

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	5.00

2. Data about the subject

2.1 Subject name	Computer Programming				
2.2 Course responsible/lecturer	Lecturer dr. eng. Sanislav Teodora – teodora.sanislav@aut.utcluj.ro				
2.3 Teachers in charge of applications	Lecturer dr. eng. Sanislav Teodora – teodora.sanislav@aut.utcluj.ro				
2.4 Year of study	1	2.5 Semester	1	2.6 Assessment (E/C/V)	E
2.7 Type of subject	DF – fundamental, DD – in the field, DS – specialty, DC – complementary				DF
	DI – compulsory, DO – elective, Dfac – optional				DI

3. Estimated total time

3.1 Number of hours per week	4	of which:	Course	2	Seminar	-	Laboratory	2	Project	-
3.2 Number of hours per semester	56	of which:	course	28	Seminar	-	Laboratory	28	Project	-
3.3 Individual study										
(a) Manual, lecture material and notes, bibliography										30
(b) Supplementary study in the library, online and in the field										20
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										10
(d) Tutoring										5
(e) Exams and tests										4
(f) Other activities:										0
3.4 Total hours of individual study (sum of (3.3(a))...3.3(f))				69						
3.5 Total hours per semester (3.2+3.4)				125						
3.6 Number of credit points				5						

4. Pre-requisites (where appropriate)

4.1 Curriculum	N/A
4.2 Competence	N/A

5. Requirements (where appropriate)

5.1. For the course	Classroom with appropriate equipment to support an ongoing lecture (multimedia equipment)
5.2. For the applications	The attendance at the laboratory classes is mandatory.

6. Specific competences

6.1 Professional competences	<ul style="list-style-type: none"> • C1 – Operating with basic Mathematical, Engineering and Computer Science concepts <ul style="list-style-type: none"> ○ C1.1 - Recognizing and describing specific concepts to calculability, complexity, programming paradigms and modeling of computing and communication systems ○ C1.2 - Using specific theories and tools (algorithms, schemes, models, protocols, etc.) for explaining the structure and the functioning of hardware, software and communication systems ○ C1.3 - Building models for various components of computing systems
6.2 Cross competences	N/A

7. Course objectives

7.1 General objective	<ul style="list-style-type: none"> To learn how to design and to implement computer programs
7.2 Specific objectives	<ul style="list-style-type: none"> To understand a problem stated in a natural language and to transpose it into a computer program To study C programming language To write C programs using the structured/modular approach To provide a good programming style and to determine the causes of programming errors and to correct them

8. Contents

8.1 Lecture	No.hours	Teaching methods	Notes
Introduction to Computer Programming. Introduction to C programming language.	2	Lectures, demos and discussions	N/A
Syntax rules. Tokens: keywords, identifiers, constants, operators. Data types. Digital representation.	2		
Variables and expressions. Statements. Decision making statements. Loop statements. Jump statements. Programming style.	2		
Arrays. Preprocessor directives. Predefined macros.	2		
Addresses in C. Pointers.	2		
Functions. C Standard library. Memory representation of C programs.	2		
Pointers to functions. Recursion.	2		
Memory allocation/deallocation. Modular programming. Debugging.	2		
Strings. Command-line arguments in C.	2		
Structures. Unions. Enumerations.	2		
Files.	2		
Sample programs explained.	2		
Some concepts of concurrent programming. Embedded systems.	2		
Review.	2		
Bibliography			
1. Course materials available at http://users.utcluj.ro/~tsanislav/teaching.html .			
2. C How to Program, Sixth Edition, Paul Deitel, Harvey Deitel, Published by Pearson Education, 2010			
3. C Programming. A Modern Approach, Second Edition, K.N. King, Published by W.W. Norton, 2008			
4. C Primer Plus, Fifth Edition, Stephen Prata, Published by Sams, 2004			
5. Expert C Programming Deep Secrets, Peter van der Linden, Published by Prentice Hall, 1994			
6. The C Programming Language, Second Edition, Brian Kernighan, Dennis Ritchie, Published by Prentice Hall, 1988			
8.2 Applications (seminar/laboratory/project)	No.hours	Teaching methods	Notes
Laboratory:	-	Tutoring, discussions, and in class problem solving	N/A
Interactive Development Environments (IDEs) for C. Setting up and using Codeblocks IDE.	2		
C Input/Output (I/O).	2		
Data types and expressions in C.	2		
Statements in C.	4		
Pointers in C.	2		
Functions in C.	2		
Modular programming.	4		
String manipulation.	2		
Structures, unions, enumerations in C.	2		
Files in C.	2		
Review.	2		
Laboratory Test.	2		
Bibliography			
1. Laboratory materials available at http://users.utcluj.ro/~tsanislav/teaching.html .			

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

The contents of the course help the students to create the necessary bases for the further development of applications in the field of industrial informatics.

10. Evaluation

Activity type	Assessment criteria	Assessment methods	Weight in the final grade
Course	The correctness and completeness of the assimilated knowledge; The logical coherence.	Written exam on-site / on-line exam using Microsoft Teams	70%
Seminar	-	-	-
Laboratory	The ability to operate with the assimilated knowledge; The capacity of their application in practice.	Laboratory test on-site / on-line assessment using Microsoft Teams	30%
Project	-	-	-

Minimum standard of performance:

- Each component of the final grade must be passed with at least grade five.

Date of filling in:		Title Firstname NAME	Signature
28.06.2022	Course	Lecturer dr. eng. Teodora SANISLAV	
	Applications	Lecturer dr. eng. Teodora SANISLAV	

Date of approval by the Department of Automation Board ____ . ____ . 2022	Head of Department of Automation Prof.dr.eng. Honoriu VĂLEAN
Date of approval by the Faculty of Automation and Computer Science Council ____ . ____ . 2022	Dean Prof.dr.eng. Liviu Cristian MICLEA