

Topics for program Electrical Power Engineering (MPA-EEN)

Fundamentals of electrical engineering: Basic laws and quantities in electrical circuits. Properties of elements of the electrical circuits. Analysis of DC and AC (single-phase and three-phase) circuits.

Electricity production: Energy sources. Thermal cycles. Thermal power plants. Nuclear power plants. Hydro power plants, pumped-storage power plants. Renewable energy sources. Electrical equipment of power plants.

Electricity distribution: Basic concepts and aspects of electrical power networks. Transmission and distribution system. High voltage, medium voltage and low voltage networks. Basic design and analysis of electrical power networks. Shunt and series compensation. Short circuits in power systems.

Substations and equipment: Electrical substations. Switchgear bay facilities. Cables and overhead lines (materials, construction, design). Fundamentals of electrical protections. Basic protection functions (overcurrent, distance and differential protection). Protection devices in low voltage systems.

Electricity use: Electrical appliances. Lighting engineering and illumination, light sources and luminaires. Electro-heat technology and equipment, electrical heating (resistance, arc, induction and microwave heating).

Electrical machines: Transformers. Induction motors. Synchronous machines. Basic principles of construction and operation, characteristics, connection to the system.

Evaluation of the entrance exam

The written knowledge test shall comprise 10 problems/tasks selected from above-mentioned topics. The test shall last 60 minutes, and the maximum overall score available is 70 points. The oral part of the exam has a form of professional discussion with the candidate about selected topics with the maximum overall score of 30 points, lasting up to 20 minutes. The oral part is conditional upon the result of the written test. The entire entrance exam is done online. Candidates are expected to have a good level of English.

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.