

## DTC-GITI-112 Fundamentals of Computer Science

- SEMESTER:** Fall or Spring
- CREDITS:** 7.5 ECTS (5 hrs. per week: 2h Theory + 3h Lab)
- LANGUAGE:** English (a similar course is offered in Spanish)
- DEGREES:** GITI (Fall or Spring), GITT (Fall)

### Course overview

The main objective is to learn computer programming. The C programming language is used during the course in laboratory sessions and during several exams. The course covers basic programming concepts including data types, operators, control statements and functions. In addition, more advanced concepts are also covered, such as arrays, pointers (including dynamic memory allocation), structures and data files.

### Prerequisites

No prior programming knowledge is required for attending this course.

### Course contents

#### Theory:

1. Introduction. Structure of a PC. Operating Systems
2. Basic concepts on programming.
3. Introduction to C programming language.
4. Operators and expressions.
5. Control statements (if, switch, for, while, do-while).
6. Functions.
7. Arrays.
8. Pointers.
9. Structures.
10. Data files.

#### Laboratory:

Each unit described previously has at least one associated lab practice (3 hours/week)

- P1. Compiler and debugger tool (CodeLite)
- P2. printf/scanf, operators and expressions
- P3. if and switch statements
- P4. Loops
- P5. Functions 1

- P6.** Functions 2
- P7.** Vectors, Strings
- P8.** Matrices
- P9.** Pointers and functions
- P10.** Pointers and memory allocation
- P11.** Structures
- P12.** Text files
- P13.** Binary files

## Textbook

- B. W. Kernighan y D. M. Ritchie, C Programming Language, 2nd Edition. Englewood Cliffs, N.J: Prentice Hall, 1988.

## Grading

- Final exam accounts for 60% of the final grade (36% corresponding to the handwritten part and 24% corresponding to the computer part).
- Mid-term exam accounts for 20%.
- Several small exams during the course (some handwritten, some on the computer) account for 15% in total.
- Lab reports must be handed in every week and they are graded and returned the following week. They account for 5% of the grade.