



Subject card

Subject name and code	, PG_00070302							
Field of study	BIM 2 (KBI)							
Date of commencement of studies	October 2022		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	4		Language of instruction		Polish			
Semester of study	7		ECTS credits		1.0			
Learning profile	general academic profile		Assessment form		assessment			
Conducting unit	Department of Engineering Structures -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology							
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Dariusz Kowalski					
	Teachers		dr inż. Dariusz Kowalski					
			dr inż. Aleksander Perliński					
			dr inż. Aleksander Grabowski					
			dr inż. Maciej Lewandowski-Szewczyk					
			dr inż. Natalia Korcz-Konkol					
			dr inż. Dawid Bruski					
Lesson types	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							
	eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2182							
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		0.0		0.0	30
Subject objectives	The course aims to provide students with both theoretical and practical knowledge of Building Information Modeling (BIM) technologies, enabling effective design, modeling, and management of construction projects using advanced digital tools. Students will develop the ability to create detailed three-dimensional models of buildings and their components, as well as to analyze and coordinate multidisciplinary models of construction projects in accordance with the principles of sustainable development and minimal environmental impact. The course fosters competencies in teamwork, professional responsibility, and the application of standards and regulations in BIM-supported investment processes. It also equips students with skills in applying engineering knowledge, utilizing modern digital tools, critically analyzing information, and solving technical problems. The course responds directly to current market needs.							

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies.	The student is able to apply practical knowledge of building materials, tools, and construction technologies to create three-dimensional building models using BIM systems. The student is able to analyze and interpret design data and use it effectively in the process of modeling and documenting building structures. The student is able to efficiently use BIM software tools and methods to develop structural models and generate technical drawings	[SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania [SU4] Ocena umiejętności korzystania z metod i narzędzi [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU2] Ocena umiejętności analizy informacji [SU1] Ocena realizacji zadania
	[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint	The student designs building structures with respect for the principles of sustainable development and with the aim of minimizing environmental impact	[SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania [SU4] Ocena umiejętności korzystania z metod i narzędzi [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU2] Ocena umiejętności analizy informacji [SU1] Ocena realizacji zadania
	[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.	The student is aware of the importance of professional and ethical responsibility in managing projects within the BIM environment and is able to work effectively as a member of a project team	[SK5] Ocena umiejętności rozwiązywania problemów występujących w praktyce [SK3] Ocena umiejętności organizacji pracy [SK1] Ocena umiejętności pracy w grupie
	[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment	The student understands the environmental impact of civil engineering structures and is able to recognize the relationships and interactions between a construction project and the natural environment	[SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym
	[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).	The student possesses practical knowledge of the properties, applications, and limitations of materials and technologies used in construction	[SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym
Subject contents	Course content – laboratory Introducing students to the principles of working with computer programs that meet the requirements of the BIM (Building Information Modeling) methodology. Development of an architectural and construction design for a building structure that includes all commonly used structural elements in construction, such as: strip and pad foundations, masonry walls with external ETICS insulation, reinforced concrete tie beams and lintels, reinforced concrete columns, reinforced concrete floor slabs, steel beams and joists, steel columns, wooden structural elements of a gable roof in the form of timber trusses, roof coverings, window and door joinery, and building finishing elements. Preparation of detailed drawings for the load-bearing elements of the designed building using specialized structural design software. Development of design and workshop documentation for all structural elements, including material take-offs and construction details. Preparation of a comprehensive architectural and construction documentation of the building (including structural elements). Creation of visualizations of the designed building. Clash detection and model coordination for the designed building. Presentation of the project results.		
Prerequisites and co-requisites	Knowledge in the field of design and development of building structures, as well as the design of reinforced concrete, steel, and timber elements forming the structural framework of buildings.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	building design project	60.0%	70.0%
	project presentation	60.0%	10.0%
	semester project defense	60.0%	20.0%

Recommended reading	Basic literature	1. Bednarczyk i inni, BIM Standard PL, Warszawa 2020 (dostępny w sieci Internet). 2. Kasznia D., Magiera J., Wierzowiecki P., BIM w praktyce, standardy, wdrożenia, case study, Wydawnictwo Naukowe PWN, Warszawa, 2017. 3. Anger A., Łaguna P., Zamara B., BIM dla managerów, Wydawnictwo Naukowe PWN, Warszawa, 2021. 4. Kacprzyk Z., Projektowanie w procesie BIM, Oficyna Wydawnicza Politechniki Warszawskiej, WARSZAWA, 2020. 5. Tomana A., Bim Innowacyjna Technologia w Budownictwie. Podstawy, standardy, narzędzia, Kraków 2015. 6. Eastman, C., Teicholz, P., Sacks, R., & Liston, K. 2011. BIM handbook: A guide to building information modeling for owners, managers, designers, engineers and contractors. Indianapolis, IN: Wiley. 7. Autodesk - Revit, dokumentacja, oprogramowanie komputerowe 8. Schuller & Company - Bocad Hybrid - dokumentacja, oprogramowanie komputerowe, 9. Trimble - Tekla Campus - dokumentacja, oprogramowanie komputerowe,
	Supplementary literature	1. Publikacje Ministerstwa Infrastruktury 2. Publikacje Urzędu Zamówień Publicznych 3. Publikacje Ministerstwa Rozwoju 4. Norma ISO 19650
	eResources addresses	
Example issues/ example questions/ tasks being completed	The intended learning outcome of the semester-long course is the development of a group-based semester project, culminating in the preparation of comprehensive design documentation for a building structure. The project is based on general input data, which must be further refined and detailed through the application of individual design solutions.	
Practical activities within the subject	Not applicable	

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