

Tadeusz Kosciuszko Cracow University of Technology

Course Card

Faculty of Civil Engineering

Field of study: Civil Engineering

Study profile: general academic

Study form: full-time

Field of study code: BUD

Study cycle: 1st

Specialty: no specialty

1 COURSE INFORMATION

Course name	Geometria wykreslna
Course name in English	Descriptive Geometry
Course code	WIL BUD oIS C15 24/25
Course category	Basic
No. of ECTS points	3.00
Semester	1

2 CLASS TYPE, NUMBER OF HOURS ACCORDING TO THE STUDY PLAN

Semester	Lecture	Class exercise	Laboratory	Computer lab	Design exercise	Seminar
1	15	0	0	0	15	0

3 COURSE OBJECTIVES

Objective 1 Ability to provide representation methods of three-dimensional(3D) objects on a two-dimensional (2D) plane

Objective 2 Ability to "read" 2D drawings and to provide their restitution into a 3D space

Objective 3 Ability to think in a 3D space and to analyze 3D relationships between spatial elements of the constructions.
Developing spatial visualization abilities.

Objective 4 Ability to communicate design ideas on the base of graphical representation of the designed structure

4 PREREQUISITES IN TERMS OF KNOWLEDGE, SKILLS AND OTHER COMPETENCES

- 1 Knowledge of basic axioms and theorems of Euclidean geometry
- 2 Knowledge of basic planimetric constructions, ability to distinguish planimetric from stereometric representations
- 3 Ability to determine simple 2D and 3D objects

5 LEARNING OUTCOMES

LO1 Knowledge Graduate will know the basic graphical representation methods applied for creating technical documentation of engineering design project.

LO2 Knowledge Graduate will be able to communicate design ideas by using various projection methods to represent designed objects.

LO3 Skills Graduate will be able to "read" technical drawings.

LO4 Knowledge Graduate will gain ability to effectively communicate in a teamwork both at branch-works and at interdisciplinary communities.

6 COURSE CONTENT

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L1	Course Introduction & Objectives. Projective Space Definition. Infinite Elements in Projective Space. Projection methods classification and invariants. Multiview projection: U.S Standard and European standard (PN-EN ISO 5456-2: 2002).	3
L2	Mongean Projection Method. Point, line and plane representation. Auxiliary views. Perpendicularity. measuring distances, surface area and dihedral angles.	2
L3	Five Platonic solids - regular polyhedra and their properties.	1
L4	Axonometric projection: oblique and orthographic axonometry. Isometric projection (PN-EN ISO 5456-3:2002).	2
L5	Topographic projection. Point, line and plane representation. Application of the topographic mapping into the earth works. Cuts and fills around a road or a platform. Profile and cross-section construction. Roofs development.	3
L6	Perspective projection method: theory and application (PN-EN ISO 5456-4:2006).	2
L7	Surfaces of revolution and ruled surfaces applied in building constructions: cylinder of revolution, cone of revolution, parabolic - hyperboloid. Sphere and its sections with a plane.	2

Design exercise		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
P1	Multiview projection: U.S Standard and European standard (PN-EN ISO 5456-2: 2002).	1
P2	Sketching as an indispensable element in engineering practice. Lines and curves freehand sketching. Tangential lines to circles. Construction of an ellipse, parabola, hyperbola.	2
P3	Mangena projection: points, lines and planes representation. Basic constructions. Auxiliary Views. True shape and size of plane and True length line. Dihedral angles.	2
P4	The five Platonic solids: a composition made of a tetrahedron, an octahedron and a cube. Designing and modeling.	2
P5	Axonometric projection: orthogonal axonometry of a designed composition of solids. Oblique axonometry of the same composition (PN-EN ISO 5456-3: 2002).	2
P6	Topographic projection. Designing of cuts and fills around a road/ platform construction. Roof design. True shape and size of a roof surface. Dihedral angle between the adjacent roof surfaces.	2
P7	Roof coverings: a rectilinear or a curvilinear patch of surface. 3D Visualization.	2
P8	Perspective projection: perspective drawing of the Platonic solids composition used within L4 (PN-EN ISO 5456-4:2006).	2

7 TEACHING TOOLS

N1 Lectures

N2 Multimedia presentation

N3 Design exercise

N4 Tasks

N5 Consultation

8 Student workload

Activity form	Number of hours of activity
Hours realized in contact with the teacher	
Hours resulting from the study plan	30
Consultation hours	10
Exams and tests during session	5
Hours of autonomous student work	
Preparing for classes, studying literature	15
Developing results	0
Preparing of reports, projects presentations, discussion	30
Total number of hours devoted to the subject	90
Total number of ECTS points	3.00

9 Methods of grading

Partial grades

F1 Colloquium

F2 Individual project

F3 Tasks

Summary grade

P1 Written exam

P2 Weighted average of the midterm tests grades

Conditions for passing the course

L1 Attendance

L2 Successful completion of all formative assessments
