# ISAE-SS5 – Preliminary Aircraft Design

## OBJECTIVES

In this course key aspects of aircraft design will be presented, such as requirements, regulations, design process, aircraft loads, mass models, aerodynamic and propulsion models, aircraft stability. Interactions between disciplinary issues will also be explored.

The aims of the module are the following:
- To discover key engineering disciplines at play in preliminary aircraft design with emphasis on low fidelity models;
- To complete the preliminary design of a conventional aircraft;
- To use an existing preliminary aircraft design process, with potentially limited software developments;
- To present the final work to peers (oral) and within a synthetic report;
- To prepare students for team work by requiring them to collaborate on an assessed exercise.

Pre-requisites: none

## CONTENTS

- Review of atmosphere properties
- Aircraft design requirements
- Aviation regulations
- Aircraft loads, mass models
- Review of basic aircraft aerodynamics and stability, and propulsion models
- Preliminary design process

## Bibliography:

- General Aviation Aircraft Design [0-12-397308-2; 0-12-397329-5] Gudmundsson, Snorri An..2014

## Organization

24x lectures (24h)

Total: 24 hours (excluding project work, review time, and personal work)

Estimated personal work: 90 hours

## Evaluation

- 1 project reporting (60%)
- 1 intermediate review (1h) (10%)
- 1 final oral presentation (1h) (30%)

## US CREDIT HOURS / ECTS: 3 / 6