

Guidance to Instructors on Subject Delivery

MILITARY AIRCRAFT SYSTEMS

Programme of learning:

- This is a suggested programme for the delivery of this subject.
- The main headings are the Learning Outcomes (LO1, LO2, etc), with sub headings related to topics within those Learning Outcomes (see Glossary of Terms).

Activities:

- Some practical activities are suggested throughout the programme as a way of reinforcing the learning and adding interest.
- It may be not be practical to undertake all of these activities at the suggested part of the programme.
- Instructors may have to adapt this programme to prevailing circumstances.

Method of delivery:

- Learning resources can be found on Ultilearn and may be adapted by the instructor, if required.
- Lesson delivery should be as practical as possible and should contain the maximum amount of cadet participation and interaction.

Check of understanding:

- Each lesson should contain a check of understanding (see Glossary of Terms).
- At the start of each lesson, the previous check of understanding should be reviewed in order to consolidate previous learning before moving on to new learning.

Formative assessment:

- There should be a formative assessment at the conclusion of each Learning Outcome (see Glossary of Terms).

Summative assessment:

- This is the Online Assessment, through Ultilearn, of the Assessment Criteria for this subject (see Glossary of Terms).
- Assessment Criteria (see Glossary of Terms) are found on the final page of this document.

MILITARY AIRCRAFT SYSTEMS

Introduction:

- Introduction to the subject and assessment method

LO1: Know types of air-launched weapons carried by modern aircraft

Introduction:

- Introduce the types of air-launched weapons carried by modern aircraft whether RAF or other British armed forces

Air-to-air weapons:

- Introduce the types of air-to-air weapons
- Explain the role and function of guided missiles, including:
 - Meteor
 - AMRAAM
 - ASRAAM
 - Sidewinder (AIM-9L)
 - Sky Flash

Air-to-ground weapons:

- Introduce the types of air-to-ground weapons
- Explain the role and function of guided missiles, including:
 - Storm Shadow
 - Hellfire
 - Brimstone
 - ALARM
 - Maverick
- Explain the role and function of freefall bombs, including:
 - 500 lb bombs
 - 1000 lb bombs
 - 2000 lb bombs
- Explain the role and function of guided bombs, including:
 - Paveway 2
 - Paveway 3
 - Paveway 4
 - JDAM
- Explain the role and function of guns and rockets, including:
 - M134 Minigun

- Mauser 27mm
- CRV-7

Air-to-surface weapons:

- Introduce air-to-surface weapons
- Explain the role and function of guided missiles, including:
 - Harpoon
- Explain the role and function of torpedoes, including:
 - Sting Ray

Review:

- Review the types of air-launched weapons carried by modern aircraft

Formative assessment:

- Formative assessment of the types of air-launched weapons carried by modern aircraft

MILITARY AIRCRAFT SYSTEMS
LO2: Know use, capability and limitations of air-launched weapons
Introduction: <ul style="list-style-type: none">• Introduce the use, capability and limitations of air-launched weapons
Air-to-air missiles: <ul style="list-style-type: none">• Recap learning on air-to-air missiles• Explain types of target• Explain direction and range of target principles• Explain the method of steering missile towards target• Explain the process for updating target information in flight• Explain overcoming defensive measures• Explain effectively disabling the target
Air-to-ground weapons: <ul style="list-style-type: none">• Recap learning on air-to-ground weapons• Explain the types of target• Explain how to locate the target• Explain the method of steering towards the target• Explain the process for updating target information in flight• Explain overcoming defensive measures• Explain effectively disabling the target
Review: <ul style="list-style-type: none">• Review the use, capability and limitations of air-launched weapons
Formative assessment: <ul style="list-style-type: none">• Formative assessment of the use, capability and limitations of air-launched weapons

MILITARY AIRCRAFT SYSTEMS
LO3: Know how air-launched weapons work as systems and interact with the aircraft on which they are carried
Introduction: <ul style="list-style-type: none">• Introduce how air-launched weapons work as systems in their own right and interact with the aircraft on which they are carried
Version markings: <ul style="list-style-type: none">• Explain weapon type and version markings
Parts of systems: <ul style="list-style-type: none">• Introduce the parts of the different systems• Explain parts of the system, its role and function, including:<ul style="list-style-type: none">○ Seeker,○ Guidance unit○ Navigation system○ Fuse and warhead○ Actuation system○ Propulsion system○ Airframe
Carriage equipment: <ul style="list-style-type: none">• Introduce carriage equipment• Explain the role and function of rail launchers, including:<ul style="list-style-type: none">○ BOL-304○ LAU-7• Explain the role and function of ejection release units
Safety aspects: <ul style="list-style-type: none">• Introduce the safety aspects• Explain the importance of safety mechanisms• Explain how safety mechanisms are used to ensure that the hazard to the launch aircraft is minimised
Review: <ul style="list-style-type: none">• Review how air-launched weapons work as systems in their own right and interact with the aircraft on which they are carried

