VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF CIVIL ENGINEERING

Civil Engineering

Study branch: Building Materials and Diagnostics of Structures

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Faculty	Faculty of Civil Engineering
Type of study	Bachelor
Language of instruction	English
Code of the branch	S07
Regular period of the study	4 years
Cost	50,000 CZK per semester
Department	Department of Building Materials and Diagnostics of Structures
Coordinator	prof. Ing. Antonín Lokaj, Ph.D.
Keywords	Building testing, Building materials, Diagnostics and rehabilitation of building structures, Excursions and field lessons, Environmental aspects in civil engineering

About study programme

Graduate of the bachelor's program with specialization in Building Materials and Diagnostics of Structures will acquire theoretical and practical knowledge in a variety of study activities including excursions, field lessons, realisation of testing methods by modern equipment and also theoretical lessons with participation of practice experts. The characteristic is an individual approach, which corresponds to the conception of final work based on practice requirements and especially the student's interests. The program completion provides students with a general overview about building structures, current and latest building materials, its development and testing, diagnostics and rehabilitation of building structures, as well as environmental issues of building impact on the environment.

Graduate's employment

Graduates of the Building Materials and Building Diagnostics specialization find employment in a wide range of construction companies, especially in the company management of manufacturing, OSH and fire safety, as production and construction technologists, construction specialists, technical advisors, or as employees of state and private testing and research institutes. After fulfilling the requirements for professional practice, the graduate will meet with the conditions for authorization in the field of Testing and Diagnostics of Structures. The graduate will be theoretically equipped for the follow-up university master's study of technical study of related study programs at the Faculty of Civil Engineering VŠB-TU Ostrava or at other building faculties in the Czech Republic and abroad.

Study aims

The aim of the bachelor's degree with specialization Building Materials and Diagnostics of structures is to prepare the graduate for work in the building practice, for which he will acquire relevant theoretical and professional knowledge and skills. After the first two years of joint study, focusing on theoretical basis and basic technical subjects, students continue in the specialization Building Materials and Diagnostics of Structures, where they will gain knowledge focused on specific areas:
- application of building materials to building structures, material compatibility, durability,
- application of building materials in relation to the required mechanical, physical and thermal-technical properties of building structures,
- design and development of building materials, sourcing of raw materials,
- production of building materials and elements, range of products and its practical application,

- the impact of the whole lifecycle of building materials and structures on the environment, recycling, the principles of sustainable development,
- the role of testing and quality issues in the civil engineering,
- issues about diagnostics of structures - requirements for building structures, defects and damages, diagnostic methods for assessment of structures and materials,
- rehabilitation of structures - rehabilitation methods for masonry, steel, concrete and timber structures, historical structures, rehabilitation of surface finishes of structures or the requirements and assessment of repair materials themselves,
- the issues of design and implementation of building structures in relation to building materials.

They also work on their final (bachelor) work in these areas. The study of specialization, thanks to the previous joint study, allows the student's flexibility to move to any area of civil engineering activity. In the fourth year, in addition to specialized vocational subjects, students prepare projects related to their final work. The study program is completed by verifying the knowledge of two thematic areas arising mainly from the profiling subjects and defending the final bachelor thesis.

Graduate's knowledge

A graduate of the bachelor's program with a specialization in Building Materials and Diagnostics of Structures will gain broad knowledge in the field of civil engineering, deepened in the theoretical and practical knowledge about the design, production and testing of building materials, about methods of solution and application of a specific design concept or diagnostic method, about understanding the possibilities, conditions and limitations of methods application and concepts in practice. The graduate is able to apply the acquired professional knowledge on the basis of a generally defined task, which results from the specific requirements of practice.

Graduate's skills

The graduates of the bachelor's program with a specialization in Building Materials and Diagnostics of Structures have the necessary skills in terms of using terminology, application of test methods and evaluation of building materials, performance of investigations and proposals for rehabilitation interventions and environmental issues. The graduate is able to apply the acquired professional skills on the basis of a generally defined task, which results from the specific requirements of practice.

Graduate's general competence

Graduates of the bachelor's program with specialization in Building Materials and Diagnostics of Structures are able to use engineering approaches for solving problems based on generally accepted computational methods and procedures, including standard and specialized software applications. They are able to evaluate new knowledge and acquire new expertise knowledge, skills and capabilities through its own creative activities. The above mentioned knowledge can be applied by the graduates in the construction practice, where they can get find employment in management positions of design and production organizations in civil engineering, as construction manager, technologist, construction specialist, technical advisor, employee of management and quality control, employee of state-owned or private testing and research institutes or as a private businessman. The graduate also has the possibility to continue on a master study program either at the university at FAST VŠB-TU Ostrava or at another technical university in the Czech Republic or abroad after master's degree. They can be also accredited as an Authorized Engineer in the field of Building Structures and specialization Testing and Diagnostics of Buildings after fulfilling the requirements set by the Czech Chamber of Authorized Engineers and Techniques in the Constructions.

Professions

- Specialist of technical building investigation
- Testing services or laboratory specialist
- Research and development specialist
- Civil engineering technologist
- Technologist of building materials production

Hard skills

- Knowledge of environmental and waste management legislation (Chemical Substances Act, Waste Act, EIA)
- Knowledge of construction chemistry
- Knowledge of PC basic programmes
- Knowledge of non-destructive testing