Title	Code
Technical Electrodynamics	**1010321261010320173**
Field: **Electrical engineering**	Year / Semester: **3 / 6**
Specialty: **-**	Course: **core**
Hours: Lectures: **1** Classes: **-** Laboratory: **2** Projects / seminars: **-**	Number of credits: **2**
	Language: **polish**

Lecturer:

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Status of the course in the study program:

Obligatory subject, Faculty of Electrical Engineering, Field: Electrical Engineering, Full-time first-degree studies

Assumptions and objectives of the course:

The student should obtain knowledge of the description and analysis of electromagnetic phenomena in electrical devices as well as knowledge of finite element method in electromagnetism.

Contents of the course (course description):

Field description of electromagnetic phenomena. Differential, integral and circuit forms of electromagnetic field equations. Boundary conditions. Two dimensional (2D) fields. Methods of electromagnetic field analysis, field and potential formulations. Integral and finite difference methods of 2D electro and magnetostatic field analysis. Finite element method. Network models of systems with magnetic and electric field. Inducted currents. Electromagnetic shields. Field method of electromagnetic torques and forces calculation. Electromagnetic levitation. Equations of 2D transient field. Numerical methods of solving diffusion equation. Implicit and explicit schemes, Cranka-Nicholson method. Professional software for electromagnetic field analysis in electrical devices.

Introductory courses and the required pre-knowledge:

Elementary knowledge of circuit theory, electromagnetism, electrical machines and numerical methods.

Courses form and teaching methods:

Lectures supported by power point presentations, laboratory exercises related to the investigation of electromagnetic phenomena and to the electromagnetic field computation.

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

Written tests, verification of knowledge during exercises, verification of exercise reports,

Basic Bibliography:

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Additional Bibliography:

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