

UNIT 2.03 – NAVIGATION AND METEOROLOGY SYLLABUS

Note: The pass mark for the examinations set to this syllabus is 80%.

1. CROSS COUNTRY ENDORSEMENT

| 1.1 – NAVIGATION | | Standard prior to: | |
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| | | Solo | P/Cert |
| 1.1.1 | <p>Basics – Extract Information from documents.</p> <p><i>Note: Reference to AIP “visual” charts means the present ERC-L, VTC, VNC and AUS PCA and includes any subsequent changes to charts required for flight under VFR.</i></p> <p>On a WAC and AIP “visual” charts (if applicable) which cover the local area of operation:</p> <ul style="list-style-type: none"> (a) identify, without reference to the chart legend: <ul style="list-style-type: none"> i. major features to assist in map reading e.g. roads, rivers, lakes; ii. obstacles and spot heights, including elevation or height above terrain; iii. CTA, PRDs, and aerodrome data on VTC/ERC (if applicable); (b) decode other symbols with reference to the chart legend (c) assess the general height of the terrain from hypsometric tints and contours; (d) estimate track and distance; (e) demonstrate and explain the reason for chart orientation in flight. <p>On AIP visual charts identify airspace boundaries and symbols with reference to the chart legend.</p> <p>Use ERSA to extract the following regarding aerodromes:</p> <ul style="list-style-type: none"> (a) runway data; (b) special procedures; | B/P | C/P+ |
| 1.1.2 | <p>Computation Techniques.</p> <p>Use mental rules of thumb to estimate:</p> <ul style="list-style-type: none"> (a) time interval using estimated GS and distance e.g. 120 KT = 2 NM/MIN; (b) endurance; given fuel flow and fuel available (excluding reserve fuel). <p><i>Note: Students should be given examples to indicate that over short distances and periods of time, such approximations are reasonably accurate.</i></p> <p>Apply magnetic variation to obtain magnetic direction.</p> <p>Determine head/tail, and x-wind components given W/V and HDG.</p> | B/P | C/P+ |
| | | B/P | C/P+ |
| | | B/P | C/P+ |

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| 1.1.3 | <p>Form of the Earth.</p> <p>In order to apply this knowledge a student should have an understanding of the items listed in (a) to (f) and, if applicable, their effect on:</p> <ul style="list-style-type: none"> • position on the earth • time differences • distance and direction <p>(a) the shape and rotation of the earth;</p> <p>(b) latitude, longitude;</p> <p>(c) meridians of longitude, parallels of latitude;</p> <p>(d) difference between true and magnetic north;</p> <p>(e) terrestrial magnetism, magnetic variation and the change in variation with time;</p> <p>(f) distance on the earth i.e. relationship between a minute of latitude and a nautical mile.</p> | B/P B/P B/P | C/P+ C/P+ C/P+ |
| 1.1.4 | <p>Time.</p> <p>Explain the terms UTC, Local Mean Time, Local (Standard) Time, Local summer time.</p> <p>Extract (within +/- 5 min) the beginning and end of civil twilight from AIP daylight and darkness graphs.</p> <p>Carry out conversions between:</p> <ul style="list-style-type: none"> • LMT, UTC, Local (Standard) times including local summer time <p>List factors which may cause daylight to diminish earlier than the time extracted from AIP darkness graphs.</p> <p>Describe the effect of the earth's rotation and revolution around the sun on the:</p> <p>(a) beginning and end of daylight;</p> <p>(b) period of daylight;</p> | B/P B/P B/P B/P B/P | C/P+ C/P+ C/P+ C/P+ C/P+ |

