

Syllabus

1. Data about the program of study

1.1 Institution	Technical University of Cluj-Napoca
1.2 Faculty	Automation and Computer Science
1.3 Departament	Automation
1.4 Field of study	Systems Engineering
1.5 Cycle of study	Bachelor of Science
1.6 Program of study/Qualification	Automation and Applied Informatics (English)
1.7 Form of education	Full time
1.8 Codul disciplinei	50.20

2. Data about the subject

2.1 Subject name	Computer Networks			Discipline code	50.20
2.2 Course responsible/lecturer	Lecturer Dr. Eng. Ioan Valentin Sita – Valentin.Sita@aut.utcluj.ro				
2.3 Teachers in charge of applications	Lecturer Dr. Eng. Ioan Valentin Sita – Valentin.Sita@aut.utcluj.ro				
2.4 Year of study	4	2.5 Semester	1	2.6 Assessment (E/C/V)	C
2.7 Type of subject	<i>DF – fundamental, DD – in the field, DS – specialty, DC – complementary</i>				DD
	<i>DI – compulsory, DO – elective, Dfac – optional</i>				DO

3. Estimated total time

3.1 Number of hours per week	4	of which:	Course	2	Seminar	0	Laboratory	2	Project	0
3.2 Number of hours per semester	56	of which:	course	28	Seminar	0	Laboratory	28	Project	0
3.3 Individual study										
(a) Manual, lecture material and notes, bibliography										14
(b) Supplementary study in the library, online and in the field										14
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										11
(d) Tutoring										2
(e) Exams and tests										3
(f) Other activities:										0
3.4 Total hours of individual study (sum of (3.3(a))...(3.3(f)))					44					
3.5 Total hours per semester (3.2+3.4)					100					
3.6 Number of credit points					4					

4. Pre-requisites (where appropriate)

4.1 Curriculum	Control Engineering, Systems Theory, Process Modeling
4.2 Competence	Solve common problems in systems engineering by identifying the techniques, principles, and applying appropriate methods of mathematics with emphasis on numerical calculation methods.

5. Requirements (where appropriate)

5.1. For the course	N/A
5.2. For the applications	Mandatory attendance

6. Specific competences

6.1 Professional competences	Using automation fundamentals, methods of modeling, simulation, identification and analysis processes, computer aided design techniques.
6.2 Cross competences	N/A

7. Course objectives

7.1 General objective	• To design and implement human-machine interfaces in different programming environments
7.2 Specific objectives	• To use the mechanisms offered by different development environments for designing user interfaces.
	• To use different tools for designing complex application interfaces.

8. Contents

8.1 Lecture	No.hours	Teaching methods	Notes
Introduction. Historical Shield. Graphical user interfaces.	2	Teaching using laptop and projector, interactive course, debate / or online on Teams platform	
Principles of realization of human-machine interfaces I. Feedback. Predictability. Transparency. Error tolerance, etc.	2		
Principles of realization of human-machine interfaces II. Standardization. Open standards.	2		
Design of human-machine interfaces. User profiles. Utility. Compliance with user requirements.	2		
Specific problems I. Hardware. Input devices. Output devices.	2		
Specific problems II. Software. Interactive schemes. Error messages. Response time.	2		
Specific problems III. Web. Design of human-machine interfaces in web context. Compatibility of web pages. Cookies. Information security.	2		
Realization of human machine graphical interfaces. User interfaces. Specific controls. Specific types of applications.	2		
Examples of environments for the development of human-machine interfaces for industrial processes. OpenGL, VRTool, etc.	2		
WinCC development environment I. Fields of application. Basic functions.	2		
Development environment WinCC II. Libraries.	2		
Development environment WinCC III. Link with the description language of AP STEP7.	2		
Designing user interfaces using WinCC I.	2		
Designing user interfaces using WinCC II.	2		
Bibliography			
1. Peter Norton, Dave Kearns. Computer Networks. Teora. Year of publication: 2002			
2. R.Baciu. Programarea aplicatiilor grafice 3D cu OpenGL Year of publication: 2005 Cota 522.881			
3. D. Boling. Programming Microsoft Windows CE .NET. Year of publication: 2003 Cota 510.949			
4. A. Cooper. Proiectarea interfetelor utilizator. Year of publication: 1997 Cota 489.432			
5. R. Copindean, O.P. Bortos. Interfete standard pentru achizia de date. Year of publication: 2003 Cota 511.223			
6. C. Petzold. Programare in Windows cu C#. Year of publication: 2003 Cota 519.149			
8.2 Applications (seminar/laboratory/project)	No.hours	Teaching methods	Notes
Programming user insights. Classes of controls. Connect to process I / O equipment.	4	Presentation of examples, demonstrations, discussions, practical applications / or online on Teams platform	
Programming user interfaces. Graphic classes.	4		
OpenGL.	4		
Web user interfaces.	4		
WinCC II.	4		
Design and implementation in WinCC of a level control application on a stand with Siemens programmable software.	4		
Design and implementation in WinCC of a flow control application on a stand with Siemens programmable automatic.	4		
Bibliography			
1. A. Morariu, H. Vălean, C. Marcu. Human–Computer Interfaces. U.T. Press, 2010, 127 pag., ISBN 978-973-662-549-7			
2. R.Baciu. Programarea aplicatiilor grafice 3D cu OpenGL Year of publication: 2005 Cota 522.881			
3. D. Boling. Programming Microsoft Windows CE .NET. Year of publication: 2003 Cota 510.949			
4. A. Cooper. Proiectarea interfetelor utilizator. Year of publication: 1997 Cota 489.432			
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9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

The topics of the courses cover the requirements of employers in the field of ICT, especially those in the field of systems engineering. Some of the methods applied in the discipline can be used in other areas.

10. Evaluation

Activity type	Assessment criteria	Assessment methods	Weight in the final grade
Course	Assessment of knowledge through a test based on the knowledge gained following participation in the course	Written exam	70%
Seminar	-	-	-
Laboratory	Examination of the skills and knowledge acquired through the participation in the laboratory.	Practical assessment	30%
Project	-	-	-
Minimum standard of performance: Written exam rank > 5 and practical assessment rank > 5			

Date of filling in: 30.06.2026		Title Firstname NAME	Signature
	Course	Lecturer PhD Eng Ioan-Valentin Sita	
	Applications	Lecturer PhD Eng Ioan-Valentin Sita	

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