IS450a - Space systems architecture

From the Advanced Master TAS ASTRO (Space Systems Engineering)

Key elements

Period: **Mid-February**

Estimated duration: **20 hours**

For whom:
recent graduates, jobseekers and experienced employees

Location:
ISAE-SUPAERO, Toulouse

Language: **English**

Highlights

- Spacecraft architecture
- Interdisciplinary design
- Simulation tools

This module provides an interdisciplinary approach for preliminary design of an Earth Observation micro-satellite. Participants will use simulation tools to design all subsystems and perform budgets (mass, power, performances…).

Learning objectives

After completing this course, participants will be able to:

- Create an optimal spacecraft architecture, applying an interdisciplinary approach;
- Model the satellite with a simulation tool.

Prerequisites

- Master level
- Orbital mechanics fundamental concepts

Information and registration

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Course content

Mission analysis

- Orbitography
- Access
- Coverage
- Tracking error analysis

Radio communications

- Satellite emitter power
- Station emitter power
- Link budget calculation

Thermal analysis

- External flux analysis
- Temperatures calculation

Power subsystem

- Solar panel sizing
- Battery sizing
- Global analysis

Attitude control system

- External torques analysis
- Performance requirements
- Architecture definition
- Actuators and sensors sizing

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	

Assessment

- Written test
- MCQ
- Marked Practicals