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| <p>1.1.5</p> | <p>Charts and Publications.</p> <p><i>Note: AIP "Visual Charts" refers to the present ERC-L, VTC, VNC and AUS PCA and embraces any subsequent changes to charts required for flight under VFR.</i></p> <p>From AIP "Visual Charts" and ERSA, select the chart(s) document(s) which contain information about a given item of operational significance.</p> <p>Extract/decode symbols and apply information displayed on AIP "visual charts".</p> <p>Interpret topographic detail and decode symbols displayed on a WAC, VTC and VNC.</p> <p>On a WAC and AIP "visual charts":</p> <ul style="list-style-type: none"> (a) measure distance: <ul style="list-style-type: none"> i. using chart and latitude scale; (b) plot a position given: <ul style="list-style-type: none"> i. latitude and longitude; ii. bearing and distance. <p><i>Note: Students should also practice techniques to estimate track and distance.</i></p> | <p>B/P</p> <p>B/P</p> <p>B/P</p> <p>B/P</p> | <p>C/P+</p> <p>C/P+</p> <p>C/P+</p> <p>C/P+</p> |
| <p>1.1.6</p> | <p>Computations.</p> <p>Review computations and conversions and:</p> <ul style="list-style-type: none"> (a) solve GS, distance, fuel used, fuel required, fuel remaining and fuel consumption problems, given appropriate combinations of these factors; (b) determine HDG, GS and drift given TAS, W/V, TR; (c) determine TR given HDG, TAS, W/V; | <p>B/P</p> | <p>C/P+</p> |

| 1.2 – METEOROLOGY | | Standard prior to: | |
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| | | Solo | P/Cert |
| 1.2.1 | Knowledge of Local Weather. Demonstrate a basic knowledge of local weather, in particular the likely occurrence of : (a) thunderstorms; (b) low cloud; (c) poor visibility; (d) turbulence; | B/P | C/P+ |
| | and describe how these phenomena may affect the safe operation of an aeroplane. | B/P | C/P+ |
| 1.2.2 | Knowledge of Forecasts and Reports. Demonstrate an understanding of weather forecasts, reports and broadcasts that are pertinent to the area of operation. | B/P | C/P+ |
| | Know the terms and abbreviations used in forecasts and where to obtain decodes. | B/P | C/P+ |
| | Demonstrate an ability to obtain relevant forecasts. | B/P | C/P+ |
| 1.2.3 | Understand Significance of Observations. Recognise signs which may indicate the presence of : (a) turbulence, thermals, dust devils; (b) wind gradient, wind shear, | B/P | C/P+ |
| | and describe the effect of these phenomena on flight characteristics. <i>Note: "Signs" means forecast conditions and pilot observations.</i> | B/P | C/P+ |
| 1.2.4 | Atmospheric Pressure: Demonstrate an understanding of : (a) Unit of measure (b) Variation with height (c) Pressure altitude (d) Effects of pressure altitude (e) ICAO standard atmospheric pressure | B/P | C/P+ |
| 1.2.5 | Atmospheric Temperature: Demonstrate an understanding of: (a) Units of measure (b) Variation with height (c) Density altitude (d) Effects of density altitude (e) ICAO standard atmospheric temperature | B/P | C/P+ |

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| 1.2.6 | Pressure systems and fronts: Demonstrate an understanding of: (a) Depression or low pressure (b) Anti-cyclone or high pressure (c) Cold and warm fronts (d) General characteristics of pressure systems and fronts over Australia (e) Horizontal pressure (f) Isobars | B/P | C/P+ |
| 1.2.7 | Cloud Classifications: Demonstrate and be able to identify different cloud classifications and the weather associated with them. | B/P | C/P+ |
| 1.2.8 | Visibility: Demonstrate an understanding of the effects on visibility of : (a) Haze (b) Smoke (c) Fog | B/P | C/P+ |
| 1.2.9 | Turbulence: Demonstrate a knowledge and understanding of turbulence in relation to the following: (a) Mechanical (b) Terrain (c) Convectonal (d) Local winds (e) Slipstream (f) Wake | B/P | C/P+ |
| 1.2.10 | Wind: Demonstrate a knowledge and understanding of: (a) Wind velocity (b) Wind shear (c) Wind gradient (d) Backing and veering (e) Sea breezes (f) Fohn winds (g) Valley winds (h) Anabatic and katabatic winds | B/P | C/P+ |
| 1.2.11 | Mountain waves Demonstrate an understanding of: (a) conditions and severity at which they occur (b) how they can affect flight conditions | B/P | C/P+ |

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| 1.2.12 | Met Reports and Forecasts: | | |
| | Demonstrate an understanding of: | B/P | C/P |
| | (a) Metar's (b) Speci's (c) TTF (d) TAF (e) AFOR (f) Sigmet (g) Airmet | | |

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