 

**2024 recruitment - job description**

**Professor / Assistant Professor**

**Pr/MdC**

**Graduate School of Civil, Environmental and Urban Engineering,**

**(ENTPE)**

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**Job title :** Teacher researcher : Full professor or Assistant professor in Aquatic Ecology

**Discipline(s):** Ecology

**Specialty:** Anthropized aquatic environments

**Assigned laboratory:** LEHNA UMR 5023, Equipe IAPHY

**Location :** ENTPE – rue Maurice Audin, 69518 Vaulx-en-Velin Cedex

**Contact(s) :** At the ENTPE :

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At the LEHNA :

- Nathalie Mondy, Director of UMR LEHNA, nathalie.mondy@univ-lyon1.fr

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## Context and issues

Higher education and research institution, a public scientific, cultural and professional establishment (EPSCP) under the supervision of the French Ministry of Ecological Transition, the École nationale des travaux publics de l'État (ENTPE) offers training and research in all professional fields of urban development and management:

* Buildings and infrastructure;
* Town and country planning, urban policies and urban planning;
* Transport systems and mobility;
* Soil, water and anthropized hydro systems: controlling environmental impacts and preserving hydro systems.

In an increasingly competitive environment, a major challenge for ENTPE today is to position the school even more firmly and gain even greater recognition in the academic and socio-economic spheres, both nationally and internationally. With this in mind, the ENTPE has drawn up a new strategic project that affirms its determination to make the school a pilot and exemplary establishment for the challenges of ecological and socially responsible transition.

Today, the ENTPE trains around 700 engineering students, most of whom are recruited from "classes préparatoires aux grandes écoles". It also offers a range of masters and specialized masters degrees, as well as continuing professional education programs. A Bachelor's degree program opened in September 2023, with the first year under student status and the following two years under apprentice status, with a target enrolment of 50 students per year. ENTPE is part of the dynamic Lyon Saint-Étienne site, and works closely with the site's 3 other engineering schools: INSA Lyon, Ecole Centrale de Lyon and Mines Saint-Etienne.

The ENTPE is home to 5 research laboratories, 4 of which are affiliated to the CNRS and one to the Université Gustave Eiffel. The ENTPE employs and hosts 80 researchers, including 60 permanent staff. Around a hundred theses are in preparation.

Training is managed by the Department of Education (DFI), which relies on the skills of laboratory staff to implement the training courses offered by the establishment.

To coincide with the opening of the "Ecological Transition and Territories" bachelor's degree course in 2023, the establishment has created its own status for teacher-researchers, enabling it to recruit on permanent contracts and offer a career path tailored to the progress of the staff concerned.

In this context, ENTPE is recruiting a teacher-researcher, assistant professor or full professor, to carry out a dual mission: 50% of his/her time will be devoted to research within the IAPHY-LEHNA laboratory, and the remaining 50% to teaching in the courses offered by the school.

**Description of the laboratory's themes**

The IAPHY team (Impact of Developments and Pollutants on Hydrosystems) of the LEHNA laboratory (Laboratory of Ecology of Natural and Anthropized Hydrosystems), located on the ENTPE campus in Vaulx-en-Velin (69), is one of the six research teams within the UMR 5023 (as detailed below).

The Joint Research Unit (UMR) 5023, LEHNA, comprises a total of 70 permanent staff based on the Doua campus and the ENTPE campus. Its main research focus is the analysis and understanding of the influence of global changes on ecosystem services in hydrosystems. The three overarching transversal axes mobilized are (i) biotic interactions and global changes, (ii) stress and adaptations to global changes, and (iii) eco-hydrology at interfaces, from ecological processes to ecosystem services. Research is organized into themes corresponding to the research scopes of its six teams: (i) BPH (Biodiversity and Plasticity in Hydrosystems), which identifies the ecological and evolutionary mechanisms governing the biodiversity and functioning of river hydrosystems; (ii) EVZH (Plant Ecology and Wetland Zones), which studies adaptive and functional responses of plant communities in wetland areas to environmental constraints; (iii) E3S (Ecology, Evolution, Underground Ecosystems), which focuses on identifying factors and connections shaping the evolution, dynamics, and role of biodiversity in underground ecosystems; (iv) E2C (Ecophysiology, Behavior, Conservation), which investigates how natural and anthropogenic changes in the environment influence ecological, behavioral, and physiological processes contributing to biodiversity conservation; (v) IAPHY (Impact of Developments and Pollutants on Hydrosystems) (see below for more details), and finally, (vi) BMPT (Biogeography and Macroecology in Deep Time) to characterize the patterns, rhythms, and modalities of biodiversity variations at different spatiotemporal scales.

