Where the Water World Meets
WELCOME TO IHE DELFT

In 2016, the United Nations adopted the 2030 Agenda, including 17 Sustainable Development Goals. Goal 6, ensuring availability and sustainable management of water and sanitation for all, shows the importance placed on the world’s water resources. In fact, most of the 16 other Goals relate in some way to water, ranging from combating desertification to food production and urban resilience.

As a member of the UNESCO Water Family, the role of IHE Delft in helping to achieve the UN 2030 Agenda is very important. Education is fundamental to making this agenda a reality and on completing a course at IHE Delft, students are better equipped to tackle or advise on solving water-related challenges in their own country.

When we meet our alumni following their studies at IHE Delft, they often use the word 'transformation' when describing the impact their education at IHE Delft has had on their life. They mean much more than improving their career prospects or chance of promotion. The international environment that the Institute provides, the practical knowledge and experience of academic staff who also regularly work in the field and the progressive yet friendly and vibrant nature of life in Delft, all make it an unforgettable, positive experience.

In addition to its wide range of programmes and specialisations, IHE Delft provides its education in many formats to cater to the diverse needs of our students: a full-time, Delft-based Master’s course; joint or double degrees, spending time in different countries; short courses for those with limited time and specialised needs; online to fit in with work and life commitments. Tailor-made training courses are designed specifically for the needs of a group and run in Delft or in the participants’ country, to suit their requirements.

IHE Delft helps enhance the careers of those who are already working in the field of water, by giving them the chance to broaden or deepen their expertise. As increasingly, a wide range of skills and backgrounds are beneficial for the water sectors, the Institute also welcomes students who wish to change their career path, provided they meet the eligibility requirements.

Since its establishment in 1957, the Institute has educated over 14,500 scientists, engineers and decision-makers representing more than 160 countries. Many alumni reach senior positions in their home countries and become nationally and internationally recognised experts in their fields of speciality.

We invite you to join our dynamic, international community at IHE Delft and together we can work towards a better, safer and more sustainable 2030.

Professor Eddy Moors, Rector

www.un-ihe.org

Graduate education at IHE Delft is science-based and highly relevant for those interested in water and development.
IHE Delft is located in the historical centre of Delft, a city of great charm characterized by ancient canals, beautifully kept monuments and historic squares. It is also a young, vibrant city with a large student population and an ideal starting point to explore the Netherlands and Europe.

Delft, Netherlands, Europe
A HOME IN THE HEART OF EUROPE

Delft is known for its historic town centre with canals, Delft Blue pottery, painter Johannes Vermeer and scientist Antony van Leeuwenhoek and its association with the royal House of Orange-Nassau.

Since Delft is a university city, there are plenty of cultural events to be enjoyed throughout the year, as well as museums and theatres. There is also an abundance of cafés and restaurants, catering to every taste and making time spent away from your studies an experience in itself.

Water has always played an important role in both the Netherlands’ and Delft’s history.

The Institute’s Facilities and Services

- 14,000 m² premises, including three interconnected buildings;
- Four modern teaching and research laboratories - aquatic ecology, microbiology, process technology and analytical laboratories - including state of the art instrumentation;
- A library with online connections to national and international resource centres, and a reading room containing many international journals and magazines;
- Modernised classrooms and multifunctional lecture theatres;
- A fully equipped auditorium seating 300 and a videoconferencing studio;
- Notebooks for all participants and extensive computing facilities;
- Flexible and group work-spaces, notebooks lockers;
- A restaurant offering a wide variety of meals and snacks;
- Social and cultural activities, sports facilities and events;
- International student health and counselling services;
- An in-house prayer and meditation room.

YOUR INTERNATIONAL EXPERIENCE

Staff at the Institute simplify your transition to the Netherlands by organizing the annual ‘Introduction Days’. In these two weeks, they help you deal with various formalities such as residence permits, health insurance and bank accounts. Other activities during this period are an excellent way for new students to meet one another and receive the friendship and advice of senior students and the Institute’s staff.

Throughout your study period, IHE Delft organizes many social, cultural and sports events, allowing you to get the most out of your free time. Every year, trips are organized that stimulate you to discover Dutch culture, Delft, the Netherlands and Europe.

HOUSING

Delft is a university city, and therefore accommodation is scarce and expensive. This is why IHE Delft provides fully furnished accommodation in Delft for all students of the Institute’s programmes, available upon arrival and for the duration of the study period.

www.un-ihe.org/welcome
Studying at IHE Delft is a life-changing experience. You will be exposed to an intercultural environment characterized by plurality and diversity of ideas, experiences and disciplines resulting in intellectual, professional and personal growth.

A Network for Life
Today, several ministers, heads of water-related institutions and top scientists around the globe are IHE Delft graduates.

MAKE IHE DELFT YOUR NETWORK

IHE Delft acts as a hub for partnerships and networks across the globe, linking global knowledge to local sector agendas. The Institute collaborates with an extensive range of public and private partners, comprising a wide range of fields and technical cooperation in human and institutional capacity building. These partners are at the international, United Nations, EU and national level. They include education and research institutes, knowledge centres, the (Dutch) Water Sector, funding agencies, NGOs and governmental organizations. These partnerships add value to many of the Institute’s activities.

The Institute maintains close working relationships with many regional and local networks, which facilitates the transfer of scientific and technical expertise, strengthening the capacity of water professionals and institutions. Many of these networks are thriving professional communities, encouraging joint research, knowledge sharing and the development of sustainable water solutions.

As a student, you profit from the professional contacts the Institute has made since its inception. When studying at IHE Delft, you can expect to meet leading figures from the international water arena. Your professors and lecturers will put your study in the context of global dialogues and targets such as the Sustainable Development Goals.

ALUMNI NETWORK

Today, a number of ministers and government officials, heads of water-related institutions, and top scientists around the globe are IHE Delft graduates.

After graduation, you will be part of the largest partnership network of water professionals in the world. IHE Delft will continue to facilitate the communication between you, your former classmates, and the Institute. You will receive news about the Institute and the water sector on a regular basis through e-zines. You are invited to join an Alumni Association in your country, independent associations where you can meet fellow alumni and enjoy social and professional activities.

With a IHE Delft degree you will have taken a major step in your professional career. Many alumni reach prominent positions in which strategic, managerial, policy and decision-making components become major responsibilities of their functions. You will, over time, wish to keep your skills and knowledge refreshed, to stay up to date with changing professional demands. To cater to this need, the Institute's refresher seminars are held annually in different continents, covering themes of direct relevance to these regions. Also, alumni are entitled to discounts on the tuition fee for attending IHE Delft short and online courses, and purchasing publications.
IHE Delft offers five Master of Science programmes, with a total of 16 specializations. The MSc Programmes educate students primarily from developing countries and countries in transition, as well as students from developed countries with a strong interest in water and development, to become creative problem solving professionals in the field of water and environment.
MSc PROGRAMMES

The MSc curricula are geared towards supporting a greater understanding of sustainable development and the inherent challenges in achieving that. In the programmes, a mix of modern knowledge transfer methods includes lectures, workshops, role-play, games, study tours, and field visits. Teaching staff and students come from all over the world and partnerships with related institutes and universities play an important role in teaching. The educational environment can therefore be called truly international; it is characterized by pluralism and diversity and stimulates students, while progressing in their studies, to develop communication skills that will enable them to disseminate their professional knowledge and skills effectively.

The Delft-based MSc specializations start in October and take 18 months, the first year of which consists of taught modules that are given at IHE Delft. After successful completion of the taught modules, you will do individual research for a six-month period. The research deals with a practical or theoretical problem and may be carried out in collaboration with an organization outside the Netherlands, for example in the home country. Often, field data collection, laboratory or computer analysis work are part of the research. Research is always completed with a thesis and a public presentation of results.

