

Building Technologies

Fields of education: Construction and Planning

1. Professional qualification

Professional career outline

The graduates can work in the field of development on the landlord side as well as in the field of conception and planning within engineering companies or in the field of construction realisation in executing companies as well as general or total contracting companies

In the field of building operation and sustainable building maintenance the graduates can work in FM companies or in integrated FM staff positions as well as in the field of mandated monitoring in engineering companies.

The profile covers all competences for a high-quality and holistic sustainable building design and construction related to the different building technology systems.

Professional skills

The profile «Building Technologies» enables to systematically develop holistic solutions for complex questions in the various disciplines of building technology on the basis of a comprehensive problem analysis and to competently convey the results.

The profile «Building Technologies» deepens the basic disciplines of building technology (thermal and electrical building systems, building automation and information) and building climatology (building physics, indoor air quality) in the context of the "building as a system".

It introduces complementary areas according to single buildings and areas with more than one building such as decentralized energy supply and storage, thermal and electrical area networks (energy hub and micro grids) and life cycle analysis of material resources.

Entry skills

Specific skills are required to enrol in this profile. Students holding one of the following Bachelor degrees generally fulfil these entry requirements.

- BSc in Gebäudetechnik
- BSc in Energie- und Umwelttechnik (Vertiefungsrichtung Energie in Gebäuden)

The assessment of the entry skills is part of the enrolment process of the respective school. Students who do not hold one of the above mentioned Bachelor degrees will be individually assessed for their suitability by the respective University of Applied Sciences.

Differentiation to bachelor level

At the Bachelor's level, students are trained in all areas of the individual construction disciplines and related disciplines, whereby the practical training leads to a professional qualification.

In the Master's degree program students will deepen their expertise in focus areas and expand it with system and process management skills. Graduates will be able to design larger and more complex projects and take over the coordination of the integral and iterative processes therein. In terms of system engineering, they are thus able to optimize all relevant aspects of sustainable building in their entirety.

2. Profile contents

The profile covers the following content:

Advanced methods of building related applied thermodynamics and electrical engineering (heat sources and sinks, decarbonised heat, cold and grid dependent and independent power generation, thermal and electrical storage and distribution / delivery) for transient power and energy requirements.

Systemic-constructive interactions between outdoor climate, construction and users as well as future challenges around climate change and its effects. Long-term agile construction (solid construction, lightweight construction), optimum solar gains and solar protection (daylight / artificial light), indoor air quality, acoustic requirements (airborne sound, structure-borne noise, room acoustics) as well as urban planning aspects (microclimate) should create ideal conditions for lean technology (LowTec) and functional buildings in regard to building physics.

Simulation based optimisation for synergetic overall concepts (mobility integration, IoT applications, load, and storage management) including building automation and information aspects. In addition, climatic modelling in a larger context and on the object level as well as sustainable building materials and construction techniques (lifecycle analysis).

Development of sophisticated heating, cooling and electrical concepts and their implementation in executable system configurations taking into account the design conditions and the transient requirements for individual buildings as well as for areas with several buildings.