

Syllabus

1. Information regarding the programme

1.1 Higher education institution	Babeş-Bolyai University
1.2 Faculty	Faculty of Mathematics and Computer Science
1.3 Department	Department of Computer Science
1.4 Field of study	Computers and Information Technology
1.5 Study cycle	Bachelor
1.6 Study programme / Qualification	Information Engineering

2. Information regarding the discipline

2.1 Name of the discipline (en) (ro)			Project: Virtual Instrumentation Proiect: Instrumentare virtuală				
2.2 Course coordinator			Assoc. Prof. Eng. Florin CRACIUN				
2.4. Year of study	III	2.5 Semester	6	2.6. Type of evaluation	C	2.7 Type of discipline	Compulsory DD
2.8 Code of the discipline		MLE5179					

3. Total estimated time (hours/semester of didactic activities)

3.1 Hours per week	2	Of which: 3.2 course		0	3.3 seminar/laboratory	2 project
3.4 Total hours in the curriculum	28	Of which: 3.5 course		0	3.6 seminar/laboratory	28
Time allotment:						hours
Learning using manual, course support, bibliography, course notes						7
Additional documentation (in libraries, on electronic platforms, field documentation)						7
Preparation for seminars/labs, homework, papers, portfolios and essays						4
Tutorship						-
Evaluations						4
Other activities:						-

3.7 Total individual study hours		22
3.8 Total hours per semester		50
3.9 Number of ECTS credits		2

4. Prerequisites (if necessary)

4.1. curriculum	.
4.2. competencies	.

5. Conditions (if necessary)

5.1. for the course	· Course hall with projector; internet connection
5.2. for the seminar /lab activities	· computers · embedded systems myRIO · accessories for myRIO systems: sensors, displays, connectors, passive and active electronic components

6. Specific competencies acquired

Professional competencies	<p>C5.1 Appropriate use of the operating principles of electronic devices and circuits, as well as methods of measuring electrical quantities</p> <p>C5.2 Analysing, designing, executing and measuring of electronic circuits of low/medium complexity</p> <p>C5.3 Diagnosis / troubleshooting of electronic circuits and instruments</p> <p>C5.4 Use of electronic tools to characterize and evaluate the performance of electronic circuits</p> <p>C5.5 Designing electronic circuits of low / medium complexity and implementing them using CAD techniques</p>
Transversal competencies	<p>CT1 Honorable, responsible, ethical conduct in the spirit of the law to ensure the reputation of the profession</p> <p>CT3 Demonstrate the spirit of initiative and action to update professional, economic and organizational culture knowledge</p>

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	· Develop practical abilities to implement embedded systems, produce functional prototypes which may be used in applied research
7.2 Specific objective of the discipline	· Learning and understanding of the concepts and notions related to the graphical programming language G, respectively programming framework LabVIEW

8. Content

8.1. Project	Teaching methods	Remarks
1. Project Allocation	exposure: description, explanation, example, case studies, dialogue, debate	
2. Graphical programming in G		
1. Graphical programming in G 1/2		
2. Real Time Application development		
5. Real Time Application development		
6. Real Time Application architecture		
7. Real Time Application architecture		
8. Image processing using VI		
9. Image processing using VI		
10. Rapid Prototyping		
11-12. Rapid Prototyping		
13-14. Project Evaluation		
<p>Bibliography</p> <p>[1] Horia Hedesiu, Radu Munteanu jr. –Introducere in Programare Grafica Instrumentala, ISBN 973-9357-48-2, Editura Mediamira, Cluj-Napoca, 2003</p> <p>[2] Gabriel Chindris, Horia Hedesiu - Proiectarea Grafica a Sistemelor de Control Pentru Aplicatii Industriale, ISBN 978-973-713-242-0, Editura Mediamira Cluj-Napoca, 2009</p> <p>[3] National Instruments Corp – LabVIEW Core 1 Course Manual, 2013 Edition</p> <p>[4] National Instruments Corp – LabVIEW Core 2 Course Manual, 2013 Edition</p> <p>[5] National Instruments Corp – LabVIEW Core 3 Course Manual, 2013 Edition</p> <p>[6] Kye-Si Kwon, Steven Ready - Practical Guide to Machine Vision Software: An Introduction with LabVIEW, Wiley VCH (14 Jan. 2015)</p> <p>[7] Blume, Peter A. - The LabVIEW Style book, ISBN 0-13-145835-3, Pearson Education, 2007</p> <p>[8] ***, [8] ***, https://www.yottavolt.com/</p>		

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations, and representative employers within the field of the program

- The course respects the IEEE and ACM Curricula Recommendations for Computer Science studies;
- The course exists in the studying program of all major universities in Romania and abroad;
- The content of the course is considered the software companies as important for advanced programming skills

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Project	Final project: architecture & design pattern application	Project grading	100%
10.6 Minimum performance standards			
<input type="checkbox"/> A minimum passing grade is defined by attaining at least 50% (5/10) points for the project			

Date

Signature of course coordinator

Signature of seminar coordinator

Assoc. Prof. Phd Eng. Florin CRACIUN



Date of approval

Signature of the head of department

Prof. dr. Laura Dioşan

24.05.2022