The so-called joint programmes are MSc specialisations developed with and offered in collaboration with partner institutes. These joint programmes have varying start and end dates, and part of the programme is given at a partner institute in another country.

ACCREDITATION

The Institute’s MSc programmes are accredited under legislation of The Netherlands. As such, the IHE Delft Foundation is the party legally responsible for the Institute’s education and authorized to issue its degrees.

T-SHAPE COMPETENCY PROFILE

Effective problem solving in the field of water and environment requires knowledge-based competence from the physical sciences, water engineering, and/or the social sciences. The MSc curricula provide you with the so-called T-shape competency profile which enables you to cooperate within teams uniting various disciplines. The vertical bar of the T stands for a specialist deep knowledge-based competence. The horizontal bar represents preliminary or working knowledge and skills from neighbouring disciplines, and also general academic skills, communication competencies and other professional skills. Thus, team members who each bring their respective specialist knowledge are able to ‘embrace’, i.e. sufficiently understand, each other in interdisciplinary problem solving.
The PhD Programme leads to a deepening in a field of specialization. PhD fellows undertake scientific research, often with conclusions that directly influence their own country or region. At IHE Delft, more than 130 PhD researchers from around the world are brought together to participate in problem-focused, solution-orientated research into development issues, resulting in an inspiring research environment.
**PhD Programme**

Conducting research at IHE Delft is a unique experience, as you will work together with other researchers in a multinational and multidisciplinary environment. Your research will provide a firm academic foundation for you to play your part in providing solutions to the global challenges of sustainable water supply, quality and governance.

The PhD research of IHE Delft crosses the spectrum from engineering, information systems, habitat quality and the social and political realities that affect the use and abuse of water. All PhD fellows work within specific Chair Groups, but are encouraged to collaborate internally and externally to produce high quality results within IHE Delft’s research themes. Work often occurs within larger groupings and can include linking to the research topics that are a requirement of the institute’s MSc programme and/or embedded in larger multidisciplinary projects.

You will often do research in collaboration with the Institute’s extensive network of research institutions, governmental and private sector partners throughout the world. Research often includes time in Delft and abroad, mostly in the home country of the research fellows. This directly supports the capacity development mission of the institute and the agenda of the UN Sustainable Development Goals.

All PhD fellows are registered both with the IHE Delft Graduate School and with a partner university. This is normally a Dutch university with the legal authority to award the degree of PhD, although we also have some joint PhD programmes as part of funded networks of research. The time span of a PhD programme is usually planned for four years. The degrees are fully recognised in all parts of the world.

**IHE Delft International Graduate School in Water and Development**

Sustainable water use is frequently characterised by complex, so-called ‘wicked’, problems where traditional assumptions of knowledge, causality and predictability may not apply. The fundamental importance of better connection between science, policy and society makes new demands on PhD graduates, who are increasingly expected to possess, not only a deep knowledge of their own discipline, but are additionally capable of placing that knowledge in a wider understanding of societal needs.

IHE Delft is well placed to play a significant role in supporting PhD level education that is targeted to water related problems, not only in the global south and countries in transition, but in an increasingly globalised world.

In 2015 IHE Delft established the Graduate School in Water and Development, to create a hub for a vibrant and an intellectually exciting research and development environment at the heart of the Institute. The vision of the Graduate School is to develop a stimulating research environment for PhD fellows and the staff of the Institute. PhD Fellows produce the majority of the research output of the Institute, and future developments are to further support academic quality and relevance in meeting the serious challenges of sustainable water use in increasingly difficult situations. Research activities are supported by an individual training plan that build competencies directly related to the specific research programme, as well as wider interactive and awareness skills that are needed in a professional environment. Each PhD fellow develops his/her Training and Supervision Plan (TSP) that builds verified doctoral education credits.

**Research is conducted by the following academic departments and chair groups:**

- **Water Supply Engineering**
- **Pollution Prevention & Resource Recovery**
- **Sanitary Engineering**
- **Water Management**
- **Water Governance**
- **Hydroinformatics**
- **Knowledge & Capacity Development**
- **Land & Water Development**
- **Aquatic Ecosystems**
- **Hydrology & Water Resources**
- **Coastal Systems, Engineering & Port Development**
- **River Basin Development**
- **Flood Resilience**

**13 Chair Groups**

- **Safe Drinking Water & Sanitation**
- **Water, Food & Energy Security**
- **Water-related Hazards & Climate Change**
- **Information & Knowledge Systems**
- **Water Management & Governance**
- **Water & Ecosystem Quality**

**www.un-ihe.org/phd**
Online and Short Courses

IHE Delft aims to make water education accessible to an increasing number of students and professionals. The Institute achieves this by providing online and short courses, tailor-made training, a diploma programme and open courseware on a wide array of topics.

ECTS

It is possible to earn European Credit Transfer System (ECTS) points for several online and short courses. For the latest information on earning ECTS points, including regulations and costs, please refer to our website.

DISCOUNTS

The following discounts on the tuition fee of online and short courses are offered:
• 30%: IHE Delft alumni
• 10%: UN family staff members
• 10%: groups of 5 or more (provided that the courses start at the same time and a group application has been sent)
ONLINE COURSES

IHE Delft offers high quality online courses in many of the topics of significance in the water sector. The online courses are beneficial to professionals working in public and private institutions, NGOs, and academic institutions, and are ideal for professionals with jobs and families, who want to upgrade their skills from the comfort of their home or office. Each online course’s total study load is 140 hours. A four month course thus takes around 8 hours of work per week. The guidance by lecturing staff during these online courses is intensive, and there are many opportunities to get feedback from and interact with fellow participants.

The web-based Moodle eCampus is used to disseminate training material and for communication. It contains learning tools such as presentations, videos featuring case studies from various countries, interviews with experts, quizzes and audio material, as well as a discussion area, where fellow participants and lecturers can meet each other. All courses run completely via eCampus, but course materials can be sent on CD as well.

For a list of online courses in 2018, see page 22.

SHORT COURSES

IHE Delft conducts a wide range of short, intensive and highly specialized courses which are aimed at upgrading and refreshing the knowledge and skills of mid-career and senior experts. They are meant for professionals - or groups of professionals - with a specific area of interest and a limited amount of time.

Short courses usually are one to three weeks in length. The focus and content vary from specialized and technical matters to challenges and approaches in management. Didactical methods used in these short courses include lectures, individual or group exercises in the classroom, at the computer, or in the laboratory. Fieldwork, excursions and field visits to relevant institutions are often part of a short course, allowing the participants to experience practical examples of the theory offered. Through case studies, role-play and workshops, content is made more interactive, and know-how of participants is shared.

For a list short courses in 2018, see pages 24-25.

TIELODE TRAINING

Tailor-made courses are designed for clients whose staff require training in specific topics or seek to develop a common knowledge base to address future challenges. The focus of the courses can be technical, managerial, strategic or operational, depending on the client’s priorities.

The training can be organized for groups of various sizes, from one or multiple organizations, sectors or regions. The trainings can vary in length and depth, ranging from a course lasting several days, to a tailored MSc programme in which regular components are mixed with case studies and modules requested by the client. Training can be delivered on-site or using IHE Delft in Delft as a base, or a combination of the two. A mixture of training techniques are utilised in creating tailor-made trainings, including lectures, workshops, role-plays, case studies and study tours to project sites throughout Europe or the region where the training takes place.

