MSE | MASTER OF SCIENCE IN ENGINEERING

Natural Phenomena and Geotechnics

Major projects such as the New Alp Transversal road and rail routes, new road systems in towns and agglomerations, large shopping centres or apartment blocks, as well as avalanche or rockfall shelters would not be possible without the sound knowledge of geotechnical engineers. There are great planning uncertainties involved in the properties of the subsoil, the water and the groundwater and in how they are interpreted from a structural engineering point of view. Geotechnical engineers therefore hold important key positions in the planning, development and construction of buildings.

The Bern University of Applied Sciences is a noted partner for business, public authorities and professional associations in the area of natural phenomena and geotechnics. Our competence is attested by service projects, expert evaluations and applied research and development projects. One cornerstone of this success is our longstanding cooperation in research and teaching with the Geological Institute of the Berne University. Our shared, internationally accredited, laboratory allows for informal and uncomplicated exchanges of differing approaches.

Experienced and competent staff, with access to well-equipped laboratories and field instruments, provide an ideal backdrop for your master's degree course. The lecturers take part in professional and scientific panels and have wide-ranging networks of contacts.

Course contents

During the course, you will learn how to analyse geotechnical tasks on the basis of current research projects by gathering, evaluating and rating the fundamentals. Project work will teach you about the instruments used in geotechnical engineering for scientific drafting, enabling you to compare them and apply them to sample problems. You will be introduced to various measurement tools (e.g., analytical, numerical or empirical methods), so that you will later be able to translate projects into practice.

Projects and the master's thesis are prepared on the basis of current research and service projects. The focus is on utilitarian and protective construction.

Geotechnical engineers design utilitarian and protective structures to neutralise potential problems.

Bern University of Applied Sciences
Architecture, Wood and Civil Engineering

As part of your specialisation in «Natural Phenomena and Geotechnics», you will acquire greater expertise in one or more of the skill sets below. You may also combine them with skill sets from another specialisation area within the Master Research Unit «Integral Planning and Construction».

Natural phenomena

As a specialist in natural phenomena, your activities will be concentrated on structures aiming to protect people from natural phenomena, such as unstable mountainsides, avalanches and rock falls. The aim of your work is identifying and neutralising dangers. You achieve this not only by designing protective structures that absorb impact, but also by developing concepts and models for reducing the effects and implications of natural events. These will simplify whatever engineering measures are required and increase their effectiveness.

Geotechnics

As a geotechnical engineer, you will work at the interface between geosciences and civil engineering. The «building materials» you will be dealing with on site will have been placed at your disposal by nature herself. As the scope for influencing these building materials is fairly limited, the tools at the disposal of the geotechnical engineer are specifically limited by the constraints of each situation and can only used within those constraints.

You will be ideally qualified to work for businesses, planning offices, public authorities or insurance companies.

Conditions of admission

Bachelor of Science in Civil Engineering (FH, ETH)
Dipl. Ing. in Civil Engineering (FH, ETH)
Geo- and Environmental Sciences with additional bachelor's-degree level credits in civil engineering

Applicants with qualifications in other disciplines will be considered on the basis of written applications

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