

Civil Engineering & Environmental Studies (B.Sc.)

Program of Study:	Civil Engineering & Environmental Studies
Department:	Civil Engineering & Surveying
Degree Awarded:	Bachelor of Science
Form of Study:	full-time undergraduate study on campus
Language of Teaching:	German
Commencement of Study:	Fall trimester
Standard Period of Study:	3 years
Academic Counseling:	Department Chair of Civil Engineering & Surveying
Homepage:	http://www.unibw.de/bauw

I) Program Description

The subject “Civil Engineering & Environmental Studies” includes all aspects of scientifically based planning and construction projects and their integration into the natural and man-made environment. Construction sites can be thought of as intrusions into the pre-existing infrastructure and the surrounding natural environment. The aim of civil engineering is to determine the effects of construction activity by employing scientific methods; to organize construction projects in consideration of stability, functionality, durability, and cost-effectiveness; and to develop and manage construction sites in light of these factors.

The initial stage of the bachelor’s program in Civil Engineering & Environmental Studies is mainly devoted to mathematical and scientific theories underlying the subject. In addition to mathematics, emphasis is also placed on mechanics and materials science. Courses in structural design and structural physics complement these theory-oriented seminars and provide the first crucial link to the practical application of the students’ theoretical knowledge. In the remainder of the program, students are introduced to the three main branches of civil engineering:

- Construction Engineering (building and bridge construction as well as underground engineering, including planning and calculation),
- Water Engineering and Geotechnics (river and coastal engineering; environmental engineering; planning, calculation, construction, and operation of waterway constructions, water supply and disposal systems), or
- Transportation and Urban & Regional Planning (planning, construction, and operation of traffic facilities in consideration of environmental issues).

In preparation for a master’s program in the field, this bachelor’s program offers students the opportunity to begin specializing in one of these three branches.

In addition, the departments of Electrical Engineering & Information Technology, Aerospace Engineering, Computer Science, and Civil Engineering & Surveying cooperatively offer an area of concentration known as “Mathematical Engineering”.

II) Prerequisites

The program in Civil Engineering & Environmental Studies is an attractive option for candidates who enjoyed their high school coursework in mathematics and science. An interest in the various facets of construction is an important motivation for choosing this diversified program of study.

III) Preparing for Study

We recommend that new students refresh their knowledge of mathematics and physics prior to the commencement of their studies. General computer skills are also important.

IV) Abilities & Tendencies

Prospective students should be interested in technological issues and in issues relevant to the environment. In addition, it is important that students be willing to work on projects in an interdisciplinary team. Additional qualities that are helpful in this field are excellent spatial processing ability, the ability to think abstractly, and organizational talent. In general, an education in civil engineering prepares students for careers in a wide variety of fields—ranging from the building industry to high-tech branches of engineering—such that, during their studies and the first few years of their professional lives, students can develop skills in their individual areas of concentration and earn the appropriate qualifications for a career in that particular area.

V) Structure of the Program

In the first year of the program, students attend courses covering mathematics, structural mechanics and statics, geodesy, environmental studies, design, and experimental and structural physics.

In the second year of the program, students concentrate on the foundations of water engineering, transportation planning, and construction engineering, focusing on one these areas in depth, depending on the area of concentration chosen by the student. All second-year students are required to attend lectures in computer science for civil engineers, materials science, and geotechnics. During the summer break, students take part in an extended field trip and an internship.

In the third year, all students attend lectures in environmental studies, construction project management, urban and regional planning, computer science for civil engineers, and construction operation. Students also work on an interdisciplinary project in the third year of the program. Depending on the student's area of concentration, additional lectures are attended in the areas of geotechnics, water engineering, statics, or computer science for civil engineers. The program concludes with the bachelor's thesis at the end of the third year, for which three months are allotted.

VI) Careers

Graduates in the field of computer science are prepared for a wide variety of careers. The fields of activity open to civil engineers include many areas of engineering:

- Mechanics and statics
- Development of software for civil engineers
- Construction engineering, e.g. construction of bridges, industrial facilities, etc.
- Materials
- Construction of transportation routes, e.g. roads, railway tracks, canals, airports
- Geotechnics, e.g. foundation works, soil mechanics, etc.
- Hydraulic engineering, e.g. dams, weirs, hydroelectric power plants, renaturation of rivers
- Construction operation
- Waste engineering and water management

Engineering firms, construction companies, and public authorities also offer a wealth of career opportunities for civil engineers. In addition, many civil engineers work as consultants or appraisers.

VII) Further Information

For more information on study at the Universität der Bundeswehr München and the application process, please visit www.unibw.de/studienberatung. As a student at the Universität der Bundeswehr München, you can also complete a portion of your studies abroad. You will find information on our exchange programs and partner universities at www.unibw.de/auslandsbuero.