For advice on how IHE Delft could be of service to your organization, contact IHE Delft’s Liaison Office. Their contact information is available from the website, see bottom of page.

PROFESSIONAL DIPLOMA PROGRAMME

The Graduate Professional Diploma Programme (GPDP) in Sanitation and Sanitary Engineering disseminates relevant knowledge and know-how to professionals who do not have the means or time to pursue a full-time Master’s course in that subject, or who already have an MSc Degree in a related field and wish to specialize.

In the programme you will follow a sequence of four to five online courses, regular short courses or a combination of both. To ensure that the programme fits your personal circumstances, you select the courses of interest and a personal study plan will be designed in collaboration with a study advisor. The total duration of the programme depends on this study plan and varies between 1.5 to a maximum of 4.5 years.

For extra information on these tracks and courses, see page 23.

SUMMER COURSES

Summer courses are meant to bring together students and professionals with different academic or professional backgrounds and explore a cross-cutting issue. Course topics include: water diplomacy, communication, leadership, entrepreneurship and gender. The courses are 5 days and usually held in August.

Check our website regularly or subscribe to our e-newsletter to stay tuned with updates about the 2018 summer courses.

OPEN COURSEWARE

IHE Delft freely provides online educational materials, including recorded lectures and downloadable materials such as course notes, exercises, tools and public domain software on a wide variety of topics.

For a list of open courseware courses, see page 22.

For a list of open courseware courses, see page 22.

www.un-ihe.org/online-courses
www.un-ihe.org/short-courses
www.un-ihe.org/tailormade
www.un-ihe.org/gpdp
www.un-ihe.org/summer-courses
www.un-ihe.org/ocw
A Guide to our MSc Programmes

2018

APPLICATION DEADLINE
1st of August

START PROGRAMME
3rd week in October

APPLICATION
Apply online at our website. For Frequently Asked Questions see: www.un-ihe.org/faq

ADMISSION REQUIREMENTS
- BSc Diploma in a related field of study
- English Language (IELTS: 6.0 / TOEFL iBT: 87 overall or PBT: 502/TWE 4.5)
- Two or more years of work experience in a related field is preferred

SCHOLARSHIPS
Attention: most scholarship programmes have a deadline much earlier than August 1, see website: www.un-ihe.org/fellowships

2019

INTERNATIONAL FIELDTRIP

APPLICATION
3 weeks - 5 ECTS

Most modules can be followed separately as short course (see pages 24-25)
Many short courses can be followed as online course (see page 22)

INTENSIVE LEARNING
Due to the breadth and depth of subjects covered in the MSc programmes, please be advised that in particular the 12 month taught part is intensive. We advise students to prepare themselves for a challenging, but rewarding educational experience.
The Delft-based MSc Programmes start in October and take 18 months. The first year consists of taught modules and after successful completion of these modules, you will do individual research for a six-month period. You can apply to the programmes throughout the year, but make sure you apply well before the deadline of 1 August, so you will have time to make the financial arrangements and prepare for your studies at IHE Delft.

Our Joint Programmes and the MSc Programme in Sanitation have varying start and end dates and a different duration. See website for more information.
**MSc PROGRAMME IN ENVIRONMENTAL SCIENCE**

Develops the necessary skills to contribute to a sustainable and innovative future for the protection and management of water and natural resources.

**Integrating science, technology and policy making**
As the world enters a period of increasing pressures that cause impact on the environment and human well-being, future sustainable development needs to integrate scientific knowledge with technological developments and effective policies. The Environmental Science MSc programme builds the skills necessary to meet the environmental challenges in an integrated way. Each of the programme’s specializations provides the essential in-depth knowledge that links with a broader skills base, so that graduates of the programme can play their part in a sustainable and innovative future for protection and management of water and natural resources.

**Aim of the programme**
The unsustainable management of natural resources hampers human development and exacerbates human inequalities. Pollution, depletion of natural resources, the disintegration of ecological functions, and ineffectual policies are matters of local, regional and global concern. Economic development and rising living standards in the developing world, set against increased pressures on the environment contribute to the urgency of these issues. Preventing further degradation of the environment, and the damage to human society that follows, requires new approaches for sustainable inter-actions between people and their environment. Sustainability depends on balancing use and conservation of environmental resources. The challenge to sustainable development is to increase food supply and human welfare, while minimising and counteracting any negative impacts on the environment.

To find sustainable solutions and improve the quality of human life, we must first understand the processes that sustain natural systems, how these systems function and how they interact with one other and with human society. The Environmental Science MSc programme develops the understanding of these processes and how in your day-to-day work to apply this knowledge for better natural resource management. During the programme you will learn to analyze and assess environmental systems and problems; be able to propose sustainable solutions; and understand the social complexities and challenges of environmental problems. During the final phase of the programme, you will produce an independent scientific research project that brings together the critical thinking developed through the individual modules of the programme.

**Programme contents**
The Environmental Science MSc programme equips professionals with the necessary capacities by offering a systems approach. This means you will investigate subsystems and their interactions at global, regional and local scale, without losing sight of the overall picture. The programme balances a thorough knowledge of the disciplines taught and the added value of bringing these disciplines together in one coherent programme.

**Desired profile**
Admission is open to all suitably qualified applicants with a focus and interest to meet future water environmental challenges in the developing world and countries in transition. The programme is intended for students and professionals with an interest in environmental sciences and in maintaining environmental integrity to support human development. Suitable academic backgrounds include a BSc or MSc in natural sciences, chemistry, environmental science, agriculture, geography, environmental economics, planning and management or engineering. Professional experience in a relevant area is desirable.

Basic knowledge of mathematics, physics and chemistry is a prerequisite. Computer literacy is a valuable asset. Good conversational, reading and writing capabilities in the English language are essential in order to successfully complete the course.

---

**CAREER**
Graduates of the ES programme start or resume a career dealing with water policy and planning, research and/or environmental regulation in the water sector or related sectors such as infrastructure, energy, agriculture or mining. Careers include working at:
- Public administration: central and local government (urban water and wastewater authorities, water boards, water and environment ministries);
- Private sector, e.g. consulting engineering firms;
- Academia and research institutes;
- NGOs and international organizations (UN, Worldbank, etc.).

Graduates of the ES programme start or resume a career dealing with water policy and planning, research and/or environmental regulation in the water sector or related sectors such as infrastructure, energy, agriculture or mining. Careers include working at:
- Public administration: central and local government (urban water and wastewater authorities, water boards, water and environment ministries);
- Private sector, e.g. consulting engineering firms;
- Academia and research institutes;
- NGOs and international organizations (UN, Worldbank, etc.).

**Study Information**
www.un-ihe.org/es
SPECIALIZATIONS

**APPLIED AQUATIC ECOLOGY FOR SUSTAINABILITY**
You will gain a thorough understanding of the natural processes in aquatic ecosystems and be able to apply this knowledge to sustainable management for healthy ecosystems and good water quality in a multidisciplinary setting.

**Topics**
- Aquatic Ecology
- Ecosystem Functions and Services
- Water Quality
- Biodiversity
- Ecosystem Restoration and Services
- Sustainable Use of Ecosystems

**Prospective Students**
This specialization is designed for students and professionals who have a strong interest in water quality, sustainable management and conservation of wetland ecosystems, including rivers, swamps, lakes, and estuaries. Suitable academic backgrounds include natural sciences, environmental science, biology, fisheries and agriculture.

**Delft-based MSc specialization**

---

**ENVIRONMENTAL PLANNING AND MANAGEMENT**
You will develop the skills and know-how for strategic development, policy-making and decision-making in the environmental arena.

