



Subject card

Subject name and code	Wearable electronics, PG_00062758						
Field of study	Technologies for Industry 5.0						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group		Optional subject group 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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Katedra Inżynierii Materiałów Funkcjonalnych WETI -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Piotr Jasiński				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	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		5.0		40.0	75
Subject objectives	The aim of the course is to familiarize students with intelligent electronic devices that are worn close to and / or on the surface of the skin, where they detect, analyze and transmit information on, i.e.biosignals.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U02] identifies and solves problems related to signal processing and transmission, integrates measurement and control systems, manages electronic systems in the context of intelligent production processes		The student is able to identify and solve problems related to signal processing and transmission, as well as integrate measurement systems with control systems. He/ she is able to manage electronic systems.		[SU1] Assessment of task fulfilment		
	[K6_W02] demonstrates knowledge and understanding of electronics, automation and telecommunications and systems theory, that enables identification of problems and formulation of solutions appropriate for the fourth and fifth industrial revolutions		The student demonstrates knowledge and understanding of the fundamentals of electronics, automation and telecommunications, as well as systems theory, which enables them to identify problems and formulate solutions in the context of the challenges of the fourth and fifth industrial revolutions.		[SW1] Assessment of factual knowledge		
	[K6_K03] effectively, clearly and unambiguously conveys information, describes activities and communicates their results and opinions of a specialist engineer using appropriate communication methods and tools		The student effectively, clearly and unambiguously conveys information, describes activities and communicates results and opinions to the specialist engineer, using appropriate communication methods and tools.		[SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	Biochemical and chemical wear sensors. Inertial wear sensors. Optical wear sensors. Electronic knitted fabrics and textile fabrics. Flexible electronics: materials, devices and assembly. Power wear electronics and energy management. Collecting energy on the human body: temperature gradient, movement, light, electromagnetic field. Communication technologies in wearable electronics. Antennas. Wearable electronics in sports. Wearable electronics in medical applications.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lab	50.0%	40.0%
	Lecture	50.0%	60.0%
Recommended reading	Basic literature	Tao, Xiaoming, ed. Wearable electronics and photonics. Elsevier, 2005.	
		Kate Hartman, Make: Wearable Electronics: Design, Prototype, and Wear Your Own Interactive Garments, Maker Media, 2014	
		Subhas C. Mukhopadhyay, Wearable Electronics Sensors: ForSafe and Healthy Livin, Springer, 2015	
	Supplementary literature	Journal Frontiers in Elelectronics - Wearable Elelectronics	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	List and describe power supply systems in the wearable electronics		
Work placement	Not applicable		

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