

Title Electromagnetic Field Theory	Code 1010324231010320339
Field Electrical Engineering	Year / Semester 2 / 3
Specialty -	Course core
Hours Lectures: 2 Classes: 10 Laboratory: 1 Projects / seminars: -	Number of credits 5
	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 undergraduate studies.

Assumptions and objectives of the course:

Student should obtain knowledge and deep understanding of electromagnetic fields laws in integral/differential formulation. He/She should be able to calculate steady fields analytically and have an idea of a computer-aided approach.

Contents of the course (course description):

Introduction to the electromagnetic field theory. Electrostatic field. Coulomb's law and electric field intensity. Electric flux density, Gauss's law. Energy and potential. Conductors, dielectrics and capacitance. Forces in systems of charged bodies. Steady current electric field. Magnetostatic field. Ampere's law. Biot-Savart law. Magnetic flux and magnetic flux density. Magnetic materials. Inductance. Energy and forces in systems of current circuits. Faraday's law. Maxwell's equations. Electrodynamics potentials. Electromagnetic waves. Harmonic fields in conductors, dielectrics and dissipative media. Energy, power and Poynting theorem. Transmission lines.

Introductory courses and the required pre-knowledge:

Calculus, integrals, differential equations, vector analysis (mathematics), fundamentals of electrodynamics (physics), electric circuit theory.

Courses form and teaching methods:

Lectures supported by transparencies and slides. Problem solving sessions. Laboratory experiments.

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

Mid-term exam during problem solving sessions, written and oral examination at the end of the semester.

Basic Bibliography:

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Additional Bibliography:

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