UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Faculty of Technical Sciences

Course title: DISTRIBUTION OF ELECTRICAL ENERGY

ECTS credit allocation (and other scores): 4

Semester: autumn

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 15+30

Course coordinator/ Department and e-mail: Maciej Neugebauer, Department of Electrical, Power, Electronic and Control Engineering, mak@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Fuse testing. Residual current device test. The flow of currents and power in power grids. The study of voltage drops and power losses in power grids. Test of heating of conductors under the influence of electric current. Testing the basic functions of the ZT-21 SMAZ Modular Protection Automation System. Testing overvoltage, undervoltage and overcurrent relays. Testing soil resistivity and grounding resistance. Short circuit loop, insulation resistance and station measurement. Testing the current transformer and its operation systems. Measurement of the quality of electricity.

LECTURES: National transmission and distribution system of electricity. Regulation of voltage and frequency in the power system. Power cables and wires. Cable lines. Overhead lines - cables, supporting structures (poles) and accessories. High, medium and low voltage networks. Overvoltage and lightning protection. Electric power protection automatics. Domestic electrical installations. Principles of operation of power lines. Disturbances and failures in the processes of transmission and distribution of electricity.

Learning purpose: Developing the habits of safe work with the apparatus used in the electricity transmission.

On completion of the study programme the graduate will gain:

Knowledge: Knows the basic elements of electric energy transmission.

Skills: Can solve simple problems in the field of electricity transmission.

Social Competencies: Can interact and work in a group, assuming different roles in it.

Basic literature: R.C. Dugan, Electrical Power Systems Quality, Third Edition, McGraw-Hill, 2012; Edited by: B.W. D'Andrade, the power grid, Academic Press, 2017; S.T. Blume, Electric Power System Basics for the Nonelectrical Professional, IEEE Press, 2016

Supplementary literature:

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 32

Student's independent work: 30