

## FOREWORD

### FROM THE HISTORY OF THE FACULTY

The Faculty of Civil Engineering (FCE) was founded in 1938 as the first faculty of the Slovak University of Technology (SUT). It was originally located in both Košice and Martin. The launching of its first departments laid the foundations not only for the present Faculty, but also for technical education as a whole in Slovakia. Instruction was given by three departments: the Department of Building Construction and Transportation, the Department of Water and Cultural Engineering, and the Department of Surveying.

In 1939, the Faculty moved to Bratislava. There, two branches, which later became faculties of SUT, the Branch of Construction Engineering and the Branch of Specialised Sciences, were formed. Another organisational change was adopted during the academic year 1946-47, when the Department of Architecture and Civil Engineering was established.

In 1950, the Department of Architecture and Construction Engineering became independent, thus creating the foundations for the new Faculty of Architecture and Building Engineering (FABE). In the same year the Faculty of Civil Engineering (FCE) was founded, and the Department of Geodesy became affiliated with it. Another significant change in the organisational structure of SUT was adopted in 1960, when the Faculty of Civil Engineering and the Faculty of Architecture and Building Engineering merged to create the new Faculty of Civil Engineering. The FCE retained that structure until 1976, when four departments providing instruction in architecture and urban planning left to create the new Faculty of Architecture.

In the last sixty years the Faculty has produced almost 27,000 graduates and 850 PhD's. The Faculty of Civil Engineering is now the largest engineering faculty at the University and in Slovakia as a whole. Shaped by a number of outstanding personalities in science and technology, the Faculty has become a leader in research and education in the fields of civil engineering and geodesy in Slovakia.

The Faculty of Civil Engineering presently consists of 22 departments, together with the Institute of Forensic Engineering, a Computing Centre and a Learning Centre. More than 350 employees make up the Faculty staff, which consists of 40 professors and 89 associate professors. Approximately 3,200 undergraduate and 180 PhD. students are currently enrolled at the Faculty. Degrees from the Faculty provide a passport to rewarding professional careers in civil engineering, architecture, geodesy and cartography.

The Accreditation Committee of the Government of the Slovak Republic confirmed the ability of the Faculty to award the Bc. degree in 5 branches and the MSc. degree in 11 branches in graduate-study courses as well as the PhD. degree in 11 branches. Simultaneously, the Faculty has also obtained the right to appoint associate professors and professors. This results in the periodical evaluation of the Faculty's scientific research and education, which represents the very high level of all the Faculty's activities.

### EDUCATION

#### System of study

A new system of study introduced after 1989 at the Faculty has recently been further updated to a credit-based modular-unit system. The first part of the study, a three-year course (180 credits) leads to a bachelor's degree. It gives the student the theoretical background necessary for further specialisation together with the basics of civil engineering. To broaden the

students' educational perspectives, courses in the arts and social sciences, including philosophy, sociology, law, psychology and aesthetics, were added to the curricula.

The second part of the system, which is aimed at developing special skills in the appropriate discipline, is completed by a thesis, the successful completion of which results in the award of the Diploma in Civil Engineering - Dipl. Ing., an M.Sc. equivalent degree. This part lasts two years (120 credits) and permits students to implement their individual goals for their vocational education and specialisation. Thereafter, a three-year Ph.D. study programme in all the major theoretical civil engineering subjects is offered to students with a M.Sc. degree.

The new study plan provides three means by which foreign students can attend courses offered by the Faculty. Presently, they can enter the B.Sc. and M.Sc. courses held in Slovak after taking a Slovak language course. An English-language M.Sc. programme is currently being prepared for foreign students and will initially be open to approximately 20 participants. An individual study programme is arranged for each Ph.D. candidate. The candidate is monitored by a supervisor and a doctoral committee. The study programme also includes teaching activities and a seminar in a foreign language. Ph.D. students can pursue their doctoral thesis in Slovak or a foreign language.

The civil engineering training is supported by education in foreign languages (English and German) at all levels of instruction provided by the Department of Languages. Instruction in the Slovak language is also offered for foreign students. The engineering training is also supported by an extensive offering of athletic activities by the Department of Physical Education.

## Courses

Bachelor degree courses are available in the following fields:

- Civil and Transportation Engineering,
- Water Resources Management and Hydraulic Structures,
- Geodesy and Cartography,
- Building Structures,
- Environmental Engineering.

The successful completion of higher secondary education, a school-leaving examination and passing the university entry examination are prerequisites for admission.

Master's degree courses, which require a bachelor's degree or its equivalent in a relevant subject discipline as a prerequisite, can be taken in:

- Civil and Transportation Engineering,
- Water Resources Management and Hydraulic Structures,
- Geodesy and Cartography,
- Architecture and Building Structures,
- Economics and Building Industry Management,
- Materials Engineering,
- Building Services,
- Building Technology.

