

BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS  
FACULTY OF CIVIL ENGINEERING  
STRUCTURAL ENGINEERING MSc PROGRAM  
SPECIALISATION IN STRUCTURES

The basic aim of the Specialisation in Structures is to deepen and complement the knowledge acquired in the bachelor programme in the field of structural engineering and to enable the student to perform high-level design, expert and research tasks. The Specialisation focuses on the following areas.

Basic practical procedures in engineering assessment and design, statistics, probability, reliability analysis, numerical methods, risk assessment and optimisation. All these will also serve to build on the foundations laid here in the related modelling, design and programming courses in the Master's programme.

Risks of structures, methods of structural reliability and analysis and their consideration in design. In this context, students will learn about the behaviour, modelling, analytical and numerical solutions and design specifics of more complex structures (beam, plate, disc, shell, space truss, suspended structures, cable and tensile membrane structures).

Theoretical and mathematical foundations of structural stability theory and engineering warping theory, analytical and numerical calculation methods, advanced Eurocode-based design procedures and their practical applications.

Structural designs and special features of prestressed structures, characteristics of materials and prestressing technologies used in prestressing, Eurocode-based design procedures for prestressed bridge and other structures and their practical applications.

Infrastructure construction: structural design, construction issues and structural analysis of hydraulic structures, water and wastewater storage and treatment structures, underground structures, reinforced concrete structures for tunnels, underpasses, road and railway bridges.

Diagnostics of structures of different materials and structural systems, principles of classification of buildings, possible causes of failure of structures, methods of repair of damaged structures and methods of strengthening.

The mathematical basis of fracture mechanics, the methods of design of structural engineering materials and structures based on fracture mechanics, as contained in the Eurocode standard.

The basic aim is that the student who has completed the specialisation will be able to solve a problem related to structural engineering independently, by deepening his/her knowledge in one of the above topics, and to master the methods of literature research, knowledge organisation, comprehensive problem-solving, methodology of expertise and research and development.

Chair of Specialisation

Dr. László Dunai

professor

Department of Structural Engineering