

**Assistant Professor in Biomechanics and Mechanobiology
(1 year renewable)**

Centre Ingénierie et Santé (CIS) – Laboratoire Santé INgénierie BIOlogie St-Etienne
(SAINBIOSE)

Saint-Etienne France

École Nationale Supérieure des Mines de Saint-Étienne (Mines Saint-Etienne), Graduate School of the Institut Mines Télécom, under the supervision of the Ministry of Economy and Finance, is responsible for training, research and innovation, transfer to industry and scientific, technical and industrial culture. Mines Saint-Etienne represents: 1,800 engineering students and researchers in training, 420 staff, a consolidated budget of 50m€, two campuses (one in Saint-Etienne in Lyon area with three sites, one located in Marseille area), 5 training and research centers, 7 research laboratories, a center for scientific, technical and industrial culture ("La Rotonde") and development projects in France and abroad.

The CIS brings together 70 people, including 17 permanent teacher-researchers in industrial / computer engineering, biomechanics and process engineering around health applications: biotechnology, tissue engineering, e-health, computer-assisted surgery, medicine and personalized patient care... Since its creation in 2004, the CIS has been representative of the ability of Mines Saint-Etienne to lead innovative research in new topics such as Cardiovascular Mechanobiology, Healthcare Engineering or Engineering of Inhaled Particles. The recruited person will also interact with the other department of the School in order to federate research and transfer actions in the field of biomechanics and bioengineering.

The "Santé INgénierie BIOlogie Saint-Etienne" laboratory (SAINBIOSE, INSERM UMR 1059) brings together researchers from CIS (biomechanics, biomaterials and bioengineering), from the faculty of medicine at Jean Monnet University, from CHU de Saint -Etienne, Inserm and the French Blood Establishment. The overall scientific objective of SAINBIOSE is to provide better knowledge and innovative management of biostress in osteoarticular (LBTO team) and cardiovascular (DVH team) pathologies.

Biomechanics, experimental and digital, is a major cross-cutting theme of SAINBIOSE, which ranges from modeling the mechanical behavior of tissues to clinical and industrial applications, particularly with the textile sector. The dynamism of SAINBIOSE and the CIS in this field makes them world-class players today (ERC and other European funding, numerous international collaborations and industrial contracts). The developed approach is based to a large extent on established skills in numerical simulation and identification of constitutive equations. Studying, monitoring and predicting the biomechanical properties of soft tissue, or their interactions with medical devices, are areas of excellence. An additional dimension, of great added value, will be obtained by integrating mechanobiology more firmly on different scales (proteins, cells, tissues, organs) and its role in the pathophysiology of cardiovascular and osteoarticular diseases.

Expected candidate profile

The candidate must hold a PhD in biomechanics, bioengineering or biophysics. A mixed mechanist / biologist, physicist / biologist profile and an appetite for developing experimental work in bioengineering at the cellular and molecular scales would be particularly appreciated.

Significant teaching experience in the aforementioned fields at a second or third cycle level will be appreciated.

The recruited person will have to attest to a significant scientific production in at least one of the fields of the "Mechanics, Biology and Health" theme.

Significant international experience highly recommended.

Missions in Teaching

The teaching mission consists in ensuring courses, directed and practical work, or supervision of projects and internships, in the different training cycles of Mines Saint-Etienne (Civil Engineer of Mines, international master, doctoral training, training continuous and under salaried status). The candidate should be able to teach in English and cover a fairly wide spectrum among the lessons of physics, mechanics, bioengineering and materials science. The design, supervision and facilitation activities are taken into account in the minimum annual hourly volume to be provided.

Missions in Research

The recruited person will develop a research project integrating the themes of the SAINBIOSE laboratory (VDH or LBTO team), for example in one of the following fields (non-exhaustive and indicative list):

- mechanobiology of endothelial cells in connection with thrombosis and aneurysmal pathologies,
- mechanobiology of cartilage linked to the inflammatory reaction,
- mechanobiology of atrial fibrillation.

The experimental profile is essential. Among the previous experiences considered with interest:

- Instrumental developments for observation, study or biomechanical manipulation at the cellular and molecular scales.
- Studies of the properties of living things, their evolution and their response to external mechanical stimuli.
- Biomechanics and mechanobiology for cardiovascular or osteoarticular applications

These missions will be carried out on the Saint-Etienne Campus (42), Campus Santé Innovations.

The main criteria for evaluating the candidate will be as follows (non-exhaustive list):

- Ability to integrate into the project of the center and the research laboratory on a theme "Mechanics, Biology and Health",
- International experience
- Scientific production,
- Significant teaching experience,

Recruitment conditions

Hold a doctorate or a recognized qualification at least equivalent to that of the required national diplomas. Starting date desired: between September and November 2020

Application procedures

The application files must include:

- A letter of application,
- A curriculum vitae showing teaching activities, research work and, possibly, relations with the economic and industrial world (10 pages maximum),
- A research and teaching development project taking into account the recruitment context
- At the discretion of the candidates, letters of recommendation,
- a copy of the doctorate degree (or PhD),
- a copy of an identity document

These documents must be sent no later than June 30 to V. Augusto, director of CIS (augusto@emse.fr).

Applicants selected for an interview will be informed as soon as possible.

How to apply

For all information on the position, please contact:

V. Augusto, director of CIS,

Email: augusto@emse.fr

Phone: +33 6 29 98 18 90

For any administrative information, please contact:

Amandine HIRONDEAU

Phone: + 33 (0)4 77 42 01 03

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