### COURSE DESCRIPTION – ACADEMIC YEAR 2016/2017

<table>
<thead>
<tr>
<th>Course title</th>
<th>Temporal and Spatial Databases</th>
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</thead>
<tbody>
<tr>
<td>Course code</td>
<td>72099</td>
</tr>
<tr>
<td>Scientific sector</td>
<td>INF/01</td>
</tr>
<tr>
<td>Degree</td>
<td>Master in Computer Science (LM-18)</td>
</tr>
<tr>
<td>Semester</td>
<td>1</td>
</tr>
<tr>
<td>Year</td>
<td>2</td>
</tr>
<tr>
<td>Credits</td>
<td>8</td>
</tr>
<tr>
<td>Modular</td>
<td>No</td>
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| Total lecturing hours | 48                                              |
| Total lab hours       | 24                                              |
| Total exercise hours  | -                                               |
| Attendance            | Not compulsory                                  |

**Prerequisites**

Students should be familiar with basic concepts in databases (including relational databases, SQL, and relational algebra) and algorithms. This material is taught in the following courses: Database Systems, and Data Structures and Algorithms.

**Course page**

https://ole.unibz.it/course/view.php?id=561

**Specific educational objectives**

The course belongs to the type "caratterizzanti - discipline informatiche".

Understanding of the basics of temporal and spatial database systems.

**Lecturer**

Vincenzo Del Fatto and Anton Dignös

**Contact**

Vincenzo Del Fatto: Piazza Domenicani 3, Room 2.19, vincenzo.delfatto@unibz.it, +39 0471 016255

Anton Dignös: Piazza Domenicani 3, Room 2.19, anton.dignoes@unibz.it, +39 0471 016142

**Scientific sector of lecturer**

INF/01

**Teaching language**

English

**Office hours**

Arrange beforehand by email.

**Lecturing Assistant (if any)**

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**Contact TA**

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**Office hours TA**

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**Syllabus**

- Requirements and motivation for temporal databases
- Time domain, granularity, calendars
- Abstract and concrete temporal data models
- Temporal operators and extensions of SQL
- Spatial Reference Systems and Geographic Data Format: Raster Data, Vector Data
- Modelling Spatial Concepts in Spatial Databases
- Spatial indexes
- Spatial Analysis

**Teaching format**

Frontal lectures and labs (exercises). The labs will allow students to get practical experience and apply the concepts learned during the lectures.
### Learning outcomes

**Knowledge and understanding:**
- Know the main methods for the design of user-centred systems.

**Applying knowledge and understanding:**
- Be able to identify new application requirements and business opportunities in the field of systems based on data and knowledge.

**Making judgments**
- Be able to identify reasonable work goals and estimate the resources required to achieve the objectives.

**Communication skills**
- Be able to structure and prepare scientific and technical documentation describing project activities.

**Learning skills**
- Be able, in the context of a problem-solving activity, to extend even incomplete knowledge taking into account the objective of the project.

### Assessment

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Lab exercises [50% of mark] + final exam (written) [50%]</th>
</tr>
</thead>
</table>

### Assessment language

English

### Evaluation criteria and criteria for awarding marks

The written exam is needed to assess the students' understanding of the topic's key principles. The laboratory exercises are needed to assess the students' ability to work with examples, applications and real systems. Lab exercises and the final exam are mandatory, and must both be positive in order to pass the exam. Sufficient grades for lab exercises shall be kept valid for all 3 regular exam session, in case of failed exam.

### Required readings

**Online lecture notes**

**Supplementary readings**


### Software used

PostgreSQL with PostGIS, QGIS, PostgreSQL client (psql or pgAdmin) and/or C compiler