In terms of research structuring in the Lyon area, the UMR has actively participated in the funding of the GraduateSchool (EUR) H2O’Lyon. The UMR is also involved in LabEX Intelligences of Urban Worlds (IMU), Interdisciplinary Research Devices on Human-Environment Interactions (DRIIHM), various federative research structures, and observatories (ZABR and OTHU).

The scientific field of the IAPHY team falls within the broader scope of Environmental Sciences and focuses on assessing the impact of developments, in a broad sense, and chemical pollutants on continental aquatic environments and ecosystems. The research and teaching activities of the IAPHY team intersect the concerns of the INEE (National Institute for Ecological and Environmental Sciences) of CNRS and the land development and management missions under the Ministry of Ecological Transition (MTE). The team's work is centered on understanding the role of developments, pollutants, and other stresses resulting from human activities on biotic and abiotic processes within continental hydrosystems. This aims to identify high-risk situations and characterize the resilience of these ecosystems. The scientific project aligns with the broader study of the effects of anthropogenic forcings (developments and pollutant emissions) on fluxes (water, sediments, nutrients, and pollutants) and their impacts on hydrosystems and their ecological functions.

The management of education at ENTPE is organized within the Initial Training Directorate, which relies on the expertise of personnel from the laboratories to implement the training programs offered by the institution.

## Missions

## The successful candidate will be assigned to the IAPHY team of the LEHNA UMR 5023. His or her research activities will be in line with the unit's scientific program. His or her teaching activity will fall within the scope of the collective contractual commitment defined each year by his or her laboratory and the Department of Education. The director of the ENTPE research unit is responsible for all the activities of the new recruit.

## Teaching

**Concerned training programs:**

The recruited person will primarily be involved in the new post-baccalaureate Bachelor's program, scheduled to start in fall 2023 (levels L1 to L3). The teachings may also extend to other training programs, including the engineering degree, research master's, and continuing education.

Specifically, the proposed teaching profile aims to conduct face-to-face teaching and participate in pedagogical management by (i) Teaching in the 1st year (1A), 2nd year (2A), and 3rd year (3A) of the Bachelor's program in modules related to the environment (especially in the Teaching Units: Hydrosystems, Ecosystems, and Pollution) and the challenges of City and Water; (ii) In the engineering program, particularly in ecology, practical work in Life Sciences, and courses related to ecological transition; (iii) Involvement in the supervised follow-up of bachelor's interns in companies and participation in MSP (Professional Situation Internships of 2nd-year ENTPE) and TFE (End-of-Study Project of 3rd-year ENTPE) juries.

**Pedagogical objectives: challenge regarding the developments to be carried and brought to the school**

The teaching mission involves providing lectures, tutorials, practical work, project and internship supervision, as well as academic tutoring for students in apprenticeship programs, in direct collaboration with the workplace mentor in the company.

The candidate should be able to conduct and lead general teachings in ecology/hydrobiology, with a particular focus on the major mechanisms and cycles of aquatic environments. The protection of wetlands is a central issue in the national policy for biodiversity protection and water resources, emphasized in the fourth National Wetlands Plan (2022-2026). Additionally, the aspect of "Ecological Transition" through biodiversity and the potential sensitivity of these different aquatic ecosystems to climate change will be highly appreciated. Therefore, the candidate should have experience teaching in these topics as part of their professional background. The candidate should be capable of delivering lectures, tutorials, and practical work on the chemical and ecological quality of hydrosystems, with a focus on the effects of developments, urban and agricultural pollution, and variations in flow and temperature due to climate change. A good knowledge of biological indicators of aquatic environments (such as IBGN or biofilm, for example) would also be appreciated. The proposed teachings must provide an overview of the current knowledge on observed impacts, discuss various existing models for assessing their vulnerability, and present elements about the adaptation strategies that can be implemented to limit their vulnerability. In general, it would be interesting for both scientific questions and teachings to be integrated into the broader issue of managing water resources in the face of global changes (anthropogenic disturbances - developments, pollutant flows - and climate change).

