

## PhD thesis proposal, international co-tutelle

**Title:** Scheduling Job Shop Operations under Uncertainty and Limited Storage in Aircraft Maintenance

**Supervisors:** O. Battaïa (ISAE-SUPAERO, France), Y. Zinder (University of Technology Sydney, Australia)

**Specialty:** Operational Research, Industrial Engineering

**International co-tutelle:** PhD candidate will spend 1.5 year at University of Technology Sydney, Australia (<https://www.uts.edu.au/>) and 1.5 year at ISAE-SUPAERO, France (<https://www.isae-supaproject.fr/en/research/isae-supaproject-research/>) and will be graduated from both institutions. The working language will be English.

**Keywords:** Scheduling, Uncertainty, Optimisation

**Abstract:** The project is concerned with job shop models where the routes and processing times are uncertain and where there are limits on what jobs can be in progress simultaneously. The uncertain routes are common in maintenance context when inspection or testing at some stage causes the necessity to partly repeat some already completed operations. The duration of such additional operations as well as their nature may significantly vary from job to job and normally cannot be predicted with certainty. Another distinctive feature of the job shop models that will be the subject of the proposed project is the role of storage. The objective of proposed research is threefold: the development of new stochastic scheduling models, motivated by real-world application areas; the analysis of computational complexity of the corresponding scheduling problems; and the development of efficient optimisation algorithms capable of solving problems arising, in considered areas of application.

**Skills:** The PhD candidate is expected to do scientific research in the domain described, write a PhD thesis and publish research results in scientific journals. Applicants should have completed (or be close to completion of) a Master's degree in Operations Research, Computer Science, Mathematics or a comparable domain. Fluency in English is required. Moreover, the candidate must be comfortable in programming in an OO programming language such as python, Java or C++. Affinity with Industrial Engineering or Operations Management is a plus.

**Applications:** may be submitted electronically to [olga.battaia@isae.fr](mailto:olga.battaia@isae.fr) and [yakov.zinder@uts.edu.au](mailto:yakov.zinder@uts.edu.au) and must include a cover letter, a curriculum vitae detailing educational background, research experience and up to three recommendation letters.

**Deadline:** Applications submitted by April 1, 2019 will be given full consideration, although we will accept later applications if the position is not yet filled.