# 270636 - DS - Decentralized Systems

**Coordinating unit:** 270 - FIB - Barcelona School of Informatics  
**Teaching unit:** 701 - AC - Department of Computer Architecture  
**Academic year:** 2018  
**Degree:** MASTER'S DEGREE IN INNOVATION AND RESEARCH IN INFORMATICS (Syllabus 2012). (Teaching unit Optional)  
**ECTS credits:** 6  
**Teaching languages:** Catalan

## Prior skills

Computer networks.

## Degree competences to which the subject contributes

### Specific:

- CEC3. Ability to apply innovative solutions and make progress in the knowledge that exploit the new paradigms of Informatics, particularly in distributed environments.
- CEE2.1. Capability to understand models, problems and algorithms related to distributed systems, and to design and evaluate algorithms and systems that process the distribution problems and provide distributed services.
- CEE2.2. Capability to understand models, problems and algorithms related to computer networks and to design and evaluate algorithms, protocols and systems that process the complexity of computer communications networks.

### General:

- CG5. Capability to apply innovative solutions and make progress in the knowledge to exploit the new paradigms of computing, particularly in distributed environments.

### Transversal:

- CTR6. REASONING: Capacity for critical, logical and mathematical reasoning. Capability to solve problems in their area of study. Capacity for abstraction: the capability to create and use models that reflect real situations. Capability to design and implement simple experiments, and analyze and interpret their results. Capacity for analysis, synthesis and evaluation.

## Teaching methodology

Theory and participatory classes, readings of research papers, presentation of topics by students, development of a course work.

## Learning objectives of the subject

1. Review papers

## Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Theory classes: 27h</th>
<th>18.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practical classes: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 27h</td>
<td>18.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 96h</td>
<td>64.00%</td>
</tr>
</tbody>
</table>
The evaluation of the course is based on the participation of students in class activities, the students' review and assessment of reports/papers and the development of a course work on specific topics.

\[ \text{NF} = 0.3 \times \text{PR} + 0.2 \times \text{PAR} + 0.5 \times \text{DT} \]

where:

- \( \text{NF} \) = Final mark of the course
- \( \text{PR} \) = Paper reviews and assessment
- \( \text{PAR} \) = Participation in activities
- \( \text{DT} \) = Work on specific topic

**Fundamental concepts**

**Degree competences to which the content contributes:**

**Description:**
Peer-to-peer and overlay networks

**Routing in overlay networks**

**Degree competences to which the content contributes:**

**Description:**
Routing in unstructured and structured overlay networks

**Techniques and models**

**Degree competences to which the content contributes:**

**Description:**
Publish/subscribe, group communication, self-properties, incentives, management, resource allocation, security and anonymity, characterization and evaluation.

**Applications**

**Degree competences to which the content contributes:**

**Description:**
Content and media distribution, storage, file sharing, communication, computing, social networks

**Qualification system**

The evaluation of the course is based on the participation of students in class activities, the students' review and assessment of reports/papers and the development of a course work on specific topics.

\[ \text{NF} = 0.3 \times \text{PR} + 0.2 \times \text{PAR} + 0.5 \times \text{DT} \]

where:

- \( \text{NF} \) = Final mark of the course
- \( \text{PR} \) = Paper reviews and assessment
- \( \text{PAR} \) = Participation in activities
- \( \text{DT} \) = Work on specific topic
Bibliography

Basic:

The course will not rely on any basic bibliography, but on a set of research papers that address topics of the different sections of the program of the course.