



Environmental Water Management

MSc, PgDip, PgCert



Managing water is one of society's greatest challenges. Droughts, floods, poor water quality and uneven water provision have social, economic and environmental consequences. Through our strong industry connections, students gain the up-to-date knowledge and skills needed to propose sustainable policy, practice and technological solutions now and for our changing future.

All components of the Environmental Water Management course are designed to produce the best graduates for jobs in water resources, hydrology, water quality, habitat conservation and creation, and flood risk management.

To do this, you will first reinforce your knowledge of topics and methods in eight core areas (hydrology, ecology, water quality, modelling, drought, flood risk, urban water, and catchment management). You then integrate this learning and apply it to a real-world problem in the group project. Finally, you will delve into a single topic for your individual thesis project, strengthening your skills in project design and management; data collection, analysis and interpretation; and report writing, all of which are essential for your future career.

Who is it for?

This course is ideal for graduates wishing to develop the expertise needed to solve environmental water management problems. It is designed to complement and expand students' existing knowledge of science, policy and practice, making it suitable for students from a range of backgrounds. Recent students have joined us from undergraduate and postgraduate degrees in engineering (civil, hydraulic, agricultural), physical geography, chemistry and environmental sciences, as well as from professional careers.

Our strong industry links make the course particularly suited for those looking to work in the water industry, government or environmental and engineering consultancy, and in a wide range of roles including water quality, water resources, aquatic habitat and wildlife, flood defence, and policy.

Course structure

- Eight taught modules (40%),
- Group project or dissertation: (20%),
- Individual research project (40%).

Informed by industry

This MSc benefits from input from an industry advisory panel with representatives from consultancy, government, industry and charitable sectors, who help to ensure the course maintains its real-world relevance to the marketplace and industry focus. This involvement and direct contact with industry makes successful students highly sought after in the employment market.

Future career

A degree from Cranfield will fast-track your career, enabling you to go further and to progress more quickly. Cranfield University Environmental Water Management graduates are located all over the world working at all levels of the water industry, government, environmental and engineering consultancy, and charitable sector. Therefore, our Environmental Water Management graduates join a large and supportable global alumni network.

Key information

Duration:

MSc: one year full-time, two to three years part-time.
PgDip, PgCert: one year full-time, two years part-time.

Start date:

Full-time: October.
Part-time: October.

Qualification:

MSc, PgDip, PgCert.

Location:

Cranfield campus.

Entry requirements

A first or second class UK Honours degree in a relevant science, engineering or related discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Overview of taught modules

Compulsory modules

(all the modules in this list need to be taken as part of this course).

Surface and Groundwater Hydrology

An understanding of rainfall, evapotranspiration, runoff, groundwater recharge, groundwater storage, and groundwater movement is essential for those involved in the science, engineering or management of the water environment. This module provides a conceptual and quantitative understanding of hydrology and the basic principles of hydraulics as a basis for later applied studies of water quality, water engineering, and water management.

Catchment Water Quality

For those working in water management, a comprehensive understanding of regulations applying to water quality is needed. This module aims to provide an overview on water quality and its applications. This includes the conditions prevailing in the water catchment area and therefore its potential uses according to established criteria. In order to adequately monitor water quality, you will also learn about sampling and measurement of water parameters as well as the interpretation of acquired data.

Aquatic Ecosystems

Water bodies are fundamental features of the landscape. Whether they are rivers, canals, wetlands, ponds, lakes, estuaries or the open coast, they are important habitats that support diverse ecological communities. This module provides the necessary background in ecological processes, aquatic community structure and function, survey approaches, and assessment methods to design ecological studies and interpret their results within the context of current environmental regulation.

Modelling Environmental Processes

The objective of this module is to give an overview of the different types of models currently being used to describe environmental processes and how they are being applied in practice. The module will offer you the opportunity to strengthen your analytical abilities with a specific mathematical emphasis, including programming and modelling, which are key skills to launch future careers in science, engineering and technology. In addition, throughout various interactive learning events as well as the group-work based assignment, your social skills will be intensively trained.

Drought and Water Scarcity

Droughts and water scarcity collectively represent a substantial threat to our natural environment, agricultural and industrial production, water supply infrastructure and societal well-being. Gaining a better understanding of the risk of a drought, including the likelihood of occurrence, duration and intensity, enables more informed management decisions. This module focuses on impact and management responses in three key sectors, domestic (public water supply), agriculture (rainfed and irrigated cropping) and the environment (aquatic and terrestrial ecosystems).

Flood Risk Management

This module considers the techniques for estimating flood probability, engineering and non-structural measures to reduce flood probability, economic techniques for evaluating flood consequences and current approaches to managing flood risk.

Water in Cities

There is growing recognition that, as a result of rapid urbanisation, many of the key global challenges in water management will be faced by cities. This creates significant challenges for urban areas in terms of how to supply a growing population (in planned and/or unplanned settlements), how to manage ageing infrastructure, how to recover resources from wastewater, and how to interact with the natural environment. This module will examine these challenges and provide you with the skills to identify, contextualise and evaluate different urban water management technologies and approaches.

Integrated River Basin Management

There is growing recognition that sustainable solutions to environmental water management problems require a coordinated approach centred on the river basin scale. This is reflected in the holistic nature and administrative structure of current regulations and government initiatives and policies. In this module, you will develop the skills to analyse and interpret environmental data within a spatial context and to assess them in light of current drivers (e.g. regulatory and socioeconomic).

Group project

A unique component of a Cranfield University taught MSc is the Group Project. Group projects are consultancy-style projects sponsored by industry partners. They provide you with experience working on real environmental water management problems for a real client, gaining essential technical and transferable skills, such as team working, managing resources and developing reporting and presentation skills. Previous students routinely state that the group project helped them secure and adapt to their first job. As such, the group project experience is highly valued by both students and prospective employers.

Examples of recent group projects include:

- Integrated catchment planning
- Diffuse Water Pollution Investigation in the Broads National Park
- Surface water management strategy.

Individual project

You select your individual project in consultation with the thesis project coordinators. The individual project provides you with the opportunity to demonstrate your ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems. You have the choice to work on projects sponsored by industry or related to current Research Council, EU or industry funded research.

Accreditation

The MSc of this course is accredited by:



Accredited Course

Contact details

T: +44 (0)1234 758082

E: studywater@cranfield.ac.uk

For further information please visit
www.cranfield.ac.uk/ewm

Every effort was made to ensure that the information on this document was correct at the time it was produced. Please check our website for the latest information. March 2019.