



Grenoble INP - UGA is a member of **international** engineering and management education and research **networks**. It is widely recognized in national and international rankings.



8 schools + **39** laboratories

8 300 students

1 300 teaching, research, administrative and technical staff

Grenoble INP-UGA is a renowned public institution of higher education and research, and a major player in the Grenoble ecosystem. It is the engineering and management institute of Grenoble Alpes University, and plays a leading role in the scientific and industrial community.

University lecturer Position

Short profile	Hydroelectricity, turbomachinery, renewable energies
Body	Assistant Professor
Position number	60 MCF 0682
CNU Section	60
Location	Grenoble
Date of recruitment	01/09/2023
Key words	Fluid mechanics, Renewable energies, Fluid-structure interactions, Turbulence, Instabilities

Grenoble INP - UGA is a leading public institution accredited with the French label "Initiative d'excellence". It offers innovative engineering and management programs, with an increasing internationalization of its educational programs. The courses are grounded on sound scientific knowledges and linked to digital, industrial, organizational, environmental and energy transitions. The Engineering and Management Institute of Grenoble Alpes brings together more than 1300 staff members (teacher-researchers, lecturers, administrative and technical staff) and 8300 students, located on 8 sites (Grenoble INP - Ense3, Grenoble INP - Ensimag, Grenoble INP - Esisar, Grenoble INP - Génie industriel GI, Grenoble INP - Pagora, Grenoble INP - Phelma, Polytech Grenoble, Grenoble IAE and the INP Prepa). Grenoble INP is also a highly-ranked institution of higher education and research, leading the way in the fields of engineering and management at international scale. It is a member of a large number of international academic and research networks. It is part of the European University UNITE!.

As part of Grenoble Alpes University, Grenoble INP has associated guardianship of 39 national and international research laboratories or technological platforms. The research conducted benefits to both its socio-economic partners and its students. Grenoble INP is at the heart of the following scientific fields: physics, energy, mechanics and materials; digital sciences; micronanoelectronics, embedded systems; industry of the future, production systems, environment; management and business sciences.

Grenoble INP - UGA is an equal opportunity employer committed to sustainability. Grenoble INP-UGA celebrates diversity and equity and is committed to creating an inclusive environment for all employees. All qualified applications will be considered without discrimination of any kind.

Teaching

School of affiliation : Grenoble INP - Ense3

School website : <http://ense3.grenoble-inp.fr/>

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Grenoble-INP Ense3 is one of the six schools of engineering hosted by Grenoble INP which aims at training engineer students during 3 years in order to develop their knowledge, know-how and skills that will contribute to energy and environmental transitions in water and energy professions, sectors and uses. The present position focuses more specifically on the production of electricity in the context of renewable energies (hydraulics, wind energy for instance).

Teaching profile:

The successful candidate will be primarily involved in the Mechanics and Energy (ME), Energy Systems and Markets (SEM) courses. He/she may also be involved in several international masters: Fluid Mechanics and Energetics (FME), Hydraulics and Civil Engineering (HCE). He/she may also participate in professional training or will be involved in the apprenticeship program.

The courses to be covered, will be mainly taught in English and concerned by specialty courses related to Renewable Energies (Renewable Marine Energies, Hydraulic Machines and Hydroelectricity, ...) and some fundamental courses (fluid mechanics, fluid-structure interaction, flows under load, turbulent flows, ...). The teaching activities could also include the setting up of a practical course based on Grenoble-INP platforms (Fluid Mechanics Platform, Hydraulic Turbines Platform at CREMHyG laboratory...etc.).

The Assistant Professor will be expected to participate in school's cross-disciplinary teaching, in particular with the supervision of student projects in 2nd or 3rd year of the school (engineering projects, industrial or research projects), but also with a contribution to innovative didactic activities (your choice: creativity seminar, innovation with the ENSE3 Hackathon, problem-based learning, Fablab animation, ...etc.) The teaching methods of the successful candidate are expected to incorporate the international and multicultural dimension of the students recruited by the school (25% of student population.)

