

## 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:	2018		
Degree:	MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional) MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Teaching unit Optional) MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (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++ .

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### Study load

Total learning time: 75h	Hours large group:	27h	36.00%
	Hours medium group:	0h	0.00%
	Hours small group:	0h	0.00%
	Guided activities:	0h	0.00%
	Self study:	48h	64.00%

### Content

Module I	Learning time: 25h Theory classes: 9h Self study : 16h
<p>Description:</p> <ol style="list-style-type: none"> <li>1. Sequential and data structures: vector, list, stack, queue</li> <li>2. Associative data structures: MAP</li> <li>3. Java and C ++ Libraries</li> <li>4. Applications.</li> </ol>	
Module II	Learning time: 25h Theory classes: 9h Self study : 16h
<p>Description:</p> <ol style="list-style-type: none"> <li>1. Concurrent and Event-based programming: Concepts and examples</li> <li>2. Case study in concurrent programming:develop a C/Java concurrent function and graphic interface.</li> <li>3. Java and C ++ Libraries</li> </ol>	
Module III	Learning time: 25h Theory classes: 9h Self study : 16h
<p>Description:</p> <ol style="list-style-type: none"> <li>1. Basic concepts of the natural language interfaces.</li> <li>2. Examples of existing natural language interfaces.</li> <li>3. Develop a natural language interface in C++ .</li> </ol>	

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### 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:

Jurafsky, Dan; Martin, James H. Speech and language processing: an introduction to natural language processing, computational linguistics, and speech recognition. 2nd ed. Upper Saddle River: Prentice Hall, 2008. ISBN 9780131872316.

Others resources:

Hyperlink

<http://www.cplusplus.com/reference/>  
STL REFERENCE

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

<http://alice.pandorabots.com/>

Computer material

C++, C, Java

Class notes