# SYLLABUS

## 1. Information about the program

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| **1.1** Higher education institution | UNIVERSITY POLITEHNICA OF TIMISOARA |
| **1.2** Faculty[1]/ Department [2] | ELECTRONICS, TELECOMUNICATON AND INFORMATION TECHNOLOGIES/AIA |
| **1.3** Field of study (name/code[3]) | ELECTRONIC ENGINEERING, TELECOMUNICATION AND INFORMATION TECHNOLOGIES |
| **1.4** Study cycle | License |
| **1.5** Study program (name/code/qualification) | TST-ENG/20/20/10/100/10/TST-ENG |

## 2. Information about the discipline

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|---|---|---|---|---|---|---|---|
| **2.1** Name of discipline/ formative category[4] | Computer Programming/DF | | | | | | |
| **2.2** Coordinator (holder) of course activities | Lect.inf. Cristian ZIMBRU | | | | | | |
| **2.3** Coordinator (holder) of applied activities[5] | Lect.inf. Cristian ZIMBRU | | | | | | |
| **2.4** Year of study[6] | 1 | **2.5** Semester | 2 | **2.6** Type of evaluation | D | **2.7** Regime of discipline[7] | DOb |

## 3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) [8]

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|---|---|---|---|---|---|
| **3.1** Number of fully assisted hours / week | 4 of which: | **3.2** course | 2 | **3.3** seminar / laboratory / project | 0/2/0 |
| **3.1\*** Total number of fully assisted hours / semester | 56 of which: | **3.2\*** course | 28 | **3.3\*** seminar / laboratory / project | 0/28/0 |
| **3.4** Number of hours partially assisted / week | of which: | **3.5** training | | **3.6** hours for diploma project elaboration | |
| **3.4\*** Total number of hours partially assisted / semester | of which: | **3.5\*** training | | **3.6\*** hours for diploma project elaboration | |
| **3.7** Number of hours of unassisted activities / week | 3.14 of which: | additional documentary hours in the library, on the specialized electronic platforms and on the field | | | 1.14 |
| | | hours of individual study after manual, course support, bibliography and notes | | | 1 |
| | | training seminars / laboratories, homework and papers, portfolios and essays | | | 1 |
| **3.7\*** Number of hours of unassisted activities / semester | 44 of which: | additional documentary hours in the library, on the specialized electronic platforms and on the field | | | 16 |
| | | hours of individual study after manual, course support, bibliography and notes | | | 14 |
| | | training seminars / laboratories, homework and papers, portfolios and essays | | | 14 |
| **3.8 Total hours / week** [9] | 7.14 | | | | |
| **3.8\* Total hours /semester** | 100 | | | | |
| **3.9 Number of credits** | 4 | | | | |

#### 4. Prerequisites (where applicable)

| 4.1 Curriculum | • Introduction to Computer Programming |
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| 4.2 Competencies | • Programming basics using the C programming language |

#### 5. Conditions (where applicable)

| 5.1 of the course | • Projector and whiteboard |
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| 5.2 to conduct practical activities | • 16 computers (with C programming environment), projector and whiteboard |

#### 6. Specific competencies acquired through this discipline

| Specific competencies | • Acquiring particular knowledge of programming that can be applied on specific domains.<br>• Designing and implementing complex C programs.<br>• Creating a correct programming style. |
|---|---|
| Professional competencies ascribed to the specific competencies | • Solving technological problems in fields of applied electornics.<br>• Design, implementation and service operation of data, voice, video multimedia, based on understanding and applying fundamental concepts in communications and information transmission. |
| Transversal competencies ascribed to the specific competencies | • 1 Methodical analysis of field-related problems aimed at identifying acknowledged solutions, thus ensuring the accomplishment of professional tasks.<br>• 2. Adaptation to new technologies, professional and personal development through continuous training, using printed documentation sources, specialized software and electronic resources in Romanian and at least one foreign language. |

#### 7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

| 7.1 The general objective of the discipline | Thoroughgoing study of the programming field, with specific examples in the C<br>• programming language. |
|---|---|
| 7.2 Specific objectives | Acquiring particular knowledge of programming that can be applied on specific domains.<br>Designing and implementing complex C programs.<br>• Creating a correct programming style. |

#### 8. Content [10]

| 8.1 Course | Number of hours | Teaching methods [11] |
|---|---|---|
| Coding standards | 3 | Presentation of theoretical aspects, examples, discussions, solved problems, questions |
| Recursion | 3 | |
| Implementing concurrency | 6 | |
| Advanced data structures | 6 | |
| Dynamically allocated memory. Working with Graphs | 2 | |
| Creativity with Graphics | 2 | |
| Macros (Object-like macros, Function-like macros) | 2 | |

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[10] It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".

[11] Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

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| Improving the code performance | 2 | |
| Security in coding | 2 | |
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Bibliography [12]

1. Adriana ALBU: "Computer Programming – The C Language", Conspress, Bucuresti 2013, ISBN 978-973-100-270-5

2. B.M. Harwani: "Practical C Programming", 2020, ISBN 978-1-83864-110-8

3. Robert C. Seacord, " Effective C An Introduction to Professional C Programming", 2020, ISBN 1-7185-0104-8

| 8.2 Applied activities [13] | Number of hours | Teaching methods |
|---|---|---|
| Coding standards | 6 | Theoretical presentations, discussions, explanations, case studies |
| Recursion | 6 | |
| Implementing concurrency | 6 | |
| Advanced data structures | 2 | |
| Dynamically allocated memory | 2 | |
| Graphs | 4 | |
| Graphics | 2 | |
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| | | |

Bibliography [14]   1. Adriana ALBU: "Computer Programming – The C Language", Conspress, Bucuresti, 2013, ISBN 978-973-100-270-5

9. **Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program**

- The programming is important for all disciplines (belonging to the curriculum of this study program) that have connections to software development (e.g. Object Oriented Programming).
- Main representative employers in the field of this study program ask for applied knowledge of the C programming language.

10. **Evaluation**

| Type of activity | 10.1 Evaluation criteria [15] | 10.2 Evaluation methods | 10.3 Share of the final grade |
|---|---|---|---|
| **10.4** Course | Two multiple choices written tests (30 theoretical and practical questions; each question has five possible answers of which one only is correct) | Written examination | 2 / 3 |
| **10.5** Applied activities | **S:** | | |
| | **L:**   Two practical tests (the following aspects are appreciated: a proper implementation, an adequate way of presenting solutions, correct answers to the questions) | Practical examination (on a computer) | 1 / 3 |

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| | **P**[16]**:** | | |
| | **Pr:** | | |

**10.6** Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified [17])

- In order to pass the multiple choices written tests, 50% of the questions must have correct answers (for each test). The practical tests are passed if the programs are functional and solve the minimum requirements. The final mark is calculated only if the student obtains marks greater than or equal to 5 for all the examinations (written and practical)

| **Date of completion** | **Course coordinator**<br>**(signature)** | **Coordinator of applied activities**<br>**(signature)** |
|---|---|---|
| 02.07.2023 | | |

| **Head of Department**<br>**(signature)** | **Date of approval in the Faculty Council** [18] | **Dean**<br>**(signature)** |
|---|---|---|
| | 14.09.2023 | |

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[16] In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

[17] It will not explain how the promotion mark is awarded.

[18] The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.