



Subject card

Subject name and code	Descriptive Geometry , PG_00042794						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2021/2022		
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	1	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Katedra Wytrzymałości Materiałów -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Bożena Kotarska-Lewandowska					
	Teachers	dr inż. Karol Daszkiewicz dr inż. Bożena Kotarska-Lewandowska					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	30.0	0.0	0.0	0.0	45
	E-learning hours included: 0.0						
Adresy na platformie eNauczenie:							
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		5.0		35.0	85
Subject objectives	The aim of the course is to equip the student in: - knowledge of projection methods in orthogonal, topographic and axonometric projections; - skills of solving spatial problems in engineering practice.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U07] can read architectural, construction and geodesy drawings, and can use the known computer programs to prepare a drawing part of technical documentation for the sanitary industry	.At the conclusion of the course, students should be able to: represent polyhedrons and selected surfaces in orthogonal, topographic and axonometric projection; transform planes and determine natural size of elements; determine relation between objects in space by construction of piercing points or intersection lines; solve practical problems in the scope of geometry of roofs and earth works; sketch 3-D objects in axonometric view; distinguish kinds of perspective and draw simple one-point perspective views.			[SU1] Assessment of task fulfilment		
	[K6_W16] knows the rules of descriptive geometry and technical drawing regarding the recording and reading of architectural drawings, construction and surveying drawings, as well as their preparation with the use of CAD	At the conclusion of the course, students should be able to: read and create views or intersections of 3D objects in orthogonal projection, read and create surfaces of earth works in topographic projection			[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	Orthographic projection, planes of reference. Invariants of parallel projections. Representation of geometric elements in the Monge projection, transformation, auxiliary views. Belonging and parallelism of points, lines and planes. Determination of common elements: piercing points, edges between planes. Operating on polyhedrons: piercing points, intersection lines and development of polyhedrons surfaces. Parameters and construction of ellipse, parabola and hyperbola. Surfaces: sphere, conics and cylinder. Intersection of surfaces and planes, intersection of surfaces. Topographic projection. Representation of points, lines and planes. Basic constructions: belonging and parallelism of geometric elements, intersection of elements. Edge and normal view of a plane. Topographic surfaces. Determination of embankment and cut planes along roads and squares. Axonometric projection. Plane of reference and property of axonometric projection. Orthogonal projection. Determination of shortenings of true lengths on orthographic axes. Oblique axonometric projection. Application of presented projection methods: construction of roofs and earth work along roads. Basic rules of perspective projection, one-point perspective.		
Prerequisites and co-requisites	No requirements.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	40.0%	50.0%
	Project	0.0%	10.0%
	Drawing exercises	0.0%	40.0%
Recommended reading	Basic literature	<p>1. KOTARSKA-LEWANDOWSKA B., CHRÓSCIELEWSKI J. (red. praca zbiorowa): Materiały pomocnicze do wykładów i ćwiczeń z Geometrii Wykreślnej. Wersja elektroniczna do pobrania z portalu pg.edu.pl/enauczanie</p> <p>2. KOTARSKA-LEWANDOWSKA B.: Geometria wykreślna. Zadania testowe. Wersja elektroniczna do pobrania z portalu pbc.</p> <p>3. GROCHOWSKI B.: Elementy geometrii wykreślnej. PWN, Warszawa 2002.</p> <p>4. OTTO F., OTTO E.: Podręcznik geometrii wykreślnej. PWN, Warszawa 1998.</p> <p>5. JANKOWSKI W.: Geometria wykreślna. Wydawnictwo Politechniki Poznańskiej, Poznań 1999.</p>	
	Supplementary literature	<p>6. BIELIŃSKI A.: Geometria wykreślna. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005.</p> <p>7. BŁACH A.: Inżynierska geometria wykreślna (podstawy i zastosowania). Wydawnictwo Politechniki Śląskiej Gliwice 2006.</p> <p>8. BIELIŃSKI A.: Ćwiczenia z geometrii wykreślnej. Oficyna Wydawnicza Politechniki Warszawskiej 2002.</p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Construction of embankment and cut planes along roads and squares.		
Work placement	Not applicable		