University College Dublin
Ireland's Global University

Course codes:
W626 (FT)
W627 (PT)

MSc Applied Catchment Science & Management

1 year Full Time or 2 years Part Time

Introduction

The Master of Applied Catchment Science & Management responds to major EU and national policy drivers, including the EU Nature Restoration Law (NRL) and the Water Framework Directive (WFD), both of which prioritise ecosystem restoration and improved water quality through catchment-based approaches. At the heart of these goals is hydromorphology, which integrates river form and structure, flow regimes, connectivity, and sediment processes, which are factors that are fundamental to habitat creation, ecological health and successful restoration.

The key aim of the course is to train graduates in the theory and practice of applied catchment science integrating learnings from hydromorphology, hydrology and freshwater ecology. The programme emphasizes the acquisition of practical skills, including desk-based assessments using GIS, field survey methods incorporating hands-on training using state-of-the-art technologies (drones, total station and GNSS) and a range of laboratory techniques for water, sediment and ecological assessments.

Course Highlight

Residential Field Course

A central feature of the programme is the residential fieldwork module, where we will use the Irish landscape as a living laboratory to explore applied catchment science challenges. This unique immersive experience will allow students to engage directly with integrated landscape analyses and field survey, within the context of stakeholder-based restoration and management. More broadly, students will have the opportunity to tailor their learning through a wide range of option modules offered by experts in their field.

Programme Content and Structure

90 credits taught masters = **60 credits** Taught modules + **30 credits** Dissertation

Core modules:

Over the course of the Masters, you will complete six core modules:

- Applied Hydromorphology
- Applied Hydrology
- Field and Laboratory Techniques
- Freshwater Resources Assessment
- Research Design
- Dissertation

Optional modules:

You will choose four further modules, with choices including:

- GIS Principles and Applications
- Advanced GIS Applications
- Geostatistics and Programming for GIS
- Python for GIS
- Remote Sensing
- Citizen Science
- Coastal Risks
- Practical Environmental Assessment
- Internship

Why study at UCD?

Graduate Education

13,000 graduate students; 15% graduate research students; structured PhDs

Global Careers

Dedicated careers support; 2 year stayback visa to work in Ireland

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Graduate Employability

Ranked no. 1 in Ireland in QS Graduate Employability ranking

Global Community

10,00 international students and 300,000 alumni network across 189 countries

Sustainability

UCD is ranked number one in Ireland and 50th in the world for Sustainability

Career Opportunities

The practical, hands-on experience gained through the Masters, supported by a strong theoretical foundation, will open doors to a wide range of exciting career paths. Graduates will be well prepared for roles with employers such as the Environmental Protection Agency, Inland Fisheries Ireland, the Local Authority Water Programme (LAWPRO), Irish Water (Uisce Éireann), and local authorities nationwide. Similarly, many environmental consultancies in Ireland and abroad are seeking graduates with expertise in applied catchment science. In addition, there are excellent opportunities overseas, with international agencies, research institutes, and NGOs recruiting graduates with these skills. Career options include:

- Catchment Scientist / Catchment Officer
- Hydromorphologist
- Water & Environmental Consultant
- River Restoration Practitioner
- GIS & Remotes Sensing Analyst (environmental application)

The programme also provides a strong pathway to further research through PhD studies in cognate disciplines.

Programme Director

Dr Jonathan Turner
Programme Director

"I am an Assistant Professor in the School of Geography and have been teaching topics on River Science and Catchment Management for more than 20 years. My teaching is supported by research on channel morphodynamics, sediment transport studies, including investigations on the impacts of low-head barriers on sediment connectivity, the impacts of historical metal mining in river catchments, and research on long-term controls on river channel behaviour."

"I am currently project lead on the EPA-funded project HymoGuide that aims to develop guidelines for regulatory standards on hydromorphology in Ireland. I am passionate about the environment, especially our rivers and streams, and am committed to high quality, positive, experiential learning that will support the education and training of the next generation of river and catchments managers. I believe this is more important than ever given the pressing challenges of climate and socio-ecological change we are experiencing today."

Applicant Profile

- This programme is intended for applicants with a degree in Geography or related discipline, such as Environmental science, Civil Engineering, Earth Science or professionals working in related fields.
- Applicants should have a minimum of an upper second-class honours (2H1) degree or international equivalent at bachelor's level.
- In certain circumstances, we will consider students who have a GPA 2.48 (2H2) and some relevant work or other experience. Contact jonathan.turner@ucd.ie. This includes students returning to study after a break.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that the costs of travel and subsistence for some fieldwork modules are borne by the student.

UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships for further information.

Related Masters

- MSc GIS and Remote Sensing
- MSc Risk, Resilience and Sustainability
- MSc Urban Data Analytics
- MA Critical Geographies: Crises, Climate & Inequality
- MA Geography

Graduate Diploma

This course is also offered as a Graduate Diploma. Students on this pathway will complete 60 credits of taught modules but not the dissertation. While applicants can apply to the Graduate Diploma directly, students on the MSc can also transfer to this pathway during the year

CONTACT US

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International Students
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APPLY NOW

This programme receives significant interest so please apply early online at
www.ucd.ie/apply