

## Private Pilot Licence Examinations – 060 Navigation Aeroplane and Helicopter

| Syllabus Reference  | Syllabus details & Associated Learning Objective  | Aeroplane |               | Helicopter |               |
|---------------------|---|-----------|---------------|------------|---------------|
|                     |   | PPL       | Bridge Course | PPL        | Bridge Course |
| <b>060.00.00.00</b> | <b>NAVIGATION</b>   |           |               |            |               |
| <b>061.00.00.00</b> | <b>GENERAL NAVIGATION</b>   |           |               |            |               |
| 061.01.00.00        | <b>Basics of navigation</b>   |           |               |            |               |
| 061.01.01.00        | <b>The solar system</b>   |           |               |            |               |
| 061.01.01.01        | Seasonal and apparent movements of the sun  | x         |               | x          |               |
| 061.01.02.00        | <b>The earth</b>  |           |               |            |               |
| 061.01.02.01        | Great circle, small circle and rhumb line   | x         |               | x          |               |
| 061.01.02.02        | Latitude and difference of latitude   | x         |               | x          |               |
| 061.01.02.03        | Longitude and difference of longitude   | x         |               | x          |               |
| 061.01.02.04        | Use of latitude and longitude co-ordinates to locate any specific position                                | x         |               | x          |               |
| 061.01.03.00        | <b>Time and time conversions</b>  |           |               |            |               |
| 061.01.03.01        | Apparent time   | x         |               | x          |               |
| 061.01.03.02        | UTC   | x         |               | x          |               |
| 061.01.03.03        | LMT   | x         |               | x          |               |
| 061.01.03.04        | Standard times  | x         |               | x          |               |
| 061.01.03.05        | Dateline  | x         |               | x          |               |
| 061.01.03.06        | Definition of sunrise, sunset and civil twilight  | x         |               | x          |               |
| 061.01.04.00        | <b>Directions</b>   |           |               |            |               |
| 061.01.04.01        | True north, magnetic north and compass north  | x         |               | x          |               |
| 061.01.04.02        | Compass deviation   | x         |               | x          |               |
| 061.01.04.03        | Magnetic poles, isogonals, relationship between true and magnetic   | x         |               | x          |               |
| 061.01.05.00        | <b>Distance</b>   |           |               |            |               |
| 061.01.05.01        | Units of distance and height used in navigation: nautical miles, statute miles, kilometres, metres and ft | x         |               | x          |               |
| 061.01.05.02        | Conversion from one unit to another   | x         |               | x          |               |
| 061.01.05.03        | Relationship between nautical miles and minutes of latitude and minutes of longitude                      | x         |               | x          |               |
| 061.02.00.00        | <b>Magnetism and compasses</b>  |           |               |            |               |
| 061.02.01.00        | <b>General principles</b>   |           |               |            |               |
| 061.02.01.01        | Terrestrial magnetism   | x         |               | x          |               |
| 061.02.01.02        | Resolution of the earth's total magnetic force into vertical and horizontal components                    | x         |               | x          |               |
| 061.02.01.03        | Variation-annual change   | x         |               | x          |               |
| 061.02.02.00        | <b>Aircraft magnetism</b>   |           |               |            |               |
| 061.02.02.01        | The resulting magnetic fields   | x         |               | x          |               |
| 061.02.02.02        | Keeping magnetic materials clear of the compass   | x         |               | x          |               |
| 061.03.00.00        | <b>Charts</b>   |           |               |            |               |
| 061.03.01.00        | <b>General properties of miscellaneous types of projections</b>   |           |               |            |               |
| 061.03.01.01        | Direct Mercator   | x         |               | x          |               |
| 061.03.01.02        | Lambert conformal conic   | x         |               | x          |               |
| 061.03.02.00        | <b>The representation of meridians, parallels, great circles and rhumb lines</b>                          |           |               |            |               |

