

Discipline: **Automatic control, electronics and electrical engineering**

Candidate's Profile

The persons eligible to apply for admission to the CUT Doctoral School in the scientific discipline of Automatic control, electronics and electrical engineering must be university graduates who have obtained the title of Master in Engineering in a study programme within the area of technical sciences or within the field of engineering and technology as well as university graduates who have obtained the title of Master or Master in Engineering in a study programme within the area of science in the field of mathematical or physical sciences in the discipline of mathematics or physics or within the field of science and natural science in the discipline of mathematics and physical science.

Conditions of the entrance examination

Profiling group: Electrical engineering

- The examination has the form of a test composed of 25 multiple-choice closed questions – date of the examination according to the time schedule of the CUT Doctoral School 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 Doctoral School recruitment process.

Problem areas for the entrance examination

- **Industrial automatic control systems** – controllers in automatic control systems, methods of electrical systems description, theory of stability, standards of industrial automatic control and data transmission, SCADA systems.
- **Digital and microprocessor technology** – A/C and C/A transducers, digital systems, microprocessors and microcontrollers, concepts of their structure and capabilities, programming languages.
- **Analog electronics and analysis of electric circuits** – semiconductor elements, division and application, basic analog circuits (including pulse systems), analysis of linear alternating current systems, three-phase sinusoidal current circuits, structures and calculations, non-linear alternating current circuits.
- **Generation and processing of electrical energy** – basic models of electrical machines, energy transducers, basic concepts of field and circuit modelling of electrical grids, power electronic converters.
- **Transmission, distribution and quality of electrical energy** – electric power system and its components, equivalent circuits and electric installations, measurements of electric quantities and statistical processing of the results, electric energy receivers and how they affect the network.