



Subject card

Subject name and code	Fundamentals of Cost Estimation, PG_00069948						
Field of study	Real Estate 5.0						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
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		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Building Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Beata Grzyl				
	Teachers		dr inż. Beata Grzyl				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 7419 Podstawy kosztorysowania - sem. zimowy 2026/2027, 2 sem. mgr Nieruchomości 5.0, SS, specjalność: Rzeczoznawstwo majątkowe oraz Nieruchomości komercyjne i niekomercyjne https://enauczanie.pg.edu.pl/2025/course/view.php?id=7419						
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		2.0		18.0	50
Subject objectives	The aim of the course is to familiarise students with the legal framework and methods of preparing construction cost estimates. The course also aims to present the applications of construction cost estimates in real estate valuation and in the context of commercial and non-commercial real estate.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U03] is able to independently interpret and apply the provisions of construction law, efficiently use documentation related to the investment process, assess the degree of physical depreciation of buildings and structures, identify maintenance and repair needs of buildings and installations, develop renovation plans, and perform cost estimation tasks	Is able to independently prepare bills of quantities and construction cost estimates based on technical documentation, using appropriate cost estimation methods, normative databases and sources of construction pricing information. The student is able to determine the estimated costs of construction works and design services, analyse and compare alternative technical solutions in terms of costs, and apply the results of cost estimates to the planning and evaluation of construction investment projects.	[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
	[K7_W03] possesses advanced knowledge and understanding of selected issues in the field of technical fundamentals essential for real estate valuation, property management, real estate brokerage, and other processes characteristic of the functioning of the real estate market.	The student has knowledge and understanding of the legal, technical and economic foundations of construction cost estimating, including the types and functions of cost estimates, principles of quantity take-off and measurement of construction works, cost estimation methods, and the use of normative and pricing databases. The student understands the principles of estimating labour, material and equipment requirements, as well as the role of cost estimating in the construction investment process, real estate valuation and investment cost planning. The student also understands the basic applications of 5D BIM technology in construction cost estimating.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	Course content – lecture		
	The course content takes into account the curriculum requirements established by the competent minister in the regulations governing education in the field of real estate valuation.		
	Procedures governing the construction services market. Procurement of construction works, supplies and services under public and private procurement procedures. Forms of remuneration for construction works. Selected construction project delivery systems and contractual arrangements – principles, advantages and disadvantages. Fundamental concepts of construction cost estimating. Cost analysis in the construction investment process. The role of cost estimates and cost estimators in the construction investment process. Specific characteristics of construction cost estimating. Components of construction cost estimates. Types of construction cost estimates and their functions. Legal, technical, quantitative and pricing bases for preparing construction cost estimates. Normative and pricing databases. Sources of construction pricing information. Methods of determining labour, equipment and material consumption norms. Principles and procedures for preparing bills of quantities and measuring completed construction works. Construction cost estimation methods. Structure and content of construction cost estimates. Examples of construction cost estimating. Functional and Utility Programme (PFU). Advanced aspects of construction cost estimating. Introduction to 5D BIM – definitions and examples. Differences between traditional cost estimating and 5D BIM-based cost estimating. Levels of detail in 5D BIM cost estimating. Examples of construction cost calculations. Building Cost Reference Catalogues and the Replacement Cost Calculator – demonstration of software applications.		
	Course content – laboratory		
	The course content takes into account the curriculum requirements established by the competent minister in the regulations governing education in the field of real estate valuation.		
	Task 1 Preparation of a bill of quantities and a construction cost estimate for a specified scope of wall construction works in a multi-family residential building, including the proposal of an alternative technical solution and a comparative analysis in terms of cost and time. Task 2 Preparation of a construction works schedule. Analysis of the application of construction cost estimates and construction schedules in the planning, execution and control of construction projects. Task 3 Calculation of the estimated costs of design services and construction works based on the Functional and Utility Programme (PFU).		
Prerequisites and co-requisites	Knowledge of general construction principles and the ability to read and interpret technical drawings.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Task 1	60.0%	40.0%
	Task 2	60.0%	10.0%
	Task 3	60.0%	20.0%
	Written assessment of lecture content	60.0%	30.0%

Recommended reading	Basic literature	1. Association of Construction Cost Estimators. (2017). <i>Polish standards for construction cost estimating</i> (2nd ed.). Warsaw. 2. Regulation of the Minister of Development and Technology of 20 December 2021 on the detailed scope and form of design documentation, technical specifications for the execution and acceptance of construction works, and the functional and utility programme. (2021). <i>Journal of Laws of the Republic of Poland</i>, item 2454. 3. Regulation of the Minister of Development and Technology of 20 December 2021 on the methods and principles for preparing investor's cost estimates and calculating the estimated costs of design services and construction works specified in the functional and utility programme. (2021). <i>Journal of Laws of the Republic of Poland</i>, item 2458. 4. Kowalczyk, Z., & Zabielski, J. (2014). <i>Construction cost estimating and resource consumption standards</i> (8th ed.). WSiP. 5. BIM Standard PL. (2020). Version 2.0. Warsaw.
	Supplementary literature	1. https://kosztorysowanie.pl/ 2. https://isap.sejm.gov.pl/ 3. https://www.gov.pl/web/uzp 4. https://wacetob.com.pl/ 5. https://orgbud.pl/ 6. https://sekocenbud.pl/
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Legal framework, types and methods of construction cost estimating. 2. Principles of determining construction costs and using normative and pricing databases. 3. Application of cost estimating in the planning and execution of construction projects, including the use of 5D BIM technology.	
Practical activities within the subject	Not applicable	

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