GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Architectural geometry, PG_00052609		
Field of study	Architecture		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2020/2021
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	English
Semester of study	2	ECTS credits	3.0
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	dr inż. arch. Anna Wancław	

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

Adresy na platformie eNauczanie:
Geometria dla architekta 2020/21 - Moodle ID: 8621
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=8621

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	6.0	39.0	75

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	He knows various methods of mapping space. Correctly constructs and reads spatial objects in various types of projections, also with the use of popular digital programs.	[SW1] Assessment of factual knowledge
[K6_U04] is able to use analytical methods to formulate and solve project tasks	He can use various methods of space mapping to solve simple spatial problems. He can present the effects of work in an attractive way. Has manual skills in the precise execution of linear drawings.	[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: 1. One-point perspective, circle in perspecrive 2. Orthogonal perspective. Shadows in prespective 3. Settings in digital perspective 4. Regular and semi-regular polyhedrons and geodesic domes. 5. Curves and their properties. Properties of digital curves. 6. Surfaces and their properties. Surface classification. Construction of the surface. Piercing points. 7, 8. Stage II surfaces and their cross-sections. Conical curves. Affinity relationship elipse with circle 9. Straight and screw surfaces. Digitally surfaces. Methods of creation. Curves and "offset" surfaces 10, 11. Intersection of surface. The vault. 12. Computer modifications and surface transformations. Models and surface developments. 13, 14. Sufraces in architecture. 15. Review of issues. Preparation for the exam design: 1. Horizontal projection - basic constructions, drawing 2. Horizontal projection - a road project in the terrain (laboratory) 3. One point perspective, the circle and shadow 4, 5. Vertical perspective with shadow, homework - settings of digital perspective 6, 7. (laboratory). Regular and semi-regular polyhedrons and geodesic domes 8. TEST - roofs and shadow, horizontal projection, perspective. 9. Construction of sufrace, piercing points 10, 11. (laboratory) Ruled surfaces. 12. conical cross-sections 13. Intersection of surfaces 14, 15 (laboratory) Surfaces - selected issues

Prerequisites and co-requisites		
Assessment methods and criteria		

Subject passing criteria	Passing threshold	Percentage of the final grade
Final exam, part II	51.0%	34.0%
Quality of drawings	100.0%	33.0%
Final exam, part I	51.0%	33.0%

Recommended reading	Basic literature	H. Pottmann, A. Asperl, M. Hofer, A. Kilian, *Architectural geometry,* Bentley Institute Press 2007 Przyłucka K., Helenowska-Peschke M. *Wykłady z geometrii wykreślnej*; http://www.pg.gda.pl/~mhelen/w1/index.html Helenowska-Peschke M., Wancław A., *Zadania z geometrii wykreślnej.* http://pbc.gda.pl/dlibra/doccontent?id=2597 *Helenowska-Peschke M., Wancław A., Konstrukcje cieni,* http://pbc.gda.pl/dlibra/doccontent?id=2566
	Supplementary literature	Górska R., *Geometria wykreślna,* Kraków 2015 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	Geometria dla architekta 2020/21 - Moodle ID: 8621 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=8621
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. According to the given light ray construct the common cast shadow of a sphere and torus 4. According to the given light ray construct the shadow of the complex surface (surface combined from torus and hemisphere) 5. Construct the interior shadow of cone according to the given light ray 6. Create a ruled surface in parametric mode (Grasshopper)	
Work placement	Not applicable	