# COURSE PRESENTATION FORM - ACADEMIC YEAR 2011/2012

<table>
<thead>
<tr>
<th>COURSE NAME</th>
<th>Knowledge Representation and Ontologies</th>
</tr>
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<tbody>
<tr>
<td>COURSE CODE</td>
<td>72011</td>
</tr>
<tr>
<td>LECTURER</td>
<td>Diego Calvanese</td>
</tr>
<tr>
<td>TEACHING ASSISTANTS</td>
<td>Mariano Rodriguez-Muro</td>
</tr>
<tr>
<td>TEACHING LANGUAGE</td>
<td>English</td>
</tr>
<tr>
<td>CREDIT POINTS</td>
<td>8</td>
</tr>
<tr>
<td>LECTURE HOURS</td>
<td>48</td>
</tr>
<tr>
<td>EXERCISE HOURS</td>
<td>24</td>
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**OFFICE HOURS**

- **LECTURER**
  - During the lecture time span Friday 15:00–17:00, Faculty of CS, POS Building, piazza Domenicani 3, office 2.07; outside of the lecture time span by previous email appointment.

- **TEACHING ASSISTANTS**
  - During the lecture time span: by previous email or verbal appointment, Faculty of CS, POS Building, piazza Domenicani 3, office 2.06

**PREREQUISITES**

- Notions about first-order logic as taught in an introductory BSc course on Mathematical Logic;
- Notions about relational databases as taught in an introductory BSc course;

**OBJECTIVES**

- The aim of the course is to provide students with an understanding of the formal foundations of classical logic-based knowledge representation languages, with an overview of the reasoning methods for them, and of the application of techniques developed in knowledge representation to classical data management problems. Most of the course will focus on description Logics and on ontology languages.

**SYLLABUS**

- Knowledge Representation
- Structural description logics
- Propositional description logics
- Knowledge bases
- Logics and databases
- Ontology based data access
- Reasoning about queries
- Query reformulation

**TEACHING FORMAT**

- The course is organized as frontal lectures on the course topics, possibly complemented by monographic seminars that serve as a starting point for
discussing the techniques involved during lab sessions the students will familiarize with the usage and internals of state-of-the-art tools for managing and querying relational data sources through an ontology, and will work on a project.

**ASSESSMENT**

The exam consists of:

- a project [30 % of mark]
- a final oral or written exam [70 % of mark]

Both parts have to be passed to pass the exam, but they can be taken independently of each other.

In case of a positive mark, the part that has been passed will count for all 3 regular exam sessions of the Academic Year (i.e., if the student fails or does not take, e.g., the oral exam, he keeps the project and only needs to retake the oral exam).

**READING LIST**


Lecture notes and additional reading material covering the course topics will be provided during the course and made available in the course web page.

**SOFTWARE USED**

- Protégé ontology editor
- MySQL or Postgres database engine
- Ontology-based Data Access Tools

**LEARNING OUTCOME**

Students will acquire an understanding of the advanced languages, methodologies, and the use of knowledge representation techniques, also in the context of accessing and querying information sources. Automated reasoning techniques and formal semantics will be understood for these languages.

**COURSE PAGE**

[http://www.inf.unibz.it/~calvanese/teaching/11-12-kro/](http://www.inf.unibz.it/~calvanese/teaching/11-12-kro/)