GDAŃSK UNIVERSITY OF TECHNOLOGY

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 2026	Academic year of realisation of subject	2026/2027
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		

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

<table>
<tr><td>Subject contents</td><td>Course content – lecture
hospital infrastructure - review of systems - heating, ventilation, air conditioning.

Definitions and measurements of selected parameters of air quality, water, etc.

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</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Test końcowy</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>Ocena realizacji zadań</td><td>50.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Lean Healthcare Systems Engineering for Clinical Environments, aut: Bohdan Oppenheim</td></tr>
<tr><td>Supplementary literature</td><td>Hospital Automation System: A guide book of Software Engineering followed in a Hospital Automation system by Kumar, Nishant (2012)</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Discuss the climatic requirements of the operating room
Discuss methods for ensuring continuity of media supply</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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