



**Laboratory of Computer Science, Systems Modelling and Optimization (CNRS UMR 6158) Henri FAYOL Institute
Open position of Associate Professor in Simulation and Decision Support for Industry of the Future (12 months – end : 31/12/2023)**

Mines Saint-Etienne (MSE), one of the graduate schools of Institut Mines Télécom, the #1 group of graduate schools of engineering and management in France under the supervision of the Ministry of the Economy, Finance and Industrial Sovereignty, is assigned missions of education, research and innovation, transfer to industry and scientific, technological and industrial culture.

MSE consists of 2,400 graduate and postgraduate students, 400 employees, a consolidated budget of €46M, three sites on the Saint-Etienne campus (Auvergne Rhone-Alpes region, Lyon Saint-Etienne metropolitan area), a campus in Gardanne (SUD region, Aix Marseille metropolitan area), a site in Lyon within the digital campus of Auvergne Rhone-Alpes Region, six research units, five teaching and research centres and one of the leading French science community centres (La Rotonde €1M budget and +40,000 visitors per year). The Times Higher Education World University Ranking ranked us for 2022 in the 251-300 range for Engineering and Technology. Our work environment is characterised by high Faculty-to-Student, Staff-to-Faculty and PhD-to-Faculty ratios, as well as comprehensive state-of-the-art experimental and computational facilities for research, teaching and transfer to industry.

The Laboratory of Computer Science, Systems Modelling and Optimization (LIMOS¹), is a Mixed Research Unit (UMR 6158) in computer science, and more generally in Science and Information and Communication Technologies (STIC). It is linked with the Institute of Information Sciences and their Interactions (INS2I) of the CNRS and in a secondary way with the Institute of Engineering and Systems Sciences (INSIS). The LIMOS belongs to the University Clermont Auvergne (UCA) and Mines Saint-Etienne (MSE). It is also a member of Clermont Auvergne INP. The scientific positioning of LIMOS is centered on Computer science, Modeling and Optimization of Organizational and Living Systems.

Founded in 2011, the Henri Fayol Institute², brings together academics in industrial engineering, IT, environment and management to work on the theme of the global performance of companies. From a sustainable development and social responsibility perspective, a company's performance must be considered not only from a technical and economic standpoint, but also from a social, environmental and territorial standpoint. Two technological platforms have been developed to validate, promote and teach the work done within the institute under near-real conditions. The first one is dedicated to the territory of the future (Territoire Platform³) and the second one deals with the industry of the future (IT'mFactory Platform⁴).

Mines Saint-Etienne is recruiting an **Associate Assistant Professor (post-doc equivalent) for 12 months in simulation and decision support** for the development of digital twins in the industry of the future. The proposed position is open within the GMI (Mathematical and Industrial Engineering) department with research activities developed in the ODPS (Decisional Tools for Production and Services) axis of the UMR CNRS 6158 LIMOS. The missions of this position will be carried out on the **Saint-Etienne campus** (42).

¹ <https://limos.fr/>

² <https://www.mines-stetienne.fr/recherche/centres-et-departements/institut-henri-fayol/>

³ <https://territoire.emse.fr/>

⁴ <https://www.itm-factory.fr>

1) Candidate profile

The candidate, who holds a PhD in Computer Science or Industrial Engineering, must have skills in the field of decision support related to the simulation of dynamic processes. These skills could include: discrete event simulation, multi-agent simulation, decision graphs such as Markov processes or decision optimization approaches related to reinforcement methods.

Experience with digital twins through initial training and/or professional experience will be a plus. The expected contributions will have to integrate the current transformations induced by the industry of the future.

2) Missions

The associate professor position includes a teaching and a research mission.

Teaching

The teaching mission consists of providing courses, tutorials and practical work in the field of industrial engineering and decision support, for example, in modeling and simulation, digital twins (modeling, design, operation), supply chain management, production management, systems engineering, operations research or quality management. The candidate will also have to supervise projects and internships, primarily in the Civil Mining Engineering program (ICM program). The courses may also be offered in more specialized master's programs (e.g., specialized master's in industry transition management), national master's degrees, particularly those with an international cursus (the CPS2³ international master's), employee status engineer programs, doctoral programs and continuing education. It is possible to teach in English.

In addition, in collaboration with the current teaching team, the person recruited will be able to get involved in the ongoing development of new training courses in connection with the Mines Saint-Etienne platforms on the industry of the future.

Research

The research mission consists in developing work in simulation (discrete event simulation, multi-agent simulation) and/or decision support (dynamic optimization, metamodeling) for the design or use of flow analysis digital twins. It could also involve Data-Driven approaches, simulation - A.I. couplings (reinforcement learning). These developments may use different approaches and methods depending on the candidate's previous experience (e.g. systemic approach, simulation, machine learning, operations research).

These missions will take place in the Decision Tools for Production and Services (ODPS) axis of LIMOS. The activities of the ODPS axis concern Operations Management, i.e. finding the best use of resources to carry out given activities, within the framework of complex organizational systems.

In the context of the valorization and validation of his or her work, the candidate will be able to rely on the Maq'IT prototyping environment and the IT'mFactory platform of the Institut Fayol. More generally, he or she will be able to participate in the development of industrial collaborative projects on the Industry of the Future carried out by the GMI department and the Institut Fayol.

3) Assessment Criteria:

The main evaluation criteria are the following (non-exhaustive list):

- PhD in Computer Science or Industrial Engineering (CNU Section 27 or 61);
 - Ability to strengthen the ongoing activities and projects on simulation and decision support for Digital Twins;
 - Ability to contribute to the projects of the GMI department and the ODPS axis, the Fayol Institute and the LIMOS laboratory;
 - Scientific production: quality and number of publications in journals and conferences indexed by the main electronic databases (Scopus, Web of Science, PubMed, Nature Index, arXiv.org ...)
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- Experience in teaching (instructor, temporary assistant) in the above-mentioned fields at a graduate level as well as experience in the development and use of new pedagogical methods;
- Fluency in English and, if possible, international experience;

4) Recruitment Conditions

- In application of the special status of teachers at the Institut Mines Télécom (decree n° 2007-468 of 28 March 2007, as amended), candidates must hold a doctorate or a recognized qualification at least equivalent to the national diploma required.

- These missions will be carried out on the Saint-Etienne (42) Campus of Mines Saint-Etienne.

- The duration of the contract is a 12-month fixed-term contract **from January 1, 2023 to December 31, 2023.**

- Desired start date: **January 1, 2023**

5) Application procedures

The application file should include:

- An application cover letter
- A curriculum vitae outlining teaching activities, research work and where appropriate, relations with economic and industrial sectors (maximum 10 pages)
- Recommendation letters, at the discretion of the candidate,
- A copy of the Doctorate diploma (or PhD),
- A copy of an identity document

Applications must be submitted on the RECRUITEE platform **by November 15, 2022 at the latest via the following link :**

URL deposit : <https://institutminestelecom.recruitee.com/o/maitreassistant-associe-en-simulation-et-aide-a-la-decision-pour-lindustrie-du-futur-cdd-12-mois>

Candidates selected for an interview will be informed rapidly. The interview will take place on the afternoon of November 24, 2022. Part of the interview will be held in English. Cover letters, CVs and application files written in English will be accepted, but applicants will have to demonstrate in their application file their operative ability to communicate in French with students, fellow faculty members and the school administration. For those invited to be interviewed, the same will be expected in oral form and tested by the selection committee.

6) Pour en savoir plus

For further information concerning the position, contact:

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