



Faculty of Electrical Engineering

WARSAW UNIVERSITY OF TECHNOLOGY

International Summer School of the Faculty of Electrical Engineering – Modern electrical engineering

PROGRAM DESCRIPTION

Program of the International Summer School of the Faculty of Electrical Engineering - Modern electrical engineering

No.	Course name	Time [h]	ECTS
1.	Introduction to the power industry	10	1
2.	Energy distribution and transmission networks	10	1
3.	Electrical installations	10	1
4.	Fundamentals of electronics and power electronics	10	1
5.	Computational methods in technics	10	1
6.	Electromobility	10	1
7.	Technical measurements and signal processing	10	1
8.	Popularization of Polish culture and education in Poland	5	0

1. Introduction to the power industry

Information on power systems (construction, structure, configurations), power substation structures, digital network modelling will be provided. Electricity sources, quality of electricity, reliability and security of the power system will be provided.

2. Energy distribution and transmission networks

Distribution and transmission networks will be discussed. Determination of power flows, estimation of loads in distribution networks and calculations of earth faults in M. The automation, computerization and optimization of distribution networks will be introduced.

3. Electrical installations

Theoretical basics, characteristics of electrical devices, methods of calculating linear electric circuits, principles of power balancing will be discussed. An overview of electrical installations



will be made and construction guidelines and coordination of electrical installations will be presented.

4. Fundamentals of electronic and power electronics

Students will learn basic electronic systems, DC/DC converters, their basic topologies and control algorithms, network converters and their application.

5. Computational methods in technics

Students will learn the practical applications of computational methods. The areas of engineering will be shown: numerical mathematics, programming and modeling. The methods will be illustrated with examples of practical applications. The course will cover an introduction to programming in MATLAB environment.

6. Electromobility

During the lectures, students will gain knowledge of electric drives in vehicles - their topologies and properties, they will learn about converter drive systems, battery energy systems and charging systems.

7. Technical measurements and signal processing

Participants will learn the basics of metrology and the construction of measuring equipment. Will get acquainted with the possibilities of basic measuring equipment: multimeter and oscilloscope as well as methods and tools for extravasation of basic electrical quantities RLC, power. Signal processing issues such as signal conditioning, A / D processing as well as time, frequency and time-frequency analysis will be discussed.

8. Elements popularizing Polish culture and promoting Poland as a country of attractive educational opportunities

Participants will learn about the culture of our country, including the contribution of Polish science to the development of world science. Films and interesting laboratories of the Faculty of Electrical Engineering as well as cultural and national heritage sites will be shown.