



Subject card

Subject name and code	Thesis Seminar , PG_00044845						
Field of study	Seminarium dyplomowe						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group		Optional subject group 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	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Geodesy -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Jakub Szulwic				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	40.0	0.0	0.0	0.0	0.0	40
	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	40		6.0		29.0	75
Subject objectives	The aim of the course is to prepare students to independently develop and defend an engineering thesis by developing competencies in formulating a research problem, selecting geodetic and geomatic methods, analyzing data, and presenting results. During the seminar, students refine their technical, methodological, and editorial skills, learn to critically evaluate sources, correctly interpret results, and prepare professional engineering documentation. The seminar also supports the development of communication skills: presentation, discussion, and defense of their own conclusions in the context of current geodetic standards and job market requirements.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_K01] can think and act in a creative and enterprising way; is ready to define priorities for the implementation of an individual or group task; understands the need for continuous education and professional responsibility for his own and his team activities, and being ready to assess their own limitations, knows when to ask experts		The student is able to independently plan the implementation of a thesis, establish priorities, assess risks and constraints, demonstrate initiative and creativity in solving technical problems, and – if necessary – consult with experts. They understand the surveyor's professional responsibility for the quality and reliability of the work.		[SK2] Ocena postępów pracy		
	[K6_U81] is able to communicate appropriately in foreign language at B2 level of the Common European Framework of Reference for Languages (CEFR) in everyday life, in academic and professional environments		The student is able to prepare and present in Polish and a foreign language (at B2 level) a clear, substantive presentation of the results of his/her diploma thesis and lead a professional discussion in an academic and professional environment.		[SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania		

Subject contents	Course content – lecture Principles of preparing an engineering diploma thesis topic selection, scope and structure of the thesis, formal and editorial requirements; formulation of the purpose, research problem, and scope of the study. Geodetic and geomatic research methodology in diploma theses review of typical engineering and analytical solutions used in diploma projects; selection of measurement data, technologies, and computational tools. Analysis of the progress of diploma theses monitoring the schedule and implementation stages; identification of technical and substantive issues, joint discussion of solutions; assessment of the quality of the methodology used. Presentation of results and technical communication preparation of a presentation on the assumptions, method, and results of the thesis; discussion of how to present data, conclusions, and limitations; training in public speaking and defending arguments. Group discussion of diploma theses student presentations at the end of the phase and at the end; critical peer review, formulating questions and constructive comments; developing the ability to defend one's own solutions. Analysis of topics for the diploma exam discussion of the topic range of typical questions in geodesy and cartography; identification of key issues from the perspective of the examination board; exam simulation exercises: short answers, thesis defense, discussion. Ethics and professional responsibility of a surveyor standards of reliability, the ability to assess the limitations of one's own work; the role of expert consultation and responsibility for data and conclusions.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	presentation	60.0%	100.0%

Recommended reading	Basic literature	Kadaż R. Wyrównanie obserwacji geodezyjnych. Gocał J., et al. Geodezyjne pomiary inżynierskie. Boroń A. Fotogrametria i teledetekcja. Podstawy metodologii i redakcji pracy dyplomowej Eco U. Jak napisać pracę dyplomową (w zakresie metodologii i konstrukcji). Walcott R. How to Write and Present Technical Information (jasne zasady prezentacji). Materiały PG dotyczące redakcji i stylu prac: Wytyczne redakcyjne PG (jeśli używane na WILiŚ). Zotero / Mendeley oficjalne przewodniki użytkownika (zarządzanie bibliografią). Scientific/industry articles and portals (current issues) www.mostwiedzy.pl access to Gdańsk University of Technology publications, project cards, and teaching materials. www.geoforum.pl industry commentaries, analyses, and geodetic news. www.gugik.gov.pl technical standards, instructions, and GGK announcements. ISOK, geoportal.gov.pl technical documentation and spatial data analyses. MDPI Sensors / Remote Sensing (open access) contemporary articles on geodesy, photogrammetry, and remote sensing. Journal of Geodesy (Springer) the most influential publications on geodetic methods. Measurement (Elsevier) engineering measurements, sensors, precision. Applied Geomatics GIS, UAV, special measurements.
	Supplementary literature	Standards and technical documents (key for engineering work) Surveying regulations in particular: regarding technical standards, BDOT500, GESUT, EGIB. General Directorate for National Roads and Motorways (GDDKiA) instructions regarding road surveying. PKP PLK S.A. instructions regarding railway surveying. Technical documentation from instrument manufacturers (Leica, Trimble, Topcon). PN-ISO and PN-EN standards related to displacement measurements, monitoring, and leveling.
	eResources addresses	Basic http://geoforum.pl - Geoforum

Example issues/ example questions/ tasks being completed	1. Thesis Issues Defining the purpose, scope, and research problem of the thesis. Selecting appropriate measurement, computational, and analytical methods for a given topic. Assessing the quality and usefulness of input data: measurement, photogrammetry, and GIS. Formulating engineering conclusions, limitations, and recommendations. Preparing the computational and graphical sections (maps, 3D models, charts, analyses). Identifying methodological errors and their impact on the final result. Preparing the elements of the technical report and final presentation. 2. Guiding Questions (before the exam and for group discussion) What are the differences between strict and free alignment in the context of project control networks? When is it better to use geometric leveling and when is it better to use trigonometric leveling? How can the accuracy of a tunnel cut-out point be defined and estimated? What are the primary sources of error in monitoring the displacement of engineering structures? How to choose a measurement method for a railway or road structure? What should be submitted to the PZGiK (Polish Geological and Cartographic Association) and in what format for construction measurements? What geometric parameters are crucial for adjusting a crane's axis in a 3D system? How should the results of a thesis be presented in a way that is understandable to the examination committee? How should local variance coefficients be calculated and interpreted in error analysis? What are the most common questions on the G&K thesis exam and how should they be answered? 3. Practical tasks completed during the seminar Develop a fragment of your own thesis (methodology, data analysis, conclusions) and present it to the group. Prepare a staged presentation: "Assumptions and input data for the thesis." Prepare a mock thesis defense: a short presentation + answers to questions. Analysis of a sample set of measurements and identification of methodological errors. Critical evaluation of your colleague's thesis (peer review) with substantive justification. Prepare a list of 10 problem-solving questions related to your thesis topic. Develop an action plan for completing your thesis (schedule + milestones). Analysis of sample questions from previous years' diploma exams.
Practical activities within the subject	Not applicable

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