AMS301 - PHM, Predictive maintenance & data analytics

From the Advanced Master AMS: E&M

(Aeronautical Maintenance and Support: Engineering & Management)

Key elements

Period: **Early March**

Estimated duration: **25 hours**

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

Location: I**SAE-SUPAERO, Toulouse**

Language: **English**

Highlights

- Data analytics for maintenance
- Aircraft health management
- Industrial expertise

This module provides an introduction to prognostics and health management (PHM), predictive maintenance and data analytics through the basic theoretical aspects, the benefits that can be gained with their implementation, the key aspects of their implementation. An interactive and practical review of some Machine Learning techniques to aeronautical data analytics case studies will be performed.

Learning objectives

After completing this course, participants will be able to:

- Understand key principles of health management and predictive maintenance in aeronautical applications;
- Understand aircraft data generation processes and (big) data environment, and identify associated constraints related services for stakeholders;
- Understand basic concepts of data science as applied to predictive maintenance, based on real use cases, in order to be relevantly involved, as a maintenance engineer, in design of maintenance data-driven solutions and services.

Prerequisites

- Aircraft maintenance concepts knowledge

Information and registration

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Course content

PHM and predictive maintenance:

- PHM concepts and techniques
- Pragmatic application to aeronautics (models, fluctuations and sensitivity, parameters estimation, implementation)
- PHM costs and impacts on operations
- Perspectives

From aircraft data generation to business cases:

- Aircraft sensors and data/features generation
- Data storage and transfer
- Real-time/off-time data analysis
- Business cases and generated value

Data analytics:

- Introduction to data science and machine learning techniques
- Benefits and usage for maintenance and predictive maintenance
- Case study

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	
Case study	X

Assessment

- Written exam