Università degli Studi della Basilicata

Dipartimento di Matematica, Informatica ed Economia

COURSE: **Procedural Programming**			
ACADEMIC YEAR: **2019-2020**			
TYPE OF EDUCATIONAL ACTIVITY: **Characterizing**			
TEACHER: Giansalvatore Mecca, Enzo Veltri			
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phone:			
Language: Italian			
ECTS: 15	n. of hours: 128	Campus: Potenza Dept.: DiMIE Program: Scienze e Tecnologie Informatiche	Semester: I, II

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Standard Mimimum Knowledge

The minimum level of knowledge to be achieved to pass the tests end of this course corresponds to have acquired (in theory and in practice) knowledge of the following concepts:

- Basic elements of procedural languages (types, variables, control structures, structured types, input/output, the use of sequential-access file)
- Knowledge of the structure of data and the list of its main implementations
- Syntax and semantics of the programming language C ++ and Java
- Algorithmic techniques on the basis of collections (sum, count, maximum and minimum, verification of conditions, exchange and their variants)
- Algorithmic techniques on the basis of mathematical matrices
- Modular programming techniques, design and development of the sub-and parameter passing, stack execution model, use of libraries

Standard Intermediate Knowledge

The standard intermediate corresponds to demonstrate a good knowledge of the course topics, and in particular, in addition to the knowledge that the standard minimum:

- thorough understanding of the topics covered by the minimum standard
- Ability to design and develop algorithmic solutions of medium complexity
- acquisition of data from file in free format
- Ability to program in multiple languages; ability to apply the concepts and techniques provided by the minimum standard in the BASIC language

Standard Complete Knowledge

The achievement of the learning objectives to complete this course requires that the student acquires in theory and in practice, the knowledge of all the topics covered in the course. Among them, in addition to the topics covered by the standard intermediate:

- Ability to design and develop algorithmic solutions to complex medium / high
- knowledge of the techniques for testing and verification of the code; use of regression tests

PRE-REQUIREMENTS

There are no restrictions on the preparation courses

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SYLLABUS

Introduction

Architecture of Information Systems; Background of the binary representation of the information.

Introduction to Programming

Life cycle of a program. Problem, algorithm, program. History of programming languages. Compiler: function and process of compilation; The linker: linking process. Examples of compilers and linkers.

Procedural Programming in C Language ++

Introduction to imperative programming in C ++: basic elements; variables; assignments and expressions; simple data types; control structures; operations of input and output; management of files.

Modular Programming in C Language ++ and Java

Subprograms: procedures and functions; parameter passing. Methods of modular programming. Code quality. Iterative techniques for the design of algorithms. Techniques for program verification.

Data Structures

Structured data types: one-dimensional arrays and two-dimensional structures. Data structures: lists, stacks (notes) and tails (notes). Basic algorithmic solutions.

TEACHING METHODS

The course will offer 128 teaching hours. In particular, there will be theoretical lessons and of laboratory tutorials.

EVALUATION METHODS

Students must take both a multiple choices test and a practical test on the computer; the latter test is provided according to the two learning levels described before (basic/intermediate, advanced). In addition, students could take the inter-course tests (multiple choice tests). The inter-course tests will allow students to access teorical test and the practical test on the computer. The students who have passed the tests have elapsed fully achieved the teaching credits. Based on the assessments reported in the trials elapsed, it will be given a 30 grade assessment, to which are added two bonus points on the final grade.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Lecture notes available on the web site of the course.

Textbooks

John R. Hubbard -- Programmare in C++ (II Edizione, 2001) -- McGraw Hill Libri Italia - Milano

INTERACTION WITH STUDENTS

The hours of receipt are shown in the section dedicated to teachers on the page of the Procedural Programming.
In addition to the weekly reception, the teachers are available at any time for a contact with the students, through their e-mail.

EXAMINATION SESSIONS (FORECAST)[1]

I intermediate test: 16-17 December 2019
Repeat I intermediate test : 7-9 January 2020
II intermediate test : 10 February 2020
Repeat II intermediate test: 27 February 2020
intermediate test 30 April 2020
Repeat III intermediate test 14 May 2020
IV intermediate test: 15-16 June 2020
I Session: 2-3 July 2020
II Session: 20-21 July 2020
III Session : 10-11 September 2020
IV Session : 8-9 February 2021
V Session : 10-11 May 2021

SEMINARS BY EXTERNAL EXPERTS YES □ NO X

[1] Subject to possible changes: check the web site of the Teacher or the Department/School for updates.

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