**Topics**
- Water and Environmental Law
- Environmental Systems Analysis
- Water and Environmental Policy Making
- Environmental Planning and Management
- Environmental Assessment for Water-related Policies and Development

**Prospective Students**
The programme is designed for students and professionals with an interest in environmental planning and management to support human development. Suitable academic backgrounds include natural sciences, environmental science, agriculture, geography, environmental economics, planning and management.

**Delft-based MSc specialization**

---

**ENVIRONMENTAL SCIENCE AND TECHNOLOGY**
You will be introduced to research and development leading to technologies that address environmental problems, and learn to interact with stakeholders, managers and policy makers for appropriate remedial actions.

**Topics**
- Industrial Resource Management and Cleaner Production
- Resource Recovery Processes and Engineering
- Aquatic Ecosystems Processes and Applications

**Prospective Students**
The programme is designed for students and professionals with an interest in the development and application of technologies that contribute to maintain environmental integrity in relation to human development. Suitable academic backgrounds include natural sciences, chemistry, environmental science, agriculture, geography and engineering.

**Delft-based MSc specialization**

---

**ENVIRONMENTAL TECHNOLOGY AND ENGINEERING**
You will learn to apply and develop environmental technologies, with a strong focus on multidisciplinary and problem-based technology development.

**Topics**
- Environmental Engineering
- Process and Control Engineering
- Resource Recovery Processes and Engineering
- Advanced Wastewater Treatment Technologies
- Waste Management and Treatment
- Advanced Waste Gas Treatment
- Soil Remediation

**Prospective Students**
This specialization is intended for students and professionals who are interested in deepening their knowledge of the application of environmental technologies. Suitable academic backgrounds include chemistry, biology, geology, civil or agricultural engineering, environmental or agricultural sciences.

**Delft-based MSc specialization**

---

**LIMNOLOGY AND WETLAND MANAGEMENT**
You will learn about the structure and functioning of aquatic and wetland ecosystems for their management and wise use, and learn how to interact with stakeholders, managers and policy makers for the development of best practices.

**Topics**
- Limnology
- Ecology of Aquatic Organisms
- Aquatic Ecosystem Management
- Stream and River Ecology
- Fisheries and Aquaculture
- Aquatic Ecosystems Processes and Applications

**Prospective Students**
This specialization is intended for students and professionals with a special interest in one of the following topics: aquatic ecology, limnology, wetland ecosystems, or aquatic resources management. Suitable academic backgrounds include natural sciences, chemistry, environmental science, agriculture, geography, environmental economics, planning and management.

**Delft-based MSc specialization**

---

This specialization is jointly offered with BOKU, University of Natural Resources and Life Sciences, Austria, and Egerton University, Kenya.

**www.imete.org**

---

**www.un-ihe.org/es**
MSc PROGRAMME
IN URBAN WATER AND SANITATION

Educates professionals in the fields of water supply, sanitation and integrated urban engineering, particularly in urban areas.

Recent decades have witnessed an increasing rate of urbanisation, particularly in developing regions and in countries in transition. About 80% of the world’s megacities can be found in these regions. The high concentration of people in urban areas will place enormous pressure on the local environment and on available resources. It will also generate ever higher, sometimes conflicting demands on services such as water supply and sanitation. At the same time, under decentralisation policies, the responsibility for delivering such services will be increasingly delegated to lower levels of government that are often ill equipped for this challenge in terms of financial and human resources.

Aim of the Programme
The MSc Programme in Urban Water and Sanitation educates professionals in the fields of water supply, sanitation and water engineering and management, particularly in urban areas. Once they have successfully completed this programme, graduates:

- Can place their profession in the wider social, economic and environmental contexts of urbanisation and municipal water and infrastructure services provision;
- Will be able to contribute to the development of innovative approaches to the provision of sustainable and equitable municipal water, sanitation, environmental and infrastructure services in developing and transitioning countries;
- Will be able to conduct academic research independently.

SPECIALIZATIONS

SANITARY ENGINEERING

You will learn how to deal with wastewater and sludge treatment process operation, maintenance and design, including urban drainage and sewerage, centralized and decentralized systems and land-based and engineered treatment plants.

Prospective Students
This specialization is designed for students and professionals interested in achieving and maintaining water pollution control and public health. It is particularly relevant for those who are or wish to become involved in the provision of sanitation services. Suitable academic backgrounds include civil, environmental or chemical engineering and microbiology.

Topics
- Integrated Urban Water Management
- Urban Drainage and Sewerage
- Wastewater Treatment Processes and Modelling
- Resource Oriented Wastewater Treatment and Sanitation
- Wastewater Treatment Plants Design and Engineering
- Industrial Effluents Treatment and Residuals Management
- Faecal Sludge Management

Delft-based MSc specialization

URBAN WATER ENGINEERING AND MANAGEMENT

You will learn to deliver both water and wastewater services within the context of the urban water cycle, covering both technical and management aspects.

Prospective Students
This specialization is designed for students and professionals dealing with or interested in water and sanitation services and managing the urban water cycle. Suitable academic backgrounds include civil, environmental and chemical engineering.

Topics
- Drinking and Waste Water Treatment
- Water Transport and Distribution
- Urban Drainage and Sewerage
- Asset Management
- Managing Water Organizations
- Urban Flood Management and Disaster Risk Mitigation
- Urban Water Systems

Delft-based MSc specialization

WATER SUPPLY ENGINEERING

You will learn to deal with technical aspects of drinking water treatment and distribution in an integrated way, paying attention to the choice of technologies and tools, ranging from low-cost to advanced options.

Prospective Students
This specialization is designed for students and engineers interested in or dealing with water collection, storage, treatment, transport and distribution. Suitable academic backgrounds include civil, chemical, environmental, hydraulic and mechanical engineering.

Topics
- Integrated Urban Water Management
- Surface Water Treatment
- Groundwater Treatment and Resources
- Water Transport and Distribution
- Advanced Water Treatment and Re-use
- Water Treatment Processes and Plants
- Decentralized Water Supply and Sanitation

Delft-based MSc specialization

www.un-ihe.org/uws
The state-of-the-art content was developed and provided by the world’s top experts from both academia and practice. This demand-driven and practice orientated programme will yield graduates with fundamental understanding and knowledge as well as the skills necessary for creating impact. The generic skills development is embedded from the start through individual coaching and tailored guidance. Preparatory (e-learning) courses and entry interviews are included. All graduates will benefit from a dedicated career development programme, supported by the Bill and Melinda Gates Foundation and will become a member of the Global Faecal Sludge Management Learning Alliance and alumni community.

Target group
The new MSc programme is dedicated to target needs and deliver specialists in a short time, with the necessary qualifications. It aims to attract talented and ambitious young and mid-career sanitation professionals, working in water supply and sewerage companies, municipal assemblies, government ministries, NGOs and consulting firms. Ideally these individuals are dealing with urban and peri-urban sanitation, especially in informal settlements. Participants should have a Bachelor’s or equivalent engineering degree (e.g. civil, sanitary, environmental etc.) or degree in other relevant fields (e.g. public health, medicine, urban planning, finances, administration, economics, etc).

Programme structure
The 68 ECTS points programme consist of a taught and a thesis research part. The taught part has a modular structure, comprising 13 modules ranging from 1 to 6 weeks’ duration, including lectures, laboratory tutorials, field trips, case studies, group work, design exercises and discussions. Especially for this programme IHE Delft constructed a state-of-the-art faecal sludge laboratory, which is a member of the Global Partnership of Laboratories for Faecal Sludge Analyses. The individual thesis research (29 ECTS), follows on completion of the taught programme, although, in order to avoid a ‘cold start’ and to guarantee sufficient time, students will be allocated a research topic and will start preparing for their individual research early on in the programme. The field work part of the research will preferably take place in a developing country, hosted by one of IHE Delft's academic partners and supervised locally by partner institution’s staff. To enable students to pass the entry exam, a set of preparatory e-learning courses are available for those who may need to increase their knowledge in one or more subjects as prerequisite for the programme.