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|--------------|--|---|--|---|--|
| 061.03.02.01 | Direct Mercator  | x |  | x |  |
| 061.03.02.02 | Lambert conformal conic  | x |  | x |  |
| 061.03.03.00 | <b>The use of current aeronautical charts</b>                                |   |  |   |  |
| 061.03.03.01 | Plotting positions   | x |  | x |  |
| 061.03.03.02 | Methods of indicating scale and relief (ICAO topographical chart)            | x |  | x |  |
| 061.03.03.03 | Conventional signs   | x |  | x |  |
| 061.03.03.04 | Measuring tracks and distances   | x |  | x |  |
| 061.03.03.05 | Plotting bearings and distances  | x |  | x |  |
| 061.04.00.00 | <b>DR navigation</b>   |   |  |   |  |
| 061.04.01.00 | <b>Basis of DR</b>   |   |  |   |  |
| 061.04.01.01 | Track  | x |  | x |  |
| 061.04.01.02 | Heading (compass, magnetic and true)   | x |  | x |  |
| 061.04.01.03 | Wind velocity  | x |  | x |  |
| 061.04.01.04 | Air speed (IAS, CAS and TAS)   | x |  | x |  |
| 061.04.01.05 | Groundspeed  | x |  | x |  |
| 061.04.01.06 | ETA  | x |  | x |  |
| 061.04.01.07 | Drift and wind correction angle  | x |  | x |  |
| 061.04.01.08 | DR position fix  | x |  | x |  |
| 061.04.02.00 | <b>Use of the navigational computer</b>                                      |   |  |   |  |
| 061.04.02.01 | Speed  | x |  | x |  |
| 061.04.02.02 | Time   | x |  | x |  |
| 061.04.02.03 | Distance   | x |  | x |  |
| 061.04.02.04 | Fuel consumption   | x |  | x |  |
| 061.04.02.05 | Conversions  | x |  | x |  |
| 061.04.02.06 | Air speed  | x |  | x |  |
| 061.04.02.07 | Wind velocity  | x |  | x |  |
| 061.04.02.08 | True altitude  | x |  | x |  |
| 061.04.03.00 | <b>The triangle of velocities</b>  |   |  |   |  |
| 061.04.03.01 | Heading  | x |  | x |  |
| 061.04.03.02 | Ground speed   | x |  | x |  |
| 061.04.03.03 | Wind velocity  | x |  | x |  |
| 061.04.03.04 | Track and drift angle  | x |  | x |  |
| 061.04.04.00 | <b>Measurement of DR elements</b>  |   |  |   |  |
| 061.04.04.01 | Calculation of altitude  | x |  | x |  |
| 061.04.04.02 | Determination of appropriate speed   | x |  | x |  |
|              | <b>In-flight navigation</b>  |   |  |   |  |
| 061.05.00.00 | <b>Use of visual observations and application to in-flight navigation</b>    | x |  | x |  |
| 061.05.01.00 | <b>Navigation in cruising flight, use of fixes to revise navigation data</b> |   |  |   |  |
| 061.05.01.01 | Ground speed revision  | x |  | x |  |
| 061.05.01.02 | Off-track corrections  | x |  | x |  |
| 061.05.01.03 | Calculation of wind speed and direction                                      | x |  | x |  |
| 061.05.01.04 | ETA revisions  | x |  | x |  |
| 061.06.00.00 | <b>Flight log</b>  | x |  | x |  |
| 061.07.00.00 | <b>RADIO NAVIGATION</b>  |   |  |   |  |
| 061.07.00.00 | <b>Basic radio propagation theory</b>  |   |  |   |  |
| 061.07.01.00 | <b>Antennas</b>  |   |  |   |  |
| 061.07.01.01 | Characteristics  | x |  | x |  |
| 061.07.02.00 | <b>Wave propagation</b>  |   |  |   |  |
| 061.07.02.01 | Propagation with the frequency bands   | x |  | x |  |
| 061.08.00.00 | <b>Radio aids</b>  |   |  |   |  |

|              |   |   |  |   |  |
|--------------|---|---|--|---|--|
| 061.08.01.00 | <b>Ground DF</b>                                    |   |  |   |  |
| 061.08.01.01 | Principles  | x |  | x |  |
| 061.08.01.02 | Presentation and interpretation                     | x |  | x |  |
| 061.08.01.03 | Coverage  | x |  | x |  |
| 061.08.01.04 | Range   | x |  | x |  |
| 061.08.01.05 | Errors and accuracy                                 | x |  | x |  |
| 061.08.01.06 | Factors affecting range and accuracy                | x |  | x |  |
| 061.08.02.00 | <b>NDB/ADF</b>                                      |   |  |   |  |
| 061.08.02.01 | Principles  | x |  | x |  |
| 061.08.02.02 | Presentation and interpretation                     | x |  | x |  |
| 061.08.02.03 | Coverage  | x |  | x |  |
| 061.08.02.04 | Range   | x |  | x |  |
| 061.08.02.05 | Errors and accuracy                                 | x |  | x |  |
| 061.08.02.06 | Factors affecting range and accuracy                | x |  | x |  |
| 061.08.03.00 | <b>VOR</b>  |   |  |   |  |
| 061.08.03.01 | Principles  | x |  | x |  |
| 061.08.03.02 | Presentation and interpretation                     | x |  | x |  |
| 061.08.03.03 | Coverage  | x |  | x |  |
| 061.08.03.04 | Range   | x |  | x |  |
| 061.08.03.05 | Errors and accuracy                                 | x |  | x |  |
| 061.08.03.06 | Factors affecting range and accuracy                | x |  | x |  |
| 061.08.04.00 | <b>DME</b>  |   |  |   |  |
| 061.08.04.01 | Principles  | x |  | x |  |
| 061.08.04.02 | Presentation and interpretation                     | x |  | x |  |
| 061.08.04.03 | Coverage  | x |  | x |  |
| 061.08.04.04 | Range   | x |  | x |  |
| 061.08.04.05 | Errors and accuracy                                 | x |  | x |  |
| 061.08.04.06 | Factors affecting range and accuracy                | x |  | x |  |
| 061.09.00.00 | <b>Radar</b>  |   |  |   |  |
| 061.09.01.00 | <b>Ground radar</b>                                 |   |  |   |  |
| 061.09.01.01 | Principles  | x |  | x |  |
| 061.09.01.02 | Presentation and interpretation                     | x |  | x |  |
| 061.09.01.03 | Coverage  | x |  | x |  |
| 061.09.01.04 | Range   | x |  | x |  |
| 061.09.01.05 | Errors and accuracy                                 | x |  | x |  |
| 061.09.01.06 | Factors affecting range and accuracy                | x |  | x |  |
| 061.09.02.00 | <b>Secondary surveillance radar and transponder</b> |   |  |   |  |
| 061.09.02.01 | Principles  | x |  | x |  |
| 061.09.02.02 | Presentation and interpretation                     | x |  | x |  |
| 061.09.02.03 | Modes and codes                                     | x |  | x |  |
| 061.10.00.00 | <b>GNSS</b>   |   |  |   |  |
| 061.10.01.00 | <b>GPS, GLONASS OR GALILEO</b>                      |   |  |   |  |
| 061.10.01.01 | Principles  | x |  | x |  |
| 061.10.01.02 | Operation   | x |  | x |  |
| 061.10.01.03 | Errors and accuracy                                 | x |  | x |  |
| 061.10.01.04 | Factors affecting accuracy                          | x |  | x |  |