

| | | | | | |
|-------------------------------|--|-----------------|------------------------|------------------------|------|
| Course Title | General Navigation | | | | |
| Course Code | AVM213 | | | | |
| Course Type | Compulsory | | | | |
| Level | Bachelor (1 st cycle) | | | | |
| Year / Semester | 2 nd Year / 1 st Semester | | | | |
| Instructor's name | TBA | | | | |
| ECTS | 4 | Lectures / week | 3 Hours/14 Weeks | Laboratories / week | None |
| Course Purpose and Objectives | The purpose of the General Navigation course is to provide the student with the knowledge required in order to understand the main geographical and navigational concepts and the ability to use navigational tools and apply navigational techniques. The course aims in explaining the most important navigational concepts of the earth, time and distance, explain the principles of navigational instruments, provide instruction on how to interpret and use navigational charts, apply Dead Reckoning (DR) techniques and carry out in-flight navigation during the different stages of flight. | | | | |
| Learning Outcomes | <p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> • Explain the different geographical concepts that are applied in navigation. • Apply conversion techniques between units of measurement for distance and speed. • Explain the principles based on which navigational instruments are used. • Use a variety of navigational instruments and tools. • Interpret, understand and use navigational charts; • Apply Dead Reckoning (DR) techniques in navigational calculations. • Apply navigational techniques in order to calculate, revise and confirm navigational data in all stages of flight. | | | | |
| Prerequisites | AVM111 | Co-requisites | None | | |
| Course Content | <p>The material included in this course cover the following subjects:</p> <ul style="list-style-type: none"> • Basics of Navigation: The solar system (Earth's orbit, seasons and apparent movement of the sun), The earth (Great | | | | |

circle, small circle, rhumb line, Convergency, Conversion Angle, Latitude, Difference of Latitude, Longitude, Difference of Longitude, Use of Latitude and Longitude Co-ordinates to Locate any Specific Position), Time and time conversions (Apparent time, UTC, LMT, Standard times, Dateline, Determination of sunrise, sunset and civil twilight), Directions (True north, Terrestrial magnetism: Magnetic North, Inclination and Variation, Compass deviation, Compass North, Isogonals, relationship between true and magnetic, Gridlines, isogrives), Distance (Units of Distance and Height Used in Navigation: Nautical Miles, Statute Miles, Kilometres, Metres, Feet, Conversion from One Unit to Another, Relationship between Nautical Miles and Minutes of Latitude and Minutes of Longitude).

- **Magnetism and Compasses:** Knowledge of the principles of the direct reading (standby) compass (The Use of this Compass, Serviceability Tests, Situations Requiring a Compass Swing).
- **Charts:** General Properties of Miscellaneous Types of Projections (Direct Mercator, Lambert Conformal Conic, Polar Stereographic), The representation of meridians parallels , great circles and rhumb lines (Direct Mercator, Lambert conformal conic, Polar stereographic), The use of current aeronautical charts (Plotting Positions, Methods of Indicating Scale and Relief, Conventional Signs, Measuring Tracks and Distances, Plotting Bearings).
- **Dead Reckoning Navigation (DR):** Basis of Dead Reckoning (Track, Heading (Compass, Magnetic, True, Grid), Wind Velocity, Airspeed (IAS, CAS, TAS, Mach number), Groundspeed, ETA, Drift, Wind Correction Angle), Use of the navigational computer (Speed, Time, Distance, Fuel Consumption, Conversions, Airspeed, Wind Velocity, True Altitude), The triangle of velocities, Determination of DR position (Confirmation of flight progress (DR), Lost procedures), Measurement of DR elements (Calculation of altitude, adjustments, corrections, errors, Determination of temperature, Determination of Mach number).
- **In-Flight Navigation:** Use of visual observations and application to in-flight navigation, Navigation in climb and descent (Average airspeed, Average wind velocity, Ground speed/distance covered during climb or descent, Gradients versus rate of climb/descent), Navigation in cruising flight, use of fixes to revise navigation data (Ground speed revision, Off-track corrections, Calculation of wind speed and direction, ETA revisions, Flight Log).

| | | | | | | | |
|----------------------|---|--------------|-----|---------------|-----|--|------|
| Teaching Methodology | Face-to-face | | | | | | |
| Bibliography | <ul style="list-style-type: none"> Bristol ATPL (A) Groundschool Manual & CBT Software | | | | | | |
| Assessment | <table border="1"> <tr> <td>Examinations</td> <td>90%</td> </tr> <tr> <td>Participation</td> <td>10%</td> </tr> <tr> <td></td> <td>100%</td> </tr> </table> | Examinations | 90% | Participation | 10% | | 100% |
| Examinations | 90% | | | | | | |
| Participation | 10% | | | | | | |
| | 100% | | | | | | |
| Language | English | | | | | | |