic or international investigation • Assignment of right people to form a team to carry out the investigation • Investigation guidelines <p>6.2 Investigation ♦ Able to carry out the following investigations for an incident or accident:</p> <ul style="list-style-type: none"> • Domestic and foreign investigation • On site activities • Site investigation • Meetings, reports and press release • Release of wreckage • Laboratory examination • Post on-scene activities • Accidents involving sabotage associated with suspected criminal acts

	<p>6.3 Professional approach</p> <ul style="list-style-type: none"> ◆ Able to comply with the working procedure, guidelines and other relevant legislation ◆ Able to consider site conditions and environment in the incident or accident ◆ Able to make thorough investigation and compile a report ◆ Able to apply the knowledge in the aircraft maintenance task.
<p>7. Assessment Criteria</p>	<p>The integral outcomes requirement of this UoC are:</p> <ul style="list-style-type: none"> (i) Able to understand incident or accidents. (ii) Able to give a general description of the findings and explain the situations. (iii) Able to apply the knowledge in a practical manner using detailed procedures.
<p>8. Remarks</p>	

1. Title	Aircraft certification
2. Code	EMAMMG610A
3. Range	This UoC is intended for people certifying the release to service of aircraft or aeronautical components following maintenance or repair
4. Level	6
5. Credit	30
6. Competency	<p style="text-align: center;"><u>Performance Requirement</u></p> <p>6.1 Knowledge</p> <ul style="list-style-type: none"> ◆ Able to understand the knowledge to the certification of aeronautical maintenance, included: <ul style="list-style-type: none"> • aeronautical science principles; • engineering principles; • materials principles; • avionics; • air law; • human factors and supervision skill; • basic aeroplanes; • compass compensation; • rotorcraft; • piston engines; • turbine engines. <p>6.2 Methods and procedures</p> <ul style="list-style-type: none"> ◆ Able to demonstrate knowledge of safety on engineering worksites. ◆ Able to apply safe working practices on an engineering worksite. ◆ Able to apply the knowledge to the certification of aeronautical maintenance, included: <ul style="list-style-type: none"> • aeronautical science principles; • engineering principles; • materials principles;

	<ul style="list-style-type: none"> • avionics; • air law; • human factors and supervision skill; • basic aeroplanes; • compass compensation; • rotorcraft; • piston engines; • turbine engines; <p>6.3 Professional approach</p> <p>◆ Able to understand the legislative requirements, aviation authority requirements, manufacturers' publications and the maintenance organizations' approved maintenance practices and requirements in carrying out the task.</p>
7. Assessment Criteria	<p>The integral outcome requirement of this UoC are:</p> <p>(i) Able to understand the knowledge to the certification of aeronautical maintenance.</p> <p>(ii) Able to give a general description of aircraft certification systems and illustrate with examples.</p> <p>(iii) Able to apply the knowledge in a practical manner using detailed procedures.</p>
8. Remarks	

Appendix 1

Generic Level Descriptors

Level	Generic Level Descriptors			
	Knowledge & Intellectual Skills	Processes	Application, Autonomy & Accountability	Communication, IT and Numeracy
1	<ul style="list-style-type: none"> - Employ recall and demonstrate elementary comprehension in a narrow range of areas with dependency on ideas of others - Exercise basic skills - Receive and pass on information - Use, under supervision or prompting, basic tools and materials. - Apply learnt responses to solve problems - Operate in familiar, personal and/or everyday contexts - Take some account, with prompting, of identified consequences of actions. 	<ul style="list-style-type: none"> - Operate mainly in closely defined and highly structured contexts - Carry out processes that are repetitive and predictable - Undertake the performance of clearly defined tasks - Assume a strictly limited range of roles. 	<ul style="list-style-type: none"> - The ability to perform tasks of routine and repetitive nature given clear direction - Carry out directed activity under close supervision - Rely entirely on external monitoring of output and quality 	<ul style="list-style-type: none"> - Use very simple skills with assistance — for example: - Take some part in discussions about straightforward subjects - Read and identify the main points and ideas from documents about straightforward subjects - Produce and respond to a limited range of simple, written and oral communications, in familiar/routine contexts - Carry out a limited range of simple tasks to process data and access information - Use a limited range of very simple and familiar numerical and pictorial data - Carry out calculations, using whole numbers and simple decimals to given levels of accuracy.