Syllabus
The programme focus is on non-sewered sanitation, as sewerage-based sanitation is the subject of the complementary specialization in Sanitary Engineering. The programme design and module plans have been prepared in cooperation with partners from academia and practice. The input from practice was essential, as the new programme has a clear professional focus. The course content facilitates learning objectives and achievement of final qualification.

The following topics are part of the programme:
- Introduction to Sanitation
- Sanitation Systems and Services
- Public Health
- Technology
- Governance
- Finances
- Behaviour Change
- Leadership
- Project Management
- WASH in Emergencies
- Group Work
- Basic Laboratory Training
- Advanced Laboratory Training, or
- Social Science Methods

*) accreditation is expected to be completed in February 2018

Check our website regularly or subscribe to our e-newsletter to stay tuned with updates about this programme.
The MSc programme in Water Management and Governance provides a unique combination of knowledge, skills and competencies to help comprehensively analyze, critically reflect and effectively contribute to solving contemporary water problems. The question of how to balance objectives of social equity with those of ecological integrity and productivity are at the heart of societal efforts to deal and live with water. In answering this question, science and data are always deeply entangled with particular visions on development, moral world views, and economic or geopolitical interests. This is why the study programme pays explicit critical attention to the definition and workings of authority and power, and to the organisation of democracy in water.

As solutions to water problems always consist of a combination of engineering, institutions and organisations, this programme brings together insights about water quality and quantity - and hence of key biophysical and hydrological processes - with understandings of the infrastructural, political and institutional arrangements to regulate its access, allocation, treatment, use and discharge. Courses on offer thus range from those that are rather technical or natural science oriented (focusing on physical, biological or technical processes) via more skills-oriented modules aimed at acquiring the abilities to 'do' water management and governance effectively (law, conflict resolution, mediation, modelling, environmental assessment) to more interpretive social science courses. Throughout the programme, there is a lot of attention to different ways of integrating these different disciplines and sources of knowledge.

The programme’s anchor are water problems as they are experienced by relevant actors - users, operators, policymakers, politicians, experts - in their everyday dealings with water. The applicability of taught practical and analytical skills for dealing with actual water management and governance situations is therefore the most crucial measure of their value. However, by deepening their insights about how socio-natural processes shape water flows and vice-versa, the programme not just provides tools to help solve problems, but also develops students’ theoretical ability to critically compare and reflect on proposed solutions, measuring their effectiveness against wider environmental and social objectives.

An important target audience for the programme are water professionals from Southern countries. However, we also welcome students from other disciplinary and professional backgrounds (lawyers, journalists, entrepreneurs, activists) or countries of origin who aim to specialize in water, and we are open to less experienced students who are interested in studying at IHE Delft because it gives them a unique, broad and interdisciplinary background in contemporary water management and governance questions. The programme’s overall ambition is to train and educate reflective water professionals and experts who have the knowledge and capacity to develop, plan, implement and evaluate water management and governance policies and strategies in support of the ecologically wise and socially equitable use of water.

In line with the overall IHE Delft approach to education, the programme’s content is diverse: lectures by experts in the field are complemented by practical assignments, work in the laboratory, excursions and group-work. Innovative distance learning and electronic interactive educational tools support the programme. Throughout the educational cycle, lecturers and professors make creative use of opportunities to build on and learn from the rich experiences of students. More generally, the programme is student-centred, which means that students have a large degree of freedom to put together the curriculum that best fits their choice, interests and needs.

Graduates of the WM programme start or resume a career dealing with wide range of water management and governance jobs in the water sector or related sectors such as infrastructure, energy, agriculture or mining. Careers include working at:

- Public administration: central and local government (river basin organizations, urban water authorities, water boards, urban/rural development ministries/authorities);
- Private sector: e.g. consulting firms, water supply companies, law firms;
- Academia and research institutes;
- NGOs and international organizations (UN, Worldbank, etc.).
# SPECIALIZATION / THEMATIC PROFILES

## WATER COOPERATION AND DIPLOMACY
You will study socio-hydrological dynamics, decision making processes on water resources and services management, water diplomacy, water dispute prevention, management and resolution skills and tools.

### Prospective Students
Professionals, preferably with relevant work experience in the water sector, involved in planning, regulating, and managing access, allocation and control of water resources and services at various scales as well as diplomats, UN staff or other professionals working for international organizations or NGOs.

### Topics
- Water Management and Governance
- Water Security and Peace
- Water Conflict Management
- Water Economics
- Water and Environmental Law
- Water Resources Planning

This specialization is jointly offered with the University for Peace, Costa Rica and Oregon State University, USA.

## WATER CONFLICT MANAGEMENT
You will study water conflict management, particularly alternative dispute resolution processes and develop the skills required to prevent, manage and resolve water-related conflicts.

### Prospective Students
The thematic profile is designed for water managers as well as for institutional, legal and international relations experts and (social) geographers interested in local, national and international water management.

### Topics
- Water Management and Governance
- Water Conflict Management
- Institutional Analysis
- Water Resources Planning
- Water and Environmental Law
- Urban Water Governance

Delft-based MSc thematic profile

## WATER QUALITY MANAGEMENT
You will study the water quality impacts of human activities on aquatic ecosystems, as well as possible remedial actions, considering different levels of environmental stress and in various socio-economic contexts.

### Prospective Students
The thematic profile is designed for engineers and natural scientists responsible for or involved in planning, developing and implementing water quality policies, strategies and programmes. Affinity with chemistry and biology is required for this thematic profile.

### Topics
- Water Management and Governance
- Water Quality Monitoring and Assessment
- Water and Environmental Law
- Aquatic Ecosystems Processes and Applications
- Wetlands for Water Quality
- Environmental Planning and Implementation

Delft-based MSc thematic profile

## WATER RESOURCES MANAGEMENT
You will study water availability in connection to water use, and seek to develop alternative land use and water allocation policies, including legal and institutional arrangements from the local watershed to the basin scale and beyond.

### Prospective Students
This profile is designed for engineers, natural scientists and managers responsible for planning, developing and implementing water resources projects and programmes. Affinity with quantitative methods, such as statistical analysis, is required for this thematic profile.

### Topics
- Water Management and Governance
- Water Economics
- Water Resources Assessment
- Water Systems Analysis and Modelling
- Water Resources Planning

Delft-based MSc thematic profile

## WATER SERVICES MANAGEMENT
You will study the provision of water and sanitation services as well as the management of related infrastructure and critically review institutional and financial instruments and business models considering different socio-economic contexts.

### Prospective Students
The thematic profile is designed for broad range of professionals from various academic backgrounds active in the water services sector and involved in the planning, developing and managing of water supply and/or sanitation policies, strategies and programmes.

