Title	Code
(Teoria i metody optymalizacji)	**1010332111010330807**
Field: **Control Engineering and Robotics**	Year / Semester: **1 / 1**
Specialty: **-**	Course: **core**
Hours: Lectures: **4** Classes: **2** Laboratory: **-** Projects / seminars: **-**	Number of credits: **7**
	Language: **polish**

Lecturer:

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Status of the course in the study program:

Obligatory course, Faculty of Electrical Engineering, Field: Automation and Robotics, Full time undergraduate studies.

Assumptions and objectives of the course:

The study of optimisation methods and their applications in control.

Contents of the course (course description):

Linear programming - graphical approach. Simplex tableu and matrix form method. Duality in linear programming. Linear programming in discrete sets. Implementation of simplex method. Sensitivity analysis of simplex method. Unconstrained nonlinear programming. Equality- and inequality-constrained nonlinear programming. Convex optimisation. Lagrange dual problem. Iterative methods of minimisation. Interior-point methods in linear and quadratic programming. Variational calculus. Pomtriagin minimum principle. Bellman equation. Linear matrix inequalities. Multicriteria programming. Penalty function methods. Genetic programming. Solving nonlinear simultaneous equations. Interior-point methods in nonlinear programming. Nonlinear programming in discrete sets. Geometric programming. Linear complementary problem.

Introductory courses and the required pre-knowledge:

Mathematical analysis, matrix algebra, differential equations, integral calculus, control theory.

Courses form and teaching methods:

Lectures supported by multimedia presentations, exercises.

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

Test exam at the end of semester (lecture), verification of knowledge during exercises.

Basic Bibliography:

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Additional Bibliography:

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