



Subject card

Subject name and code	Operation of Medical Devices, PG_00068774						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	February 2026		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 delivery			at the university	
Year of study	1		Language of instruction			Polish	
Semester of study	1		ECTS credits			3.0	
Learning profile	general academic profile		Assessment form			exam	
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Tomasz Neumann				
	Teachers		dr Tomasz Neumann dr hab. inż. Marek Olesz				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		4.0		26.0	75
Subject objectives	The aim of the course is to familiarize students with the basic principles of medical equipment operation - principles of safety, usability, life cycle assessment. Methodology of equipment selection in terms of usability and generated costs. Maintaining technical documentation of medical equipment. Principles of disposal and disposal of equipment.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U53] can apply advanced equipment used in biomedical diagnostics	The student knows the basic types of medical equipment used in health care facilities.	[SU4] Assessment of ability to use methods and tools
	[K7_W10] knows and 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 study	The student is able to design and implement a medical equipment registration system.	[SW1] Assessment of factual knowledge
	[K7_U03] can design, according to 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 environment	The student is able to select a set of medical equipment for a specific purpose.	[SU4] Assessment of ability to use methods and tools
	[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	The student is able to determine the condition of equipment and classify it for service or disposal The student is able to determine the parameters of equipment required by public procurement law	[SU3] Assessment of ability to use knowledge gained from the subject
Subject contents	Course content – lecture The lecture part of the course covers topics related to electrical safety, operation, technical inspection, and management of medical equipment. The requirements for the safe use of medical devices, maintenance of technical documentation, and organization of equipment operation processes in healthcare facilities are discussed. The scope of the lectures includes, in particular: - the effects of electric current and electric arc on the human body, - principles of safe work with electrical devices and installations, including the use of personal protective equipment, - protection against electric shock in electrical installations, including TN, TT, and IT network systems, - lightning protection and surge protection of buildings and medical equipment, - principles of periodic testing and measurements of electrical installations and interpretation of measurement results, - electrical safety of medical devices in accordance with EN 60601 and EN 62353 standards, - types, classification, and intended use of medical equipment, - the life cycle of medical equipment and the organization of equipment operation processes, - selected issues related to public procurement in healthcare, - principles of selecting consumable materials for medical equipment, - design and maintenance of equipment records and technical passport systems, - operation of medical devices using a nuclear medicine department as a case study.		
	Course content – laboratory The laboratory part of the course provides practical skills related to the assessment, testing, and documentation of medical equipment. In particular, it includes: - assessment of the technical condition of batteries and accumulators used in medical equipment, - functional testing of medical devices using biomedical signal simulators (ECG, SpO₂, blood pressure), - measurement of environmental parameters in medical facilities and evaluation of air filtration system performance, - cleaning and disinfection procedures for medical devices, - preparation and maintenance of technical documentation for medical equipment, including equipment technical passports.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Ocena realizacji zadania	50.0%	50.0%
	Test wiedzy	50.0%	50.0%
Recommended reading	Basic literature	Catalog of instruments and apparatus for surgeons and hospitals ; George P. Pilling & Son Company.	

	Supplementary literature	Manual of Hospital Planning and Designing For Medical Administrators, Architects and Planners Ajay Garg, Anil Dewan
	eResources addresses	
Example issues/ example questions/ tasks being completed	Develop a specification for ordering equipment of the type ... Develop a database structure for the equipment maintenance section	
Practical activities within the subject	Not applicable	

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