GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	BIM basics (Building Information Modeling), PG_00058963		
Field of study	Environmental Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
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	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Mechanics of Materials and Structures -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Dawid Bruski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	20.0	0.0	0.0	10.0	0.0	30

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=1414

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	5.0	20.0	55

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_U06] knows and applies the basic provisions of construction law, water law and environmental law	Knows the basic legal and regulatory requirements for design documentation and understands the principles for preparing design documentation within a BIM environment.	[SU1] Assessment of task fulfilment
[K6_W08] has elementary knowledge of construction: including building materials, their strength, construction mechanics and building physics, moisture migration in buildings, heat transfer through building partitions	Knows the basic properties of building materials and their impact on a building's performance within a BIM model. Understands the role of structural elements (e.g., foundations, walls, columns, slabs, roofs) and can identify and describe them in a BIM model.	[SW1] Assessment of factual knowledge
[K6_U01] has the ability to self-education, can obtain information from literature, databases and other sources, uses information technology, Internet resources; can integrate the obtained information, make their interpretation, as well as draw conclusions and formulate and justify opinions	Is able to independently create and modify a BIM model of a building in Autodesk Revit. Can locate and integrate information resources (family libraries, standards), use scheduling and basic analysis tools, and import/export BIM model data.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Introduction to BIM. Basic BIM terminology. BIM software overview. Standards and legislation - Poland and Europe. Software interoperability / BIM models. Open standards for data models. Rules for creating an object-oriented BIM model. Modeling architectural and structural elements (e.g., foundations, walls, columns, slabs, roofs). Creating and managing families; applying families within a project. Annotations and documentation: tags, notes, and dimensioning. Site/terrain modeling. Working with schedules; cost estimation; visualizations and animations in a BIM environment. Fundamentals of producing design documentation in BIM software. Principles of modeling building services (MEP) systems. Data exchange: importing to and exporting from the BIM model (open standards included).
Course content – project
Introduction to Autodesk Revit. Modeling a single-family house (foundations, walls, windows, doors, stairs, slabs, roof). Schedules, tags and notes, dimensioning, and sheet setup. Site/terrain modeling; material takeoffs and cost estimation; suspended ceilings and reflected plans; project visualizations; creating and using families in Revit. Team formation and assignment of project topics. Fundamentals of modeling MEP systems.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></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>30.0%</td></tr>
<tr><td>Project</td><td>60.0%</td><td>70.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>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. Tomana A., Bim Innowacyjna Technologia w Budownictwie. Podstawy, standardy, narzędzia, Kraków 2015.
5. Autodesk - Revit, dokumentacja on-line,
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.</td></tr>
<tr><td>Supplementary literature</td><td>-</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>Design of a small facility - BIM model, schedules, analyses, visualizations, and animations.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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