



**Master of Science**

# Environmental Engineering

## Profile

### Environmental Engineering

Environmental and climate protection, sustainability, energy transition and resource conservation are among the most important topics of our time. The challenges, particularly regarding climate neutrality by 2050 or sooner, are enormous and many of the problems to be solved concern the field of engineering. Nevertheless, these problems include not only questions of environmental engineering, but also the transformation of entire value-added chains, from raw materials and energy supply to sustainable construction and production all the way to a circular economy. The Environmental Engineering master's programme therefore offers a wide range of methodological knowledge and subject-specific expertise for future-oriented and environmentally conscious engineers.

The master's programme builds on the bachelor's programmes Environmental and Process Technology as well as Energy and Environmental Technology. It also offers exciting specialisation

options for students from a different field of engineering. The programme was developed from the research- and method-oriented Simulation and Experimental Engineering master's programme. It therefore now combines the exciting topics in energy, environmental and process engineering with a wide range of cutting-edge methodology courses and aspects of digital transformation.

### **Specialisation: Energy Engineering**

The design of sustainable energy systems primarily concerns topics such as

- use of renewable energies;
- storage and distribution of electrical power;
- production, distribution and use of hydrogen;
- advanced processes of heat and mass transfer;
- monitoring and reduction of environmental impacts of energy engineering systems (e.g. air and noise pollution);
- holistic views on the sustainability of the technologies and systems.

### **Specialisation: Process Engineering**

For this specialisation, we combine the current topics of decarbonisation, energy efficiency and resource conservation with cutting edge methods to simulate industrial processes and to design chemical plants, strategies to save energy and minimise emissions in industrial processes as well as the monitoring and reduction of environmental impacts, such as air and noise pollution.

**Please note:** The language of instruction is mainly German.

## **Career Options**

### **What to expect from professional practice?**

You shape the future of energy and raw materials supply or sustainable and environmentally compatible production in a wide variety of industries. You can embark on a career in research and development, as a production engineer in the field, as a simulation engineer or process plant designer for power, environmental and industrial plants, or as an expert in energy and environmental management in businesses and authorities. Whether you dig dust and dirt or bits and bytes – the Environmental Engineering master's programme prepares you for all career paths! Our graduates work in development departments of companies from various sectors, at universities and research institutes (doctoral studies possible!), for producers of power, environmental and industrial devices and plants, at engineering services firms, for energy suppliers, public utilities, corporate water supply and wastewater treatment opera-

tors, in the cement, steel, chemical and other primary industries as well as for monitoring and regulatory authorities.

## Admission Requirements

Please check if you meet all requirements for admission to the study programme. Further information:

[mv.hs-duesseldorf.de/study-programmes/environmental-engineering](http://mv.hs-duesseldorf.de/study-programmes/environmental-engineering)

# SYLLABUS

## SEMESTERS 1-2

### Methodology (choose 3 out of 5)

- Experiment Design and Evaluation
- Signal Processing for Mechanical and Process Engineering
- Optimisation and Simulation
- Computational Fluid Dynamics
- Engineering Mathematics

### Study Projects and Compulsory Elective Modules

- Compulsory Elective Module 1
- Study Project 1 (Research & Development)
- Compulsory Elective Module 2 or Study Project 2 (Research & Development)

## SPECIALISATION (CHOOSE 1)

### Specialisation: Energy Engineering

- Heat and Mass Transfer in Two-Phase Flows
- Electrical Power – Conversion, Storage, Distribution
- Sustainable Energy Economics
- Air Pollution Measurement Technology

### Specialisation: Process Engineering

- Process Simulation
- Energy and Environmental Process Optimisation
- Applied Simulation in Process Technology
- Air Pollution Measurement Technology

## SEMESTER 3

- Engineering Conferences
- Master's Thesis
- Master's Colloquium

Please check the module manual (currently available in German only) for detailed information on the contents of the study programme.

## Further Information

### Events for prospective students (in German only)

[hs-duesseldorf.de/zsb\\_veranstaltungen](https://hs-duesseldorf.de/zsb_veranstaltungen)

### How to apply

[hs-duesseldorf.de/prospectivestudents/degreeseekings/application](https://hs-duesseldorf.de/prospectivestudents/degreeseekings/application)

### Information for international applicants

[hs-duesseldorf.de/degreeseeking](https://hs-duesseldorf.de/degreeseeking)

### About the programme and admission requirements

[mv.hs-duesseldorf.de/study-programmes/environmental-engineering](https://mv.hs-duesseldorf.de/study-programmes/environmental-engineering)

## Get in Touch

### Dean's Office at the Faculty of Mechanical and Process Engineering

[dekanat.mv@hs-duesseldorf.de](mailto:dekanat.mv@hs-duesseldorf.de)

### Student Advisory and Counselling Service (ZSB)

[studienberatung@hs-duesseldorf.de](mailto:studienberatung@hs-duesseldorf.de)

[hs-duesseldorf.de/zsb-en](https://hs-duesseldorf.de/zsb-en)

### Admissions Office

[zulassung@hs-duesseldorf.de](mailto:zulassung@hs-duesseldorf.de)

[hs-duesseldorf.de/zulassungsstelle](https://hs-duesseldorf.de/zulassungsstelle) (in German only)

### International Office (IO)

[international-office@hs-duesseldorf.de](mailto:international-office@hs-duesseldorf.de)

[hs-duesseldorf.de/io-en](https://hs-duesseldorf.de/io-en)

### Family Support Centre

[familienbuero@hs-duesseldorf.de](mailto:familienbuero@hs-duesseldorf.de)

[hs-duesseldorf.de/fam-en](https://hs-duesseldorf.de/fam-en)

### Disability Services (ABS)

[barrierefrei@hs-duesseldorf.de](mailto:barrierefrei@hs-duesseldorf.de)

[hs-duesseldorf.de/abs-en](https://hs-duesseldorf.de/abs-en)

### Psychological Counselling Service (PSB)

[info.psb@hs-duesseldorf.de](mailto:info.psb@hs-duesseldorf.de)

[hs-duesseldorf.de/psb-en](https://hs-duesseldorf.de/psb-en)

HSD on social media  
[facebook.de/hsduesseldorf](https://facebook.de/hsduesseldorf)  
[instagram.com/hsduesseldorf](https://instagram.com/hsduesseldorf)

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