



## Subject card

Subject name and code	Integrated design, PG_00057356						
Field of study	Power Engineering						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
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. Wojciech Migda				
	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_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		
	[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		
Subject contents	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.						

Prerequisites and co-requisites	Knowledge of Computer Aided Design (CAD) systems.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	presentation	60.0%	40.0%
	project	60.0%	60.0%
Recommended reading	Basic literature	<p>Anger A., Łaguna P., Zamara B.: BIM dla managerów, PWN, 2021  Kaszniak 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, <a href="https://www.uzp.gov.pl/_data/assets/pdf_file/0024/43449/BIM-Standard-wersja-opublikowana-2.0.pdf">https://www.uzp.gov.pl/_data/assets/pdf_file/0024/43449/BIM-Standard-wersja-opublikowana-2.0.pdf</a></p>	
	Supplementary literature	Autodesk Revit 2022 MEP Fundamentals, ASCENT, 2021	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Team design of a ventilation system for a sport hall / public facility.		
Work placement	Not applicable		