

**Discipline:** Civil Engineering and Transportation

**Candidate's Profile:**

The persons eligible to apply for admission to the CUT Doctoral School in the scientific discipline of **civil engineering and transportation** must be graduates of: Master's Degree programmes offered by universities of technology or university Master's Degree programmes in mathematics, physics and computer science.

**Conditions of the entrance examination:**

- Profiling groups: **Civil Engineering, Transportation**
- Candidates will be divided according to **the declared profiling group**
- The examination has the form of a test composed of 20 multiple-choice closed questions – date of the examination according to the [time schedule](#) of the CUT DS recruitment process;
- Candidate interview (on *inter alia* the individual research plan) – only those persons will be admitted who have obtained no less than 50% of the total possible score in the examination – date of the interview according to the [time schedule](#) of the CUT DS recruitment process;

**Problem areas for the entrance examination:**

**Profiling group – Civil Engineering:**

- Properties and applications of building materials and products;
- Building physics;
- Building protection against corrosion;
- Strength of materials;
- Structural mechanics (statics and dynamics);
- Theory of elasticity;
- Structural systems of buildings;
- Metal, reinforced concrete, prestressed concrete, masonry and timber structures: types, structural and computational problems;
- Industrial construction;
- Bridge structures;
- Computational methods in construction;
- Road and street design, road and railway surfaces;
- Transportation servicing of urbanised areas;
- Earthwork technology;
- Concrete and reinforced concrete works technology;
- Construction structures assembly;

- Construction process organisation and planning;
- Building site management.

**Profiling group – Transportation:**

- Classifications of transportation systems;
- Logistics and its role in transportation;
- IT services in logistic orders;
- Fundamental diagram of traffic engineering (systems of traffic data detection and collection, traffic streams, transportation networks and transportation infrastructure);
- Formulation of typical problems of management in transportation;
- Organisational structures of transportation system components management;
- Freightage process in road, rail and air transportation;
- Transportation infrastructure characteristics;
- Characteristics of means of transportation;
- Freightage parameters – demand for freightage services;
- Supply of freightage services: structure and factors affecting the volume and structure of supply;
- Internal and external costs of transportation;
- Marketing vs. logistics in a transportation enterprise;
- Analysis of transportation projects efficiency; Basic legal regulations in transportation.