The recruited individual will actively engage with the educational teams responsible for the aforementioned training programs and will, in particular, take on the pedagogical responsibility for course units (UC) or teaching units (UE). Participation in juries and defenses, the design of new activities, continuous improvement of teachings, and the development of active and innovative pedagogies, including leveraging digital functionalities, are integral parts of the teaching mission.

The candidate must be capable of delivering instruction in English and French and remotely (or in a hybrid format).

## Research

The recruited candidate will join the IAPHY team of LEHNA (UMR 5023) and contribute to strengthening research on biotope/biocenosis interactions, whether by measuring effects or monitoring the "ecological" quality using bioindicators. The recruited person will incorporate the "response of living organisms" to environmental and anthropogenic constraints into their research to identify and quantify their impacts on biodiversity, environmental quality, ecosystem functions, and, more broadly, on the functioning of hydrosystems. The research will be closely linked to the issues of climate change, current and future developments, and the expansion of pollutant sources (both old and recent). The use of systemic and multi-scale approaches will be appreciated.

The recruited researcher will align their project with the ongoing and future research of the IAPHY team and the thematic poles of LEHNA by proposing cross-cutting approaches involving the expertise of other thematic fields within LEHNA's teams. They will conduct their research on the study objects of the IAPHY team (biofilms, microorganisms, plants...) and those of UMR LEHNA, making use of the team's facilities (Laboratory C at ENTPE in Vaulx-en-Velin), technical platforms of LEHNA (Doua campus, Villeurbanne), federative structures, and networks of the team and the UMR.

In more general terms, the recruited individual, as a teacher-researcher, is expected to have research production, supervision, and valorization activities. They should strive to publish their work in peer-reviewed international journals that meet the standards of their discipline. A communication activity to disseminate their work to peers and society is also expected. They will contribute to developing research projects related to their research activities and may be involved in supporting public policies and providing expertise to authorities. They will supervise and train young researchers (Ph.D. students and post-doctoral researchers), participate in their laboratory's scientific collective, and engage in discussions on the orientations and functioning of both the laboratory and ENTPE.

## Expected profile

* **For assistant professors:** The candidate must hold a Ph.D. in the aquatic ecology field or demonstrate an equivalent level, especially for foreign applicants (publications, participation in projects, teaching).
* **For professors:** The candidate must be qualified to direct research, or be able to prove an equivalent level, particularly for foreign candidates (publications, doctoral supervision, experience of scientific direction of research projects, teaching).

The candidate must:

* Demonstrate interest and aptitude for teaching (ecology, hydrology, etc.) and pedagogical support (tutoring, supervision, etc.) for students. He/she must be able to cover a fairly broad spectrum of ENTPE courses (Bachelor's, engineering cycle and Master's) in order to meet the evolving needs of the training program.
* Provide evidence of scientific publications in journals, conference presentations, or the authorship of internationally recognized works in their disciplines and fields of research.
* Possess a good understanding of the socio-economic environment and have a vision of skill needs in the field of aquatic ecology.
* Have proficiency in both written and spoken English.

The recruitment committee will also appreciate the following elements:

* Having experience abroad or the ability to mobilize a national and international network.
* Having research experience post-Ph.D.
* Possessing a good understanding of their scientific field, its challenges, stakeholders, and associated networks, both within their discipline and neighboring disciplines.
* Demonstrating the ability to work in a team and engage in interdisciplinary collaboration.

**4-Application procedures**

If you are interested, please send your application by email to:

[recrutement-enseignants-chercheurs2024@entpe.fr](mailto:recrutement-enseignants-chercheurs2024@entpe.fr),

stating your surname, first name, email address and the position you are applying for.

In return, you will receive a message informing you of the application procedure: this is a paperless procedure via the https://recrutement.entpe.fr website.

The application procedure includes the creation of a Research and Training application file. In order to prepare their applications and define their research and training projects, and until the closing date for applications, candidates are strongly encouraged to contact the heads of the recruiting units (see contact details on each job description).