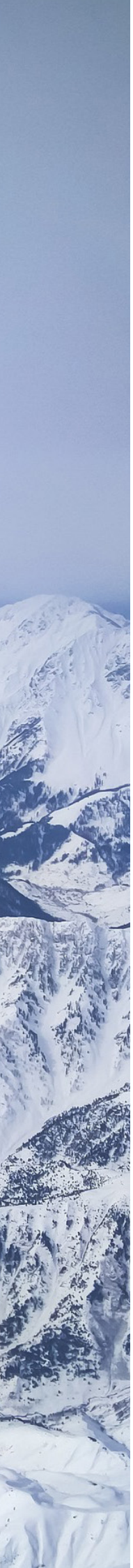
ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

FLIGHT MECHANICS AND FLIGHT CONTROL SYSTEMS

The improvement of existing and new tools for aircraft performance analysis and control system design represents one of the main challenges of current research in aerospace.

Flight Mechanics research addresses the performance analysis, stability, and control system design of atmospheric vehicles, providing a valuable answer to multiple requirements (sustainable design, environmentally friendly, high energy efficiency).



The research of the University of Bologna covers a wide range of issues:

- Development analytical tool for electrical powered aircraft design and performance analysis
- Remotely Piloted Aircraft System (RPAS) operations for remote sensing, ground monitoring, precision farming and aerial photography
- Avionic systems (autopilots and telemetry) and aid-to-piloting devices design and prototyping
- Aircraft simulation, system identification and flight testing
- Formation flight, cooperative control of multiple aircraft, swarm and fleet management for security, search and rescue and environmental protection
- Economic/environmental evaluation and risk analysis of integrated scenarios where RPAS are used within General and Aviation and Airliners
- Robust Control of Unmanned Aerial Vehicles

HIGHLIGHTS

High performance/high endurance drone design and prototyping.

Modeling, simulation, and control system design, prototyping and Hardware-in-the Loop validation.

Aerial photography and 3D photogrammetry by means of Remotely Piloted Aircraft Systems.