

# COMPUTER-AIDED DESIGN

(Specialization Landscape Engineering, 2<sup>nd</sup> Year of study, 2<sup>nd</sup> Semester)

**Credits (ECTS): 4**

**Course category: Specialized discipline**

**Course holder: Assist. Prof. Ana-Maria-Roxana ISTRATE, PhD**

## Objectives of the discipline:

The general aim of the subject:

- Learning the fundamental notions necessary to realize computer-aided graphic representations under the AutoCAD interface.

Specific objectives:

- Learning the computer-aided drawing and editing commands necessary to realize 2D graphical representations under the AutoCAD interface;
- To train the student's ability to use modern computer tools in the drawing process as a basic tool in landscape design;
- Apply the received information to solve individual tasks related to computer-aided representation of technical drawings.

## Contents (syllabus)

Course (chapters/subchapters)
<b>1. AutoCAD. Getting started. Utility commands:</b> - AutoCAD interface: Introduction to the AutoCAD interface, explaining the basic components such as the RIBBON, command palette, and toolbar. - Utility Commands: Familiarize yourself with essential commands such as ZOOM, PAN, UNDO, and REDO to navigate the workspace and correct real-time errors.
<b>2. Graphic aids:</b> - Alignment and precise drawing functions: Explanation of the ORTHO, GRID, SNAP, and POLAR TRACKING functions and how they facilitate accurate and controlled drawing. - OBJECT SNAP and Positioning Aids: Introduction to OBJECT SNAP (OSNAP) functions, which allow you to capture the exact reference points of drawn objects, such as the midpoints, endpoints, and centers of circles.
<b>3. 2D object drawing commands:</b> - Drawing basic objects: Use commands such as LINE, POLYLINE, CIRCLE, RECTANGLE, RECTANGLE, ARC, and SPLINE to create basic geometric shapes. - Creating polyline and arcs: Explaining the differences between line and polyline and how to draw arcs and curved lines, which are essential for various technical and design applications.
<b>4. 2D object editing commands:</b> - Transform objects: commands such as MOVE, COPY, ROTATE, and SCALE will be used to reposition, clone, rotate, and resize objects. - Modifying and adjusting shapes: TRIM, EXTEND, FILLET, and MIRROR commands will modify object boundaries, connect curves, and create symmetrical reflections, allowing for plane refinement and correction.
<b>5. Drawing dimensioning commands:</b> - Linear and Aligned Dimensioning: Students will learn to add linear and aligned dimensioning using commands such as LINEAR DIMENSION and ALIGNED to express the dimensions of features clearly and accurately. - Dimensioning angles and radii: Radial and angular dimensioning commands will be used to dimension the radii of circles and angles, which are essential elements in many technical drawings.
<b>6. Object hatching commands and information commands:</b> - Hatching objects: Apply HATCH to fill enclosed areas with textured patterns indicating different materials or surfaces. - Information commands: Use the LIST, DISTANCE, and AREA commands to get detailed information about the properties of drawn objects, such as their length, area, and position.
<b>7. Layout settings, saving to scale:</b> - Setting LAYOUT for Print: Students will learn how to set up a print layout, create viewports, and adjust the drawing view to match the print page dimensions. - Exporting and Saving the File to PDF: Explain the process of saving scaled drawings and exporting them to PDF so they are ready for professional presentation or printing.

<b>Practical work and project</b>
<b>1. Organization of the working session in AutoCAD</b> (AutoCAD graphical AutoCAD screen, entering commands, utility commands, coordinate systems). Screen control commands. Graphical aids. Practical applications
<b>2. Drawing techniques</b> for lines, polylines, circles, circular arcs, ellipses, polygons, text entities, etc. Practical applications
<b>3. Entity editing techniques</b> use erase, copy, draw symmetries, move, scale, rotate, extend, expand, stretch, cut, join, and split commands on the represented objects. Practical applications
<b>4. Object properties</b> (color, line type, line, and layer thickness)
<b>5. Hatching commands for objects</b> (hatch patterns, pattern properties, setting the outline of the hatch area, visualizing the hatch). Dimensioning drawings (dimensioning elements, types, styles, editing dimensions). Practical applications;
<b>6. Individual work</b> (Computer-aided representation of a plan representing a garden design).

## Bibliography

- 1. Steven L. Cantor** (2020), *Professional and Practical Considerations for Landscape Design*, Editura Oxford University Press Inc, ISBN 978-0-1906-2333-3;
  - 2. Edward Hutchison** (2019), *Drawing for Landscape Architecture*, Editura Thames & Hudson, ISBN 978-0-5002-9488-8;
  - 3. Slonovschi, A., Prună, L.** (2014), *Infografică. Noțiuni introductive*, Editura PIM, Iași, ISBN 978-606-13-2086-8;
  - 4. Palmboom** (2012), *Drawing the Ground – Landscape Urbanism Today: The Work of Palmbout Urban Landscapes*, Editura Birkhauser, ISBN 978-3-0346-1207-4;
  - 5. Booth Norman**, (2011), *Foundations of Landscape Architecture*, Editura Wiley, ISBN 978-0-4706-3505-6;
  - 6. Thomas R. Ryan, Edward Allen, Patrick J. Rand** (2011), *Detailing for Landscape Architects - Function, Constructibility, Aesthetics, and Sustainability*, Editura John Wiley & Sons Inc, ISBN 978-0-4705-4878-3;
  - 7. Elke Mertens** (2009), *Visualizing Landscape Architecture: Functions, Concepts, Strategies*, Editura Birkhauser, ISBN 978-3-0346-0459-8;
  - 8. Grant W. Reid** (2002), *Landscape Graphics: Plan, Section, and Perspective Drawing of Landscape Spaces – Revised Edition*, Editura Watson–Guptill, ISBN 978-0-8230-7333-7;
- \*\*\* Software AutoCAD.

## Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Monitoring attendance and activity	20 %
	Final evaluation	80 %
Project	Monitoring attendance and activity	20 %
	Presenting and/or supporting the project Critical appraisal of a project	80 %

## Contact

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