Presentation

course "Essentials of computing systems"

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course

- This course was conceived for programmers and software engineers who want to comprehend how the components of a computer work and how they affect the correctness and performance of their programs.

- Understanding how a computer works is a fundamental knowledge for software engineers to comprehend the principles governing the execution of the programs they develop or maintain.

- It is also a fundamental knowledge if one wants to optimise the performance of a program, to write a compiler, or to develop an embedded system.

- This course is focused on describing the fundamental aspects of computers, by studying their organisation and structure.

topics

- Computer systems
- Representation of information
- Representation of numbers
- IA32 instruction-set architecture
- Cache memory
- Code optimisations

The contents of this course is continued in "Arquitetura de Computadores" (2.º ano / 1.º semestre).

professors

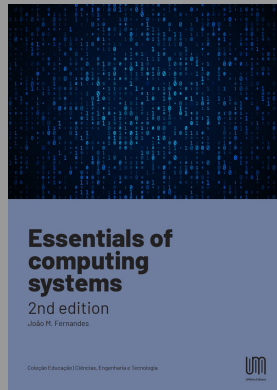|	
João M. Fernandes	T
António Esteves	PL1 PL2 PL8 PL10
André L. Ferreira	PL4 PL6
Manuel Alves	PL5 PL9
Paulo Rafael Sousa	PL3 PL7

e-book

- A 100-page e-book was prepared to support the course.
- The e-book is free (published by UMinho-Editora).
- Students must read the book.
- Ambitious students must read other materials (e.g. suggested readings).

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assessment

- Final mark is given by:
    - practical assignments (0-2 points).
    - written test/exam (0-18 points).
- An overall minimum of 9.50 points is needed to APPROVE.
- A minimum of 8.50 points in the test/exam is needed to APPROVE.
- A bonus of 0.125 points is given to the first student that detects any mistake in the e-book [max. 1.0/student].
- Marks are rounded up
  $11.00 \rightarrow 11, 11.20 \rightarrow 12, 11.50 \rightarrow 12, 11.95 \rightarrow 12$
- Students that attend both T- and PL-classes and that prepare themselves conveniently should approve with a good mark.

T-classes

- Slides in English / Speech in Portuguese.
- T-classes serve to expose/discuss course contents.
- Contents are totally described in the e-book.
- When the number of students in both T-classes fits in the room, only 0.08 T-class will be given.

PL-classes

- PL-classes serve to consolidate skills.
- Presence in PL-classes is not mandatory, but highly recommended.
- Students are expected to prepare the PL-classes before entering the room.
- Every Monday, each student must upload in the BlackBoard platform a single PDF file with the resolutions of the exercises for that week.
- Solutions to exercises are provided in the e-book.
- Some classes require access to a computer (with gcc compiler or a web browser).