

Topics for programs Electrical Power Engineering, Power Systems and Communication Technology (MPA-EEN, MPA-EAK)

Basic laws and quantities in electrical circuits. Properties of elements of the electrical circuits. Power in electrical circuits. Time-varying behaviours of voltages and currents. Methods of analysis of linear resistor circuits. Magnetic circuits.

Harmonic steady state. Methods of circuit's analysis. RC, RL circuits, RLC resonant circuits. Multiphase systems. Power in three-phase systems. Analysis of three-phase systems in harmonic steady state. Classical and operator solution of transients in linear networks. Responses to standard and arbitrary test signals. Basic equations of transmission lines. Harmonic steady state and transient phenomena in transmission lines.

Semiconductors physics. PN-junction. Semiconductor Diode. Bipolar junction transistors. Field effect transistors. Voltage amplifier in class A and AB. Transistor switches. Multilayer switching devices, thyristor, triac. Transistor switches IGBT, JFET, HEMT. Digital Circuits. Sensors. Data transfers. Radio communication systems.

Classification measurement instruments for electrical quantities. Principles of correct measurement. Analogue measurement devices. Voltage, current, frequency, phase, power, modulation, resistance, capacitance and resonant frequency measurement. Testers. Generators. Automation in measurement. Magnetic and non-electrical measurements.

Continuous time signals and systems. Discrete-time signals and systems. Continuous-time and discrete-time random signals. Sampling and signal recovery, digital signals. Telecommunication systems. Baseband digital communications. Analogue and digital modulations in communication systems.

Evaluation of the entrance exam

The written knowledge test shall comprise 10 problems/tasks selected from above mentioned topics

The test shall last 75 minutes, and the maximum overall score available is 100.

The English language competence assessment as the other component of the entrance examination shall consist in a) a written test at the intermediate level that corresponds to the B2 class of the Common European Framework of Reference for Languages (CEFRL), and b) an oral interview. The English test shall last 30 minutes, with the maximum score achievable being 30 points; the pass threshold allowing an Applicant to sit the interview is 15 points.

The reviewing and correction of any and all entrance tests submitted for assessment shall begin immediately after the examination has ended, and the responsibility for the entire procedure and/or its outcomes shall be with the academic staff member(s) involved. The results will appear in the participants' e-application tables.