Course Title	Course Code	Credit Hours
Aerospace Vehicle Performance	AE-323	3-0

Textbooks:

- Bandu N Pamadi, “Performance, Stability, Dynamic and control of Airplanes”, AIAA Series
- John D Anderson, “Aircraft Performance and Design”, McGraw Hill Education, NY

Reference Books/Materials:

- Daniel P Raymer, “Aircraft Design: A conceptual Approach”, AIAA
- Mohammad H. Sadraey, “Aircraft Performance: An Engineering Approach”, CRC Press
- EASA Part-66 Category B1 Maintenance License Module 8, “Basic Aerodynamics”
- EASA Part-66 Category B1 Maintenance License Module 15, “Gas Turbine Engine”

Course Objectives:

This course aims to help students understand the basics of Aircraft Performance, including Lift and Drag Physics. It provides a comprehensive study of Drag and its impact on Aircraft efficiency.

Course Outline:

- Introduction to Aircraft Performance; Evolution of Airplane; Later Performance Considerations
- International Standard Atmosphere (ISA), Application to Aerodynamics
- Aerodynamic of the Airplane
- Source of Aerodynamic Force, Lift, Drag and Moments
- Aerodynamic Coefficients and their Variation with AOA and Mach number
- Aerodynamic Centre, Lift for High Aspect Ratio Wings
- Lift for Low Aspect Ratio Wings, Swept Wings, Delta Wings, Subsonic Airfoil
- Drag, Induced drag, Transonic drag, Supersonic Drag
- Drag Polar

- Thrust and Efficiency, the Reciprocating Engine/Propeller Combination, Turbojet, Turbofan, and Turboprop
- Four Forces of 2D Steady Level Flight, Climbing Flight and Climb and Roll and the Equations of Motion
- Thrust Required and Factors Affecting it, Fundamental Performance Parameters (T/W, W/S, Drag Polar & L/D) Velocity Instability
- Rate of Climb, climb performance Hodograph, Service and absolute Ceiling, Time to Climb, Gliding Flight, Sink Rate, Glide Performance
- Energy Height, Specific Excess Power Subsonic and Supersonic Ps Contours, Minimum Time to Accelerated Climb Path, V- n Diagram
- Takeoff Performance
- Landing Performance