

Title <b>Electromechanical Drive Systems</b>	Code <b>10103222110103201098</b>
Field <b>Electrical Engineering</b>	Year / Semester <b>1 / 1</b>
Specialty -	Course <b>core</b>
Hours Lectures: <b>2</b> Classes: <b>1</b> Laboratory: -    Projects / seminars: -	Number of credits <b>3</b>
	Language <b>polish</b>

**Lecturer:**

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**Status of the course in the study program:**

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

**Assumptions and objectives of the course:**

The student should obtain knowledge of the method of simulation of electromechanical system and electrical drive and methods of their control

**Contents of the course (course description):**

Magnetic circuits. Non-linear and variable structure circuits. Sommerfeld theory: energy and co-energy. Analogies of electrical, magnetic and mechanical systems. Electromagnetic forces and torques ? virtual work principle. Forces in linear and non-linear systems. Forces in alternating current circuits. Mechanical system dynamics: the Hamilton?s principle and Lagrange?s equations. Unified coordinates; unified energy and co-energy. Lagrange equations for electromechanical systems. Linear movement electromagnetic actuators: basic structures; the steady-state characteristics; dynamics.  
Mathematical models of driving systems. The circuits models: natural and transformed current coordinates. Transformation of multi-phase systems. Transformation of the rotary systems.  
The symmetrical components model.

**Introductory courses and the required pre-knowledge:**

Basic knowledge about electrical and magnetic circuits theories. The knowledge of the principles of electrical machines

**Courses form and teaching methods:**

Multimedia supported lectures, classes exercises related to practical problems

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

Verification of knowledge during the classes, tests

**Basic Bibliography:**

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**Additional Bibliography:**

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