### Topics
- Water Management and Governance
- Managing Water Organizations
- Environmental Management and Water Services
- Finance in the Water Sector
- Partnerships for Water Supply and Sanitation
- Urban Water Governance

Delft-based MSc thematic profile

## TAILOR MADE STUDY PROFILE
The Tailor made study profile offers the possibility for students to compose their own study trajectory within the Water Management and Governance Master Programme. After a foundation phase during which students are exposed to the different disciplines involved in the water management domain, students can compile a study profile from a wide range of available courses and variety of thesis research topics to ensure that the educational programme is fully aligned with their professional needs. They will be guided in this process by professional coaches who will encourage students to reflect on their knowledge and skills, advise them on career possibilities and assist them in selecting a suitable tailor-made study profile. The coaches have extensive knowledge of the needs of the water sector in various parts of the world and student’s employers will be consulted in the process when needed. Prospective water management students may wish to compile a study profile from a wide range of available courses and variety of thesis research topics to ensure that the educational programme is fully aligned with their professional needs. The prospective students may have bachelor or master degrees in Engineering, Natural and Social sciences, Arts, Law, Geography etc.

www.un-ihe.org/wm
MSc PROGRAMME IN WATER SCIENCE AND ENGINEERING

SPECIALIZATIONS

FLOOD RISK MANAGEMENT

You will develop scientific and engineering knowledge needed to reduce the human and socioeconomic losses caused by flooding while at the same time taking into account the social, economic, and ecological benefits from floods and the use of flood plains or coastal zones.

GROUNDWATER AND GLOBAL CHANGE – IMPACTS AND ADAPTATION

You will develop scientific and engineering knowledge needed to understand the interactions between groundwater, surface water, climate and global change, to consider and benefit from these interactions when dealing with adaptation.

Prospective Students
Suitable academic backgrounds include civil/hydraulic or environmental engineering, earth/environmental sciences and limnology.

Topics
• Flood Risk Management
• Meteorology and Hydrology
• River Basin Modelling
• Hydroinformatics for Decision Support
• Debris Flow and Flash Flood Management
• Coastal Flood Management
• Spatial Planning

This specialization is offered jointly with the Technical University of Dresden (Germany), and University of Ljubljana (Slovenia).

www.floodriskmaster.org

Prospective Students
Suitable academic backgrounds include geological, civil/hydraulic or environmental engineering, earth/environmental sciences, climate sciences, geography and geology.

Topics
• Hydrogeology
• Climate Processes and Modelling
• Integrated River Basin and Water Resource Management
• Groundwater and Environmental Impacts
• Groundwater, Society and Policies
• Data Collection, Interpretation and Modelling
• Climate and Global Change Impacts and Adaptation

This specialization is offered jointly with the Technical University of Dresden (Germany) and IST Lisbon (Portugal).

www.groundwatermaster.eu

CAREER

Graduates of the WSE programme start or resume a career dealing with civil engineering design and construction, information technology or earth sciences in the water sector or related sectors such as infrastructure, energy, agriculture or mining. Careers include working at:
• Public administration: central and local government (river basin organizations, municipalities, water boards, public works ministries, urban/rural development and agriculture ministries);
• Private sector: e.g. consulting engineering firms;
• Academia and research institutes;
• NGOs and international organizations (UN, Worldbank, International River Commissions etc.).

In particular, this programme provides the education to:
• Improve the management of water resources through assessing and monitoring their condition and vulnerability to hazards;
• Sustain economic development by better flood and drought protection, risk management and hazard reduction, in an era of global climate change;
• Improve environmental and public health through pollution prevention;
• Sustain and improve water supply, power generation and agriculture through integrated water resources management;
• Improve food production by developing, operating, maintaining and optimising water-related infrastructure;
• Sustain economic growth through the development of coastal and riparian zones;
• Manage and control water systems in an integrated and sustainable way, with stakeholders, through the development of technologies to simulate such systems.
Focuses on the understanding, management and development of water resources and water flows and quality in the natural and human-influenced environment, while addressing the multidisciplinary character of human activities dealing with water.

<table>
<thead>
<tr>
<th>HYDRAULIC ENGINEERING AND RIVER BASIN DEVELOPMENT</th>
<th>HYDRAULIC ENGINEERING – COASTAL ENGINEERING AND PORT DEVELOPMENT</th>
<th>HYDROINFORMATICS – MODELLING AND INFORMATION SYSTEMS FOR WATER MANAGEMENT</th>
<th>HYDROLOGY AND WATER RESOURCES</th>
<th>LAND AND WATER DEVELOPMENT FOR FOOD SECURITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>You will develop scientific and engineering knowledge needed to design and implement projects for sustainable use of river systems and their resources, learning about the design of hydraulic structures, modeling of the river, and flood management for different scales of water projects (catchments, river stretches and floodplains).</td>
<td>You will develop scientific and engineering knowledge and practical skills to plan, model, design and manage coastal engineering and port development projects, and learn to analyze coastal problems and conceive appropriate solutions.</td>
<td>You will be able to understand the main water-related processes and to develop and apply computer-based mathematical models, web-based information systems and integrated hydroinformatics systems for planning, designing or managing the aquatic environment.</td>
<td>You will deal with surface and groundwater, addressing both water quantity and quality, learning to understand human influences on the hydrological system and apply tools, such as modelling, for the proper integration of hydrological knowledge and analysis in water resources planning and management.</td>
<td>You will learn to plan, design, operate and maintain land and water resources and water-related infrastructure, emphasising the modernisation of irrigation, drainage and flood protection schemes, and land use for agriculture.</td>
</tr>
<tr>
<td>Prospective Students Students and professionals who are eager to address river engineering and river basin development challenges with an academic background in civil/hydraulic engineering.</td>
<td>Prospective Students Students and professionals who are eager to address coastal zone/port development challenges with an academic background in civil/hydraulic engineering.</td>
<td>Prospective Students Students and professionals interested in mathematical models, advanced computational tools, web-based information systems and integrated hydroinformatics systems for planning, designing or managing the aquatic environment. Suitable academic backgrounds include civil, agricultural or systems engineering, earth/environmental sciences or physics.</td>
<td>Prospective Students Students and professionals interested in hydrology, river basin management, prediction and mitigation of floods and droughts, water resources assessment, water supply, hydropower, land use and development, environmental survey and planning. Suitable academic backgrounds include civil or agricultural engineering, earth/environmental sciences or physics.</td>
<td>Prospective Students Students and professionals concerned with the development and management of land and water resources for agricultural purposes, with preferably two years work experience in irrigation, drainage or land and water development. Suitable academic backgrounds include agricultural or civil/hydraulic engineering.</td>
</tr>
<tr>
<td>Topics</td>
<td>Topics</td>
<td>Topics</td>
<td>Topics</td>
<td>Topics</td>
</tr>
<tr>
<td>Hydrology and Hydraulics</td>
<td>Hydrology and Hydraulics</td>
<td>Hydrology and Hydraulics</td>
<td>Hydrology and Hydraulics</td>
<td>Hydrology and Hydraulics</td>
</tr>
<tr>
<td>Geotechnics</td>
<td>Coastal Science and Engineering</td>
<td>Information Technology and Software Engineering</td>
<td>Surface Hydrology</td>
<td>Principles and Practices of Land and Water Development</td>
</tr>
<tr>
<td>Remote Sensing</td>
<td>Coastal Systems</td>
<td>Modelling Theory and Computational Hydraulics</td>
<td>Water Quality</td>
<td>Design Aspects of Irrigation and Drainage Systems</td>
</tr>
<tr>
<td>River Morphodynamics</td>
<td>Coastal and Port Structures</td>
<td>Modelling and Information Systems Development</td>
<td>Tracer Hydrology and Flow Systems Analysis</td>
<td>Management of Irrigation and Drainage Systems</td>
</tr>
<tr>
<td>River Basin Development and Environmental Impact Assessment</td>
<td>Port Planning and Infrastructure Design</td>
<td>Computational Intelligence and Operational Water Management</td>
<td>Data Collection and Interpretation</td>
<td>Conveyance and Irrigation Structures</td>
</tr>
<tr>
<td>Delft-based MSc specialization</td>
<td>Geotechnical Engineering and Dredging</td>
<td>Flood Risk Management</td>
<td>Groundwater, addressing both water quantity and quality, learning to understand human influences on the hydrological system and apply tools, such as modelling, for the proper integration of hydrological knowledge and analysis in water resources planning and management.</td>
<td>Remote sensing, GIS and Modelling for Agricultural Water Use</td>
</tr>
<tr>
<td>This specialization is also offered jointly with the University of Nebraska-Lincoln, USA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

