GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Building Information Modeling, PG_00072574		
Field of study	Civil Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	second-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	1	Language of instruction	English
Semester of study	1	ECTS credits	3.0
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. Maciej Lewandowski-Szewczyk	
	Teachers		

Lesson types

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

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 8477 BIM CE 2026/27
https://enauczanie.pg.edu.pl/2025/course/view.php?id=8477

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	3.0	27.0	75

Subject objectives

The aim of the course is to provide students with basic practical knowledge of modelling in BIM technology using modern IT tools, namely Tekla Structures software. Students will acquire the skills to create detailed three-dimensional models of steel structures. The course enables students to develop the ability to apply engineering knowledge, use modern digital tools, critically analyse information and solve technical problems. The course responds to market demand.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U03] uses, to a deeper extent, appropriately selected analytical, numerical and experimental tools and methods to carry out tasks in the construction industry	The student is able to select and use, at an advanced level, BIM-environment IT tools, including Tekla Structures software, to create detailed three-dimensional models of steel structures and to generate shop drawings for a building structure.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[K7_W03] demonstrates in-depth preparation in the application of analytical, numerical and experimental tools and methods to tasks in the construction industry	The student has practical knowledge of the specifics of materials and technologies used in construction, as well as their limitations. In addition, the student is familiar with the capabilities and limitations of modern design-support tools.	[SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td>Course content – lecture

1. Discussion of 3D modelling methodology using modern BIM tools, including information exchange standards and formats.
2. Advanced topics in shop drawing documentation, including numbering systems and the division of the project into phases.
3. Digital material processing (CNC): model preparation and best practices.
4. Modern methods of marking assemblies.

Course content – laboratory

Familiarisation with modern 3D modelling tools using Tekla Structures as an example.
Completion of a laboratory assignment in the form of an accurate 3D model of a building structure, including structural elements commonly used in steel structures: columns, girders, floor beams, purlins, and the bracing necessary to ensure the stability of the structure.
Preparation of shop drawings for the load-bearing elements of the modelled building.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of the design and shaping of building structures, and of the detailing of steel elements forming the load-bearing system of structures.</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>demonstration of practical skills acquired</td><td>60.0%</td><td>40.0%</td></tr>
<tr><td>micro-tasks on selected elements</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>model and shop drawings of a building structure</td><td>60.0%</td><td>40.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>• Sacks R., Eastman C., Lee G., Teicholz P., BIM Handbook: A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers, 3rd ed., Wiley, 2018
• Trimble, Tekla Structures: Help / User Assistance https://support.tekla.com/tekla-structures</td></tr>
<tr><td>Supplementary literature</td><td>• PN-EN ISO 19650-1 and 19650-2: organization and digitization of information about buildings and civil engineering works, and information management using BIM.
• ISO 16739-1: Industry Foundation Classes (IFC).
• PN-EN 1090-2: execution of steel structures and aluminium structures, technical requirements.
• PN-EN 1993-1-1 and PN-EN 1993-1-8: design of steel structures and joints (Eurocode 3).
• DSTV standard</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></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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