

Programming Techniques

Academic Year: (2021 / 2022)

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Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: ABDULLA JASSIM, HARITH AL JUMAILY

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 2

Branch of knowledge: Engineering and Architecture

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Calculus: Course 1 - Semester 1
- Programming: Course 1 - Semester 1

DESCRIPTION OF CONTENTS: PROGRAMME

1. Basics of C++ Language
2. Compound Data Type
3. Functions
4. Errors handling and Defensive programming
5. Object-Oriented Programming
6. Input/Output Streams
7. Dynamic Memory Management
8. Generic Programming
9. Containers, Iterators, and Algorithms

LEARNING ACTIVITIES AND METHODOLOGY

THEORETICAL-PRACTICAL CLASSES. [44 hours with 100% classroom instruction, 1.67 ECTS]

Knowledge and concepts students must acquire. Student receive course notes and will have basic reference texts to facilitate following the classes and carrying out follow up work. Students partake in exercises to resolve practical problems and participate in workshops and evaluation tests, all geared towards acquiring the necessary capabilities.

TUTORING SESSIONS. [4 hours of tutoring with 100% on-site attendance, 0.15 ECTS]

Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher.

STUDENT INDIVIDUAL WORK OR GROUP WORK [98 hours with 0 % on-site, 3.72 ECTS]

WORKSHOPS AND LABORATORY SESSIONS [8 hours with 100% on site, 0.3 ECTS]

FINAL EXAM. [4 hours with 100% on site, 0.15 ECTS]

Global assessment of knowledge, skills and capacities acquired throughout the course.

METHODOLOGIES

THEORY CLASS. Classroom presentations by the teacher with IT and audiovisual support in which the subject's main concepts are developed, while providing material and bibliography to complement student learning.

PRACTICAL CLASS. Resolution of practical cases and problem, posed by the teacher, and carried out individually or in a group.

TUTORING SESSIONS. Individualized attendance (individual tutoring sessions) or in-group (group tutoring sessions) for students with a teacher as tutor.

LABORATORY PRACTICAL SESSIONS. Applied/experimental learning/teaching in workshops and laboratories under the tutor's supervision.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	40
% of continuous assessment (assignments, laboratory, practicals...):	60

SE1 - FINAL EXAM. [40 %]

Global assessment of knowledge, skills and capacities acquired throughout the course.

SE2 - CONTINUOUS EVALUATION. [60 %]

Assesses papers, projects, class presentations, debates, exercises, internships and workshops throughout the course.

The CONTINUOUS EVALUATION includes the assessment of the guided academic activities and practical work according to the following weighting:

1. Mid-term exam: [30%].

3. Individual works: [5%]. Problems will be published during the course, where the student must try to solve individually and deliver their solution through Aula Global within 7 days of its publication.

3. Practical case study: [25%].

The FINAL EXAM is mandatory for all students.

The student must obtain at least 4/10 points in this final exam in order to consider the grades obtained in the rest of the continuous evaluation tests.

The final grade of the course is obtained by adding the grade of the different partial tests. In order to pass the course it is necessary to obtain a final grade equal or higher than 5/10.

If a student decides not to follow the continuous evaluation, he/she will be entitled to take the final exam (same date and place as the ordinary exam). The grade obtained in this exam is equivalent to 60% of the final grade.

In the extraordinary call, the final exam will be 100% of the grade. However, the continuous evaluation can be applied if it is more beneficial for the student (the grades of the continuous evaluation tests [60%] + the grade of the extraordinary exam [40%]). To apply this option, it is necessary to obtain the minimum grade 4/10 in this exam.

BASIC BIBLIOGRAPHY

- Bjarne Stroustrup The C++ Programming Language, Addison-Wesley, 2013

- Bjarne Stroustrup Programming: Principles and Practice Using C++, Second Edition, Addison-Wesley Professional, 2014

- Josuttis, Nicolai M. The C++ standard library: a tutorial and reference, 2nd Edition, Addison-Wesley, 2012

- Stanley, B., and Lajoie L. C++ PRIMER, Addison-Wesley, 2019

- Stroustrup, Bjarne A Tour of C++. 2nd Edition, Addison-Wesley Professional, 2018