



**Hochschule Düsseldorf**  
University of Applied Sciences



**Faculty of Mechanical  
and Process Engineering**

**Bachelor of Engineering**

# **Technical Building Services and Energy System Engineering**

## **Profile**

### **Why should I study Technical Building Services and Energy System Engineering?**

Technical Building Services and Energy System Engineering is a career-integrated study programme that combines online and on-campus teaching with materials for independent learning – and gives you the ideal study-work balance. Thanks to the integration of key contents of a master craftsperson qualification in the HVAC and sanitary trade (parts 2, 3 and 4 (optional)), graduates of this study programme only need to successfully complete the practical part 1 at *Düsseldorf HWK* (chamber of crafts) to be awarded the title of master craftsperson. This study programme opens up attractive career paths in an industry with a shortage of skilled workers and also prepares students to take on leadership roles in companies, become self-employed or manage an SME.

Students can also attain a specific certificate by completing an elective module titled Energy Consulting and Energy Performance Certificates for Buildings 2, which allows graduates to register with

dena (public German energy company) as Energy Efficiency Experts. Modern blended learning formats including online lectures, interactive exercises and flexible learning opportunities create a practical and future-oriented study programme for professionals that is optimally tailored to the needs of the HVAC, energy and sanitary sector.

## **What is Technical Building Services and Energy System Engineering?**

Technical Building Services and Energy System Engineering is a practice-oriented study programme at HSD. In addition to teaching the fundamentals of engineering, students also learn about energy efficiency and sustainable building technology. The study programme makes an important contribution to the energy transition and qualifies graduates for a professional field that develops key solutions for a climate-friendly future. At the same time, it works to solve the shortage of skilled workers in the HVAC, energy and sanitary sector – graduates have excellent career prospects.

## **What to expect from the study programme?**

The Technical Building Services and Energy System Engineering study programme imparts practical competences that are aligned with the requirements of the HVAC, energy and sanitary sector.

Contents of the study programme:

- Fundamentals of engineering and mathematics: sound methodological knowledge combined with specific technical knowledge is taught in the earlier semesters.
- HVAC and sanitary technology: from the third semester onwards, students can choose specialisation modules such as Sanitary Technology, Heating, Ventilation and Air Conditioning Technologies, and Building Control Systems.
- Business administration and law: students are prepared comprehensively to become self-employed and run a business thanks to our modules on the Legal Framework, SME Organisation, Job Handling and Controlling and Accounting.
- Project work and elective modules: students can choose their individual specialisations in advanced semesters. Elective modules 1, 2 and 3 broaden the range of subjects.
- Thesis and colloquium: students complete their studies with a practice-oriented bachelor's thesis and a colloquium.

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

## **Career Options**

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

Graduates of the Technical Building Services and Energy System Engineering study programme can work in many different

occupations. Thanks to the close interlinking with the master craftsperson training in the HVAC and sanitary trade, the main objective is for graduates to become the successors in a small or medium-sized HVAC and sanitary business or to found their own business in the field.

Other professional opportunities include working

- as a senior manager in a HVAC and sanitary trade: taking on larger areas of responsibility, managing subdivisions
- in engineering services and energy consulting firms: planning and optimising energy-efficient plants and facilities
- for energy suppliers: working on power infrastructure and sustainable supply solutions
- for producers of power engineering components: development and distribution of building technology products
- in the facility management: monitoring and optimising energy system engineering in private and public buildings
- as an energy consultant on a self-employed basis: graduates who have successfully completed the Energy Consulting and Energy Performance Certificates for Buildings 2 module can register with dena (public German energy company) as Energy Efficiency Experts.

## **Admission Requirements**

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

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

# **SYLLABUS**

## **SEMESTERS 1-2**

- Mathematics, Thermodynamics, Legal Framework, Project-Oriented Procedure and Academic Methodology
- Heat Transfer, Fluid Mechanics, Business Administration for SMEs

## **SEMESTERS 3-4**

- Electrical Engineering, Chemical and Microbiological Fundamentals of Water Technology, Sanitary Technology 1, Business Organisation
- Control Engineering, Construction Materials Science, Structural Analysis, Production Technologies, Sanitary Technology 2, Job Handling

## **SEMESTERS 5-6**

- Construction and Integral Planning, Corporate IT, Heating Technology 1, Controlling and Accounting
- Heating Technology 2, Interior Hygiene, Energy Consulting and

## SEMESTERS 7-8

- Air Conditioning, Cooling and Ventilation Technologies 1, Health and Environmental Protection, Business Plan Development Simulation, Elective Module 1 (e.g. Energy Consulting and Energy Performance Certificates for Buildings 2)
- Air Conditioning, Cooling and Ventilation Technologies 2, Building Control Systems, Integrated Project: Technical Building Equipment, Elective Module 2 (e.g. BlueEngineering – Social and Ecological Responsibility in Engineering)

HSD on social media  
facebook.de/hsduesseldorf  
instagram.com/hsduesseldorf

## SEMESTER 9

- Elective Module 3 (e.g. training the trainers = Part 4 of the craftsperson training in the HVAC and sanitary trade), Bachelor's Thesis, Colloquium

## 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**  
(in German only)  
[hs-duesseldorf.de/heat-voraussetzungen](https://hs-duesseldorf.de/heat-voraussetzungen)

## Get in Touch

**Dean's Office at the Faculty of Mechanical and Process Engineering**  
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**Student Advisory and Counselling Service (ZSB)**  
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[hs-duesseldorf.de/zsb-en](https://hs-duesseldorf.de/zsb-en)