THE3 - Helicopter materials & technology

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

Key elements

Period: **Early March to Mid-March**

Estimated duration: **30 hours**

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

Location: **AIRBUS HELICOPTERS, Marignane**

Language: **English**

Highlights

- Materials & technology for airframe, blade, rotor systems for helicopter
- Metallic & composite parts on helicopter
- Design and static & fatigue justification for helicopter

This module provides a thorough overview of helicopter materials and technologies.

Learning objectives

After completing this course, participants will be able to:

- To manage all general architecture aspects, especially sub systems integration constraints,
- To assess in depth sub systems functions and performances,
- To identify helicopter production materials and technologies,
- To implement stress calculation using Finite Element Method.

Prerequisites

- Basics of engineering

Information and registration

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Course content

- Logic of evolution towards single rotor formula
- Architectural criteria
- Optimization paths for single rotor formula
- Structure technology - Landing gears
- Composite and metal structures
- Wheel and friction pad landing gears
- Blade technology
- Design criteria
- Rotor hub technology
- Anti-coupling rotor hubs
- Gear system mechanisms
- Architecture and motion of gearboxes
- Gearings & lubrication
- Mechanical element stress & fatigue (metal parts)
- Theory and origin of fatigue on helicopter
- Stress calculation via Finite Element Method
- Key parameter driving fatigue limit
- Application to structures (sizing, Flight load measurement, bench test)
- Damage tolerance
- Composite materials and parts
- Comparison of composite and metal technologies
- Mechanical behavior and characteristics

Teaching methods

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

Assessment

Written exam