Discipline: **Automation, electronic and electrical engineering**

Candidate's Profile:
The persons eligible to apply for admission to the CUT Doctoral School in the scientific discipline of automation, electronic 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 sciences.

Conditions of the entrance examination :
- 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 to the CUT Doctoral School in the discipline of automation, electronic and electrical engineering

- **Industrial automation systems** – controllers in automation systems, methods of electrical systems description, theory of stability, standards of industrial automation 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

- **Analogue electronics and electrical circuits analysis** – semiconducting elements: classification and applications, basic analogue systems (including discrete systems); analysis of linear systems of alternating current, three-phase sinusoidal current circuits: structures and computation, non-linear alternating current circuit

- **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.