Level	Generic Level Descriptors			
	Knowledge & Intellectual Skills	Processes	Application, Autonomy & Accountability	Communication, IT and Numeracy
2	<ul style="list-style-type: none"> - Apply knowledge based on an underpinning comprehension in a selected number of areas - Make comparisons with some evaluation and interpret available information - Apply basic tools and materials and use rehearsed stages for solving problems. - Operate in familiar, personal and/or everyday contexts - Take account the identified consequences of actions. 	<ul style="list-style-type: none"> - Choose from a range of procedures performed in a number of contexts, a few of which may be non-routine - Co-ordinate with others to achieve common goals. 	<ul style="list-style-type: none"> - The ability to perform a range of tasks in predictable and structured contexts - Undertake directed activity with a degree of autonomy - Achieve outcomes within time constraints - Accept defined responsibility for quantity and quality of output subject to external quality checking. 	<ul style="list-style-type: none"> - Use skills with some assistance — for example: - Take active part in discussions about identified subjects - Identify the main points and ideas from documents and reproduce them in other contexts - Produce and respond to a specified range of written and oral communications, in familiar/routine contexts - Carry out a defined range of tasks to process data and access information - Use a limited range of familiar numerical and graphical data in everyday contexts - Carry out calculations, using percentages and graphical data to given levels of accuracy.

Level	Generic Level Descriptors			
	Knowledge & Intellectual Skills	Processes	Application, Autonomy & Accountability	Communication, IT and Numeracy
3	<ul style="list-style-type: none"> - Apply knowledge and skills in a range of activities, demonstrating comprehension of relevant theories - Access, organise and evaluate information independently and make reasoned judgements in relation to a subject or discipline - Employ a range of responses to well defined, but sometimes unfamiliar or unpredictable, problems - Make generalisations and predictions in familiar contexts. 	<ul style="list-style-type: none"> - Operate in a variety of familiar and some unfamiliar contexts, using a known range of technical or learning skills - Select from a considerable choice of predetermined procedures - Give presentations to an audience 	<ul style="list-style-type: none"> - The ability to perform tasks in a broad range of predictable and structured contexts which may also involve some non-routine activities requiring a degree of individual responsibility - Engage in self-directed activity with guidance/evaluation - Accept responsibility for quantity and quality of output - Accept well defined but limited responsibility for the quantity and quality of the output of others 	<ul style="list-style-type: none"> - Use a wide range of largely routine and well practiced skills — for example: - Produce and respond to detailed and complex written and oral communication in familiar contexts, and use a suitable structure and style when writing extended documents. - Select and use standard applications to obtain, process and combine information - Use a wide range of numerical and graphical data in routine contexts, which may have some non-routine elements.

Level	Generic Level Descriptors			
	Knowledge & Intellectual Skills	Processes	Application, Autonomy & Accountability	Communication, IT and Numeracy
4	<ul style="list-style-type: none"> - Develop a rigorous approach to the acquisition of a broad knowledge base, with some specialist knowledge in selected areas - Present and evaluate information, using it to plan and develop investigative strategies - Deal with well defined issues within largely familiar contexts, but extend this to some unfamiliar problems - Employ a range of specialised skills and approaches to generate a range of responses. 	<ul style="list-style-type: none"> - Operate in a range of varied and specific contexts involving some creative and non-routine activities - Exercise appropriate judgement in planning, selecting or presenting information, methods or resources - Carry out routine lines of enquiry, development of investigation into professional level issues and problems. 	<ul style="list-style-type: none"> - The ability to perform skilled tasks requiring some discretion and judgement, and undertake a supervisory role - Undertake self-directed and a some directive activity - Operate within broad general guidelines or functions - Take responsibility for the nature and quantity of own outputs - Meet specified quality standards - Accept some responsibility for the quantity and quality of the output of others. 	<ul style="list-style-type: none"> - Use a wide range of routine skills and some advanced skills associated with the subject/discipline — for example: - Present using a range of techniques to engage the audience in both familiar and some new contexts - Read and synthesise extended information from subject documents. organise information coherently, convey complex ideas in well-structured form - Use a range of IT applications to support and enhance work - Plan approaches to obtaining and using information, choose appropriate methods and data to justify results & choices - Carry out multi-stage calculations.

