GENERAL REQUIREMENTS FOR ENTRANCE EXAMINATIONS TO MASTER DEGREE STUDY AT THE FACULTY OF CIVIL ENGINEERING CTU IN PRAGUE

Study programme: Civil Engineering / Stavební inženýrství
Branch of study: Building Structures / Konstrukce pozemních staveb
and
Study programme: Civil Engineering
Branch of study: Building Structures


Building services – Wastewater disposal, internal and external sewage systems, water supply, interior and exterior water distribution systems, exterior and interior gas piping, discharge of combustion products, indoor environment in buildings, heating of buildings, hot water preparation, heat sources, ventilation and air conditioning systems, fundamentals of cooling systems, low and high voltage wiring in buildings, fundamentals of artificial lighting, lightning conductors.


Concrete and masonry structures – Concrete technology - composition, production, properties and testing of concrete. Design of reinforced concrete members and structures - preliminary design, loading effects, computational models and methods, load-bearing capacity for basic loading cases (bending, shear, extruding, combinations of moment and normal forces, torsion), serviceability, design principles, reinforcement. Design principles of prestressed concrete members. Properties of masonry units, mortar, material properties of masonry, design of masonry elements to resist stress effects due to vertical and horizontal loads.

Steel and timber structures – Material properties of steel, production of steel structures, design of steel rods and joints. Composite steel-concrete structures. Protection against corrosion and fire. Steel structures of buildings and halls - typology, design of parts of structures, spatial rigidity. Properties of timber and wood-based materials, design of timber elements and connections, planar and spatial timber structures. Design to resist fire effects, protection from deterioration.

Geotechnics - Properties and classification of soils, engineering-geological survey, water in soil, stresses in soil, laboratory testing of soils, deformation characteristics of soils, consolidation, compaction, shear strength, earth pressure, slope stability, shallow foundations, deep foundations, construction pits and their securing.
Study programme: **Water and Environmental Engineering**


**Hydrology.** Basic hydrological and meteorological parameters. Statistical assessment of discharges. Rainfall-runoff relations. Flood wave transformation.

**Water Management.** Basic principles of water purification and wastewater treatment. Drinking water supply (water resources, intake systems, water processing plants, storage tanks, distribution systems). Wastewater discharge and treatment (types of wastewater, wastewater treatment plants, sewer systems and their parts).

**Hydraulic Structures.** Basics of design and operation, objects and technologies of the following structures: dams, weirs, channels, waterways. Water energy use (types of hydropower stations and their technologies). Flood control (types of flood protection structures, design discharges for flood protection structures).

**Environmental Engineering.** Hydropedology (physical properties of soil, hydrostatics and hydrodynamics of groundwater). Irrigation (irrigation parameters and structures, drought assessment). Water drainage (types of drainage structures and their basic parameters). Soil erosion in landscape (types of erosion and types of protective measures). Climate change (causes, environmental impacts, adaptive and reducing measures).

2nd November 2020

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