GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Architectural geometry, PG_00061211		
Field of study	Architecture		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Faculty of Architecture		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. arch. Anna Wancław	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	15.0	0.0	30

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	30	4.0	16.0	50

Subject objectives

The development of spatial vision and the ability to apply it in the architectural design, skills in using axonometric drawing and perspective.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W01] knows and understands construction problems, building and engineering issues related to building design; principles, solutions, constructions and building materials used in simple engineering tasks in the field of architectural and urban design	Correctly constructs and reads spatial objects (including curves and surfaces) in different types of projections, also using popular digital programs; with their help solves simple spatial problems.	[SW1] Assessment of factual knowledge
[K6_U04] is able to use analytical methods to formulate and solve project tasks	He is able to present the effects of work attractively, also using popular digital programs.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

Subject contents	lectures (10 meetings, 1.5 teaching hours): 1. Perspective - assumptions of the method. One-point perspective, circle in perspecrive 2. Orthogonal perspective. Shadows in prespective 3. Settings in digital perspective 4. Curves - geometry of curves, polynomial curves of degree 2 and 3, Bezier curves of any degree, B-spline curves and Nurbs 5. Surfaces - surface geometry, polynomial surfaces of degree 2 6. Stage II surfaces and their cross-sections. Conical curves. Affinity relationship elipse with circle 7. Test 1: coted projection - basic structures, roofs (projections, elevations, sections), shadows, elements land development 8. Surfaces Béziers of any degree, B-splines and Nurbs, surfaces defined by curves, mesh and subdivision representations 9. Penetration of surfaces, construction of vaults, operations on surfaces and solids. 3D modeling methods direct and parametric 10. Test 2: perspective, surface sections, surface intersection, ruled surfaces Drawing sheets: 1, 2. Sheet 1 roofs projection, cross-section, 3D model 3, 4. Sheet 2 shading of buildings 5, 6. Sheet 3 land development project 7. Sheet 4 one point perspective, circle in perspective, shadow for a ray not parallel to the projection plane 8, 9. Sheet 5 vertical perspective, shadow for a ray parallel to the projection plane Sheet 6 homework - perspective of your own project, setting the assumptions of the perspective 10. Sheet 7 conical sections 11, 12. Laboratory 1 geodesic dome 13, 14. Laboratory 2 conical sections, ruled surfaces 15. Laboratory 3 surface intersection
Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final exam	51.0%	50.0%
	Test 1 and 2	51.0%	25.0%
	Quality of drawings	100.0%	25.0%
Recommended reading	Basic literature	H. Pottmann, A. Asperl, M. Hofer, A. Kilian, *Architectural geometry,* Bentley Institute Press 2007 Górska R., *Geometria wykreślna,* Kraków 2015	
	Supplementary literature	Otto F.E., *Geometria wykreślna,* Jankowski W.,*Geometria wykreślna,* Grochowski B., *Geometria wykreślna z perspektywą stosowaną,* Bruzda J., *Szkice Perspektywiczne w architekturze,* Warszawa, 1971 Romaszkiewicz-Białas T., *Perspektywa praktyczna dla architektów,* Wrocław, 1991	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. Constructs the perspetcive of a given plans of the objects and its shadow according to a given light ray. 2. According to the given light ray construct the own shadow of a sphere and the shadw cast on the plane of the projection of the sphere 3. Create a ruled surface in parametric mode (Grasshopper)		
Work placement	Not applicable		