

MSCA Pre-doctoral fellowship offer

Development of Water Supply Quality Index for an optimal management of water distribution networks

Universitat de Girona (UdG) is recruiting a researcher within the Horizon Europe Marie Skłodowska Curie doctoral network [i3waterS – Intelligent, Innovative and Integrative Water Systems](#). The successful candidate will be enrolled in UdG PhD programme in Water Science and Technology.

Workplace: UdG Faculty of Sciences, Girona, Catalonia, Spain.

Main supervisor: Dr Hèctor Monclús, UdG (hector.monclus@udg.edu).

Co-supervisor: Dr Alba Cabrera-Codony, UdG

Industrial supervisor: Dr Fernando Valero, ATL

Project duration: 3 years

Research objectives

The general objective is to develop artificial intelligence methodologies that integrate digital twins with advanced water quality and contaminants management modules to support resilient and sustainable operation of drinking water distribution systems. The recruited candidate will contribute to the general sub-objectives:

- 1) To generate a matrix of quality indicators for risk quantification and prediction by collecting data from multiple water sources, including desalination, surface water, reservoirs and groundwater.
- 2) To design and develop an SQI to quantify and evaluate risks, as well as to forecast potential risk scenarios in WDSs.
- 3) To implement and validate the SQI in real-world systems to improve the water supply management using multiple waters sources.

Expected Results: 1) A new tool for assessing risks in large water distribution systems that combine multiple water sources. 2) A scenario analysis tool to recommend the most effective management strategy for risk mitigation.

Benefits

Annual gross salary: 39.646€ (net salary + employee's taxes and contributions).

Permanent contract linked to i3WaterS project duration. Research and mobility costs: 40.000€

Foreseen secondments

Secondment 1: Three months at Università degli Studi di Napoli Federico II (Italy), under the supervision of Dr Di Cristo. The doctoral candidate will receive specialised training in hydraulic systems management (contamination scenarios) and climate change related effects on water quality. Data collection will be conducted at GORI S.P.A.

Secondment 2: Two months at VITENS NV (The Netherlands) for testing/validating the findings. Mentor: Dr Castro-Gama.

Requirements for candidates

Candidates must meet the following mandatory requirements:

1) Fulfill the requirements to access the doctorate at UdG in accordance with Spanish Royal Decree 576/2023, of 4 July, last amendment of Royal Decree 99/2011, of 28 January, regulating the official teaching of doctoral degrees (300 ECTS credits across university Bachelor and Master studies). Detailed information is provided on [UdG Doctoral School website](#).

2) Have not resided or carried out their main activity (work, studies, etc.) in Spain for more than 12 months in the 36 months immediately before their recruitment date, and

3) Have fluency in English (C-1 level or upper)

The following technical competences and skills will be assessed: i) machine learning and data mining, ii) knowledge-based systems, iii) data-driven models, iv) explainable artificial intelligence, v) multi-agent systems, vi) decision support systems, vii) python, R, Java or related programming languages, viii) data integration and interoperability, ix) documenting in Latex, and x) water science and technology.

The following horizontal skills will be assessed: ability to work in teams, proactiveness and communication skills.

The hosting institution

The selected candidate will join the Laboratory of Chemical and Environmental Engineering ([LEQUIA](#)), a multidisciplinary research group of the University of Girona (Catalonia, Spain). Founded in 1993, LEQUIA is renowned for its work within the water sector. We have a multidisciplinary team of 40 people, including chemists, biologists, biotechnologists, environmentalists, engineers, computer scientists, and political scientists. Current research lines include: 1) Innovative processes of potabilization and (waste) water treatment; 2) Gas treatment and carbon dioxide bioconversion, and 3) Digitalisation and application of artificial intelligence to water cycle.

i3WaterS network

i3WaterS brings together leading universities, research centres, technology developers and water utilities across Europe. The project will train 15 Doctoral Candidates to develop innovative AI-driven solutions for intelligent, resilient and sustainable water systems, contributing to the digital transformation of one of the most critical infrastructures for society. i3WaterS training will uniquely integrate decades of knowledge, expertise & achievements in disciplines such as civil and computer engineering, hydroinformatics, geomechanics, applied mathematics, multi-objective optimization, high performance computing, big data, artificial intelligence, modelling, and data management, including soft skills facilitated by academic and non-academic partners.

Application and selection process

Applications should be sent by E-mail to Dr Hèctor Monclús (hector.monclus@udg.edu) and info.lequia@udg.edu not later than August 31th 2026, and content:

- Full CV with the Bachelor's and Master's average grade
- Official academic transcripts to prove that the candidate can undertake a PhD at UdG
- A motivation letter (optional)
- Up to 3 letters of reference (optional)

The selection process has two stages. The Selection Committee is composed by Dr Hèctor Monclús (UdG), **Dr xxx and Dr xxx**

In the first stage, curriculum vitae will be evaluated by scoring different assessment categories (specialisation, academic training, technical competences, organizational competences, professional experience and candidate's professional profile) between 0 and 5, and applying the following formula:

$$CV \text{ Final Score} = 0.1 * \text{required specialization} + 0.2 * \text{Required Academic Training} + 0.2 * \text{Technical Competences} + 0.1 * \text{Organizational Competences} + 0.3 * \text{Professional Experience} + 0.1 * \text{Candidates professional Profile}$$

Candidates with a score ≥ 5 will be shortlisted for the second stage, consisting in an interview. The interview will assess three categories with scores ranging from 0 to 3: suitability to the functional competences, relevance of professional experience and any other aspect of the candidate's professional profile relevant for the selection committee. The final score of stage 2 will be calculated by applying the following formula:

$$\text{Interview Score} = 0.4 * \text{suitability to the functional competencies} + 0.4 * \text{relevance of professional experience} + 0.2 * \text{aspect of the candidate's professional profile}$$

The minimum qualification to pass the interview step is 3. Eligible candidates will be ranked from highest to lowest score, which will be the selection criterion.

Calendar

- Call opening: 27th July 2026
- Deadline to submit applications: 31th August 2026
- Announcement of shortlisted participants for Interviews: September 2026
- Interview Stage: September-October 2026
- Start of fellowships: December 2026 – January 2027