	INTERNSHIP 5-6 MONTHS **YEAR 2021**
Internship tutors: Philippe PASTOR philippe.pastor@isae.fr David PLANAS-ANDRES david.planas-andres@isae.fr	Internship with ISAE SUPAERO – Toulouse Location: **ISAE-SUPAERO** Grant: standard ISAE rates, approx. 600 euros/ months Targeted level: final year of Diplôme d'Ingénieur or MSc in Aerospace-Mechanical Engineering

Development of an evaluation module of Handling Qualities for the Overall Aircraft Design FAST-OAD code

Context:
ISAE-SUPAERO is an institute dedicated to aerospace engineering higher education and research. ISAE-SUPAERO develops a research focused on the future needs of aerospace or high-tech industries. The ISAE-SUPAERO Department of Aerospace vehicles design and control (DCAS) supports activities related to the design and development of aerospace systems.

The internship subject is within the scope of the chair AIRBUS-ISAE CEDAR II for Eco-Design of Aircraft. This chair is intended to conduct different actions in order to contribute to the sustainable development of future air transportation, taking into account the many dimensions of that ambition (environment, society, economic & industrial issues …)..

Objectives:
This internship proposes to develop a new module that will be included in the Overall Aircraft Design to take into account Handling Qualities (HQ) requirements. This module will be part of the group's preliminary aircraft design open-source code, FAST-OAD (https://github.com/fast-aircraft-design/FAST-OAD), jointly developed with ONERA.

The specific target of the internship is
(a) to determine how to express the requirement of handling qualities for a transport aircraft
(b) to model of the constraints regarding HQ in function of A/C design parameter
(c) to study how to integrate this in OAD process
(d) to initiate a new code dedicated to analyse HQ in FAST-OAD

Missions:
- Define HQ requirements based on bibliographic review of norms and standard
- Define model of HQ in order to evaluate them, as optimisation constraints
- Review required modifications of the existing FAST-OAD code in order to respond to the requirements
- Implement new code (Python) and to document changes
- Test the new capability on a selection of use cases

REQUIRED SKILLS

Skills : Python programming (essential), aircraft design process (essential), Flight Dynamics and Handling Qualities, Optimization process.

Soft skills : Autonomy, reporting & scheduling, curiosity, knowledge of Aviation