

COURSE SYLLABUS

Course code	1080-BU200-ISA-0153
Course name	Descriptive Geometry II
Course version	2026L
Level of education	first cycle programme
Form and mode of study	full-time study
Study profile	general academic profile
Field of study	Civil Engineering
Specialisation	-
Organizational unit	The Faculty of Civil Engineering
Implementing unit	The Faculty of Civil Engineering
Course unit	n/a
Course groups	-
Course status	Obligatory
Language of the course	English
Study stage code	BU000-S2-ISA-1080
Number of ECTS credits	2

Part I**01. Learning outcomes and the method of conducting classes**

Learning outcomes	see table "Learning outcomes"
Forms of classes and the number of hours in the semester	
project	15,00 h
lectures	10,00 h

02. ECTS balance

Number of ECTS credits	2
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Course workload	Hours	ECTS
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Total number of hours and ECTS credits for the course:

Hours and ECTS credits for courses involving direct participation of academic teachers	26	1,04
Hours and ECTS credits involving student's independent work	24	0,96
Total	50	2,00

Number of hours involving direct participation of academic teachers:

Hours connected with class participation	25
Other synchronous hours	1
Total	26

Number of hours involving student's independent work:

Hours for student's independent work	24
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03. Course content

Part I	
Course content	Mutual one-to-one mapping of projective space onto a plane through central projection. Principle of mapping and basic constructions. Vertical perspective of a polyhedron and its sections by vertical and frontal planes. Intermediate perspective of a set of polyhedrons based on a plan and height data. Rotational surfaces in Monge projections. Intersections and sections of these surfaces. Classification of cone sections. Three projections of a rotational surface with a part cut by projecting planes. Developments of the lateral surface of a cone and a cylinder, including geodesic lines on these surfaces. Penetration of surfaces and methods for determining their intersection lines: plane method, concentric spheres method, and method resulting from decomposition of intersection lines of second-degree surfaces. Application of intersection line decomposition for constructing vaults and connections of cylindrical ducts. Ruled surfaces, their structure, and use in creating roof coverings.

Table: Learning outcomes	
Knowledge	
Outcomes code	W1
Description	Has intermediate knowledge of methods of plane and spatial Euclidean and projective geometry.
Related field-of-study learning outcomes	K1_W05
Outcomes code	W2
Description	Has intermediate knowledge of two methods of one-to-one mapping of space onto a plane: orthogonal parallel projection and central projection.
Related field-of-study learning outcomes	K1_W05
Skills	
Outcomes code	U1
Description	Is able to analyze relationships between spatial elements at an intermediate level.
Related field-of-study learning outcomes	K1_U11
Outcomes code	U2
Description	Is able to analyze properties of flat objects and polyhedral solids represented in Monge projections and in central projection at an intermediate level.
Related field-of-study learning outcomes	K1_U11
Social competence	
Outcomes code	K1
Description	Is ready to acknowledge the meaning of science in solving practical problems of geometry.
Related field-of-study learning outcomes	K1_K03

Part II	
04. Year and semester of studies	
Year	2026L
Semester	2
05. Course leader and course teachers	
Course leader	Grzegorz Dzierżanowski
lectures	Grzegorz Dzierżanowski
project	Grzegorz Dzierżanowski
06. Course objective	
Course objective	Explanation of the principles and techniques of projective geometry applied in civil engineering.
07. Teaching methods and techniques	

Part II	
project	The project-based method and problem self-studying.
lectures	Traditional lecturing.
08. Methods of verifying learning outcomes	
Knowledge	
Outcomes code	W1
Description	Has intermediate knowledge of methods of plane and spatial Euclidean and projective geometry.
Verification methods	lectures: written test:the test addressing the theory of descriptive geometry. project : project:worksheets addressing the problems discussed during the in-class tutorial
Outcomes code	W2
Description	Has intermediate knowledge of two methods of one-to-one mapping of space onto a plane: orthogonal parallel projection and central projection.
Verification methods	lectures: written test:the test addressing the theory of descriptive geometry. project : project:worksheets addressing the problems discussed during the in-class tutorial
Skills	
Outcomes code	U1
Description	Is able to analyze relationships between spatial elements at an intermediate level.
Verification methods	lectures: written test:the test addressing the theory of descriptive geometry. project : project:worksheets addressing the problems discussed during the in-class tutorial
Outcomes code	U2
Description	Is able to analyze properties of flat objects and polyhedral solids represented in Monge projections and in central projection at an intermediate level.
Verification methods	lectures: written test:the test addressing the theory of descriptive geometry. project : project:worksheets addressing the problems discussed during the in-class tutorial
Social competence	
Outcomes code	K1
Description	Is ready to acknowledge the meaning of science in solving practical problems of geometry.
Verification methods	lectures: written test:the test addressing the theory of descriptive geometry. project : project:worksheets addressing the problems discussed during the in-class tutorial
09. Required and recommended reading list	
Required reading	Łapińska C.: Descriptive Geometry, Oficyna Wydawnicza PW, Warszawa 2016.
Recommended reading	Łapińska C., Ogorzałek A.: Geometria wykreślna ćwiczenia / Descriptive Geometry exercises, Oficyna Wydawnicza PW, Warszawa 2018.
10. Other information	
Other information	In accordance with the Course Regulations.