HAD506 - Vertical Take Off and Landing Drone

From the MS HADA
(Helicopter, Aircraft and Drone Architecture)

Key elements

Period: **Late March to early April**

Estimated duration: **30 hours**

For whom: **recent graduates, jobseekers and experienced employees**

Location: **AIRBUS HELICOPTERS, Marignane**

Language: **English**

Highlights

- Vertical Take-off and landing UAVs
- Systems of systems as applied to drones
- Special cases: urban UAVs, shipboard landing

This module provides a thorough introduction to VTOL drones, autonomy levels, navigation in hostile environment, communication performance and shipdeck landing.

Learning objectives

After completing this course, participants will be able to:

- Analyze a full Unmanned Aerial System (UAS) in response to technical requirements;
- Understand the specificities of military and civil architectures;
- Know what an artificial-intelligence based autonomous architecture is.

Prerequisites

- Basic knowledge in Aeronautics
- System design knowledge

Information and registration

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Course content

- Introduction to VTOL Drones + Market breakdown
- Main stakes/ competitors and Missions Descriptions
- Aerial Segment & Ground Segment
- Autonomy concepts (LOS, BLOS, BVLOS)
- Air Traffic Management, Air Traffic insertion
- MUM-T description (LOI definition)

Main Functions for VTOL Drone

- Navigation function and Localization functions
- Communication functions and Datalink functions
- Cyber-Security constraints to Communication
- Optionally Piloted Vehicle (OPV)

Architecture principles and System of Systems

- System de Systems application to VTOL drones
- Safety principles and Safety Architecture
- “Autonomie” function & complex architectures
- Deep learning application for drone
- Machine learning for Aircraft failure management

VTOL Missions

- EI/IR, Radar sensor from military application
- Automatic Take-Off and Landing functions (ATOL)
- Vehicle VMS function (Air to Ground, HMI, …)
- Automatic Start-up and Shut-down

Teaching methods

Teaching methods	Yes
Lectures / tutorial	X
Collaborative learning	
Flipped classroom	
Blended learning (online and face to face)	
Learning by doing	
Project-based	
Simulation	X
Case study	X

Assessment

- Oral exam