Course guide  
**270603 - TMIRI - Techniques and Methodology of Innovation and Research in Informatics**

**Unit in charge:** Barcelona School of Informatics  
**Teaching unit:** 723 - CS - Department of Computer Science.

**Degree:**  
MASTER'S DEGREE IN INNOVATION AND RESEARCH IN INFORMATICS (Syllabus 2012). (Compulsory subject).  
MASTER'S DEGREE IN DATA SCIENCE (Syllabus 2021). (Optional subject).

**Academic year:** 2022  
**ECTS Credits:** 6.0  
**Languages:** English

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**LECTURER**

**Coordinating lecturer:** FRANCISCO JAVIER LARROSA BONDIA  
**Others:** Primer quadrimestre: FRANCISCO JAVIER LARROSA BONDIA - 10

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**DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES**

**Generical:**
CG1. Capability to apply the scientific method to study and analyse of phenomena and systems in any area of Computer Science, and in the conception, design and implementation of innovative and original solutions.  
CG2. Capability to lead, plan and supervise multidisciplinary teams.  
CG4. Capacity for general and technical management of research, development and innovation projects, in companies and technology centers in the field of Informatics Engineering.

**Transversal:**
CTR1. ENTREPRENEURSHIP AND INNOVATION: Capacity for knowing and understanding a business organization and the science that rules its activity, capability to understand the labour rules and the relationships between planning, industrial and commercial strategies, quality and profit. Capacity for developing creativity, entrepreneurship and innovation trend.  
CTR2. SUSTAINABILITY AND SOCIAL COMMITMENT: Capability to know and understand the complexity of the typical economic and social phenomena of the welfare society. Capacity for being able to analyze and assess the social and environmental impact.  
CTR4. INFORMATION LITERACY: Capability to manage the acquisition, structuring, analysis and visualization of data and information in the area of informatics engineering, and critically assess the results of this effort.  
CTR6. REASONING: Capacity for critical, logical and mathematical reasoning. Capability to solve problems in their area of study. Capacity for abstraction: the capability to create and use models that reflect real situations. Capability to design and implement simple experiments, and analyze and interpret their results. Capacity for analysis, synthesis and evaluation.

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**TEACHING METHODOLOGY**

Different types of activities, such as attending lessons, reading and studying additional material (articles and book chapters) to acquire complementary knowledge, and oral presentations, will be distributed within a total of 6 ECTS (180 work hours).

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**LEARNING OBJECTIVES OF THE SUBJECT**

1. Be aware of the Scientific Method, develop critical thinking, learn the process of writing a scientific paper, learn tools to help in the scientific process.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>54,0</td>
<td>36.00</td>
</tr>
<tr>
<td>Self study</td>
<td>96,0</td>
<td>64.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

- **Scientific Method**

- **Critical Thinking**
  Description:

- **Science World**
  Description:

- **Scientific papers**
  Description:

- **Integrity and ethics**
  Description:
## ACTIVITIES

### The Scientific Method

**Specific objectives:**
1.

**Related competencies:**
- CG2. Capability to lead, plan and supervise multidisciplinary teams.
- CG4. Capacity for general and technical management of research, development and innovation projects, in companies and technology centers in the field of Informatics Engineering.
- CG1. Capability to apply the scientific method to study and analyze of phenomena and systems in any area of Computer Science, and in the conception, design and implementation of innovative and original solutions.
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**Full-or-part-time:** 24h

Theory classes: 8h
Self study: 16h

### Critical Thinking

**Specific objectives:**
1.

**Related competencies:**
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Scientific world

Specific objectives:
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Full-or-part-time: 48h
Theory classes: 16h
Self study: 32h

Papers

Specific objectives:
1

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Full-or-part-time: 48h
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Self study: 32h
Integrity

Specific objectives:

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Related competencies:
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Full-or-part-time: 18h
Theory classes: 6h
Self study: 12h

GRADING SYSTEM

The evaluation will be based on: essays, tests and public presentations

BIBLIOGRAPHY

Basic: