SYLLABUS

1. Date despre program

1.1 Institution	Technical University of Cluj-Napoca
1.2 Faculty	Electrical Engineering
1.3 Department	Electric Power Systems and Management
1.4 Field of study	Electrical Engineering
1.5 Cycle of study	Bachelor of Science
1.6 Program of study/Qualification	Electrical Systems
1.7 Form of Education	Full time
1.8 Subject Code	13

2. Date despre disciplină

2.1 Subject name				Computer-aided graphics	
2.2 Field of interest				Computer-aided graphics	
2.3 Course responsible/lecturer				Conf. dr. ing. Horia Beleiu	
2.4 Titular of applications				Conf. dr. ing. Horia Beleiu	
2.5 Year of study	I	2.6 Semester	2	2.7 Assessment type	E
2.8 Discipline regime	Subject category				DF
	Optionality				-

3. Estimated total time

3.1 Number of hours per week	4	of which:	3.2 Course	2	3.3 Seminar		3.3 Laboratory	2	3.3 Project	-
3.4 Number of hours per semester	56	din care:	3.5 Course	28	3.6 Seminar		3.6 Laboratory	28	3.6 Project	-

3.7 Distribution of time fund (hours per semester) for:	
(a) Study by textbook, course support, bibliography and notes	21
(b) Additional documentation in the library, on specialized electronic platforms and in the field	6
(c) Preparation of seminars / laboratories, homework, reports, portfolios and essays	7
(d) Tutorial	4
(e) Examinations	4
(f) Other activities:	2

3.8 Total of individual study hours (sum of (3.7(a)…3.7(f)))	44
3.9 Total hours per semester (3.4+3.8)	100
3.10 Number of credits	4

4. Pre-requisites (where appropriate**)**

4.1. Compulsory	Computer operating skills, Geometry
4.2. Recommended	Technical drawing

5. Conditions (where appropriate)

5.1. For the course (where/when)	• Multimedia equipment
5.2.For the applications	• Computer network

6. Specific competences (Learning Outcomes**)**

Professional Competences	• Ability to recognize the need and engage in lifelong learning. • Developing the ability to use tools and packages specific to applications in the electro-energetic field. • Ability to work in inter and disciplinary teams, to communicate effectively and understand professional and ethical responsibilities. • Ability to address and manage specific information applications. • Ability to use modern engineering techniques, skills and tools needed for engineering practice
Competenţe transversale	• Applying the values and ethics of the engineer profession and the responsible execution of professional tasks under conditions of limited autonomy and qualified assistance. Promoting logical, convergent and divergent reasoning, practical applicability, assessment and self-assessment in decision-making. • Performing activities and exercising the roles specific to teamwork on different hierarchical levels. Promoting the spirit of initiative, dialogue, cooperation, positive attitude and respect for others, diversity and multiculturalism and continually improving their own activities.

7. Discipline objectives (according to the Specific competences)

7.1 General objective of the discipline	Operation with fundamental concepts of computer science and information technology
7.2 Specific objectives	• Technical drawing. • Realization of technical projects.

8. Contents

8.1 Course (syllabus)	Nr. of hours	Teaching Methods	Notes
1. AutoCAD - Overview. Multimedia means	2	Multimedia equipment	
2. AutoCAD - Configuring the drawing menu; coordinates.	2		
3. AutoCAD - The main options of the status bar.	2		
4. AutoCAD - Drawing commands - draw; viewing modes; Selection modes - Selection.	2		
5. AutoCAD - editing commands - Modify; Query commands - INQUIERY.	2		
6. AutoCAD - Organization of drawings on layers - Layer.	2		
7. AutoCAD - Haşuration - Hatch and gradient.	2		
8. AutoCAD - Text entities.	2		
9. AutoCAD - Using the blocks.	2		
10. Notions of technical drawing: numerical stairs, formats, indicators, lines, quotation, hatches, drawings.	2		
11. Technical Design: Orthogonal projections, sections, ruptures.	2		
12. AutoCAD - Cotting drawings - Dimension.	2		
13. AutoCAD - Creating and modifying quotation styles.	2		
14. AutoCAD - Printing - Plot.	2		

References (Bibliography)

1. Martineac, Corina, Grafică asistată de calculator utilizând AutoCAD. Cluj-Napoca: Editura Mediamira, 2008, ISBN 978-973-713-201-7 .