www.un-ihe.org/wse
ONLINE COURSES 2018

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Wastewater Treatment: Principles, Modelling and Design</td>
<td>08/Jan/18 – 08/Jun/18</td>
</tr>
<tr>
<td>Faecal Sludge Management</td>
<td>08/Jan/18 – 11/May/18</td>
</tr>
<tr>
<td>Urban Drainage and Sewerage</td>
<td>08/Jan/18 – 11/May/18</td>
</tr>
<tr>
<td>Flood Modelling for Management</td>
<td>05/Mar/18 – 29/Jun/18</td>
</tr>
<tr>
<td>Water and Environmental Law and Policy</td>
<td>05/Mar/18 – 29/Jun/18</td>
</tr>
<tr>
<td>Ecological Sanitation</td>
<td>07/May/18 – 07/Sep/18</td>
</tr>
<tr>
<td>Grey Water Management, Treatment and Use</td>
<td>07/May/18 – 07/Sep/18</td>
</tr>
<tr>
<td>Industrial Resource Management and Cleaner Production</td>
<td>07/May/18 – 07/Sep/18</td>
</tr>
<tr>
<td>Modelling Sanitation Systems</td>
<td>07/May/18 – 07/Sep/18</td>
</tr>
<tr>
<td>Constructed Wetlands for Wastewater Treatment</td>
<td>03/Sep/18 – 11/Jan/19</td>
</tr>
<tr>
<td>Environmental Flows</td>
<td>03/Sep/18 – 11/Jan/19</td>
</tr>
<tr>
<td>Governance of Decentralised Sanitation</td>
<td>03/Sep/18 – 11/Jan/19</td>
</tr>
<tr>
<td>Industrial Effluent Treatment</td>
<td>03/Sep/18 – 11/Jan/19</td>
</tr>
<tr>
<td>Partnerships for Water Supply and Sanitation</td>
<td>03/Sep/18 – 11/Jan/19</td>
</tr>
<tr>
<td>Solid Waste Management</td>
<td>03/Sep/18 – 11/Jan/19</td>
</tr>
<tr>
<td>Decision Support Systems in River Basin Management</td>
<td>17/Sep/18 – 07/Dec/18</td>
</tr>
<tr>
<td>Water Transport and Distribution</td>
<td>21/Sep/18 – 22/Jan/19</td>
</tr>
</tbody>
</table>

Dates are subject to change - please check the website for updates.

OPEN COURSEWARE

<table>
<thead>
<tr>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmarking for Improved Water Utility Performance</td>
</tr>
<tr>
<td>Biological Wastewater Treatment: Principles, Modelling and Design</td>
</tr>
<tr>
<td>Constructed Wetlands for Wastewater Treatment</td>
</tr>
<tr>
<td>Faecal Sludge Management</td>
</tr>
<tr>
<td>Governance of Decentralized Sanitation</td>
</tr>
<tr>
<td>Hydrology and Hydraulics</td>
</tr>
<tr>
<td>Industrial Resource Management and Cleaner Production</td>
</tr>
<tr>
<td>Open Source Software for Preprocessing GIS Data for Hydrological Models</td>
</tr>
<tr>
<td>Preparing for Extreme and Rare Events in Coastal Regions</td>
</tr>
<tr>
<td>Spate Irrigation Systems</td>
</tr>
<tr>
<td>Water Quality Assessment</td>
</tr>
</tbody>
</table>
GRADUATE PROFESSIONAL DIPLOMA PROGRAMME

Online courses offered by IHE Delft as part of the GPDP (duration varies between 12 to 18 weeks).

The minimum study load for obtaining a diploma is 20 ECTS credit points, which equals a workload of 560 hours. ECTS points vary from 3 to 6 per course. Participants select courses among clusters belonging to different tracks; Sanitation and Sanitary Engineering and four newly developed tracks.

<table>
<thead>
<tr>
<th>Course</th>
<th>Sanitation and Sanitary Engineering</th>
<th>Water Supply Engineering</th>
<th>Water and Wastewater Treatment Technology</th>
<th>Flood Risk Management and Urban Water Networks</th>
<th>Cleaner Production and Resources Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Wastewater Treatment</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Drainage and Sewerage</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Water Treatment*</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faecal Sludge Management</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desalination and Membrane Related Technology</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood Modelling for Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modelling Sanitation Systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecological Sanitation</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grey Water Management, Treatment and Use</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Resource Management and Cleaner Production</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Water Systems*</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Methods in Wastewater Treatment*</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater Resources and Treatment*</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constructed Wetlands for Wastewater Treatment</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Transport and Distribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Effluent Treatment</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Waste Management</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Flood Management and Disaster Risk Mitigation*</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governance of Decentralized Sanitation</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Processes for Surface Water Treatment*</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Based Learning*</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

* New courses and tracks currently being developed - please check the website for the latest information.

SUMMER COURSES

Course topics include: water diplomacy, communication, leadership, entrepreneurship and gender. 30/Jul/18 – 03/Aug/18

Please check the website for updates.
## ENVIRONMENTAL SCIENCE

<table>
<thead>
<tr>
<th>Course</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Resource Management and Cleaner Production</td>
<td>12/Feb/18 – 02/Mar/18</td>
</tr>
<tr>
<td>Water Quality Assessment</td>
<td>05/Mar/18 – 23/Mar/18</td>
</tr>
<tr>
<td>Constructed Wetlands for Wastewater Treatment</td>
<td>03/Apr/18 – 20/Apr/18</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>03/Apr/18 – 20/Apr/18</td>
</tr>
<tr>
<td>Nanotechnology for Water and Wastewater Treatment</td>
<td>03/Apr/18 – 13/Apr/18</td>
</tr>
<tr>
<td>Water and Environmental Policy Analysis</td>
<td>03/Apr/18 – 20/Apr/18</td>
</tr>
<tr>
<td>Environmental Monitoring and Modelling</td>
<td>23/Apr/18 – 11/May/18</td>
</tr>
<tr>
<td>Environmental Planning and Implementation</td>
<td>23/Apr/18 – 11/May/18</td>
</tr>
<tr>
<td>Data Analysis and Modelling for Aquatic Ecosystems</td>
<td>22/May/18 – 08/Jun/18</td>
</tr>
<tr>
<td>Aquatic Ecosystems: Processes and Applications</td>
<td>11/Jun/18 – 29/Jul/18</td>
</tr>
<tr>
<td>Environmental Assessment for Water-related Policies and Developments</td>
<td>11/Jun/18 – 29/Jul/18</td>
</tr>
<tr>
<td>River Restoration and Rehabilitation</td>
<td>11/Jun/18 – 29/Jul/18</td>
</tr>
<tr>
<td>IWRM as a Tool for Adaptation to Climate Change</td>
<td>02/Jul/18 – 20/Jul/18</td>
</tr>
<tr>
<td>Solid Waste Management</td>
<td>02/Jul/18 – 20/Jul/18</td>
</tr>
<tr>
<td>Strategic Planning for River Basins and Deltas</td>
<td>02/Jul/18 – 20/Jul/18</td>
</tr>
<tr>
<td>Wetlands for Livelihoods and Conservation</td>
<td>02/Sep/18 – 20/Sep/18</td>
</tr>
<tr>
<td>Hazardous Waste Management</td>
<td>03/Sep/18 – 26/Oct/18</td>
</tr>
</tbody>
</table>

