



Subject card

Subject name and code	Hospital Automation Systems, PG_00068776						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	February 2027	Academic year of realisation of subject				2027/2028	
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	2	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				assessment	
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 inż. Adam Bujnowski					
	Teachers	dr inż. Adam Bujnowski					
Lesson types	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	3.0	17.0	50		
Subject objectives	The aim of the course is to familiarize students with hospital infrastructure maintenance systems. The course will cover issues of broadly understood hospital system automation related to ensuring thermal comfort, threat detection - alarm and fire protection systems, HVAC, ventilation, specific requirements in individual departments - e.g. intensive care / operating room / kitchen / laundry, etc.. Taking up the subject of ensuring air quality and regulating its flow.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions	The student knows the basic methods of evaluating the performance of hospital automation systems and is able to evaluate their functioning			[SU2] Assessment of ability to analyse information		
	[K7_W53] knows and understands, to an increased extent, selected aspects of biomedical diagnostics	The student is able to select elements of hospital automation systems and integrate them. The student understands the importance of critical systems and is able to ensure continuity of service security.			[SW2] Assessment of knowledge contained in presentation		
	[K7_U08] while identifying and formulating engineering tasks specifications and solving these tasks, can: - apply analytical, simulation and experimental methods, - notice their systemic and non-technical aspects, - make a preliminary economic assessment of suggested solutions and engineering work	The student recognizes the needs of hospital infrastructure as presented in the media. The student understands the importance of quality and continuity of service delivery for the operation of a medical facility			[SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	<p>Course content – lecture hospital infrastructure - review of systems - heating, ventilation, air conditioning.</p> <p>Definitions and measurements of selected parameters of air quality, water, etc.</p> <p>Specific requirements of selected departments - e.g. environmental quality in the operating room Energy sources and their redundancy Emergency power supply systems Monitoring and alarm systems Energy demand of medical equipment Maintenance - emergency power supply management</p>											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 557 794 584">Subject passing criteria</th> <th data-bbox="801 557 1139 584">Passing threshold</th> <th data-bbox="1145 557 1473 584">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 593 794 620">Test końcowy</td> <td data-bbox="801 593 1139 620">50.0%</td> <td data-bbox="1145 593 1473 620">50.0%</td> </tr> <tr> <td data-bbox="456 629 794 656">Ocena realizacji zadań</td> <td data-bbox="801 629 1139 656">50.0%</td> <td data-bbox="1145 629 1473 656">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Test końcowy	50.0%	50.0%	Ocena realizacji zadań	50.0%	50.0%
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Recommended reading	Basic literature	Lean Healthcare Systems Engineering for Clinical Environments, aut: Bohdan Oppenheim										
	Supplementary literature	Hospital Automation System: A guide book of Software Engineering followed in a Hospital Automation system by Kumar, Nishant (2012)										
	eResources addresses											
Example issues/ example questions/ tasks being completed	<p>Discuss the climatic requirements of the operating room Discuss methods for ensuring continuity of media supply</p>											
Practical activities within the subject	Not applicable											

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