

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 Department	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	40

2. Data about the subject

2.1 Subject name	Industrial Informatics				
2.2 Course responsible/lecturer	Prof.dr.ing. Honoriu VĂLEAN – Honoriu.Valean@aut.utcluj.ro				
2.3 Teachers in charge of applications	Conf.dr.ing Dan GOȚA – Dan.Gota@aut.utcluj.ro SL.dr.ing. Teodora SANISLAV – Teodora.Sanislav@aut.utcluj.ro SL.dr.ing. Adela POP – Adela.Puscasiu@aut.utcluj.ro SL.dr.ing. Alexandra FANCA – Alexandra.Fanca@aut.utcluj.ro SL.dr.ing. Claudiu DOMUȚA – claudiu.domuta@aut.utcluj.ro – Satu-Mare As.drd.ing. Alexandru CIOBOTARU – Alexandru.Ciobotaru@aut.utcluj.ro				
2.4 Year of study	3	2.5 Semester	2	2.6 Assessment (E/C/V)	E
2.7 Type of subject	DF – fundamental, DD – in the field, DS – specialty, DC – complementary				DS
	DI – compulsory, DO – elective, Dfac – optional				DI

3. Estimated total time

3.1 Number of hours per week	5	of which:	Course	2	Seminar	0	Laboratory	2	Project	1
3.2 Number of hours per semester	70	of which:	course	28	Seminar	0	Laboratory	28	Project	12
3.3 Individual study										
(a) Manual, lecture material and notes, bibliography										2
(b) Supplementary study in the library, online and in the field										1
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										0
(d) Tutoring										0
(e) Exams and tests										2
(f) Other activities:										0
3.4 Total hours of individual study (sum of (3.3(a))...(3.3(f)))										5
3.5 Total hours per semester (3.2+3.4)										75
3.6 Number of credit points										3

4. Pre-requisites (where appropriate)

4.1 Curriculum	Computer programming, Applied informatics, Algorithm design, Software engineering, Databases
4.2 Competence	Operating with fundamental concepts in computer science, information and communication technology

5. Requirements (where appropriate)

5.1. For the course	
5.2. For the applications	

6. Specific competences

6.1 Professional competences	C2 Operating with basic concepts of computer science, information technology and communication C2.2 Well grounded usage of concepts from informatics and computer technology in
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	<p>solving well defined problems of system engineering and in applications requiring the use of hardware or software in industrial systems or information technology systems.</p> <p>C4 Design, implementation, testing, operation and maintenance of systems with generic and dedicated equipments, including computer networks for control engineering and applied informatics.</p> <p>C4.3 Solving practical problems of monitoring and automatic control and problems of applied informatics by using and adapting equipments (digital and analogue) and by using information technologies</p> <p>C4.5 Development and implementation of technical projects for automatic systems and information systems, that include general purpose and dedicated equipments (digital and analogue), including computer networks</p>
6.2 Cross competences	

7. Course objectives

7.1 General objective	The skill of making big applications in some technology. Particular case .net
7.2 Specific objectives	Working with .net technology Design and implementation of large applications (multilevel) Design and implementation of mvc applications

8. Contents

8.1 Lecture	No.hours	Teaching methods	Notes
C# programming language. OOP basics.	2	Teaching using laptop and projector, interactive course, debate / or online on Teams platform	
Inheritance, polymorphism, abstract classes, interfaces	2		
Delegate and events	2		
Multithreading	2		
I/O operations. Serialization (binary, xml)	2		
Working with databases	2		
Tranzactions	2		
Database migration	2		
Web services	2		
Multilayer architectures. Data and business logic.	2		
SOLID Principles	2		
Mvc Architectures	2		
Asp.net	2		
Pattern Design	2		
Bibliography			
1. H. Valean. Industrial Informatics. http://users.utcluj.ro/~valean/industrial_informatics.html			
2. D. Bordencea, H. Valean. Industrial Informatics. U.T. Press, 2012, 70 pag., ISBN 978-973-662-735-4			
3. Sz. Enyedj, I. Lengyel, L. Miclea, I. Stefan, O. Stan, H. Valean. Dezvoltarea si testarea aplicatiilor software. Ed. Risoprint, 2014.			
4. A. Troelsen, P. Japikse. C# 6.0 and the .NET 4.6 Framework. APRESS, 2015.			
5. W. De Kort. Exam Ref 70-483: Programming in C#. O'Reilly Media, 2013.			
6. B. De Smet. C# 4.0 Unleashed. Pearson Education, 2011.			
I. Spaanjaars. Beginning ASP.NET 4.5.1.in C# and VB. John Wiley & Sons, 2014,			
8.2 Applications (seminar/laboratory/project)	No.hours	Teaching methods	Notes
OOP in C#	2	Presentation of examples, demonstrations, discussions, practical applications / or online on Teams platform	Mandatory attendance
Console applications	2		
Basic windows forms	2		
Multiple controls	2		
Design, implementation and testing of multithreading applications.	2		
Synchronizing	2		
Databases. SQL server	2		

Databases. MySQL	2		
Design, implementation and testing of web services	2		
Design, implementation and testing of wpf	2		
Design, implementation and testing of mvc	2		
Design, implementation and testing of asp.net	2		
Mvc in asp.net	2		
Assessment	2		
Bibliography			
1. H. Valean. Industrial Informatics. http://users.utcluj.ro/~valean/industrial_informatics.html			
2. D. Bordencea, H. Valean. Industrial Informatics. U.T. Press, 2012, 70 pag., ISBN 978-973-662-735-4			
3. Sz. Enyedi, I. Lengyel, L. Miclea, I. Stefan, O. Stan, H. Valean. Dezvoltarea si testarea aplicatiilor software. Ed. Risoprint, 2014.			
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I. Spaanjaars. Beginning ASP.NET 4.5.1.in C# and VB. John Wiley & Sons, 2014			

9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

The content of the discipline, together with the skills and abilities acquired, correspond to the expectations of the professional organizations of profile, the companies of profile, as well as of the national and international bodies of quality assurance (ARACIS). It also ensures the adoption of ethical standards appropriate to the engineering practice

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 / online exam using Teams	60%
Seminar			
Laboratory	Examination of the skills and knowledge acquired through the participation in the laboratory.	Practical assessment / online assesment using Teams	20%
Project	Project presentation	Practical presentation / online presentation using Teams	20%
Minimum standard of performance: Written exam rank > 5 and practical assessment rank > 5 and practical presentation rank > 5			

Date of filling in:		Title Firstname NAME	Signature
3.02.2025	Course	Prof.dr.ing. Honoriu VĂLEAN	
	Aplications	Conf.dr.ing. Dan GOȚA	
		SL.dr.ing. Teodora SANISLAV	
		SL.dr.ing. Adela POP	
		SL.dr.ing. Alexandra FANCA	
		SL.dr.ing. Claudiu DOMUTA	
		As.drd.ing. Alexandru CIOBOTARU	

Date of approval by the Department Board Automation

Head of Departament
Prof.dr.ing. Honoriu VĂLEAN

Date of approval by the Faculty Council
Automation and Computer Science

Dean
Prof.dr.ing. Vlad MUREȘAN