## URBAN WATER AND SANITATION

<table>
<thead>
<tr>
<th>Course</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water Treatment I</td>
<td>15/Jan/18 – 02/Feb/18</td>
</tr>
<tr>
<td>Urban Drainage and Sewerage</td>
<td>15/Jan/18 – 02/Feb/18</td>
</tr>
<tr>
<td>Asset Management</td>
<td>12/Feb/18 – 02/Mar/18</td>
</tr>
<tr>
<td>Conventional Wastewater Treatment</td>
<td>12/Feb/18 – 02/Mar/18</td>
</tr>
<tr>
<td>Surface Water Treatment II</td>
<td>12/Feb/18 – 02/Mar/18</td>
</tr>
<tr>
<td>Groundwater Resources and Treatment</td>
<td>05/Mar/18 – 23/Mar/18</td>
</tr>
<tr>
<td>Resource Oriented Wastewater Treatment and Sanitation</td>
<td>05/Mar/18 – 23/Mar/18</td>
</tr>
<tr>
<td>Anaerobic Wastewater Treatment</td>
<td>05/Mar/18 – 09/Jul/18</td>
</tr>
<tr>
<td>Wastewater Treatment Plants Design and Engineering</td>
<td>03/Apr/18 – 20/Apr/18</td>
</tr>
<tr>
<td>Water Transport and Distribution</td>
<td>03/Apr/18 – 20/Apr/18</td>
</tr>
<tr>
<td>Advanced Water Treatment and Refuse</td>
<td>23/Apr/18 – 11/May/18</td>
</tr>
<tr>
<td>Modelling Wastewater Treatment Processes and Plants</td>
<td>23/Apr/18 – 11/May/18</td>
</tr>
<tr>
<td>Industrial Effluents Treatment and Residuals Management</td>
<td>11/Jun/18 – 29/Jul/18</td>
</tr>
<tr>
<td>Water Treatment Processes and Plants</td>
<td>11/Jun/18 – 29/Jul/18</td>
</tr>
<tr>
<td>Advanced Water Transport and Distribution</td>
<td>02/Jul/18 – 20/Jul/18</td>
</tr>
<tr>
<td>Decentralised Water Supply and Sanitation</td>
<td>02/Jul/18 – 20/Jul/18</td>
</tr>
<tr>
<td>Faecal Sludge Management</td>
<td>02/Jul/18 – 20/Jul/18</td>
</tr>
<tr>
<td>GIS and Remote Sensing Applications for the Water Sector</td>
<td>29/Oct/18 – 09/Nov/18</td>
</tr>
</tbody>
</table>
WATER SCIENCE AND ENGINEERING

Port Planning and Infrastructure Design 15/Jan/18 – 02/Feb/18
Coastal Systems 12/Feb/18 – 02/Mar/18
Coastal and Port Structures 05/Mar/18 – 23/Mar/18
Computational Intelligence and Operational Water Management 05/Mar/18 – 23/Mar/18
Tracer Hydrology and Flow Systems Analysis 05/Mar/18 – 23/Mar/18
Hydropower Water Conduit Design 12/Mar/18 – 23/Mar/18
Groundwater Data Collection and Interpretation 03/Apr/18 – 20/Apr/18
Hydrological Data Collection and Processing 03/Apr/18 – 20/Apr/18
River Basin Modelling 03/Apr/18 – 20/Apr/18
Integrated Hydrological and River Modelling 23/Apr/18 – 11/May/18
International Port Seminar 23/Apr/18 – 04/May/18
Management of Irrigation and Drainage Systems 23/Apr/18 – 11/May/18
Planning and Delivery of Flood Resilience 23/Apr/18 – 11/May/18
River Flood Analysis and Modelling 23/Apr/18 – 11/May/18
Urban Flood Management and Disaster Risk Mitigation 23/Apr/18 – 11/May/18
Design of Hydropower Schemes 30/Apr/18 – 04/May/18
Applied Groundwater Modelling 11/Jun/18 – 29/Jun/18
Flood Risk Management 11/Jun/18 – 29/Jun/18
Urban Water Systems 11/Jun/18 – 29/Jun/18
Water Sensitive Cities 02/Jul/18 – 20/Jul/18
World History of Water Management 30/Jul/18 – 03/Aug/18
Data Acquisition, Preprocessing and Modelling using HEC-RAS 17/Sep/18 – 28/Sep/18
Data Acquisition, Preprocessing and Modelling using PCRaster Python 17/Sep/18 – 28/Sep/18
Data Acquisition, Preprocessing and Modelling using SWAT 17/Sep/18 – 28/Sep/18
Small Hydropower Development 17/Sep/18 – 28/Sep/18
Morphological Modeling using Delft3D 17/Sep/18 – 21/Sep/18
Open Source Software for Preprocessing GIS data for Hydrological Models 17/Sep/18 – 21/Sep/18
Environmental Modelling using PCRaster 24/Sep/18 – 28/Sep/18
Hydraulic Modelling using HEC-RAS 24/Sep/18 – 28/Sep/18
River Basin Modelling using SWAT 24/Sep/18 – 28/Sep/18
Where there is little data: How to estimate design variables in poorly gauged basins 29/Oct/18 – 09/Nov/18

WATER MANAGEMENT AND GOVERNANCE

Water and Environmental Law 12/Feb/18 – 02/Mar/18
Managing Water Organizations 05/Mar/18 – 23/Mar/18
Water Conflict Management I 05/Mar/18 – 23/Mar/18
Water Resources Assessment 05/Mar/18 – 23/Mar/18
Water Conflict Management II 03/Apr/18 – 20/Apr/18
Financial Management in the Water Sector 23/Apr/18 – 11/May/18
Water Resources Planning 23/Apr/18 – 11/May/18
Partnerships for Water Supply and Sanitation 11/Jun/18 – 29/Jun/18
Water Economics - 2 weeks course 17/Sep/18 – 28/Sep/18

Dates are subject to change - please check the website for updates.
IHE Delft Institute for Water Education (formerly UNESCO-IHE) is the largest international graduate water education facility in the world and is based in Delft, the Netherlands. The Institute confers fully accredited MSc degrees, and PhD degrees in collaboration with partners. Since 1957 the Institute has provided graduate education to more than 15,000 water professionals from over 162 countries, the vast majority from the developing world.

The mission of IHE Delft is to contribute to the education and training of professionals, to expand the knowledge base through research and to build the capacity of sector organizations, knowledge centers and other institutions active in the fields of water, the environment and infrastructure in developing countries and countries in transition.

www.un-ihe.org

IHE Delft
Institute for Water Education
PO Box 3015
2601 DA Delft
The Netherlands
+31 15 215 1715
info@un-ihe.org

Engage with the IHE Delft community anytime, anywhere in the world.

10 Reasons to Study at IHE Delft

1. 60 years of experience in graduate water education
2. Close ties to the UN system
3. Fully accredited programmes
4. Gateway to Delft and Dutch water know-how
5. Learner-centred, active learning
6. Personal guidance and mentoring
7. Internationally renowned lecturers and professors
8. A truly international environment
9. Live and study in a vibrant city in the heart of Europe
10. Increase career prospects and become part of the largest global water alumni network