

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Wearable electronics, PG_00053371							
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering							
Date of commencement of studies	February 2024		Academic year of realisation of subject			2024/2025		
Education level	second-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	1		Language of instruction			Polish		
Semester of study	2		ECTS credits		2.0			
Learning profile	general academic profile		Assessment form		exam			
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 dr inż. Karolina Cysewska							
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	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 ir classes include plan				Self-study SUM		SUM	
	Number of study hours	30		3.0		17.0		50
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.							

IFC_W12[k locus and interstands, to an increased extert, selected ises of physics physical phenomena, as well explaining the complex explaining the complex expl	Learning outcomes	Course outcome	Subject outcome	Method of verification				
subject contents biodesign and prepare a working biologies peeche biologies and a sense biologies in wearble electronics for the final grade and a sense biologies in wearble electronics and a sense biologies and a sense biologio a sense biologies and a sense biologies and a sense biologies		understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the field of	structure and operation of wearable electronics components and is able to design a system	[SW1] Assessment of factual				
septements related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions. working system fulfilment [K7] W03] knows and understands, to an increased extent, the construction and Operating principles of appropriate of study, including the ories, methods and compix, relationships between them and aspected specific issues - appropriate for the curriculum Knows the principle of operation of wearable sensors and wearable power supply components [SW1] Assessment of factual knowledge Subject contents If advable, including the ories, methods and compix relationships between them and aspected specific issues - appropriate for the curriculum Can design and prepare a wearable electronics system [SU1] Assessment of task fuffilment Subject contents Biochemical and chemical wear sensors. Inertial wear sensors. Optical wear sensors. Electronic knitted factors and leatile fabrics. Fixable electronics in metrials, following engineering environment [Subject contents Subject contents Biochemical and chemical wear sensors. Inertial wear sensors. Optical wear sensors. Electronic knitted factors and leatile fabrics. Fixable electronics in medical applications. Preventage of the final grade electronics. Antennas. Wearable electronics and senset wearable electronics. Antennas. Wearable electronics in sports. Wearable electronics in medical applications. Prerequisites and corteria Subject passing criteria Passing threshold Percentage of the final grade example electronics. Sensors: ForSafe and Healthy Livin, Springer, 2015 . Kate Hartman,		understands, to an increased extent, methods of process and function support, specific to the	possibilities of wearable electronics for the needs of					
Inderstands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum [IV, U.03] can design, according to required specifications, and make a complex device, facility, system or carny out a process, specific to the field of study, unisques, tools and methods, techniques, tools and methods, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment Can design and prepare a wearable electronics system [SU11] Assessment of task fulfilment Subject contents Biochemical and chemical wear sensors. Inertial wear sensors. Optical wear sensors. Electronic knitted fabrics and texitie fabrics and texitie fabrics and energy management. Collecting energy on the human body temperature gradient, movement, light, electromagnetic field. Communication feethologies in wearable electronics. Antennas. Wearable electronics in sports. Wearable electronics in medical applications. Prerequisites and co-requisites and co-requisites Subject passing criteria Passing threshold Percentage of the final grade fabrics and protein wearable electronics. Antennas. Wearable electronics. Antennas. Wearable electronics and prostal applications. Recommended reading Basic literature • Tao. Xiaoming, ed. Wearable Electronics and photonics. Elsevier, 2005. • Tao. Xiaoming, ed. Wearable Electronics and photonics. Elsevier, 2005. • Tao. Xiaoming, ed. Wearable Electronics and photonics. Elsevier, 2005. • Tao. Xiaoming, ed. Wearable Electronics and photo		experiments related to the field of study, including computer simulations and measurements; interpret obtained results and	wearable components into a					
required specifications, and make a complex device, facility, systemwerable electronics systemfulfilmentand complex device, facility, system methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environmentfulfilmentSubject contentsBiochemical 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 criteriaSubject passing criteriaPassing thresholdPercentage of the final grade examand criteriaSubject passing criteriaPassing thresholdPercentage of the final grade examRecommended reading eRecommended readingBasic literature• Tao, Xiaoming, ed. Wearable electronics: Design, Prototype, and Wear Your own Interactive Garments, Maker Media, 2014 • Subhas C. Mukhopadhyay, Wearable Electronics ersofse and Healthy Livin, Springer, 2015Supplementary literatureCzasopismo Frontiers in Elelectonics - Wearable Electronics ersofse and Healthy Livin, Springer, 2015Supplementary literatureCzasopismo Frontiers in Elelectronics - Wearable Electronics ersofse and Healthy Livin, Springer, 2015Supplementary literatureCzasopismo Frontiers in Elelectronics - Wearable Electronics ersofse and Healthy Livin, Springe		understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues -	wearable sensors and wearable					
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, electronics in sports. Wearable electronics in medical applications. Prerequisites Assessment methods and co-requisites Subject passing criteria Passing threshold Percentage of the final grade exam 50.0% 60.0% lab 50.0% 40.0% Recommended reading Basic literature • Tao, Xiaoming, ed. Wearable electronics: Design, Prototype, and Wear Your Own Interactive Garments, Maker Media, 2014 Subplementary literature Czasopismo Frontiers in Elelectronics - Wearable Electronics Supplementary literature Czasopismo Frontiers in Elelectronics - Wearable Electronics eResources addresses Adresy na platformic eNauczanie: erample issues/ List and describe power supply systems in the wearable electronics example questions/ List and describe power supply systems in the wearable electronics		required specifications, and make a complex device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering						
and co-requisites Assessment methods and criteria Subject passing criteria Passing threshold Percentage of the final grade exam 50.0% 60.0% lab 50.0% 40.0% 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: Design, Prototype, and Wear Your Own Interactive Garments, Maker Media, 2014 Supplementary literature Czasopismo Frontiers in Elelectronics - Wearable Electronics Supplementary literature Czasopismo Frontiers in Elelectronics - Wearable Electronics eResources addresses Adresy na platformie eNauczanie: Elektronika nasobna 2024/2025 - Moodle ID: 41307 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41307 Example issues/ example questions/ tasks being completed List and describe power supply systems in the wearable electronics	Subject contents	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						
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example questions/ tasks being completed		Elektronika nasobna 2024/2025 - Moodle ID: 41307						
Not applicable	example questions/	List and describe power supply systems in the wearable electronics						
Work placement Not applicable	Work placement	Not applicable						