Graduates can conduct Ph.D. studies and research in the following fields:

- Theory and Construction of Building Structures
- Applied Mechanics and Mechanics of Solid and Flexible Bodies,
- Hydrology and Water Resources Management,
- Hydraulic Engineering,
- Sanitary Engineering,
- Geodesy and Geodetic Cartography,

- Theory and Construction of Civil Engineering Structures,
- Industrial and Branch Economics, Economics of Trade and Industry,
- Non-Metallic and Building Materials Science,
- Building Technology,
- Applied Mathematics.

### **Civil and Transportation Engineering programme**

Structural engineering and transportation engineering graduates are qualified to perform static design and organise and manage civil engineering work, such as the construction of bridges, high-rise buildings, industrial structures, foundations and underground structures, as well as special building constructions made of concrete, masonry, steel, timber, stone, soil, rock and newly-developed material composites. They are also qualified for the planning, management, implementation, maintenance and reconstruction of transportation-related structures (roads, motorways, airports, railways and buildings) and work in the related fields of urban network planning, transportation infrastructures and traffic engineering).

### **Water Resources Management and Hydraulic Structures programme**

Graduates acquire skills which are applicable to multidisciplinary areas such as hydraulic engineering, reservoir design, river training and the restoration of rivers, land reclamation and management, erosion control, water resources management, hydraulic structures, hydro-electric plants, water transport, drinking water supplies, waste water and sludge treatment, integrated water quality management, and industrial and municipal waste disposal.

Graduates of water resources management and engineering are qualified to work in design and consulting offices, local and governmental offices in the fields of water resources management and the environmental sector, research institutes, institutions managing water resources and operating hydraulic structures and can hold responsible positions in water related industries.

### **Geodesy and Cartography programme**

Geodesy and cartography graduates are qualified specialists in GIS, photogrammetry, remote sensing, cadastre, land surveying, engineering geodesy, underground surveying, topographical and subject cartography, cartographic design, and land consolidation and management. They find employment in many fields such as geodesy and cartography, defence, the construction industry, transport, power engineering, water management, agriculture and education as well as in scientific and research institutions.

### **Architecture and Construction Design programme**

The Architecture and Construction Design programme at the Faculty of Civil Engineering offers the following modules:

- Architecture and Building Structures
- Economics and Building Industry Management
- Material Engineering
- Building Services
- Building Technology.

Graduates of the Architecture and Building Structures module will find employment in design, architectural and static studios dealing with dwellings, civic, industrial and agricultural structures, investment organisations, research establishments and business management. They are also qualified in advanced planning concepts with reference to the technical aspects of architecture.

The Economics and Building Industry Management module aims at the education of engineers qualified to be managers or owners in small and medium-sized construction companies. They are qualified for positions as contract specialists, quantity surveyors, economists, cost estimators, project managers, financial managers and managers for marketing and strategy as well as specialists for advisory activities in related areas.

The Material Engineering module provides training in the material sciences in the connection with applications in the construction industry. Research as well as testing and other activities involving construction materials are stressed. Graduates are prepared for careers in the manufacture of building materials, units and prefabrications, the production of concrete mixing plants, research development and innovation in building materials and structures, consulting work as specialists in the selection of materials for work projects and testing building materials in specialised and authorised laboratories.

Graduates of the Building Services module are specialised in the design of sanitary installations, heating systems, ventilation, and air-conditioning. They are competent in the design, implementation and maintenance of the technical equipment of buildings. They are also trained for positions in management and fire protection, as well as scientific research work in these fields.

In the Building Technology module, specialists are trained in the preparation and management of construction and civil engineering structures. They are also qualified for management positions in construction and contracting or as independent entrepreneurs. Their sophisticated knowledge of civil engineering structures and special training in the theory of building technology production, which involves public and scientific-technical developments, equip graduates to become involved in creative engineering activities.

### **Environmental Engineering Programme**

The programme aims at the training of specialists in environmental structures, environmental engineering of internal and external environments, waste management, landscape and urbanised territories, transport management and longevity of structures. The programme also includes the environmental sciences, geoinformatics, project and personnel management, programming and automation of engineering and environmental, land and commercial law.

The graduate is suitable for positions as an executive state administration employee in the field of environmental politics, local administration, environmental protection, water management, engineering networks, waste management and environmental management. Other possibilities are landscape planning designer, environmental structures designer and environmental projects manager.

