

## Open full academic position:

### **(Associate-) Professor in Systems and Software Engineering**

#### **Context**

World leader in higher education in the field of aerospace engineering, ISAE-SUPAERO offers a complete and unique range of high-level scientific training including ISAE-SUPAERO engineering training, training through apprenticeship, International Master of Science in Aerospace Engineering, 16 specialized masters and 6 doctoral schools. ISAE-SUPAERO is developing a research policy focused on the future needs of the aerospace and / or high-tech industries. At the international level, the Institute is a member of TIME and PEGASUS and cooperates with the best universities in Europe (Cranfield, TU Delft, KTH Stockholm, ETSIA Madrid, TU Munich, Rome, Milan, Turin, etc.), North America (MIT, Caltech, Stanford, Berkeley, Georgia Tech...), Latin-America and Asia. ISAE-SUPAERO's academic community includes more than 100 professors and researchers, more than 1,800 speakers, half from industry and nearly 1,700 students with all potential. Each year, about 40% of the Institute's graduates are international students, and the alumni network includes more than 20,000 alumni.

The scientific activity of the research and educational resources Institute is organized into six departments including the Department of Complex Systems Engineering (DISC) which develops skills in mathematics and computer science for aeronautical and space engineering in education as well as in research: models, methods and tools necessary to control the behavior and performance of complex systems. This complexity can be induced by the multi-physical or multi-scale character of the studied systems, their dynamic behavior, and their distributed and communicating structure. These systems generate increasingly important data flows, the exploitation of which is a major issue in the aeronautics and space industry (avionics, autonomous systems, aeronautical maintenance, imagery, artificial intelligence (AI), learning, etc.). The DISC organizes its research and teaching activities into 4 research groups: Applied Mathematics (MA), Decisional Systems (SD), Communication Networks (ResCom) and Critical Systems Engineering (IpSC). The DISC, with the other departments, develops methodological research, as well as applications in collaboration with academic and industrial partners.

In this context, ISAE SUPAERO is appointing a professor or associate professor in systems and software engineering.

Her/His teaching and research missions, as well as the profile sought, are described below.

#### **Missions**

This position has two main missions, lecturing and research that will be detailed hereafter.

The "teaching" mission consists of a main teaching mission in systems engineering with participation in basic training in software engineering and programming. The "research" mission will have specific areas of interest in Model-Based Systems Engineering and Embedded Systems. The successful candidate will be expected to establish a strong research program, teach undergraduate and graduate courses in French or English, and manage teaching programs and lecturer teams. The successful candidate will also be expected to contribute to an environment that nurtures collaboration among researchers within IpSC, across the research groups within DISC, within ISAE-SUPAERO and within the framework of the Research Federation ONERA – ISAE-SUPAERO – ENAC.

#### **Teaching requirements:**

The position holder teaches for the benefit of all the trainings of the Institute. She/He actively contributes to the development of teaching and programs in the field of Model-Based Systems

Engineering and Embedded Systems, as well as to the global and transversal reflection on the on-going trainings. Her/his missions include:

- Design, develop and contribute to education in the fields of systems engineering at large, ranging from courses on systems engineering processes and product lifecycles to advanced subjects, such as engineering model-based systems (MBSE) and resilience to disturbances.
- Design, develop and contribute to teaching in the fields of software engineering in the broad sense, ranging from teaching programming to advanced subjects.
- Participate in the facilitation of training courses oriented towards embedded systems and critical embedded software, in all of the Institute's training courses.
- Take responsibility for course modules and / or participate in the teaching of existing IT modules at all levels of training, whether in common core or streams.
- Become part of the teams, lead an educational team on the themes mentioned. Maintain a network of industrialists and researchers likely to participate in teaching and to propose projects.
- Ensure a strategic watch on the evolution of these scientific themes and their applications. Develop the target profiles of ISAE-SUPAERO training accordingly.
- Contribute to the promotion of ISAE-SUPAERO training nationally and internationally.
- Invest in organizational responsibilities of a transversal nature in the Institute's training courses and contribute to the development and adaptation of programs.
- Supervise and monitor student projects at different stages of their training, carried out within the Institute's departments or externally, within the framework of research partnerships or in companies.

**Research requirements:**

The position holder is developing a line of research in modeling and / or validation / verification of system architectures, compatible with current developments at the Institute, in particular around the integration of new autonomy functions (vision, AI, learning, etc.) and their impact in terms of safety, security or performance of aeronautical and space systems. She / He is part of the IpSC group of the DISC, within which she / he develops her/his research project in conjunction with the other teams and departments of the Institute. Her/His research themes allow her/him to tackle various application themes in line with ISAE-SUPAERO's activities: systems architecture modeling (SysML, Capella, AADL), validation / verification (simulation of cyber-physical systems, model checking, proof of program), related to systems engineering issues on the one hand, and on-board systems engineering on the other hand.

Her/His mission includes:

- Directly contributing, on her/his scientific domain, to the research activities of the IpSC team and formulating a personal research project in line with the existing activity. Cooperation with the other teams within the DISC will also be appreciated.
- Contributing to the visibility and dissemination of ISAE-SUPAERO's research by the publication in top-ranked journals, participation in conferences, international scientific societies, and more generally by participating in the local, national and international research ecosystem.
- Interacting on the fields of competence with the themes of the other three research groups of DISC, and of the other departments, and establishes cooperation links with them.
- Contributing to the visibility of ISAE-SUPAERO's research activity through the publication of research results in systems and/or software engineering through articles in high-level international scientific journals, participation in conferences, learned societies, competitiveness clusters and more generally in the ecosystems of local, national and international research.
- Participating in the animation and scientific projects of the department and ISAE-SUPAERO, in particular with regard to the development and integration of new functions of autonomy (vision, AI, learning, etc.) and their impact in terms of safety, security or performance of aeronautical and space systems and in the fields of application of ISAE-SUPAERO. She / He establishes collaborations and relevant thematic actions, by carrying out a scientific watch and ensuring the relevance of the scientific project in his / her field.

- Supervising interns, doctoral and post-doctoral students, and participating in the development of ISAE-SUPAERO's scientific tools within the framework of its research, structuring or transversal projects.
- Contributing to the development of the Institute's own resources, in the form of academic and industrial partnerships, development and funding of research activity.

### **Profile**

- The position holder holds a PhD in Systems and/or Software Engineering or in related topics; or can testify on equivalent skills and professional experience in applied research. An HDR (Habilitation à Diriger des Recherches) or equivalent experience is a plus.
- The position holder has demonstrated relevance of her/his scientific project, in particular through its publication history and its scientific influence.
- She/He has a taste for teaching, pedagogy and the desire to get involved in an ambitious training project.
- Knowledge of what constitutes an engineering background or an engineering degree will be appreciated, as well as knowledge in the field of model-driven engineering and sensitivity for sustainable development.

Candidates are strongly encouraged to contact the department's research teams to define their academic project and learn more about current topics of interest.

### **Contacts**

More information: Pierre de Saqui-Sannes <pdss@isae-supero.fr>  
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Application via Digital Recruiters link

Deadline for application : 27 may 2021