

ASE103:FLY AGAINST GRAVITY

L:0 T:0 P:2 Credits:1

Course Outcomes: Through this course students should be able to

CO1 :: Explain the concept of Center of Gravity and describe how its location affects static stability in simple flying bodies.

CO2 :: Apply basic aero-modelling software tools to define a simple wing/fuselage geometry and generate lift/drag coefficient estimates.

CO3 :: Apply aircraft-nomenclature knowledge to identify, label, and explain the functions of major airplane components

CO4 :: Analyze experimental C.G. data for both plastic-sheet and balsa-wood gliders to evaluate how C.G. shifts influence glide stability and trim requirements.

CO5 :: Evaluate the flight performance of non-powered gliders by comparing design parameters (e.g., dihedral angle, wing loading) against measured glide distances and stability.

CO6 :: Construct a basic powered glider, integrate propulsion and structure.

List of Practicals / Experiments:

Experimental study of C.G location

- Experimental study of CG location of symmetrical shape.
- Experimental study of CG location of unsymmetrical shape.

Study of Aero modelling tools

- Understanding the application of Aero modelling tools
- Familiarity on handling Aero modelling tools

Study of Fly vehicle nomenclature

- Understanding the anatomy of different aircrafts
- Understanding the aero modelling wing and landing gear configuration

Fabrication of non-powered Gliders

- Fabrication of non- powered glider and flying using plastic
- Fabrication of non- powered glider and flying using balsa wood

Fabrication of powered Gliders

- Understanding of powered RC flying and stimulation practice.
- Fabrication of RC airplane using plastic/ balsa wood

Basic Aerodynamic Components

- Understanding the configurations of airfoil and wings
- Understanding the Fuselage shapes and control surfaces.

Introduction to Simple Flight Simulation Practice

- Understanding the basic components of a flight simulator
- Use a PC-based RC flight simulator to practice powered glider/airplane flight virtually before real-world trials.

Text Books: 1. HOW TO GO AEROMODELLING by LES NETHERTON, Patrick Stephens Ltd

References: 1. MAKE AND FLY by MADHAV KHARE, JYOTSNA PRAKASHAN

