GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Integrated design, PG_00057356		
Field of study	Power Engineering, Power Engineering, Power Engineering		
Date of commencement of studies	February 2022	Academic year of realisation of subject	2022/2023
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	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Katedra Wytrzymałości Materiałów -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Rafał Ossowski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	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	8.0	37.0	75

Subject objectives

The aim of the course is to equip students with:

- knowledge of the basics of Building Information Modeling (BIM) technology in design and implementation practice in the field of HVAC systems

- the ability to implement an integrated design (architecture, ventilation) of the BIM model

- the ability to filter and process BIM model data in order to obtain basic analyzes, summaries, projections, visualizations and animations

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U02] is able to use known mathematical and numerical methods to analyze and design elements, systems and power transmission networks and internal installations	He can design and analyze the internal HVAC installation system	[SU1] Assessment of task fulfilment
[K7_U04] is able to plan and perform experiments using measurements and computer simulations, together with interpretation of results, is able to present and evaluate the course and results of work in a team realizing an advanced engineering project, is able to use technical documentation and to create it independently	Can present and evaluate the course and effects of work in a team implementing an advanced engineering project. Can use technical documentation and create them on his own, formulates conclusions and describes the results of his own work. He is communicative in media presentations	[SU5] Assessment of ability to present the results of task
[K7_W09] knows and understands the basic concepts and principles of industrial property protection and copyright law and the need for intellectual property management, is able to use patent information resources	Understands the importance of responsibility in engineering activities, including the reliability of the presented results of their work and their interpretation.	[SW2] Assessment of knowledge contained in presentation

<table>
<tr><td>Subject contents</td><td>Introduction to BIM technology. BIM models, basic concepts: LOD, LOI, BIM nD. Teamwork, file sharing, tools for Collaboration.

Revit environment, data hierarchy, object systematics, parameter structure. Design template and view templates. Work with external Revit / IFC models and with HVAC modeling tools.

Preparation of an analytical model of spaces, zones, statements. Verification of the analytical model, calculation and analysis of the report, system inspection, system color legends. Creation and modification of lists. Clash checking and resolution.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of Computer Aided Design (CAD) systems.</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>presentation</td><td>60.0%</td><td>40.0%</td></tr>
<tr><td>project</td><td>60.0%</td><td>60.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Anger A., Łaguna P., Zamara B.: BIM dla managerów, PWN, 2021

Kasznia D.: BIM w praktyce. Standardy. Wdrożenie. Case Study, PWN Warszawa, 2018.

Lipska B.: Projektowanie wentylacji i klimatyzacji : urządzenia i przewody, Wydawnictwo Politechniki Śląskiej, 2018

Tomana A.: BIM Innowacyjna technologia w budownictwie. Podstawy, standardy, narzędzia, PWB MEDIA, Warszawa, 2016

Autodesk Revit - instrukcja użytkownika.

BIM Standard PL, https://www.uzp.gov.pl/__data/assets/pdf_file/0024/43449/BIM-Standard-wersja-opublikowana-2.0.pdf</td></tr>
<tr><td>Supplementary literature</td><td>Autodesk Revit 2022 MEP Fundamentals, ASCENT, 2021</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>Team design of a ventilation system for a sport hall / public facility.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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