GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00050143		
Field of study	Civil Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	
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. Dawid Bruski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	15.0	0.0	0.0	0.0	45

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	45	0.0	0.0	45

Subject objectives

The aim of the course is to equip students in:
- knowledge of the basics of Building Information Modeling (BIM) technology in design and implementation practice
- skills of making a simplified multi-branch (architecture, structures, installations) BIM model
- skills of processing BIM model data for basic analysis, summaries, visualization and animation.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W13] has knowledge on state of the art methods on knowledge acquisition, filtration, processing and analysis	The student has knowledge of BIM methodology. Knows the principles of creating BIM models and using data to create analyzes and summaries.	[SW2] Assessment of knowledge contained in presentation
[K7_U06] is able to choose proper tools (measuring, analytical or numerical) to solve engineering problems, to acquire, filtrate, proces and analyse data	The student can build an object model in the Revit. The student can define computational models for computer analysis of structures as well as loads and load combinations. Can create a simple model of ventilation and sewage.	[SU1] Assessment of task fulfilment

Subject contents

Introduction to BIM. Basic BIM terminology. BIM software overview. Software interoperability / BIM models. Open standards for data models. Rules for creating an object-oriented BIM model. Objects, object families, object classification, constraints, relations, parameters. Modification of the object's features. LOD levels. Standards and legislation - Poland and Europe.
Modeling of the building in the Revit environment. Defining families of objects, parameterization of family elements. Application of created families in the project.
Modeling of the terrain and the surrounding of the building. Creating visualizations and animations. Analytical model, adding load. Ventilation and sanitary installations. Control of BIM models, collision detection. Data export / import from / to the BIM model. Variant models. Data import / export from / to CAD programs.

Prerequisites and co-requisites

Knowledge about Computer Aided Design (CAD)

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	Anger A., Łaguna P., Zamara B.: *BIM dla managerów*. PWN, 2021 Kacprzyk Z., Werner W. A.: *Procedury inwestycyjno-budowlane. Podstawy BIM.* POLCEN Sp. z o.o., 2019. Kasznia D., Magiera J., Wierzowiecki P.: *BIM w praktyce*. PWN, Warszawa, 2018.
	Supplementary literature	Tomana A.: *BIM Innowacyjna technologia w budownictwie. Podstawy. Standardy. Narzędzia*. Kraków 2016.
	eResources addresses	Podstawowe https://www.uzp.gov.pl/baza-wiedzy/zrownowazone-zamowienia-publiczne/bim-modelowanie-danych-budowlanych/bim-standard-pl - BIM Standard PL Adresy na platformie eNauczanie: Podstawy BIM (2023-2024 zima) - Moodle ID: 30529 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30529
Example issues/ example questions/ tasks being completed	A group project of a small public facility. Model BIM, analysis, visualizations and animations.	
Work placement	Not applicable	