



## Subject card

Subject name and code	BIM Elements, PG_00065487						
Field of study	Civil Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		0.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Mechanics of Materials and Structures -> Faculty of Civil and Environmental Engineering -> Wydział Politechniki Gdańskiej						
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	0.0	0.0	0.0	0.0	0.0	0
	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	0		0.0		0.0	0
Subject objectives	To provide foundational knowledge of Building Information Modeling (BIM) technology, applicable to future professional practice.						
	To teach the basics of creating simplified BIM models of buildings.						
	To develop skills in creating, modifying, and processing BIM model data for conducting basic analyses, generating schedules, floor plans, visualizations, and animations.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U04] Reads and prepares construction documentation (including drawings, graphic documentation in the CAD environment), efficiently uses maps as well as architectural, construction and geodetic drawings.	The student is able to create BIM models of objects. The student uses BIM tools to develop and analyze design documentation, including technical drawings. They use the principles of creating and modifying technical drawings using BIM tools and are able to prepare documentation for printing.	[SU1] Assessment of task fulfilment
	[K6_W04] Knows the rules of descriptive geometry and technical drawing for preparing and reading architectural, construction and geodetic drawings; also with the use of CAD	The student is able to use BIM tools and understands the principles of descriptive geometry and technical drawing, which are essential for creating object models in the BIM environment, performing analyses, and developing and interpreting design documentation.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_W01] Demonstrate knowledge and understanding of mathematics as well as sciences and engineering disciplines underlying civil engineering at a level necessary to achieve the other programme outcomes.	The student knows how to develop BIM models of objects, understands the principles of using data from the models to generate reports, analyze them and interpret them.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_W05] Demonstrate knowledge and understanding of research methods (obtaining information, simulations, experimental methods) in the field of civil engineering.	The student knows BIM tools to obtain design data and conduct basic analyses. They understand how technical and graphic information can be integrated within the BIM environment to support decision-making in the design process. Additionally, they know how to apply various research methods to assess different aspects of the designed solutions, such as economic aspect.	[SW3] Assessment of knowledge contained in written work and projects
Subject contents	<ol style="list-style-type: none"> <li>1. Introduction to BIM technology: basic terminology, overview of available software, interoperability, and applicable standards in BIM technology.</li> <li>2. Familiarization with the work environment of BIM-dedicated software.</li> <li>3. Modeling architectural and structural elements (e.g., foundations, walls, columns, slabs, roofs).</li> <li>4. Modeling families: parametric and non-parametric families, and their application in projects.</li> <li>5. Creating variants of models.</li> <li>6. Adding tags and descriptions in the project, dimensioning elements.</li> <li>7. Generating schedules, working with schedules (e.g., filtering), cost calculations.</li> <li>8. Creating drawing sheets and managing their composition.</li> <li>9. Modeling the terrain and surroundings of the object.</li> <li>10. Graphic display options, creating visualizations and animations of the object and its elements, and rendering.</li> <li>11. Project location, analysis of natural and artificial lighting in the project.</li> </ol>		
Prerequisites and co-requisites	Knowledge of the basics of Descriptive Geometry and technical drawing. Knowledge of the basics of operating systems. Knowledge of the basics of Computer Aided Design (CAD)		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	60.0%	100.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Kasznia D., Magiera J., Wierzowiecki P., <i>BIM w praktyce, standardy, wdrożenia, case study</i>, Wydawnictwo Naukowe PWN, Warszawa, 2017.</li> <li>2. Anger A., Łaguna P., Zamara B., <i>BIM dla managerów</i>, Wydawnictwo Naukowe PWN, Warszawa, 2021.</li> <li>3. Bednarczyk i inni, <i>BIM Standard PL</i>, Warszawa 2020</li> <li>4. Kacprzyk Z., Werner W. A.: <i>Procedury inwestycyjno-budowlane. Podstawy BIM</i>. POLCEN Sp. z o.o., 2019.</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Tomana A., <i>Bim Innowacyjna Technologia w Budownictwie. Podstawy, standardy, narzędzia</i>, Kraków 2015</li> </ol>	
	eResources addresses	Basic <a href="https://www.gov.pl/web/uzp/bim-standard-pl">https://www.gov.pl/web/uzp/bim-standard-pl</a> - BIM Standard PL <a href="https://help.autodesk.com/view/RVT/2025/PLK/">https://help.autodesk.com/view/RVT/2025/PLK/</a> - Autodesk - Revit, online documentation	

Example issues/ example questions/ tasks being completed	Creating a BIM model of a single-family house, creating schedules, creating a drawing sheet
Work placement	Not applicable

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