Course guide
205064 - 205064 - Programming Interfaces and Applications

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 723 - CS - Department of Computer Science.
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Optional subject).
MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Optional subject).
MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (Optional subject).

Academic year: 2022  ECTS Credits: 3.0  Languages: English

LEADER
Coordinating lecturer: Lopez Herrera, Josefina
Others: López Herrera, Josefnia

PRIOR SKILLS
Basic concepts of C++/C programming

TEACHING METHODOLOGY
Theory sessions
Self-study exercises

LEARNING OBJECTIVES OF THE SUBJECT
The subject of Programming Interfaces and Applications is divided into two modules. Module I covers data structures and Module II concurrent and event-based programming. The fundamental objective of this course is to teach advanced programming concepts.
The student will learn to develop programs that use:
1. The concepts of advanced data structures
2. The main sequential and associative data structures
3. Data structures in Java and C++
4. The concepts of efficiency of data structures.
5. Concurrent programming, event-driven programming, and user interface

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hours large group</td>
<td>27,0</td>
<td>36.00</td>
</tr>
<tr>
<td>Self study</td>
<td>48,0</td>
<td>64.00</td>
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</tbody>
</table>

Total learning time: 75 h
CONTENTS

Module I

Description:
1. Sequential and data structures: vector, list, stack, queue
2. Associative data structures: MAP
3. Java and C++ Libraries
4. Applications.

Full-or-part-time: 37h 30m
Theory classes: 13h 30m
Self study : 24h

Module II

Description:
1. Concurrent and Event-based programming: Concepts and examples
2. Case study in concurrent programming: develop a C/Java concurrent function and graphic interface.
3. Java and C++ Libraries

Full-or-part-time: 37h 30m
Theory classes: 13h 30m
Self study : 24h

GRADING SYSTEM

Practical activities 20%
Project and Case study 40%
Exam 40%

Unsatisfying results of the final exam could be repeated in an exam to be carried out during the period of the final exams. Students with grades lower than 5 points (unsatisfactory) can retake the exam. The new grade, if it is equal or higher than 5 points, will substitute the original one with a grade of 5.

RESOURCES

Computer material:
- C++, C, Java. Class notes

Hyperlink:
- https://docs.oracle.com/javase/8/docs/api/java/util/Collection.html. JAVA TUTORIAL, JAVA COLLECTION