

Course Title	Code	Credit Hours
Flight Stability and Control	AE-354	3-0

Textbooks:

- Bandu N. Pamadi, "Performance, Stability, Dynamics & Control of Airplanes", AIAA Education Series
- Robert C. Nelson, "Flight Stability and Automatic Control", McGraw-Hill

Reference Books/Materials:

- Charles L Phillip, "Feedback Control Systems", Prentice Hall
- Brain L. Stevens and Frank L. Lewis, "Aircraft Control and Simulation", Wiley-Inter-science
- James D. Lang, "Aircraft Performance, Stability and Control", Department of Aeronautics, USAF
- Basic Aerodynamics by Aviation Maintenance Technician Certification Series, Latest Available Edition

Course Objectives:

This course aims to introduce students to Aircraft Stability and Control, emphasizing rigid body Dynamics and Aerodynamics. It covers static stability, control, and the development of Aircraft equations of motion using Small Disturbance Theory.

Course Outlines:

- Review of Aerodynamics and Performance Basics
- Introduction to Aircraft Stability Concepts
- Static Longitudinal Stability and Control
- Longitudinal Control and Stick Forces
- Static Directional Stability and Control
- Static Lateral Stability and Roll Control
- Introduction to Dynamic Stability Principles
- Rigid Body Equations of Motion
- Airplane Orientation and Axis Transformations
- Gravitational and Thrust Force Effects
- Small Disturbance Theory and Linearization

- Aerodynamic Force and Moment Stability Derivatives
- Pure Pitching and Rolling Motion Analysis
- Introduction to DATCOMM Software
- Longitudinal and Lateral Stability Analysis Methods
- Aircraft Response to Disturbances and Turbulence