Use of languages
Principal working language: catalan (cat)

Contact
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Teachers
Targeta Provisional

Prerequisites
Competent english reading.

Objectives and Contextualisation
Cognitive Science is the current science of mind. Clearly this is a discipline in interdisciplinary research that converges in philosophy, computer science, linguistics, psychology, neuroscience, sociology and anthropology.

Scientists working in cognitive science have proposed models on a variety of cognitive processes and have offered explanations about the language, vision/perception, memory, concepts, reasoning, problem solving and decision. One of the distinctive features of the first work in cognitive science is the assumption that the mind can be understood as a special type of a computer. In fact, many researchers in artificial intelligence conceived their work as an attempt to implement cognitive processes in machines.

In this module we will explore some of the main works on the philosophy of cognitive science and artificial intelligence and analyze, with a critical and philosophical approach, the influence of the computer analogy in cognitive science. The following is an indicative list of subjects related to the module: the Turing test; the Chinese room argument; the frame problem; connectionism; extended and embodied cognition; artificial conscience; logics to represent knowledge in artificial intelligence (modal logic, temporal logic, fuzzy logic…).

Students are expected to be able to formulate and argue their points of view on the topics covered in the course. In addition, it is intended that they develop the following competences:

- To demonstrate their knowledge and critical understanding of the main arguments about the possibility of the existence of intelligent machines.

- To understand critically some of the central philosophical issues about the nature of thought and consciousness.

- To show critical understanding of some explanations about the mind and cognitive sciences.

- To demonstrate ability to critically understand some of the main texts in the philosophy of cognitive sciences and artificial intelligence.
- To prove the ability to represent arguments and show their correctness in different non-classical logics.

**Skills**

- Analyze critically and synthesize information obtained from an article or a specialized monograph, and from quality information distributed on the web.
- Apply knowledge of classical authors in the western philosophical tradition to current philosophical questions.
- Continue the learning process, to a large extent autonomously.
- Critically assess the implications on the human condition of new ideological, political, economic and technological forms that impact on the contemporary world.
- Define, design, plan and prepare an original and unpublished work of philosophical research, following established academic-scientific parameters.
- Establish and apply the implications that scientific knowledge and research have for advanced philosophical research.
- Organize one’s own time and resources to undertake research: design a plan by prioritizing objectives, schedules and commitments.
- Reconstruct and analyze critically the positions of the main current researchers in the field of philosophy of each of the main subject areas of the masters degree (science, art, politics) using their characteristic categories and lexis.
- Relate the concepts and knowledge of the various areas of current philosophical research in relation to dependencies between science and technology, and the ethical and political implications of such dependencies.
- Search for, select and manage information autonomously, both from structured sources (data bases, bibliographies, specialized journals) and from information distributed on the web.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

**Learning outcomes**

1. Analyze critically and synthesize information obtained from an article or a specialized monograph, and from quality information distributed on the web.
2. Apply and adapt current philosophical proposals to problems in the cognitive sciences.
3. Apply current philosophical language, content and theories to the problems related to philosophy of the mind.
4. Apply knowledge of philosophy to debates on the regulation of cybernetics.
5. Continue the learning process, to a large extent autonomously.
6. Demonstrate critical understanding of some explanations concerning the mind and the cognitive sciences and the technical applications of these.
7. Draw up a paper in philosophy within the framework of problem areas in the cognitive sciences.
8. Organize one’s own time and resources to undertake research: design a plan by prioritizing objectives, schedules and commitments.
9. Relate scientific knowledge to philosophical proposals and their explanatory and critical orientations.
10. Search for, select and manage information autonomously, both from structured sources (data bases, bibliographies, specialized journals) and from information distributed on the web.
11. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
12. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

**Content**

1. Turing machines and the problem of consciousness.

**References:**


References:


References:


References:

5. Epistemology of robots.

References:

6. Artificial Intelligence: origins, achievements and challenges.

References:

7. Turing Machines. Philosophy of Artificial Intelligence.

References:
8. The Role of Logic: Representation of Knowledge and Reasoning.

References:


References:
- BENTHEM, J, Hans van DITMARCH, H., Jan van EIJCK, J. Eijck, JASPARS, J (2011). (A selection will be provided).
- Notes provided by the teacher.

10. Fuzzy Logics.

References:
- GARRIDO, Ángel (2014). Lógicas de nuestro tiempo, Dykinson, chapter IV.
- Notes provided by the teacher.

Other references
Methodology

There are three elements:

1. Lectures.
2. Seminars: discussions of the required readings.
3. Student's work at home. Students must do some required readings. The work will be supervised by the teachers during seminars.

Activities

<table>
<thead>
<tr>
<th>Title</th>
<th>Hours</th>
<th>ECTS</th>
<th>Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type: Directed</strong></td>
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<tr>
<td>Seminars and lectures.</td>
<td>30</td>
<td>1.2</td>
<td>3, 4, 2, 6, 7, 11, 5, 9, 12</td>
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<td><strong>Type: Supervised</strong></td>
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<tr>
<td>Tutorials.</td>
<td>26</td>
<td>1.04</td>
<td>1, 10, 9</td>
</tr>
<tr>
<td><strong>Type: Autonomous</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Compulsory and required readings.</td>
<td>61</td>
<td>2.44</td>
<td>1, 10, 8</td>
</tr>
<tr>
<td>Doing exercises.</td>
<td>7</td>
<td>0.28</td>
<td>1, 8, 5</td>
</tr>
<tr>
<td>Preparing oral presentation.</td>
<td>7</td>
<td>0.28</td>
<td>1, 3, 4, 2, 10, 6, 7, 8, 5, 9</td>
</tr>
</tbody>
</table>

Evaluation

The assessment of the course has the following elements:

During the classes 1 to 5 it will be assigned to a student one of the compulsory readings and he/she must make an oral presentation of it. After he/she must deliver the written part that he/she had used in order to make the presentation. It is expected that other students have also read the papers in order to get involved in the discussion afterwards. The oral presentation, the written part and the participation in the seminars worth 50% of the final grade.

During the classes 6 to 10 the teacher will distribute exercises for doing at home. Students will dispose of a week in order to resolve them. The answers must be delivered via e-mail or in hand the following class. The last two exercises can be delivered via e-mail or at the teacher's office. All these exercises worth 50% of the final grade. There are seven exercises: the first one worth 1 point over the final grade, the second and the tercer 0.25 each, the fourth and fifth 0.75 each, the sixth and the last 1 point each.

Evaluation activities

<table>
<thead>
<tr>
<th>Title</th>
<th>Weighting</th>
<th>Hours</th>
<th>ECTS</th>
<th>Learning outcomes</th>
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<tbody>
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<td>0.48</td>
<td>1, 3, 4, 2, 10, 6, 7, 8, 11, 5, 9, 12</td>
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<tr>
<td>Exercises.</td>
<td>50%</td>
<td>7</td>
<td>0.28</td>
<td>11, 5</td>
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</tbody>
</table>
Bibliography

BADESA, C., JANÉ, I., JANSANA, R. (2000), Elementos de lógica formal, Ariel, chapters 6, 7 and 11.


419-436.


STANFORD ENCYCLOPEDIA of PHILOSOPHY, "Turing Machines".


UNIVERSITY of CAMBRIDGE (2012), Alan Turing- The life of a genius. Free video available at iTunes.