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| Faculty | Ingegneria |
| Master | Mechatronic Engineering (La Spezia) |
| Year/Semester | 1/I |

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| Course Title | Hardware and software for embedded systems |
| ID Course Code | 56735 |
| Course Credits (CFU) | 12 |
| Course Type | integrated course |
| Module Title | Hardware and software for embedded systems |
| ID Module Code | 56737 |
| Module Credits (CFU) | 6 |
| Module Scientific-Disciplinary Sector | ING-INF/05 |
| Lecturer-in-charge | BELLOTTI Francesco |

Learning Outcomes:

The module's objective is that students develop abilities of designing and developing C programs that are able to implement the provided specifications in a given domain. The module also involves the knowledge of the panorama and of the opportunities offered by the embedded system programming.

Course Organisation Details

Introduction to embedded systems and their programming Processors architecture Introduction to C language Fundamental data types Operators Program control flow Composed types Function programming Pointers Memory Peripherals Interrupts

| Assessment | hours |
|------------------------|-------|
| Lectures | 40.0 |
| Practice | 20.0 |
| Laboratory | 0.0 |
| Integrative activities | 0.0 |

References

C. Allison, B. Eckel, "Thinking in C: Foundations for Java & C++"

M. Barr, A. Massa, "Programming Embedded Systems. With C and GNU Development Tools", O'Reilly 2006.

Organization and examinations

The course is organized as an introduction to programming and embedded system. The course provide a detailed overview of the C programming language and presents the main issues related to the embedded system software environment. The course is completely performed in lab, so that students can have a hands-on experience of the taught items and can immediately practice the lesson.

The exam is a practical trial at the computer. The student will have to write a C language program meeting a set of provided specifications. Beside this, there is also a theoretical test with specific questions on theoretical topics related to the programming of embedded systems.

Pre-requisites

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