Assistance for preparing for the complex exam

Structural construction specialization

The preparation for the complex exam is supported by a guide consisting of 25 topics. The guide contains the topics on the basis of which the Final Exam Committee compiles the questions for the candidate. The guide displays the complexity of the knowledge learned by the student during the training.

a) Basics of design of load bearing structures, structural construction

1) Basic principles of Eurocode (limit states, loads, load combinations, etc.)

2) Aspects of structure selection in building construction

3) Bracing options for building structures

4) Effect of accidential loads on structures (earthquake, fire, collision)

b) Steel structures

1) Classification of steel cross-sections, resistance of cross-sections

2) Buckling of centrally compressed steel bars

3) Welded and bolted connections of steel structures

4) Design of frames depending on the span

5) Design of trusses and their connections

c) Reinforced concrete structures

1) Resistance of cross-sections; Characteristics of the behavior of normally, under- and over-reinforced cross-sections; Mörsh's truss model; N-M capacity diagram and its application in the examination of eccentrically pressed bars

2) Servicebility limit states: Principle of calculation of deflection and crack width according to EC2.; Possibilities to reduce the degree of deflection and crack width

3) Characteristics of the static behavior of one-way and two-way slabs

4) Design of mushroom slabs, characteristics of their static behavior

5) Main principles of the design of prefabricated reinforced concrete structures, scope of application

d) Timber structures

1) Factors affecting the strength of timber materials, strength, stability and deflection examination of timber structures

2) Damaging effects of timber structures, insect, fungal and fire protection of timber materials

3) The main types of timber roof structures, their design, and static frame

e) Geotechnics

1) Classification and condition characterization of soils, water movements in the soil

2) Mechanical properties of soils

3) Shallow foundation (design and construction issues)

4) Deep foundation (design and construction issues)

5) Earthworks and retaining structures (design and construction issues)

f) Bridge construction

2) Types of bridge structures

2) Basics of bridge sizing

g) Construction organization

1) Construction site organization, construction schedule