GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mathematical Modelling Methods - project, PG_00047530
Field of study	Automatic Control, Cybernetics and Robotics

Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Decision Systems and Robotics -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Zdzisław Kowalczuk
	Teachers	prof. dr hab. inż. Zdzisław Kowalczuk

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	15.0	0.0	15
	E-learning hours included: 0.0						

Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	15	1.0	9.0	25

Subject objectives	Getting acquainted with main problems of the mathematical modeling methods on the example of projects and practical tasks.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U01] can apply mathematical knowledge to formulate and solve complex and non-typical problems related to the field of study and perform tasks, in an innovative way, in not entirely predictable conditions, by:n- appropriate selection of sources and information obtained from them, assessment, critical analysis and synthesis of this information,n- selection and application of appropriate methods and toolsn	Student is able to analyze and synthesize mathematical models used to describe real world systems.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
	[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study	Student is able to design software for the analysis and simulation of real world systems and control systems.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

Subject contents	1. Explanation of exemplary problems discussed within the scope of the subject. 2. Individual analysis of a given tasks. Development of a proposed solution to a given mathematical modeling problem, and preparation of a presentation of the obtained results.
Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project completion and presentation	50.0%	100.0%

Recommended reading	Basic literature	Z. Kowalczuk, *Mathematical Modelling Methods* - course notes. - E.A. Bender, *An Introduction to Mathematical Modeling*, Dover Publications, 2000. M. Tenenbaum, H. Pollard, *Ordinary Differential Equations*, Dover Publications, 1985.
	Supplementary literature	• Scientific papers.
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Simulation of dynamic systems described by continuous time differential equations using suitable numerical algorithms.
Work placement	Not applicable