Formative assessment:

- Formative assessment of how air-launched weapons work as systems in their own right and interact with the aircraft on which they are carried

MILITARY AIRCRAFT SYSTEMS
LO4: Know advantages and disadvantages of guided and unguided weapons
Air power: <ul style="list-style-type: none">• Introduce how weapons are used in the application of air power
Development: <ul style="list-style-type: none">• Explain the history related to weapons and air power• Explain the development of air-launched weapons
Capability: <ul style="list-style-type: none">• Explain the capability• Explain the need for weapons with different capabilities
Range and accuracy: <ul style="list-style-type: none">• Introduce range and accuracy• Explain the relationship between range and accuracy• Explain the need for weapons that have high accuracy
Formative assessment: <ul style="list-style-type: none">• Formative assessment of how weapons are used in the application of air power
Advantages and disadvantages: <ul style="list-style-type: none">• Introduce the advantages and disadvantages of guided and unguided weapons
Unguided weapons: <ul style="list-style-type: none">• Explain the advantages and disadvantages of unguided weapons, including:<ul style="list-style-type: none">○ Cost○ Range○ Accuracy○ Effectiveness○ Anti-weapon defensive strategy○ Effectiveness
Guided weapons: <ul style="list-style-type: none">• Explain the advantages and disadvantages of guided weapons, including:<ul style="list-style-type: none">○ Cost○ Range○ Accuracy○ Effectiveness

- Anti-weapon defensive strategy
- Effectiveness

Review:

- Review the advantages and disadvantages of guided and unguided weapons

Formative assessment:

- Formative assessment of the advantages and disadvantages of guided and unguided weapons

MILITARY AIRCRAFT SYSTEMS

Activity 1:

- Cadets should view videos of weapon use

Activity 2:

- Cadets should visit an aerospace museum, or an online resource, to view military aircraft weapons

Activity 3:

- Cadets should experiment with using various weapon types against a variety of targets on a flight simulator

MILITARY AIRCRAFT SYSTEMS

Subject review:

- Review of the subject and activities

Preparation for summative assessment:
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- Prepare for Online Assessment on Utlilearn

MILITARY AIRCRAFT SYSTEMS	
Assessment Criteria for Each Learning Outcome	
Subject	Military Aircraft Systems
Classification	Senior Cadet / Master Air Cadet
BTEC Aviation Studies	Unit 15: Military Aircraft Systems
Learning Outcome	Assessment Criterion
The learner will:	The learner can:
LO1: Know types of air-launched weapons carried by modern aircraft	P1: Identify types of air-launched weapons used by military aircraft
LO2: Know use, capability and limitations of air-launched weapons	P2: Describe capability and limitations of air-to-air missiles
	P3: Describe capability and limitations of air-to-ground missiles
	P4: Identify type of target that each air-launch weapon is designed for
	P5: Identify main parts of an air-launched weapon
LO3: Know how air-launched weapons work as systems and interact with the aircraft on which they are carried	P6: Identify safety mechanisms used to protect the launch aircraft
	P7: Describe how an air-launched weapon is released from the aircraft and guided towards its target
LO4: Know advantages and disadvantages of guided and unguided weapons	P8: List advantages and disadvantages of unguided weapons
	P9: List advantages and disadvantages of guided weapons

ACO Aviation Training Syllabus

Glossary of Terms

Term	Meaning
Learning outcomes	What a cadet is expected to know, understand or be able to do.
Assessment criteria	The standard a cadet is expected to meet to demonstrate that a learning outcome, or set of learning outcomes, has been achieved.
Guidance to instructors on subject delivery	A programme that gives the instructor guidance on the content and suggested order of delivery for a particular subject. It will include the learning outcomes, what should be covered to achieve those outcomes and any relevant practical activities.
Formative assessment	Regular and informal assessment that provides feedback throughout the learning process that supports the cadet's progress. This can take the form of checks of understanding through question and answer sessions or demonstration of an activity.
Summative assessment	Assessment of learning by an HQ Air Cadets paper-based examination or online assessment. A cadet will have to correctly answer a question that directly relates to an assessment criterion.
Examination	Paper-based exclusive choice question paper for the old syllabus subjects for Leading, Senior and Master Air Cadet.
Online assessment	Online assessment process, accessed through Utlilearn, for Leading Cadet from Sep 10 and Senior and Master Air Cadet from Sep 11.
Lesson check of understanding	Throughout and at the end of each lesson there should be a check of understanding. At the start of the next lesson, the previous check of understanding should be reviewed in order to consolidate previous learning before moving on to new learning.
Check of understanding for First Class Cadet	This is a competence-based assessment process for First Class Cadet which should test understanding through practical demonstration, activity observation, oral questioning and inspection.