

Guidance to Instructors on Subject Delivery

MAP AND COMPASS

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.

MAP AND COMPASS
Introduction: <ul style="list-style-type: none">• Introduction to the subject and assessment method
LO1: Be able to show the different types of north
Introduction: <ul style="list-style-type: none">• Introduction to finding a position with an Ordnance Survey map using the physical features of the land
Finding north without a compass: <ul style="list-style-type: none">• Demonstrate how to find north without a compass using the following:<ul style="list-style-type: none">○ Pole star○ Watch○ Shadows○ Physical features of the land to orient the map to determine north
Activity 1: <ul style="list-style-type: none">• Practical field exercise practising methods of finding positions using the physical features
Formative assessment: <ul style="list-style-type: none">• Formative assessment of how to find north without using a compass
Introduction: <ul style="list-style-type: none">• Introduction to different types of north
Different types of north: <ul style="list-style-type: none">• Explain the following and their effects on navigation:<ul style="list-style-type: none">○ True north○ Grid north○ Magnetic north• Explain the difference between the types of north• Explain the variation between true north and grid north• Explain magnetic variation, including:<ul style="list-style-type: none">○ Reason and affect○ Grid magnetic angle○ How displayed on Ordnance Survey maps
Activity 2: <ul style="list-style-type: none">• Practical exercises on determining the different types of north and their variation

Formative assessment:

- Formative assessment of definitions and uses of north

Review:

- Review the content of the Learning Outcome

Formative assessment:

- Formative assessment of the content of the Learning Outcome

MAP AND COMPASS
LO2: Be able to use a map and lightweight walking compass for practical navigation
Introduction: <ul style="list-style-type: none">• Introduce the lightweight compass for practical navigation
Types of compasses, their parts and uses: <ul style="list-style-type: none">• Examine different types of compass and their uses• Examine the parts of a compass, naming them and their purpose• Discuss the limitations such as contact with magnetic sources, magnetic deviation and damage
Activity 1: <ul style="list-style-type: none">• Cadets to experiment with different magnetic sources to see the results
Calculating distance: <ul style="list-style-type: none">• Use a roamer to calculate grid reference and distance• Examine other methods to calculate distance on a map with a ruler, string, etc
Activity 2: <ul style="list-style-type: none">• Cadets to use different methods to calculate distances on a map
Set a map: <ul style="list-style-type: none">• Demonstrate how to set a map with a compass and the reasons why
Activity 3: <ul style="list-style-type: none">• Cadets to practice what learnt so far in a field exercise
Compass bearings: <ul style="list-style-type: none">• Introduce compass bearings• Demonstrate and practice how to set a compass heading• Demonstrate and practice how to walking on a bearing• Demonstrate and practice how to transfer bearing to a map• Demonstrate and practice resection methods• Demonstrate and practice how to take and use back bearings• Explain search patterns and learners to practice
Activity 4: <ul style="list-style-type: none">• Cadets to undertake a practical field exercise in using compass bearings

Formative assessment:

- Formative assessment of compass navigation

Review:

- Review the use of a map and lightweight walking compass for practical navigation

Formative assessment:

- Formative assessment of the use of a map and lightweight walking compass for practical navigation

MAP AND COMPASS
LO3: Know land navigation methods
Introduction: <ul style="list-style-type: none">• Introduce land navigation methods
Measuring distance: <ul style="list-style-type: none">• Discuss methods of measuring distance on the ground when walking, the reasons and advantages
Activity 1: <ul style="list-style-type: none">• Cadets to practice distance measurement
Timing methods: <ul style="list-style-type: none">• Explain timing methods, including:<ul style="list-style-type: none">○ Naismith's Rule○ Factors affecting the time taken to travel a distance, eg uphill, downhill, fitness, terrain and load
Activity 2: <ul style="list-style-type: none">• Cadets to practically experiment with timing methods and their factors
Pacing: <ul style="list-style-type: none">• Introduce pacing and pace counting
Activity 3: <ul style="list-style-type: none">• Cadets to practically experiment with pace counting
Navigation methods: <ul style="list-style-type: none">• Discuss errors, including:<ul style="list-style-type: none">○ Percentages of error○ Area of uncertainty○ Methods of reducing error• Explain handrailing, use of linear features to navigate• Explain aiming off and why it is an important technique• Explain contouring, walking around a hill instead of over the top, including the advantages and disadvantages of this technique• Explain attack points, aiming for an easily identifiable feature to improve accuracy
Activity 4: <ul style="list-style-type: none">• Cadets to undertake practical field exercises to practice land navigation methods

Review: <ul style="list-style-type: none">• Review land navigation methods
Formative assessment: <ul style="list-style-type: none">• Formative assessment of land navigation methods

MAP AND COMPASS
LO4: Know weather conditions that affect land navigation
Introduction: <ul style="list-style-type: none">• Introduce the weather conditions that affect land navigation
Atmosphere: <ul style="list-style-type: none">• Introduce the concept of atmosphere• Explain the movement of air masses and main air masses• Explain the origin of air mass movement and the typical weather conditions they represent, including:<ul style="list-style-type: none">○ Arctic maritime○ Polar maritime○ Polar continental○ Returning polar maritime○ Tropical maritime○ Tropical continental
Weather maps: <ul style="list-style-type: none">• Explain fronts and frontal depressions• Examine typical weather maps and the measurements used• Explain anticyclones, warm and cold fronts• Explain occluded front• Explain upper winds
Activity 1: <ul style="list-style-type: none">• Cadets should research examples of weather fronts and frontal depressions and the effects they had on people and places
Clouds: <ul style="list-style-type: none">• Introduce cloud formations• Explain how clouds are named• Explain types of clouds and how they are related to altitude• Demonstrate the different shapes of each type of cloud• Explain which clouds are related to specific weather conditions
Activity 2: <ul style="list-style-type: none">• Cadets to undertake practical field exercises practising cloud recognition

Review:

- Review weather conditions that affect land navigation

Formative assessment:

- Formative assessment of the weather conditions that affect land navigation

MAP AND COMPASS

Subject review:

- Review of the subject and activities

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

MAP AND COMPASS	
Assessment Criteria for Each Learning Outcome	
Subject	Map and Compass
Classification	Leading Cadet
BTEC Aviation Studies	Unit 7: Navigation on Land Using Map and Compass
Learning Outcome	Assessment Criterion
The learner will:	The learner can:
LO1: Be able to show the different types of north	P1: Identify the different types of north
	P2: Explain how to find true north using a map without a compass
LO2: Be able to use a map and lightweight walking compass for practical navigation	P3: Identify the features of a lightweight walking compass
	P4: Carry out basic calculations using map and compass to calculate direction of travel and position
LO3: Know land navigation methods	P5: Calculate timings of walks using Naismith's Rule
	P6: Identify what is meant by handrailing, aiming off, contouring and attack points
LO4: Know weather conditions that affect land navigation	P7: Identify how high and low atmospheric pressure affects land navigation
	P8: Describe cloud formations that affect land navigation

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 Utilearn, 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.