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

Teaching staff
Coordinator: Bernado Casas Fernández
Others: Bernado Casas Fernández

Prior skills
See catalan version.

Requirements
See catalan version.

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 adequate 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.

Teaching methodology
See Catalan version.

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

## 1. Object oriented programming

**Learning time:** 5h

- Self study: 5h

**Description:**
See Catalan version.

## 2. Analysis of the efficiency of algorithms

**Learning time:** 9h

- Theory classes: 4h
- Self study: 5h

**Description:**
See Catalan version.

**Related activities:**
See Catalan version.

## 3. Static linear structures

**Learning time:** 9h

- Self study: 9h

**Description:**
See Catalan version.

## 4. Dynamic linear structures

**Learning time:** 26h

- Theory classes: 6h
- Laboratory classes: 6h
- Self study: 14h

**Description:**
See Catalan version.

**Related activities:**
See Catalan version.
## 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 1</th>
<th>Hours: 3h 30m</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 3h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h 30m</td>
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</table>

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>Activity 2</th>
<th>Hours: 3h 30m</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 3h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h 30m</td>
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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>Activity 3</th>
<th>Hours: 3h 30m</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 3h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h 30m</td>
</tr>
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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>Control 1</th>
<th>Hours: 2h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 2h</td>
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</table>

Description:
See Catalan version.

Descriptions of the assignments due and their relation to the assessment:
See Catalan version.
### Control 2

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

### Project

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