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	Grafika inżynierska
Course name in English	Computer Graphics for Engineers
Course code	WIL BUD oIS C16 24/25
Course category	Basic
No. of ECTS points	2.00
Semester	1

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

Semester	Lecture	Class exercise	Laboratory	Computer lab	Design exercise	Seminar
1	0	0	0	30	0	0

3 COURSE OBJECTIVES

Objective 1 Capability to create 2D drawing.

Objective 2 Capability to define dynamic blocks.

Objective 3 Capability to prepare template and plot the drawing.

Objective 4 Capability to visualize 3D model.

4 PREREQUISITES IN TERMS OF KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1 None.

5 LEARNING OUTCOMES

LO1 Skills Student is capable of creating 2D drawing. Uses basic drawing tools, such as Grid, Snap, Ortho. Draws using cartesian and polar coordinate systems in relative and absolute coordinates. While drawing uses relative location with respect to objects, polar tracking, tracking relative to objects. Is capable of using Move, Erase, Trim, Break, Offset, Array, Mirror, Copy, Envelope, Area commands.

LO2 Skills Student uses blocks and links. Is capable of defining standard block. Can draw objects with parametric, geometric and dimensional constraints. Can define a dynamic block with attributes. Is capable of editing block attributes. Can extract block data and create a table containing extracted data.

LO3 Knowledge Student is capable of creating a drawing template with layers and liveweights, according to technical drawing's requirements. Student is also capable to properly prepare drawing's layout, using Viewport and Scale commands. Student uses correct paper sheets and knows how to plot the effects of his work.

LO4 Skills Student is capable of drawing 3D objects. Can manage views and local coordinate systems. Knows visual styles. Can create projections and sections of a 3D model.

6 COURSE CONTENT

Laboratory computer		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
K1	Organization of class. Requirements to pass the course. Basics of computer graphics. Basics of AutoCAD drawing environment. File operations. Display. Zoom command and its parameters. Grid, snap, ortho. Relative and absolute coordinates.	2
K2	Drawing basic objects (line, circle) using location and tracking. Location and tracking.	2
K3	Drawing objects: arc, polyline, polygon, points, spline, text, hatching. Divide and measure commands.	2
K4	Managing drawing objects using layers. Dimensioning and annotating a drawing. Dimension styles. Editing text. Object properties.	2
K5	Modifying objects. Methods to create indicator sets. Modify operations: Erase, Move, Rotate, Copy (by offsetting, single, multiple; using axial and central symmetry), Trim, Lengthen, Chamfer, Fillet. Questions.	2
K6	Modifying objects - continued.	2
K7	Test no 1 - drawing and modification of 2D geometry (45'). Drawing using parametric, geometrical and dimensional constraints.	2

Laboratory computer		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
K8	Preparation of plotting sheet with one viewport of drawing. Dimensioning, scale.	2
K9	Block definition, inserting blocks. Dynamic blocks.	2
K10	Preparation of plotting sheet with several viewports of drawing. Dimensioning in viewports. Data extraction. Tables.	2
K11	Preparation of plotting sheet with several viewports of drawing - continued.	2
K12	Test no 2 - Plotting the sheet with several viewports (90').	2
K13	Introduction to 3D modelling - surfaces and solid modelling. Managing viewports and coordinate systems in 3D. Visual styles. Exercises in solid modelling: solid primitives, simple extrusion, rotation, basic editing (union, difference, sum).	2
K14	Exercises in 3D modelling, continued. Section and Slice. Complex extrusion. Creating projections and sections based on the 3D model. Dimensioning in 3D.	2
K15	Solid modelling, creating projections and sections based on the 3D model. Summary of the course.	2

7 TEACHING TOOLS

N1 Design exercise

N2 Consultation

N3 Discussion

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	0
Exams and tests during session	0
Hours of autonomous student work	
Preparing for classes, studying literature	30
Developing results	0
Preparing of reports, projects presentations, discussion	0
Total number of hours devoted to the subject	**60**
Total number of ECTS points	2.00

9 Methods of grading

Partial grades

F1 Individual project

Summary grade

P1 Weighted average of the midterm tests grades