270726 - LAI - Logics for Artificial Intelligence

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 Optional)
MASTER’S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2017). (Teaching unit Optional)
ECTS credits: 6
Teaching languages: English

Prior skills

It is not necessary to have taken an introductory course on Logic.

Degree competences to which the subject contributes

Specific:

CEA13. Capability to understand advanced techniques of Modeling, Reasoning and Problem Solving, and to know how to design, implement and apply these techniques in the development of intelligent applications, services or systems.
CEP3. Capacity for applying Artificial Intelligence techniques in technological and industrial environments to improve quality and productivity.
CEP5. Capability to design new tools and new techniques of Artificial Intelligence in professional practice.

General:

CG1. Capability to plan, design and implement products, processes, services and facilities in all areas of Artificial Intelligence.
CG3. Capacity for modeling, calculation, simulation, development and implementation in technology and company engineering centers, particularly in research, development and innovation in all areas related to Artificial Intelligence.

Transversal:

CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.
CT6. REASONING: Capability to evaluate and analyze on a reasoned and critical way about situations, projects, proposals, reports and scientific-technical surveys. Capability to argue the reasons that explain or justify such situations, proposals, etc..

Teaching methodology

Teaching methodologies:
* Lectures.
* Sessions with student participation.
* Autonomous work.
* Tutoring sessions.
* Preparation of evaluation tests.

Learning objectives of the subject

1. Understand the basic tools of Mathematical Logic and their use as a knowledge representation and reasoning mechanism within an intelligent system.
2. Know how to apply the tools of Mathematical Logic to solve specific problems.
## Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 20h 13.33%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 20h 13.33%</td>
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<tr>
<td></td>
<td>Hours small group: 10h 6.67%</td>
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<tr>
<td></td>
<td>Guided activities: 4h 2.67%</td>
</tr>
<tr>
<td></td>
<td>Self study: 96h 64.00%</td>
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</tbody>
</table>
Content

First-Order Logic

Degree competences to which the content contributes:
Description:

Logic Programming

Degree competences to which the content contributes:
Description:

Description logics.

Degree competences to which the content contributes:
Description:

Inheritance networks.

Degree competences to which the content contributes:
Description:

Default reasoning.

Degree competences to which the content contributes:
Description:
## Planning of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Description</th>
<th>Specific objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lectures</strong></td>
<td>30h</td>
<td>Lectures that cover the theoretical content of the course.</td>
<td>1</td>
</tr>
<tr>
<td><strong>Problem sessions</strong></td>
<td>15h</td>
<td>Discussion of exercises on the topics covered in the course.</td>
<td>2</td>
</tr>
<tr>
<td><strong>Exercises</strong></td>
<td>40h</td>
<td>Exercises solved in class during the semester</td>
<td>2</td>
</tr>
<tr>
<td><strong>Final exam</strong></td>
<td>65h</td>
<td>Theoretical exam</td>
<td>1</td>
</tr>
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**Hours**
- Theory classes: 30h
- Practical classes: 0h
- Laboratory classes: 0h
- Guided activities: 0h
- Self study: 0h
- Theory classes: 15h
- Practical classes: 0h
- Laboratory classes: 0h
- Guided activities: 0h
- Self study: 0h
- Guided activities: 0h
- Self study: 40h
- Self study: 65h
Qualification system

Final exam: 50%.
Individual problems solved in class: 25%.
Individual exercises: 25%.

Bibliography

Basic:

Complementary:

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