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 2021	Academic year of realisation of subject	2022/2023
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 dr inż. Janusz Kozłowski dr inż. Mariusz Domżalski dr inż. Marek Tatara	

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.

<table>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project completion and presentation</td><td>50.0%</td><td>100.0%</td></tr>
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</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>• 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.</td></tr>
<tr><td>Supplementary literature</td><td>• Scientific papers.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Simulation of dynamic systems described by continuous time differential equations using suitable numerical algorithms.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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