205064 - Programming Interfaces and Applications

**Coordinating unit:** 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
**Teaching unit:** 723 - CS - Department of Computer Science  
**Academic year:** 2017  
**Degree:** MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional)  
**ECTS credits:** 3  
**Teaching languages:** English

### Teaching staff

**Coordinator:** Lopez Herrera, Josefina  
**Others:** Gatius Vila, Marta  
Lopez Herrera, Josefina  
Xhafa Xhafa, Fatos

### Requirements

C++, C

### Teaching methodology

Theory sessions  
Self-study exercises

### Learning objectives of the subject

**Module I**  
1. LEARN THE CONCEPTS OF ADVANCED DATA STRUCTURES  
2. LEARN THE MAIN SEQUENTIAL AND ASSOCIATIVE DATA STRUCTURES  
3. LEARN PROGRAMMING WITH DATA STRUCTURES IN JAVA AND C++  
4. LEARN CONCEPTS OF EFFICIENCY OF DATA STRUCTURES

**Module II**  
1. Learning of concurrent and event-based programming.  
2. Learning to develop an example of concurrent programming and user interface.

**Module III**  
1. Learning basic concepts of the natural language interfaces.  
2. Learning about existing frameworks for developing natural language interfaces.  
3. Learning to develop a natural language interface in C++.
205064 - Programming Interfaces and Applications

Study load

<table>
<thead>
<tr>
<th>Study load</th>
<th>Hours large group</th>
<th>Hours medium group</th>
<th>Hours small group</th>
<th>Guided activities</th>
<th>Self study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total learning time:</strong> 75h</td>
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<tr>
<td>Learning time: 25h</td>
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<td></td>
<td>27h</td>
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<tr>
<td>Theory classes: 9h</td>
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<td>0h</td>
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<tr>
<td>Self study: 16h</td>
<td>16h</td>
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<td>0h</td>
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<tr>
<td>Guided activities: 0h</td>
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<td>48h</td>
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<tr>
<td>Learning time: 25h</td>
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</table>

Content

Module I

<table>
<thead>
<tr>
<th>Learning time: 25h</th>
<th>Theory classes: 9h</th>
<th>Self study : 16h</th>
</tr>
</thead>
</table>

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

Module II

<table>
<thead>
<tr>
<th>Learning time: 25h</th>
<th>Theory classes: 9h</th>
<th>Self study : 16h</th>
</tr>
</thead>
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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

Module III

<table>
<thead>
<tr>
<th>Learning time: 25h</th>
<th>Theory classes: 9h</th>
<th>Self study : 16h</th>
</tr>
</thead>
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Description:
1. Basic concepts of the natural language interfaces.
2. Examples of existing natural language interfaces.
3. Develop a natural language interface in C++.
Qualification system

Exam 40%
Project Module I 20%
Case study Module II 20%
Project Module III 20%

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.

Bibliography

Basic:

Nuevo libro.

Others resources:

Hyperlink

http://wwwcplusplus.com/reference/
STL REFERENCE

https://docs.oracle.com/javase/7/docs/api/java/util/Collection
JAVA TUTORIAL, JAVA COLLECTION

http://alice.pandorabots.com/

Computer material
C++, C, Java
Class notes