## **RESEARCH**

### **Focus and priorities**

Basic and applied research conducted at the Faculty is funded by a system of internal and external research grants from governmental and other sources. The Faculty's extensive participation in consulting activities, expert advice for governmental and local authorities and co-operation with the building industry contribute significantly to the funding of the research and international activities of the 22 departments. The Slovak Journal of Civil Engineering, the Faculty's scientific journal, and a regularly published Annual Report, both in the English language, provide a detailed account of all instructional and scientific activities.

Environmental issues involving civil engineering design, including environmental impact assessment, have become a primary concern of the Faculty. Research priorities set by the Scientific Board of the Faculty include:

- new methods for improving the structural qualities of buildings

- structural and dynamic safety and reliability of engineering structures
- diagnoses of structural failures
- ecologically sound design of traffic structures and traffic management
- quality management in traffic engineering
- geotechnical systems of groundwater protection
- analysis of negative interactions between structures and geological conditions
- impact of hydraulic structures on the environment
- global change and the sustainable use of water resources
- integrated land and water resources management
- water quality management
- the use of geographical information systems (GIS) in real estate land registers
- urban information systems
- revitalisation and modernisation of working and living environments
- sustainable use of natural resources in the building industry
- reducing energy demand in buildings
- the use of alternative energy sources, including solar power
- innovative building design concepts
- the use of new materials and technologies in the building industry
- the use of recycled industrial waste in the production of new building materials
- quality management in civil engineering
- the use of optimisation methods in civil engineering design

The Faculty's specialists and their teams have participated in the design, implementation, and inspection of many significant and unique engineering structures, including all the bridges across the Danube River, the Gačikovo Hydroelectric Power Station, the Mochovce Nuclear Power Plant and the Slovnaft Refinery. A co-operative agreement between the Faculty of Civil Engineering and the city of Bratislava is aimed at solving problems related to the development of the capital of Slovakia, including municipal transport.

The Faculty also collaborates with the Slovak Institute of Technical Normalisation. A number of experts from the Faculty are members of its technical normalisation commissions on building codes geodesy and cartography. The Faculty has become a consultant to the Commission of European Normalisation (CEN), and representatives of the Faculty participate in various CEN commissions.

### **International activities**

The Faculty's international activities focus on the following priorities:

- co-operation with faculties, departments, and institutions active in research and development in various civil and environmental engineering disciplines
- promotion of the Faculty's participation in multilateral research programmes with special emphasis on EU projects
- supporting activities enhancing the Slovak University of Technology's international status as a research university
- active participation in existing programmes of international co-operation, such as TEMPUS, the 5<sup>th</sup> Framework Program, LEONARDO, SOCRATES and CEEPUS.

The Faculty is currently affiliated with more than 60 international governmental and non-governmental scientific organisations. The Faculty is an active member of the International Association of Civil Engineering Faculties (IACEF) and a guest member at the Permanent Conference of the German-Speaking Countries' Civil Engineering Faculties.

In recent years the international activities of the Faculty have been supported through participation in several TEMPUS and CEEPUS projects, the TEMPRA programme supported by the French Government, the SALP programme supported by the British Council, and projects

funded by diverse governmental and independent foundations, such as Fulbright grants, DAAD grants, the British Government's Know-how Fund, the Open Society Fund, and various diverse NATO, COST, and the 5<sup>th</sup> Framework Program projects. These have significantly strengthened the Faculty's professional profile, improved its computer and laboratory equipment and enriched its libraries. More than 50 students and PhD. students of the Faculty have taken part in study programmes abroad.

## SERVICES

### Learning Centre and the Computing Centre

The Library offers lending services for more than 105,000 publications. The reading room provides direct access to domestic and foreign professional periodicals. It has 23 branch libraries in the Faculty departments. The Library is an active member of the Association of Slovak Libraries and its section of academic libraries. It has also started co-operation with foreign civil engineering libraries and information centres.

Significant investments have been made in recent years to increase the University's computing capabilities. A LAN network is installed on campus. Several classrooms equipped with PCs support the educational process. Internet and e-mail services are offered to staff and students.

### Campus life

Student accommodation is available in student residences in double rooms. Student canteens provide lunch and dinner. There is an on-site medical service. Excellent athletic facilities are located on the university campus and student residences, including gymnasia, heated indoor swimming pools, a boathouse, tennis courts, football and athletic pitches as well as recreational facilities at a baroque mansion house in Kočovce near the famous Piešťany spa and a chalet in the Low Tatra Mountains situated near a popular ski resort.

We trust that the 2000 Annual Report will afford some basic information about the Faculty of Civil Engineering, Slovak University of Technology.

Prof. Dušan Petráš, PhD.  
Dean of the Faculty

I would like to thank my colleagues - vice deans - Prof. Ľudovít Fillo, PhD.  
Prof. František Ohrablo, PhD.  
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