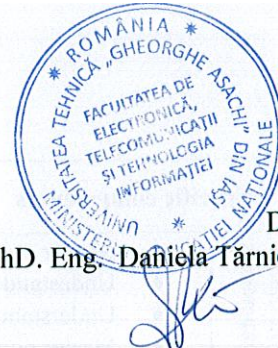# COURSE GUIDE 2019-2020

Dean,
Prof. PhD. Eng. Daniela Tărniceriu

1. Program info

1.1 Higher education institution	"Gheorghe Asachi" Technical University of Iaşi
1.2 Faculty / Department	Electronics, Telecommunications and Information Technology
1.3 Department	Telecommunications and Information Technology
1.4 Field	Electronics, Telecommunications and Informational Technologies Engineering
1.5 Study level	Bachelor
1.6 Study program / Qualification	Telecommunication Technologies and Systems / Engineer

2. Course info

2.1 Course name	Computer Programming and Programming Languages 2 *EDIȚ 113*						
2.2 Course organizer (lecturer)	Prof. PhD. Eng. Adriana Sîrbu						
2.3 Teaching assistants	Lecturer PhD. Eng. Iolanda Alecsandrescu						
2.4 Year of study	1	2.5 Semester	2	2.6 Assessement	Continuous	2.7 Category	DI

3. Estimated total time (hours per semester for teaching activities)

3.1 Number of hours per week	4	3.2 lecture	2	3.3 seminar/laboratory	2
3.4 Total number of hours in curricula	56	3.5 lecture	28	3.6 seminar/laboratory	28

Time distribution	hours
Textbook, course support, references and course notes study	14
Library, electronic platforms and on site documentation	8
Seminar/laboratory preparation, homework, reports, portfolios and essays	14
Tutoring	2
Assessment	2
Other activities	2

3.7 Total individual study hours	40
3.9 Total hours per semester	96
3. 10 Number of credit points	4

4. Prerequisites (where applicable)

4.1 curricula type	None
4.2 competence type	None

5. Infrastructure (where applicable)

5.1. for lectures	• Computer, videoprojector, whiteboard
5.2. for laboratories	• Computer network, videoprojector, whiteboard • Software - DevCpp

6. Specific competences

Professional competences	• Master operations with user defined data types • Undestand pointer operations; • Understand file operations; • Master numerical methods • Design engineering specific applications; • Design complex projects in C language.
Transversal competences	• Being able to efficiently use information resources, communication and assisted professional formation resources, both in Romanian and English language. • Demonstrate preoccupation for professional perfection by means of training of critical reasoning, envisaging lifetime learning and education.

7. Course targets (as resulting from 6. Specific competences table)

7.1 Course main target	• The course provides essentials of data structures and special programming techniques with emphasis on numerical methods applied in electronic engineering, providing also competencies for design, implementation and test of complex software applications
7.2 Course specific targets	• Acquire familiarity with major algorithms and data structures. • Critical understanding, and interpret theoretical, methodological and practical approaches specific for the design of software applications • Write complex programs in C language

8. Contents

8. 1 Lectures	Teaching methods	Notes
1. *switch* statement, jump statement		1 lecture
2. Structured data types I: array		1,5 lectures
3. Procedural paradigm : C functions, call by value, call by referencea		1,5 lectures
4. Storage classes and scope rules		1 lecture
5. Pointeris		2 lectures
6. Structured data types II: stucture. User-defined data types		
7. Structured data types III : Files		2 lectures

7. Special Programming Techniques.
  7.1. Numerical analysis problems – C language implementation - linar algebraic systems
      - function approximation
      - optimization algorithms
  7..2. Searching and soring algorithms
  7.3. Recursivity
  7.4. Complex data structures
 	
      7.4.1. Lists (general aspects, linear lists, circular lists)
      7.4.2. Trees (general aspects, trees representation, binary trees)
		5 lectures

References

8. 2 Laboratory	Teaching methods	Notes
1. PCLP1 Review		
2. *switch* statement		
3. Vector opperations	Solving applications using Dev C++	

4. Matrices operations.	IDE	
5. Functions	Exercises	
6. Functions – call by value	Discutions	
7. Storage classes		
8. Pointers		
9. Complex application design C Projects		
10. Files		
11. Numerical analysis in C language		
12. Search and sort algorithms		
13. Lists		
14. Final examination.		

References
1. A. Sîrbu – Limbajul C – Tehnici de programare, Editura "Gh. Asachi" Iaşi, 2000.
2. Negrescu, L. - Limbajele C si C++ pentru începători, vol. I şi II, Colecţia Microinformatica, Editura Romanian Software, Cluj, 1996.
3. Schildt, H. C++ Manual complet, Editura Teora 1997.
4. Cristea V.,s.a. - Limbajul C standard, Editura Teora, Bucuresti, 1992.
5. *www.wtti.tuiasi.ro/pclp*

9. Course contents corroboration with the expectations of the epistemic community representatives, professional associations and relevant employers in the field of the program

During the planning of the content of the discipline and of the teaching/examination methods teachers have consulted both similar specialists from the Romanian academic community and those from abroad (involved in Erasmus/Socrates programs). In the same time one takes into account the opinions and expectations of the most representative Romanian industrial entrepreneurs with whom our faculty has constant collaborations. The objectives of the discipline are in perfect concordance with the curriculum, conveying information and creating necessary skills for the future specialists in the field of electronics, telecommunications and information technology. The syllabus also considered the integration of the discipline in the curriculum of the specializations Applied Electronics and Intelligent Systems, Microelectronics and Telecommunications Systems and Technologies, in concordance with curricula of prestigious universities in Romania and abroad.

CPPL 2 together with CPPLP 1, provide necessary elements for disciplines devoted to signal processing by means of specialized circuits (microcontrollers and/or digital signal processors). They ensure programming skills, necessary for every electronic engineer, for the design of specific engineering applications, both autonomous ones and those dedicated to microcontrollers or digital signal processors implementations.

10. Assessment

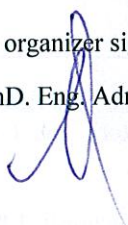| Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Percentage of final grade
10.4 Lectures	- Degree of assimilation of the specialty language - Knowledge correctness and completeness - Logical coherence and adequate usage of specific concepts	Continuous evaluation	0%
10.5 Seminar/laboratory	-Capacity to operate with assimilated knowledge	Continuous evaluation	40 % (minimum 5)

	-Quality of the solutions of the problems	Tests : on computer and written tests regarding the syntax of the language	
		Final colloquium . Solving 3 problems – C language implementation First problem, 50% (eliminatory), second problem 30% and last problem 20% of the final grade. 13th and14th week	60 % (minimum 5)

10.6 Minimum performance standard

- Knowledge of fundamental theory elements, solving simple problems, implementation, debugging and testing of medium difficulty programs in C language

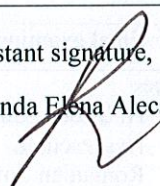|		
Completion date	Course organizer signature,	Teaching assistant signature,
09.09.2019	Prof. PhD. Eng. Adriana Sîrbu	Lecturer PhD. Eng. Iolanda Elena Alecsandrescu

Department approval date

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1 6. SEP. 2019

Department director signature

Assoc.Prof. PhD.Eng. Luminiţa Scripcariu