

## Subject Description Form

<b>Subject Code</b>	AAE4109
<b>Subject Title</b>	Aircraft Maintenance Practices
<b>Credit Value</b>	3
<b>Level</b>	4
<b>Pre-requisite/ Co-requisite/ Exclusion</b>	<b>Pre-requisite:</b> IC2133 Aircraft Manufacturing and Maintenance Fundamentals
<b>Objectives</b>	To provide students with knowledge of aircraft maintenance practice and application in modern aircraft maintenance.
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> <li>a. Acquire good understanding of safety precautions of aircraft and workshop; and</li> <li>b. Acquire good understanding of aircraft engineering drawing as well as aircraft fits and clearances system; and</li> <li>c. Obtain fundamental knowledge in the area of aircraft screw system and locking devices; and</li> <li>d. Demonstrate good understanding of aircraft maintenance procedures; and</li> <li>e. Apply their knowledge to handle and store aircraft.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p><b>Safety Precautions</b> - Aircraft and Workshop – 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 including knowledge on extinguishing agents.</p> <p><b>Workshop Practices</b> - Care of tools, control of tools, use of workshop materials; dimensions, allowances and tolerances, standards of workmanship; calibration of tools and equipment, calibration standards.</p> <p><b>Tools</b> - 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.</p> <p><b>Avionic General Test Equipment</b> - Operation, function and use of avionic general test equipment.</p> <p><b>Engineering Drawings, Diagrams and Standards</b> - Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America;</p>

	<p>Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Wiring diagrams and schematic diagrams.</p> <p><b>Fits and Clearances</b> - 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.</p> <p><b>Screw threads</b> - Screw nomenclature; thread forms, dimensions and tolerances for standard threads used in aircraft; measuring screw threads.</p> <p><b>Locking devices</b> - Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.</p> <p><b>Pipes and Unions</b> - 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; Bending and belling / flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.</p> <p><b>Electrical Cables and Connectors</b> - 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> <p><b>Aircraft Weight and Balance</b> - Centre of gravity / balance limits calculation: use of relevant documents; Preparation of aircraft for weighing; Aircraft weighing.</p> <p><b>Aircraft Handling and Storage</b> - Aircraft taxiing/towing and associated safety precautions; Aircraft jacking, chocking, securing and associated safety precautions; Aircraft storage methods; Refueling / defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies; Effects of environmental conditions on aircraft handling and operation.</p> <p><b>Maintenance Procedures</b> - 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>																							
<p><b>Teaching/Learning Methodology</b></p>	<p>Lectures are used to deliver the fundamental knowledge in relation to aircraft maintenance practices (outcomes a to e).</p> <p>Tutorials are used to illustrate the applications of fundamental knowledge to practical situations (outcomes a to e).</p> <table border="1" data-bbox="475 1637 1428 1939"> <thead> <tr> <th data-bbox="475 1637 986 1805" rowspan="2">Teaching/Learning Methodology</th> <th colspan="5" data-bbox="986 1637 1428 1738">Intended subject learning outcomes to be covered</th> </tr> <tr> <th data-bbox="986 1738 1074 1805">a</th> <th data-bbox="1074 1738 1161 1805">b</th> <th data-bbox="1161 1738 1249 1805">c</th> <th data-bbox="1249 1738 1337 1805">d</th> <th data-bbox="1337 1738 1428 1805">e</th> </tr> </thead> <tbody> <tr> <td data-bbox="475 1805 986 1872">1. Lecture</td> <td data-bbox="986 1805 1074 1872">✓</td> <td data-bbox="1074 1805 1161 1872">✓</td> <td data-bbox="1161 1805 1249 1872">✓</td> <td data-bbox="1249 1805 1337 1872">✓</td> <td data-bbox="1337 1805 1428 1872">✓</td> </tr> <tr> <td data-bbox="475 1872 986 1939">2. Tutorial</td> <td data-bbox="986 1872 1074 1939">✓</td> <td data-bbox="1074 1872 1161 1939">✓</td> <td data-bbox="1161 1872 1249 1939">✓</td> <td data-bbox="1249 1872 1337 1939">✓</td> <td data-bbox="1337 1872 1428 1939">✓</td> </tr> </tbody> </table>	Teaching/Learning Methodology	Intended subject learning outcomes to be covered					a	b	c	d	e	1. Lecture	✓	✓	✓	✓	✓	2. Tutorial	✓	✓	✓	✓	✓
Teaching/Learning Methodology	Intended subject learning outcomes to be covered																							
	a	b	c	d	e																			
1. Lecture	✓	✓	✓	✓	✓																			
2. Tutorial	✓	✓	✓	✓	✓																			

<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				
			a	b	c	d	e
	1. Assignments / Quizzes	50%	✓	✓	✓	✓	✓
	2. Final examination	50%	✓	✓	✓	✓	✓
<b>Total</b>	<b>100 %</b>						
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Overall Assessment:</p> <p><math>0.5 \times \text{Final Examination} + 0.5 \times \text{Continuous Assessment}</math></p> <p>Examination is adopted to assess students on the overall understanding and the ability of applying the concepts. It is supplemented by continuous assessment including assignments and closed-book quizzes. The continuous assessment is aimed at enhancing the students' comprehension and assimilation of various topics of the syllabus.</p>							
<b>Student Study Effort Expected</b>	Class contact:						
	▪ Lectures						26 Hrs.
	▪ Tutorials						13 Hrs.
	Other student study effort:						
	▪ Assignments						20 Hrs.
	▪ Self-study						46 Hrs.
	<b>Total student study effort</b>						<b>105 Hrs.</b>
<b>Reading List and References</b>	<ol style="list-style-type: none"> <li>1. "EASA Module 6 B1 Materials and Hardware" by Aircraft Technical Book Co.</li> <li>2. "EASA Module 7A Maintenance Practices" by Aircraft Technical Book Co.</li> <li>3. "The Jet Engine 5th Edition" by Rolls Royce</li> <li>4. "Airline Maintenance and Aircraft Manufacturing: Analyses of Select Issues" by Laura T. Pierson</li> <li>5. "Essentials of Airplane Maintenance" by Michael Loong</li> </ol>						