



Subject card

Subject name and code	Building Installations for Architects, PG_00067115						
Field of study	Architecture						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2026/2027	
Education level	second-cycle studies	Subject group				Obligatory subject group in the field of study Subject group related to scientific research in the field of study	
Mode of study	Full-time studies	Mode of delivery				blended-learning	
Year of study	1	Language of instruction				Polish	
Semester of study	1	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Faculty of Architecture -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. arch. Tomasz Szymański				
	Teachers		dr inż. arch. Tomasz Szymański				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	E-learning hours included: 15.0						
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 acquire knowledge and skills in the field of applying modern technologies and installation systems in construction, extended with pro-ecological solutions in construction.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W01] knows and understands construction, building and engineering issues related to building design; principles, solutions, constructions and building materials used in performing complex engineering tasks in the field of architectural and urban design	knows and understands advanced issues of construction, technology and building installations, covering key, complex issues in architectural, urban and planning design; knows how to choose technical providing solutions comfort and safety in the building.			[SW2] Assessment of knowledge contained in presentation		
	[K7_U02] is able to use interdisciplinary knowledge and skills acquired during studies to design a complex architectural object or urban complex that meets the aesthetic and technical requirements, creating and transforming space and giving it new values	Is able to apply technical providing solutions comfort and safety in the building.			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	<p>Course content – lecture</p> <ul style="list-style-type: none"> <li>- Definition and importance of green building systems</li> <li>- Solar energy</li> <li>- Wind energy</li> <li>- Geothermal energy</li> <li>- Heat recovery systems</li> <li>- Green roofs and walls</li> <li>- Water management systems</li> <li>- Energy-efficient lighting</li> <li>- Intelligent building management systems (BMS)</li> <li>- Ventilation and air conditioning systems</li> <li>- Biomass energy</li> <li>- Energy storage</li> <li>- Environmental certifications and standards</li> </ul>														
	<p>Course content – exercises EXERCISE SCENARIOS</p> <p>The structure of the classes has been divided into three key, complementary components, symbolically referred to as 3W: WORKSHOPS, VISITS, AND OUTINGS.</p> <ul style="list-style-type: none"> <li>- Workshops form the foundation of practical teamwork, during which students analyze innovative and environmentally friendly installations in construction. Creative thinking, dynamic work, and the ability to argue are key here, and the results are presented in the form of dynamic brainstorming sessions and final reports.</li> <li>- Visits enable direct contact with industry specialists designers, manufacturers, and representatives of technology companies. The aim is to gain first-hand knowledge by actively asking questions and conducting interviews, which allows for an understanding of the practical aspects of applying modern solutions.</li> <li>- Field trips serve to verify in reality the theoretical knowledge acquired during lectures, workshops, and meetings with experts. They are a key element linking theory with practice and can be integrated with Visits to increase educational value.</li> </ul> <p>This methodology emphasizes independence, critical analysis, teamwork, and the direct connection of the knowledge acquired with potential future diploma projects.</p>														
Prerequisites and co-requisites	-														
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th> <th>Passing threshold</th> <th>Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Classes - final work</td> <td>100.0%</td> <td>80.0%</td> </tr> <tr> <td>Lectures - Participation in online lectures</td> <td>100.0%</td> <td>10.0%</td> </tr> <tr> <td>Classes - presentation</td> <td>100.0%</td> <td>10.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Classes - final work	100.0%	80.0%	Lectures - Participation in online lectures	100.0%	10.0%	Classes - presentation	100.0%	10.0%		
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Recommended reading	Basic literature	-													
	Supplementary literature	-													
	eResources addresses														

<p>Example issues/ example questions/ tasks being completed</p>	<p>The requested translation of the content from the excerpts "Ekologiczne Instalacje i Zrównoważone Budownictwo" (Ecological Installations and Sustainable Construction) is provided below. Excerpts from "Ecological Installations and Sustainable Construction"</p> <p>Key Questions on Ecological Installations</p> <p>What are the main assumptions/principles of ecological installations in buildings? How do photovoltaic panels convert solar energy into electrical energy and what are their main applications? What are the different types of wind turbines and where are they used/applied? What is geothermal energy (geothermy) and what are its advantages and disadvantages as an energy source? How do heat pumps work and what are their types? - What is heat recovery (recuperation) and what benefits does it bring in buildings? - What are the benefits of using green roofs and walls?</p> <p>Key Questions on Management and Automation</p> <p>- What are the main challenges related to water management in the urban context and how can architecture help solve them? - What are the advantages and disadvantages of using energy-efficient lighting, especially LED technology, in buildings? - What does lighting automation involve and what technologies are used in intelligent lighting systems? - What are the types of Building Management Systems (BMS)? - What are the main advantages of mechanical ventilation compared to natural ventilation?</p> <p>Key Questions on Energy Storage, Certification, and Exercise Topics</p> <p>- What are the basic types of energy storage and how do they work? - What are ecological certificates in construction and what is their main goal? - What examples of innovative sustainable construction projects can be identified/cited?</p> <p>Examples of ideas for exercise topics:</p> <p>- Eco-scanning conducting an analysis of a chosen building in terms of applied pro-ecological solutions and proposing own improvements. - Critical analysis of construction projects regarding their ecological sustainability and innovativeness. Proposing own improvements the concept of an innovative, ecological installation.</p> <p>Exercise Topics: Debates, Case Studies, and Simulations</p> <p>- Ecological debate discussion on the latest trends and technologies in sustainable construction. Defense or criticism of applied solutions. - Case studies analysis of real examples of modern buildings with ecological installations, e.g., those with LEED or BREEAM certificates. - Expert interview interviews with construction industry professionals who specialize in ecological installation solutions. Find out about the latest trends and challenges. - Computer simulations review of currently used advanced software for simulating the operation and efficiency of various ecological installations in buildings scenario modeling and results analysis.</p> <p>Exercise Topics: Architectural Implementation and Fieldwork</p> <p>- Case studies of known architectural implementations/projects application of modern materials and technologies. - Field trips.</p>
<p>Practical activities within the subject</p>	<p>Not applicable</p>

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