SYLLABUS

1. Program Information

1.1 Higher education institution	Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Automation and Computer Science
1.3 Department	Department of Automation
1.4 Field of study	Automation, Applied Informatics and Intelligent Systems
1.5 Cycle of studies	Bachelor
1.6 Study Programme/Qualification	Intelligent Automation Systems (dual, in English language)
1.7 Form of education	IF – full-time education
1.8 Course code	29.00

2. Course information

2.1 Course title				**CAD Tools for Industrial Need**		
2.2 Course lecturer						
2.3 Seminar / Laboratory / Project Lecturer				*Ing. Adrian Mudure (Emerson)*		
2.4 Year of study	2	2.5 Semester	2	2.6 Type of assessment		E
2.7 Course status	Formative category *(DF, DS, DC)*					DS
	Optionality *(DOB, DOP, DFac)*					DOB

3.Total estimated time

3.1 Number of hours per week	4	of which:	HEI	Lecture		Seminar		Laboratory		Project	
			CO		0		0		4		
3.2 Number of hours per semester	56	of which:	HEI	Lecture		Seminar		Laboratory		Project	
			CO		0		0		56		

3.3 Distribution of time allocation (hours per semester) for:	HEI	CO
(a) Study based on textbook, course support, bibliography, and notes		16
(b) Additional documentation in library, specialized electronic platforms, and fieldwork		16
(c) Preparation of seminars/laboratories, assignments, papers, portfolios and essays		35
(d) Tutoring		0
(e) Examinations		2
(f) Other activities:		0
3.4 Total individual study hours (sum (3.3(a)... 3.3(f)))		69
3.5 Total hours per semester (3.2+3.4)		125
3.6 Number of credits per semester		5

(HEI = Higher Education Institution, CO = Company)

4. Prerequisites (where applicable)

4.1 Curriculum Prerequisites	• Fundamentals of Electronic Circuits, Power electronics
4.2 Competency Prerequisites	• English, Electrical Knowledge, Basic Computer Literacy, Technical Drawing Skills

5. Conditions (where applicable)

5.1. Course Organization Conditions	N/A
5.2. Seminar / Laboratory / Project organization conditions	Laptop with AutoCAD Electrical

6. Specific Competencies Acquired

Professional Competencies	• PC01 Adjust engineering designs • PC02 Analyse test data • PC06 Define technical requirements • PC08 Design automation components • PC12 Gather technical information • PC13 Interact professionally in research and professional environments • PC21 Report analysis results • PC25 Use technical drawing software • PC26 Use information technology tools • PC30 Design control systems
Transversal Competencies	• TC01 Apply knowledge of science, technology and engineering • TC03 Demonstrate responsability • TC04 Work in teams • TC05 Interpret mathematical information

7. Learning outcomes

Knowledge:	• Basic Drawing Commands and Techniques, Annotating Drawings, Using Blocks and Attributes, Plotting and Printing, Creation of Electrical Schematics, Report Generation, Circuit Design and Analysis, Creation of General Arrangement Drawings.
Skills:	• Advanced Electrical Drafting, Component and Symbol Management, Schematic Design, Automated Design Features, Panel Layout Design**.**
Responsibility and autonomy:	• Accuracy and Precision, Design Integrity, Independent Design Creation, Problem Solving and Decision Making, Workflow Optimization, Adaptability and Innovation,

8. Course Objectives

8.1 General objective of the course	• Understanding the Interface, Creation of Electrical Schematics, Component and Symbol Management, Efficient Use of Automated Features
8.2 Specific objectives	• Design Control Panels, Utilize Project Management Features, Generate and Customize Reports

9. Contents

9.1 Seminar / laboratory / project	Hours HEI	Hours CO	Teaching methods	Obs.
Introduction to AutoCAD		4	Presentations, discussions and practical work	Laptop, projector
Basic features of AutoCAD		8		
Introduction to AutoCAD Electrical		4		
Basic Electrical Design Concepts		8		
Automation/Productivity Tools		12		
Tips & Tricks		8		
Cabinet Design		12		
Bibliography AutoCAD Electrical User Guide - https://help.autodesk.com/view/ACAD_E/2025/ENU/				

10. Correlation of course content with the expectations of the epistemic community representatives, professional associations, and major employers in the field related to the program

The course provides a comprehensive educational experience that equips students with both theoretical knowledge and practical skills specifically in AutoCAD Electrical. This version of AutoCAD is tailored to the needs of electrical designers, offering specialized tools and features that facilitate the creation and management of electrical control systems. Students become adept at using the software's electrical-specific capabilities such as schematic design, panel layout generation, and automatic wire numbering, which streamline the design process and enhance accuracy.

11. Evaluation

Activity Type	**Evaluation criteria**	**Evaluation methods**	**Weight in final grade**
11.1 Seminar/ Laboratory/Project	Design of automation cabinet	Project presentation	100%
11.2 Minimum Performance Standard • Completion of all assigned homework, demonstrating the ability to apply the concepts learned in creating and modifying electrical schematics and cabinet designs. • Demonstrated proficiency in using AutoCAD Electrical tools and features, such as creating wiring diagrams, panel layouts, and component tagging.			

Date of completion: 11.05.2025	Program responsible	Conf.dr.ing. Roxana Rusu-Both	

Date of approval by the Department of Automation Council 24.11.2025 _____ Date of approval by the Faculty of Automation and Computer Science Council 28.11.2025 _____	Director of the Department of Automation Prof.dr.ing. Honoriu VĂLEAN Dean Prof.dr.ing. Vlad MUREȘAN