GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Advanced mechatronic systems in medicine , PG_00057882		
Field of study	Mechanical and Medical Engineering		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Zakład Hydrauliki i Pneumatyki -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Ryszard Jasiński	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	0.0	0.0	30

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	30	0.0	0.0	30

Subject objectives

Familiarizing students with advanced mechatronic systems in medicine

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K03] He/she can analyze and realize given tasks proposing entrepreneur and creative activities	Student is able to analyze and carry out the assigned tasks, showing entrepreneurship and ingenuity in action	[SK5] Assessment of ability to solve problems that arise in practice
[K7_U04] He/she can use programming-communicative techniques concerning to the scope of engineering tasks	Student is able to use information and communication techniques appropriate to perform engineering tasks, including computer methods	[SU1] Assessment of task fulfilment
[K7_U08] He/she can formulate and verify hypotheses for simple engineering problems and research	The student is able to formulate and test hypotheses for simple engineering and research problems	[SU1] Assessment of task fulfilment

Subject contents

Prosthetic hand. Construction and working principle of respirators. Devices to support blood circulation (cardiovascular support, counterpulsation methods, peristaltic pumps, artificial heart). PLC programming and commissioning of mechatronic systems manipulators.

Prerequisites and co-requisites

Basics of hydraulics and pneumatics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	56.0%	100.0%

Recommended reading	Basic literature	Heiman B., Gerth W., Popp K.: Mechatronika, metody, przykłady, tł. Gawrysiak M., Wydawnictwo Naukowe PWN, Warszawa, 2001 Gawrysiak M.: Mechatronika i projektowanie mechatroniczne, Rozprawy Naukowe Nr 44, Polit. Białostocka, Białystok, 1997 Schmid D. i inni: Mechatronika, ISBN 83-7141-425-0, Warszawa 2002 Praca zbiorowa: Urządzenia i systemy mechatroniczne. Cz.2, Wydawnictwo REA, 2009 Dindorf R., Wołkow J.: Systemy płynowe w inżynierii medycznej. Zakład Narodowy im Ossolińskich. Wrocław Warszawa Kraków. 1999. Pawlicki G.: Podstawy inżynierii medycznej. Oficyna Wydawnicza Politechniki Warszawskiej. Warszawa 1997. Podsędkowski L.: Roboty medyczne. Budowa i zastosowanie. WNT Warszawa 2010.
	Supplementary literature	-
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Hand prostheses.Construction and working principle of respirators.Devices to support blood circulation.	
Work placement	Not applicable	