Level	Generic Level Descriptors			
	Knowledge & Intellectual Skills	Processes	Application, Autonomy & Accountability	Communication, IT and Numeracy
5	<ul style="list-style-type: none"> - Generate ideas through the analysis of abstract information and concepts - Command wide ranging, specialised technical, creative and/or conceptual skills - Identify and analyse both routine and abstract professional problems and issues, and formulate evidence-based responses - Analyse, reformat and evaluate a wide range of information - Critically analyse, evaluate and/or synthesise ideas, concepts, information and issues - Draw on a range of sources in making judgments. 	<ul style="list-style-type: none"> - Utilise diagnostic and creative skills in a range of technical, professional or management functions - Exercise appropriate judgement in planning, design, technical and/or supervisory functions related to products, services, operations or processes. 	<ul style="list-style-type: none"> - Perform tasks involving planning, design, and technical skills, and involving some management functions - Accept responsibility and accountability within broad parameters for determining and achieving personal and/or group outcomes - Work under the mentoring of senior qualified practitioners - Deal with ethical issues, seeking guidance of others where appropriate. 	<ul style="list-style-type: none"> - Use a range of routine skills and some advanced and specialized skills in support of established practices in a subject/discipline, for example: - Make formal and informal presentations on standard/mainstream topics in the subject/discipline to a range of audiences - Participate in group discussions about complex subjects. create opportunities for others to contribute - Use a range of IT applications to support and enhance work - Interpret, use and evaluate numerical and graphical data to achieve goals/targets.

Level	Generic Level Descriptors			
	Knowledge & Intellectual Skills	Processes	Application, Autonomy & Accountability	Communication, IT and Numeracy
6	<ul style="list-style-type: none"> - Critically review, consolidate, and extend a systematic, coherent body of knowledge - Utilise highly specialised technical research or scholastic skills across an area of study - Critically evaluate new information, concepts and evidence from a range of sources and develop creative responses - Critically review, consolidate and extend knowledge, skills practices and thinking in a subject/discipline - Deal with complex issues and make informed judgements in the absence of complete or consistent data/information. 	<ul style="list-style-type: none"> - Transfer and apply diagnostic and creative skills in a range of situations - Exercise appropriate judgement in complex planning, design, technical and/or management functions related to products, services, operations or processes, including resourcing and evaluation - Conduct research, and/or advanced technical or professional activity - Design and apply appropriate research methodologies. 	<ul style="list-style-type: none"> - Apply knowledge and skills in a broad range of professional work activities - Practice significant autonomy in determining and achieving personal and/or group outcomes - Accept accountability in related decision making including use of supervision - Demonstrate leadership and /or make an identifiable contribution to change and development. 	<ul style="list-style-type: none"> - Communicate, using appropriate methods, to a range of audiences including peers, senior colleagues, specialists - Use a wide range of software to support and enhance work. identify refinements to existing software to increase effectiveness or specify new software - Undertake critical evaluations of a wide range of numerical and graphical data, and use calculations at various stages of the work.

