

PROGRAMMING

Code: 322078

Main Scientific Area: Technologic innovation

Lecturer: Liliana Cristina de Barros Ribeiro da Cunha Pinheiro

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 60h Total Workload: 100h

ECTS: 6,0

Objectives

This curricular unit will consist of the fundamental concepts on algorithms and data structures, as well as structured programming. The students should be able to understand and analyze problems, and to plan and develop structured solutions using an algorithmic language, and performing their implementation in the C programming language.

Learning Outcomes

Students should be able to analyze problems and propose an implementation in an imperative programming language (C programming language) supported by flowcharts and algorithms. They should be able to understand the codification, compilation and execution process.

Also, they should be able to use conditional and cyclic structures, arrays, strings and pointers.

Course Contents

Programming Logic: Generic aspects.

Programming fundamental elements and structures

Simple sequence algorithms

Control structures: Conditional and cyclic structures.

Functions, procedures and recursion

Complex data types

Search and sort algorithms

Memory management: Heap and Stack

Pointers

Recommended Bibliography

António Rocha. "Estruturas de Dados e Algoritmos em C", 3ª Edição, FCA, 2014. ISBN 978-9727227693.

João Neto. "Programação – Algoritmos e Estruturas de Dados", 3ª Edição, Escolar Editora, 2014. ISBN 978-9725924242.

Stephen G. Kochan. "Programming in C", 4th ed., Addison-Wesley Professional, 2014. ISBN 978-0321776419.

Jeffrey McConnell. "Analysis of Algorithms", 2nd ed., Jones Bartlett Learning, 2007. ISBN 978-0763707828.

Brian Kernighan e Dennis Ritchie. "C Programming Language", 2nd Edition, 1988. ISBN 978-0131103627.

Learning and Teaching Methods

The syllabus was defined with the aim to give to the students the ability of learning models for algorithms representation and, subsequently, learning an imperative programming language (language C).

The presentation, exploration and implementation of algorithm representation techniques is addressed in section 1 of the program syllabus. The remaining points are dedicated to learning the programming language (language C).

Assessment Methods

This curricular unit is intended to encourage students to use learning methods more in line with real-world functioning; To promote continuous research and self-learning as a condition of professional survival in a world in constant technological evolution; Develop technical and professional skills; Develop communication skills, responsibility, ongoing work and teamwork. In the theoretical-practical classes will be presented application examples, taking into consideration that students are encouraged to participate actively. The following variables are part of the evaluation:

The individual work [IT] is of presentation, defense and mandatory approval;

Individual [IT] defense will be carried out in the context of an oral test [TI.CT] where questions will be asked to the student related to the subject taught in the UC during the semester;

The non-delivery of the [TI.CP] on the date defined by the teacher, or the absence of presence on the date set for the oral test [TI.CT], corresponds to the non-delivery of the [TI] (ie [TI] = zero values);

No deliveries or improvements will be accepted after the date defined by the teacher for the delivery of the TI.CP;

[TI] is only valid at the time of continuous assessment;

The individual work [TE] is of presentation, defense and mandatory approval;

The individual defense of [TE] will be carried out in the context of an oral test [TE.CT] where questions will be asked to the student related to the subject taught in the UC during the semester;

The non-delivery of the [TE.CP] on the date defined by the teacher, or the absence of presence at the date set for the oral test [TE.CT], corresponds to the non-delivery of [TE] (ie [TE] = zero values);

No deliveries or improvements will be accepted after the date defined by the teacher for the delivery of the TE.CP;

The [TE] is only valid in the evaluation of the respective exam time;

Evaluation Methodology

NEW STUDENTS AND DISAPPROVED PBL ALSO REPETENTES TO UC PROJECT

CONTINUOUS EVALUATION

$[NF] = 10\% [PAC] + 20\% [TI.CP] + 50\% [TI.CT] + 20\% [PR]$

Approval if $[NF] \geq 10$ values;

Minimum notes for approval: $[TI.CT] \geq 10$ values; $[PR] \geq 10$ values.

EXAMINATIONS (APPEAL, SPECIAL, OTHER) $[NF] = 10\% [TE.CP] + 60\% [TE.CT] + 30\% [PR]$

Approval if $[NF] \geq 10$ values;

Minimum notes for approval: $[TE.CP] \geq 10$ values; $[TE.CT] \geq 10$ values; $[PR] \geq 10$ values.