

Assistant Professor in Smart Control for Energy Systems

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Context

CentraleSupélec is a scientific, cultural, and professional public institution (EPSCP in French) that operates under the authority of the French ministers for higher education and industry. It has three main missions, which are to train high-level scientific general engineers, conduct research in engineering and systems sciences, and offer executive education programs. CentraleSupélec is currently seeking an Assistant Professor in Smart Control for Energy Systems to join its Rennes Campus and conduct research in the IETR laboratory. As part of its development,

The Rennes campus of CentraleSupélec provides courses in the general CentraleSupélec engineering program, specifically for the FISA (Training of Engineers under Apprenticeship Status) and the FISE (Training of Engineers under Student Status) tracks throughout the three years of the engineering cycle. Notably, the Rennes campus offers three 3rd-year concentrations within the general course, including the Sustainable Energy Systems (SES) concentration - the specific course where the potential candidate will play an active role.

The IETR Laboratory (Institute of Electronics and Digital Technologies) comprises six Departments, and the candidate will conduct research within the Automation Department. The Automation Department is dedicated to developing algorithmic solutions for controlling and analyzing large systems, leveraging their natural structure. These solutions must facilitate the implementation of energy transition.

Education/Teaching task/Teaching duties

The successful candidate will be required to deliver 192 tutorial (TD) equivalent hours per year, in alignment with the statutory teaching service. Teaching activities will cover a broad spectrum, including instruction :

- for students in the specialized engineering program "Systems Sciences for sustainable energy", over the 3 years of the program, with a particular focus on all courses related to electrical engineering
- for students in the general Engineering program, specifically:
 - In the first year of the apprenticeship sector
 - In the third year as part of the 'Sustainable Energy Systems' major.

These activities will take the following forms:

- In initial training, the candidate will be expected to actively supervise laboratory work and projects, oversee tutorials and courses, and monitor students throughout various stages (internships, gap year, work-study programs, etc.)
- In continuing education, the candidate will lead tutorials or specialized courses focusing on electrical engineering, energy systems, and broader aspects of energy transition challenges. Proficiency in teaching in English is required. The candidate must demonstrate openness and contribute to the diverse

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teaching teams. They must provide proposals for improving and developing courses related to climate, energy, ecological transitions, and sovereignty issues, under the responsibility of the Office of the Provost and the various program managers.

Research mission

The research activities will be carried out within the Automation research team (<https://www.ietr.fr/departement-automatique-aut>), a part of the IETR (Institute of Electronics and Digital Technologies) – a joint research unit involving CentraleSupélec, the CNRS, the University of Rennes, the University of Nantes and the INSA of Rennes. The Automation team provides effective and safe control solutions to facilitate the implementation of the energy transition. The objective is to contribute to the deployment of Smart Grids and the massive integration of renewable energies and, the improvement of the energy performance of systems. It also contributes to a more theoretical axis around control and adaptive control optimization. The primary objective of the research work associated with this position is to strengthen research activities concerning energy management in intelligent energy networks. This involves high-level control, and using data (artificial intelligence, adaptation, or other) to facilitate the implementation and improve the performance of energy management systems.

Candidate profile

The candidate must hold a doctoral degree in automation or electrical engineering, with work related to energy management. They must be an author or co-author of publications in international journals (publication requirements will depend on curriculum vitae and number of years of experience). Furthermore, the candidate must demonstrate a genuine passion for teaching, research (both academic and industry-orientated contractual research), and teamwork. Finally, the candidate must engage in the supervision of research work aligned with the themes of the laboratory's Automation team.

Selection procedure

Candidates must submit, by email only, before April 21, 2024, to the following email address, drh.pole-enseignant@centralesupelec.fr, a PDF file including with reference MCF_IETR_AUTO_RENNES 2404 comportant :

- A cover letter
- A detailed CV that includes teaching experience, research, mobility, publications, etc.
- A research and teaching project fitting within CentraleSupélec (5 to 10 pages)
- A copy of identity card or passport
- A copy of the doctoral degree and any document attesting to research supervision experience
- Any documents that attest to previous experience
- Optional letters of recommendation;
- And Thesis or HDR defense report.

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Recruitment interview

For shortlisted candidates, the audition process will take place in three stages:

1. Candidates will present their academic background and present their teaching and research project.
2. Each candidate will demonstrate their teaching skills by presenting a lesson in English, addressing a common problem specified in the audition invitation.
3. Candidates will engage in a discussion with the committee members.

The audition invitations will clearly state the duration for each of these presentations.

Scientific contacts

- Romain Bourdais, head of the IETR Automation team, roman.bourdais@centralesupelec.fr
- Hervé Guéguen, head of the “Sustainable Energy Systems” major and the specialization course “Systems sciences for sustainable energy” herve.queguen@centralesupelec.fr
- Yves Louet, director of the Rennes campus of CentraleSupélec: yves.louet@centralesupelec.fr

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