Within two or three years, the lecturer may be in charge of a whole teaching unit as well as required to participate in the head of a master at ENSE3.

The person recruited could also contribute to the outside influence of the school for instance by developing international partnerships, by developing remote courses or by promoting the school during missions, regardless of whether they are motivated by research purposes or not, and whether they are abroad or not.

Research

Team : LEGI

Laboratory website : legi.grenoble-inp.fr

Contacts : joel.sommeria@grenoble-inp.fr

LEGI is an internationally recognized laboratory for its expertise in environmental fluid mechanics and multiphase flows combining experimental, theoretical and numerical approaches. An important part of the research activities on these topics concerns free-surface flows such as the study of gravity waves in coastal areas, air entrainment (e.g. wave breaking, jets impinging on a free surface) or the turbulent boundary layer in the presence of fixed or mobile roughness. These various aspects require a better understanding of the underlying physical mechanisms in order to improve the predictive character of larger scale models.

The successful candidate will enjoy the supportive environment of LEGI to develop his/her scientific project in relation with these topics and will join the MEIGE team. He/she will benefit from the research dynamics of the laboratory and will be able to participate in ongoing research projects within the laboratory such as the industrial chair with ARTELIA or the ANR SOGOOD and JetPlume.

Research profile:

The activity 'Turbomachinery - Renewable Energies' is one of the three research axes of the LEGI Energy team. Whether on numerical, experimental or mixed aspects, the research of the team covers fundamental as well as applied orientations, in relation with academic and private partners. They concern the classical hydraulic turbines or innovative concepts for the wind and tidal turbine industries. The question of energy transition has revived this research activity, in connection with the 'Cavitation' theme of the Energy team, as well as with those of the three other teams of the laboratory: MOST, EDT and MEIGE.

The challenge of this research is to analyze and control the unsteady three-dimensional flows developing in these machines, or to optimize their operation at the system scale. Concerning conventional hydraulic machines, it is necessary to answer the need to increase their flexibility by using them over a wider range of operating points. Concerning tidal turbines and wind turbines, several concepts are studied, and it is necessary to optimize and adapt them to different areas of use (floating wind, tidal turbines at sea and in rivers, micro-generators). The impact of the generated wake on the scale of a wind farm, or the effects of large wind farms on the currents are also important topics. All these topics combine many physical aspects: turbulent processes, hydro-acoustic phenomena, fluid-structure interactions, ...

The work of the energy team combines experimental and numerical studies. The study of hydraulic machines relies on regional (GRICAD) and national (GENCI) computing resources. It also benefits from advanced test facilities allowing detailed physical analysis at different scales, from the local process to the "machine" or "system" scale: CREMHyG technology platform, low speed wind tunnel, Coriolis platform, hydrodynamic tunnel, etc...

The objective of this appointment is to safeguard and enhance LEGI's expertise in the field of turbomachinery, an expertise that is internationally recognized. The candidate will have demonstrated competence in the field of turbomachinery and the physical processes involved. With a strong motivation and a spirit of innovation, he/she will submit an integration project proving that he/she will be able to collaborate and interact with the members of the Energetics team, and in particular those involved in the study of turbomachinery, as well as with the other teams of the laboratory.

Specific requirements and conditions

Administrative activities related to the duties of an Assistant Professor: the Assistant Professor will be in charge of a teaching unit or master year.

As part of research, excellence and international development, the quality of the applicant's research activities will be demonstrated by recent publications in the best journals or conferences in their field.

How to apply

Applications are to be submitted on the Galaxie platform of the French Ministry of Higher Education and Research between the 23rd of February 2023, 10:00 a.m. (Paris time) and the 30th of March 2023, 4:00 p.m. (Paris time), deadline.

Any document sent outside the Galaxie procedure will not be taken into account.

The interview will include simulation/situational exercises. The details will be communicated when the invitation will sent out. In addition, a part of the interview may be conducted in English.