2. Simion, I., AutoCAD 2007 pentru ingineri. Bucureşti, Editura Teora, 2007, ISBN 978-973-201046-4
3. Finkelstein, Ellen, AutoCAD 2004, Bucureşti: Editura Teora, 2004, ISBN 1-59496-027-5.
4. Hulpe, Gh., Bulubaşa, M. ş.a. – Desen industrial. Cluj-Napoca: Litografia Institutului Politehnic din Cluj-Napoca, 1980.

8.2 Laboratory	Nr. of hours	Teaching Methods	Notes
1 AutoCAD: Opening a working file, presentation of the main window, setting the measuring units and drawing limits, coordinate axis systems, the use of absolute and relative coordinates. Exposure, experiment, discussions.	2	Exposure, experiment, discussions	
2 AutoCAD: Working Modes: Grid, Snap, Ortho, Polar, Osnap, Otrack.	2		
3 AutoCAD: Drawing commands: Line, full, Polygon, Rectangle, Arc, Circle, Ellipse; Zoom view modes; Selection modes Window selection, Crossing Selection, Fence Selection, Quick Selection.	2		
4 AutoCAD: Orders: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Trim, Extend, Break, Join, Chamfer, Fillet, Explode.	2		
5 AutoCAD: Defining and using layers (layers), options related to defining the type, thickness and color of the lines used; Locking (locking) layers.	2		
6 AutoCAD: Making Has by using Hatch and Gradient orders.	2		
7 AutoCAD: Using Text Entities: Text Style, Single Line Text, Multilines Text, Text Edit, Text Scale, Justify Text	2		
8 AutoCAD: Make Block, Insert Block and Edit Block commands	2		
9 AutoCAD: Quotation commands: Dimension, Linear Dimension, Aligned Dimension, Arc Length, Radius, Diameter, Angular, Quick Dimension, Baseline, Continue, Dimension Text Edit	2		
10 AutoCAD: Commands for creating and modifying quotation styles: Dimension Style, Lines, Symbols and Arrows, Text, Fit; Printing commands - plot.	2		
11 AutoCAD: Exercising printing commands from the model and layout space. Methods of spreading Type A formats.	2		
12 AutoCAD: making a complex drawing using the studied commands.	2		
13 AutoCAD: making a complex drawing using the studied commands.	2		
14 Recovery session	2		

References (Bibliography)

1. http://www.sdcpublications.com/pdfsample/978-1-58503-864-0-1.pdf
2. https://cms.cerritos.edu/uploads/engt/autocad%20basics.pdf
3. http://docs.autodesk.com/ACDMAC/2013/ENU/PDFs/acdmac_2013_users_guide.pdf

9. Corroborating the discipline contents with the expectations of the epistemic community representatives, the professional associations and the representative employers in the field related to the program.

The courses and applications take into account the requirements and expectations of the business environment: well-known companies in the field, collaborators from industrial and economic environments, colleagues from other university centers.

10. Evaluations

Type of activity	10.1 Assessment criteria	10.2 Evaluations methods	10.3 Share of final mark
10.4 Course	Knowing the theoretical notions taught and making drawings with AutoCAD software.	Written exam (E) – grid, applications on aspects from the course.	50%
10.5 Laboratory	Making drawings at laboratory sessions.	Laboratories examination, experimental data processing, (mark L)	50%
10.7 Minimum performance standard: E, L ≥ 5 Mark calculation formula N=(E+L)/2			

Date:	**Titular**	**Title First name, Name**	**Signature**
September 2024	Course	Conf. dr. ing. Horia BELEIU	
	Applications	Conf. dr. ing. Horia BELEIU	

Date of approval in the Department Council ENM
September 2024

Head of Department:
Prof. Eng. MICU Dan Doru, PhD

Date of approval in the Faculty Council
Electrical Engineering
September 2024

Decan
Assoc. Prof. Eng. Andrei CZIKER, PhD