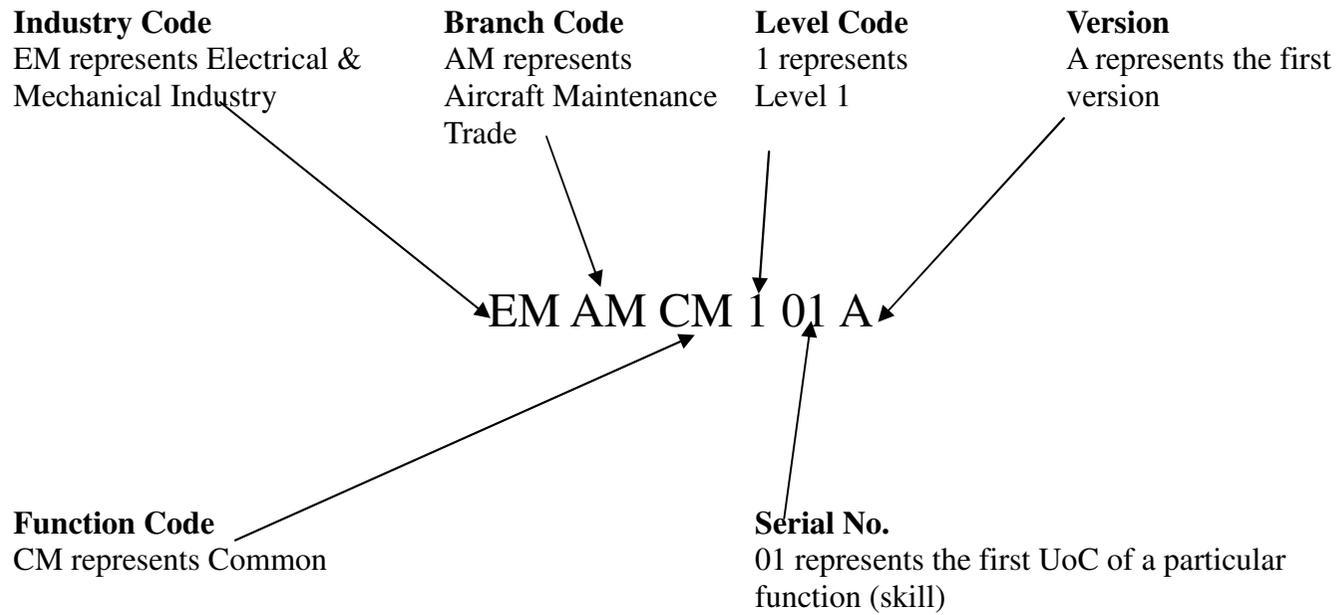
Level	Generic Level Descriptors			
	Knowledge & Intellectual Skills	Processes	Application, Autonomy & Accountability	Communication, IT and Numeracy
7	<ul style="list-style-type: none"> - Demonstrate and work with a critical overview of a subject or discipline, including an evaluative understanding of principal theories and concepts, and of its broad relationships with other disciplines - Identify, conceptualise and offer original and creative insights into new, complex and abstract ideas and information - Deal with very complex and/or new issues and make informed judgements in the absence of complete or consistent data/information - Make a significant and original contribution to a specialised field of inquiry, or to broader interdisciplinary relationships. 	<ul style="list-style-type: none"> - Demonstrate command of research and methodological issues and engage in critical dialogue - Develop creative and original responses to problems and issues in the context of new circumstances. 	<ul style="list-style-type: none"> - Apply knowledge and skills in a broad range of complex and professional work activities, including new and unforeseen circumstances - Demonstrate leadership and originality in tackling and solving problems - Accept accountability in related decision making - High degree of autonomy, with full responsibility for own work, and significant responsibility for others - Deal with complex ethical and professional issues. 	<ul style="list-style-type: none"> - Strategically use communication skills, adapting context and purpose to a range of audiences - Communicate at the standard of published academic work and/or critical dialogue - Monitor, review and reflect on own work and skill development, and change and adapt in the light of new demands - Use a range of software and specify software requirements to enhance work, anticipating future requirements - Critically evaluate numerical and graphical data, and employ such data extensively.

Appendix 2

Coding criteria

Coding for the UoCs

Each UoC is coded by a serial number to represent a skill of competency. The representation of the coding is explained in the following table.



Function Codes

Each Function Code represents different function in the aircraft maintenance trade, the representation of the function code is explained in the following table

Function Code	Represents Function
CM	Common
AG	Category A License - General
AA	Category A License - Aeroplane
AH	Category A License - Helicopter
BG	Category B1 License - General
BA	Category B1 License - Aeroplane
BH	Category B1 License - Helicopter
BX	Category B2 License
BY	Category B3 License
WS	Workshop component - General
AV	Workshop component - Avionic
MG	Management