

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Engineering of Reha	bilitation, PG_	00049457					
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering							
Date of commencement of studies	February 2025		Academic year of realisation of subject			2025/2026		
Education level	second-cycle studies		Subject group		Optional subject group Specialty subject group Subject group related to scientific research in the field of study			
Mode of study	Full-time studies		Mode of de	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		Assessme	ent form		assessment		
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics, Telecommunications and Informatics							
Name and surname	Subject supervisor		dr inż. Wiktor Sieklicki					
of lecturer (lecturers)	Teachers		dr inż. Tomasz Kocejko					
			dr inż. Wiktor Sieklicki					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0		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		3.0		17.0		50
Subject objectives	Expanding knowledg	e about techni	cal solutions us	sed in devices	used for	physic	al rehabilitatio	on.

Subject contents ISK1 2013 cara design, according to complex device, facility, system a complex device, facility, system and contents, complex device, facility, system and contents, complex device, facility, system and contents, complex device, facility, system and content of an accuracy of the study and experience gained in study in the student is familiatized without importance of knowledge in importance of knowledge in interions, specific to the field of the student is able to identify the student in the student is familiatized without importance of knowledge in importance of knowledge in interions of an actual problem with and to achieve assignet mytha student knowledge in interions of knowledge in metabilitation devices in the field of techcation on the scatch in the field of techcation on the scatch in the student knowledge in interions of knowledge of material problem with student knowledge in interions of knowledge of material problem with study in the student knowledge in the scatch knowledge of material study in the scatch in the scatch in the scatch problem with study in the student knowledge in the scatch read (scatch), the sconeq of the scatch in the scatch read (scatch), the sca	Learning outcomes	Course outcome	Subject outcome	Method of verification		
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specialist literature on the subject content and to acknowledge the importance of knowledge the importance of knowledge in solving cognitive and practical problems specialist literature on the subject importance of knowledge is confronted with knowledge is confronted with solving motor rehabilitation. communication skills, including impute problems [K7_W08] knows and understands, to an increased devices the student knows the current state of knowledge and technical devices [SW3] Assessment of knowledge contained in written work and projects Subject contents Introduction, the concept of disability, division of physiotherapy, short overview of physical therapy, discussion of kinesiotherapy, discussion of the following issues: FES stimulation and EMG testing; bone structure, mechanisms of damage to the skeletal system, bone adaptation, devices for stabilizing broken intes, sort tissue injuries, rehabilitation on the example of robotic and automated devices Prerequisites and criteria Subject passing criteria Passing threshold Percentage of the final grade project Subject passing criteria 56.0% 50.0% 50.0% Recommended reading Basic literature Kiverski J. (red.) Rehabilitacja medyczna. Wyd. Lek. PZWL, Warszawa 2005 Natecz M. Biocybernetyka i inzynieria biomedyczna 2000. Tom 5. Polska Akademia Nauk, Akademicka Oficyna Wydawnicza Exit, Warszawa 2004. Pasinczek R. Wybrane urządzenia wspomagające i frzykoterapeutyczne w rehabilitacji porazeń ośrodkowego układu netwowego i amputacjach kończym, Oficyna Wydawnicza Politechniki Warszawskie, Warszawa 1998. </td <td></td> <td>understands, to an increased extent, the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of</td> <td>components of a device and assess their suitability or durability. Student is capable of proposing alternative versions of</td> <td colspan="2"></td>		understands, to an increased extent, the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of	components of a device and assess their suitability or durability. Student is capable of proposing alternative versions of			
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eResources addresses Adresy na platformie eNauczanie:		Supplementary literature	Będziński R (red.) Biomechanika i inżynieria rehabilitacyjna,			
		eResources addresses	Adresy na platformie eNauczanie:			

Example issues/ example questions/ tasks being completed	definition, goals, functions and scope of rehabilitation, disability; describe: muscle activity, synergistic muscles, agonistic muscles, functional displacement, passive deficiency, marginal resistance, dependence of muscle strength on muscle length, external muscle structure, attachment point, fiber orientation, frequency of stimulation, type of motor unit, type of work, speed of action, etc., basics of EMG measurement, basics of functional electrostimulation (FES), Hooke's law, form strain, Young's modulus, isotropic material, anisotropic material, hysteresis of human tissue loads, bone compactness, the effect of health and tissue on its mechanical properties; features of the strength of human bones; bone adaptation; Wolf's law; types of bone fractures; and their consequences; time to heal fractures and to prevent and prevent healing of fractures; external stabilization methods; examples of devices helping people with disability after fractures; types of orthopedic corsets; materials from which corsets are made; types of hoppers for lower limb prostheses; methods of forming prosthetic sockets; functional functions of the foot; lower limb orthoses, active and passive orthoses; upper limb orthotics and prostheses; common symptoms of a stroke; examples of devices that help a person after a stroke;
Work placement	Not applicable

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