

Branch: Agriculture



Code: ENGHYD

Option: Engineering and hydrogeology

Level: Master

Prerequisites:

Opportunities:

Graduates in engineering and hydrogeology have opportunities in research and in various fields of public administration. Other opportunities are available in national and international engineering offices.

Description:

The Master's program in Engineering and Hydrogeology enables students to work independently on complex tasks in applied geology. The already existing knowledge of facts and methods is extended, deepened and systematized through individual focal points.

What is the purpose of this study program?

The aim of the Master's program is to provide in-depth knowledge of applied geology. The elective modules allow for an individual study profile in the field of engineering and hydrogeology.

Engineering geology, as a subfield of geotechnics, represents the link between the natural scientific disciplines of geosciences and engineering sciences. Engineering geologists are concerned with the study of the natural subsurface and the development of subsurface models for engineering problems. They work in an interdisciplinary manner with geotechnical engineers, civil engineers,

geodesists, mining engineers and mechanical engineers for the planning and execution of measures in the fields of road construction, special civil engineering, tunnel and cave construction, mining, extraction of raw materials and natural stones, remediation of contaminated sites and containment of natural hazards.

Slope movements are among the most important natural hazards and often threaten infrastructure and human life. Therefore, the slope movement department analyses different types of gravitational mass movements (e.g. landslides, debris flows, rock falls) using geological, geophysical, hydrological and geodetic information and establishes an appropriate monitoring system to provide early warning of possible hazards.

Hydro geologists are interested in the Earth's water cycle, i.e. the spatial and temporal distribution of water in the atmosphere and in and on the Earth. The biological, chemical and physical properties of water are of great importance. Hydrogeology therefore provides the basis for answering important questions about water as a resource for the future. Particular challenges are the supply of drinking water to 7 billion people, the sustainable use of the natural resource "groundwater", the spread of pollutants in groundwater and the treatment of soil and groundwater contamination.

Quality and competences:

As a graduate, you will have a wide range of skills, abilities and knowledge in the field of applied geology, particularly engineering and hydrogeology. You will act as an interface between the geosciences and engineering sciences, understand geological-technical problems and grasp interdisciplinary relationships. You accurately represent geological conditions in the field on maps and profiles and use appropriate field, laboratory and calculation methods for your work.

Depending on your choice of specialization, you will not only have distinct core skills in engineering and hydrogeology, but also additional subject-specific knowledge. For example, you may focus on applied quaternary geology, geostatistics, slope movement mapping and geoinformation systems, numerical modelling, mineral resources, engineering rock science, engineering and applied hydrogeology and chemical analysis. Many courses based on group work have

also enabled you to develop a high level of social skills and you are always aware of the ethical and moral framework in your work.