340374 - ESIN-I3O23 - Information Structure

**Coordinating unit:** 340 - EPSEVG - Vilanova i la Geltrú School of Engineering

**Teaching unit:** 723 - CS - Department of Computer Science

**Academic year:** 2017

**Degree:** BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)

**ECTS credits:** 6

**Teaching languages:** Catalan

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**Teaching staff**

**Coordinator:** Bernardino Casas Fernández

**Others:** Bernardino Casas Fernández

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**Prior skills**

See Catalan version.

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**Requirements**

See Catalan version.

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**Degree competences to which the subject contributes**

**Specific:**

1. CEFB3. Ability to understand and to have a good command of discrete, logical, algorithmically mathematics and computing complexity and its application to automatical treatment of information by means of computational systems and its application to solve engineering problems.

2. CEFB4. Basic knowledge of use and computer programming, as well as of operating systems, data base and generally informatic programs with engineering applications.

3. CEFB5. Knowledge of informatic systems, its structure, function and interconnection, as well as fundamentals of its programming.

4. CEFC6. Basic knowledge and application of algorithmic processes, informatic techniques to design solutions of problems, analyzing if proposed algorisms are apt and complex.

5. CEFC7. Knowledge, design and efficient use of data types and structures the most appropriate to resolve problems.

6. CEFC8. Ability to analyze, to design, to construct and to maintain applications in a well built, secure and efficient way choosing the most adequated paradigms and languages.

**Transversal:**

7. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

8. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.

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**Teaching methodology**

See Catalan version.

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**Learning objectives of the subject**

See Catalan version.
### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 30h 20.00%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h 0.00%</td>
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<tr>
<td></td>
<td>Hours small group: 30h 20.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h 0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h 60.00%</td>
</tr>
</tbody>
</table>
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## Content

| 1. Object oriented programming | Learning time: 5h  
Self study: 5h |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>See Catalan version.</td>
</tr>
</tbody>
</table>

| 2. Analysis of the efficiency of algorithms | Learning time: 9h  
Theory classes: 4h  
Self study: 5h |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>See Catalan version.</td>
</tr>
<tr>
<td><strong>Related activities:</strong></td>
<td>See Catalan version.</td>
</tr>
</tbody>
</table>

| 3. Static linear structures | Learning time: 9h  
Self study: 9h |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>See Catalan version.</td>
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</tbody>
</table>

| 4. Dynamic linear structures | Learning time: 26h  
Theory classes: 6h  
Laboratory classes: 6h  
Self study: 14h |
<table>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>See Catalan version.</td>
</tr>
<tr>
<td><strong>Related activities:</strong></td>
<td>See Catalan version.</td>
</tr>
</tbody>
</table>
| 5. Trees | **Learning time:** 21h  
Theory classes: 6h  
Laboratory classes: 4h  
Self study: 11h |
| --- | --- |
| **Description:**  
See Catalan version.  
**Related activities:**  
See Catalan version. |

| 6. Dictionaries | **Learning time:** 31h  
Theory classes: 12h  
Laboratory classes: 4h  
Self study: 15h |
| --- | --- |
| **Description:**  
See Catalan version.  
**Related activities:**  
See Catalan version. |

| 7. Priority queues | **Learning time:** 10h  
Theory classes: 4h  
Laboratory classes: 1h  
Self study: 5h |
| --- | --- |
| **Description:**  
See Catalan version.  
**Related activities:**  
See Catalan version. |

| 8. Graphs | **Learning time:** 8h  
Theory classes: 6h  
Laboratory classes: 2h |
| --- | --- |
| **Description:**  
See Catalan version.  
**Related activities:**  
See Catalan version. |
### Planning of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Description:</th>
<th>Support materials:</th>
<th>Descriptions of the assignments due and their relation to the assessment:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity 1</strong></td>
<td>3h 30m</td>
<td>Guided activities: 0h 30m</td>
<td>Laboratory classes: 3h</td>
<td>See Catalan version.</td>
</tr>
<tr>
<td><strong>Activity 2</strong></td>
<td>3h 30m</td>
<td>Guided activities: 0h 30m</td>
<td>Laboratory classes: 3h</td>
<td>See Catalan version.</td>
</tr>
<tr>
<td><strong>Activity 3</strong></td>
<td>3h 30m</td>
<td>Guided activities: 0h 30m</td>
<td>Laboratory classes: 3h</td>
<td>See Catalan version.</td>
</tr>
<tr>
<td><strong>Control 1</strong></td>
<td>2h</td>
<td>Theory classes: 2h</td>
<td></td>
<td>See Catalan version.</td>
</tr>
</tbody>
</table>
### Control 2

**Description:**
See Catalan version.

**Descriptions of the assignments due and their relation to the assessment:**
See Catalan version.

<table>
<thead>
<tr>
<th>Hours: 3h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 3h</td>
</tr>
</tbody>
</table>

### Project

**Description:**
See Catalan version.

**Support materials:**
See Catalan version.

**Descriptions of the assignments due and their relation to the assessment:**
See Catalan version.

<table>
<thead>
<tr>
<th>Hours: 27h</th>
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<tbody>
<tr>
<td>Laboratory classes: 7h</td>
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<tr>
<td>Self study: 20h</td>
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</tbody>
</table>

### Qualification system

See Catalan version.

### Regulations for carrying out activities

See Catalan version.
Bibliography

Basic:

Bernardino Casas, Jordi Esteve. Apunts d’ESIN. Transparències pels alumnes. Campus virtual,

Bernardino Casas, Jordi Esteve. Col·lecció de problemes d’ESIN. Campus virtual,

Bernardino Casas, Jordi Esteve. Manual de laboratori d’ESIN. Campus virtual,


Complementary:
