

# Curriculum 2018-2020

Civil engineering plays a key role in creating safe and healthy built environments, which are essential elements of everyday life and well-being. Combining the global needs for energy efficiency and sustainability with the characteristics of a good living environment requires theoretical understanding, professional skills, and broad-minded attitude.

## Learning outcomes

The programme deals with the design, construction, use, and maintenance of civil engineering structures, such as buildings and bridges. With its five main themes – structural engineering, construction and maintenance, building performance, construction management, and structures and architecture – the programme provides students with knowledge and skills essential to their future careers in industry, research, education or authority. Based on the individual selections within the study programme, the students can learn to

- identify physical phenomena, and use experimental, mathematical and computational methods to examine and model them,
- assess the structures and indoor environments with respect to their performance regarding the context-specific loads and physical phenomena,
- comprehend the fundamental theories and concepts of structural engineering and building physics, and use them for designing steel, concrete and timber structures and buildings,
- apply the appropriate experimental methods for the analysis of mineral-based materials, and
- describe alternative management methods and use them for planning and controlling construction processes.

The programme strives for the development of working life skills like analytical and critical thinking, multidisciplinary teamwork and collaboration, and communication for scientific and technical professionals. The aspects of professional ethics and social and environmental responsibility are integrated into the education of the programme.

## Degree structure

The master's degree consists of the major studies, elective studies and a master's thesis.



The major studies (60 cr) are divided into common and advanced studies. The common studies courses (30 cr) are compulsory for all and they are completed in the beginning of the studies. In the advanced studies (30 cr) students can choose from a variety of courses that are offered under thematic topic groups: construction management, construction and maintenance, building performance, structural engineering, and structures and architecture. Students may freely combine courses from different topic groups as long as course specific prerequisites are followed (the prerequisites are listed in the course descriptions in WebOodi).

For their elective studies (30 cr) students can choose any courses offered at Aalto University, including the advanced courses within the Building Technology programme.

Professors of the programme have prepared suggestions for how to create meaningful combinations of courses for dedicated fields of specialization. These ready-made [Study paths](#) will help you to choose courses for your advanced and elective studies.

At the end of their studies, students are required to complete a master's thesis (30 cr).