

Title Electronics and Power Electronics	Code 1010324241010320348
Field Electrical engineering	Year / Semester 2 / 4
Specialty -	Course core
Hours Lectures: 2 Classes: - Laboratory: 2 Projects / seminars: -	Number of credits 6
	Language polish

Lecturer:

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Status of the course in the study program:

Obligatory subject, Faculty of Electrical Engineering, Field: Electrical Engineering, Extramural undergraduate studies (BEng)

Assumptions and objectives of the course:

To provide a basic understanding of the operating of power semiconductor devices, their application and requirements in a variety of electrical systems. To introduce to the fundamental concepts of operation of basic converters used in industry.

Contents of the course (course description):

Modern power switching devices: diodes, BJTs, SCRs, GTOs, IGCTs, MOSFETs, IGBTs - overview, operation, characteristics, parameters and ratings. Losses in power semiconductor devices. Thermal equivalent circuit. Analysis of RLE circuit with thyristor. Power factor, displacement and distortion factors in nonlinear circuits. Line-frequency phase-controlled AC-DC converters: principle of operation, performance parameters. AC voltage controllers with resistive and inductive loads: topologies, phase-angle control. DC-DC converters, chopper circuits. DC-AC converters: single-phase bridge inverters of voltage and current-source types.

Introductory courses and the required pre-knowledge:

Basic knowledge of electronics and electrical engineering.

Courses form and teaching methods:

Lectures supported by transparencies.

Form and terms of complete the course - requirements and assessment methods:

Tests, written and oral examination.

Basic Bibliography:

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Additional Bibliography:

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