270704 - IMAS - Introduction to Multiagent Systems

Coordinating unit: 270 - FIB - Barcelona School of Informatics
Teaching unit: 1042 - URV - Universitat Rovira i Virgili
Academic year: 2019
Degree: MASTER’S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2012). (Teaching unit Compulsory)
MASTER’S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2017). (Teaching unit Compulsory)
MASTER’S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2009). (Teaching unit Optional)
MASTER’S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2009). (Teaching unit Optional)
ECTS credits: 5

Prior skills

Knowledge of basic Artificial Intelligence concepts.
Good programming skills in Java.

Teaching methodology

The teaching methodologies employed in this course are:
- Lectures.
- Participative sessions.
- Supervision of practice sessions in the lab.
- Supervision and orientation in team work.
- Orientation of autonomous work.
- Personalised tutoring.
- Doubts sessions.

Learning objectives of the subject

1. Acquisition of the basic theoretical concepts in the field of intelligent agents and multi-agent systems.
2. Design and implementation of a multi-agent in a team to solve a complex problem.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group: 16h</th>
<th>12.80%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 16h</td>
<td>12.80%</td>
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<tr>
<td></td>
<td>Hours small group: 8h</td>
<td>6.40%</td>
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<td></td>
<td>Guided activities: 5h</td>
<td>4.00%</td>
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<tr>
<td></td>
<td>Self study: 80h</td>
<td>64.00%</td>
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### Intelligent Agents

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

**Description:**
- Introduction to intelligent agents. Definition.
- Architectures: reactive, deliberative, hybrid.
- Properties: reasoning, learning, autonomy, proactivity, etc.
- Tipology: interface agents, information agents, heterogeneous systems.

### Multi-Agent Systems

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

**Description:**

### Planning of activities

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Hours: 30h</th>
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<tbody>
<tr>
<td>Theory classes: 30h</td>
<td></td>
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<tr>
<td>Practical classes: 0h</td>
<td></td>
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<tr>
<td>Laboratory classes: 0h</td>
<td></td>
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<tr>
<td>Guided activities: 0h</td>
<td></td>
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<tr>
<td>Self study: 0h</td>
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</tbody>
</table>

**Description:**
- Theoretical lectures covering the content of the course

**Specific objectives:**
- 1

<table>
<thead>
<tr>
<th>Lab sessions</th>
<th>Hours: 15h</th>
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</thead>
<tbody>
<tr>
<td>Theory classes: 0h</td>
<td></td>
</tr>
<tr>
<td>Practical classes: 0h</td>
<td></td>
</tr>
<tr>
<td>Laboratory classes: 15h</td>
<td></td>
</tr>
<tr>
<td>Guided activities: 0h</td>
<td></td>
</tr>
<tr>
<td>Self study: 0h</td>
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</tbody>
</table>

**Description:**
- Work sessions in the computer lab

**Specific objectives:**
- 2
Final exam: 40%
Practical exercise, developed in teams: 60%. This exercise will include the analysis of the architectures and types of agents appropriate for the exercise (10%), an analysis of the most adequate coordination and negotiation mechanisms (20%) and a final oral and written presentation of the complete multi-agent system (30%). It is necessary to complete the practical exercise to pass the course.

Bibliography

**Basic:**

**Complementary:**

**Others resources:**
Hyperlink
http://moodle.urv.cat