COURSE DESCRIPTION – ACADEMIC YEAR 2022/2023

<table>
<thead>
<tr>
<th>Course title</th>
<th>Research Methods and Technology Transfer</th>
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<tbody>
<tr>
<td>Course code</td>
<td>76062</td>
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<tr>
<td>Scientific sector</td>
<td>INF/01</td>
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<tr>
<td>Degree</td>
<td>Master in Software Engineering for Information Systems (LM-18)</td>
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<tr>
<td>Semester</td>
<td>1</td>
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<tr>
<td>Year</td>
<td>2</td>
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<tr>
<td>Credits</td>
<td>6</td>
</tr>
<tr>
<td>Modular</td>
<td>No</td>
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<tr>
<td>Total lecturing hours</td>
<td>40</td>
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<tr>
<td>Total exercise hours</td>
<td>20</td>
</tr>
<tr>
<td>Attendance</td>
<td>Not compulsory</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>Prior courses in Management Engineering and Mathematical Modeling.</td>
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<td>Course page</td>
<td><a href="https://ole.unibz.it/">https://ole.unibz.it/</a></td>
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Specific educational objectives
The course belongs to the type caratterizzanti – discipline informatiche – "Software/ Systems Engineering Research".
This course explores the research challenges and how to conduct the research by using suitable research methodologies.

Lecturer
Ilenia Fronza
Contact
Via Cassa di Risparmio 21, Room 1.06, Ilenia.Fronza@unibz.it
Scientific sector of lecturer
INF/01
Teaching language
English
Office hours
Wednesday, 14:00-15:00 (please arrange beforehand by email)
Lecturing Assistant (if any)
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Contact LA
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Office hours LA
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List of topics
- Quantitative, qualitative, and mixed-method research
- Systematic literature review, Systematic mapping study
- Survey research
- Experimental research
- Case study
- Technology transfer and dissemination

Teaching format
Frontal lectures, hands-on activity, and discussion.

Learning outcomes
Knowledge and understanding:
D1.2 To be able to analyze and solve even complex problems in the area of Software Engineering for Information Systems with particular emphasis on the use of studies, methods, techniques and technologies of empirical evaluation.
D1.7 To know the different sectors of application of Software Engineering also with reference to the local, national and international economic-social context.
| Assessment | Project work [70% of mark] + final exam (oral) [30% of mark].
The oral exam is needed to assess the students' understanding of the topic's key principles. Project work is needed to assess the students' ability to work with examples, applications and real systems. The written project report is needed to assess creativity, identification of interesting research questions to investigate in the project, effectiveness in the results and lessons learned presentation.

Project work and final exam are mandatory, and both must be positive to pass the exam. In case of a positive mark for the project work, the mark will count for the remaining regular exam sessions of the academic year. In case of negative evaluation of the project work, a new project needs to be submitted for the next session.

Students can choose between two modalities to prepare the project work:
- Step-by-step, which means successfully completing the project work in an iterative way during the semester.
- All-in-one, which means preparing the project work autonomously and presenting it before the final exam.

Project work must be evaluated BEFORE the final exam, otherwise the exam cannot be registered. |
| Assessment language | English |
| Assessment typology | Monocratic |
### Evaluation criteria and criteria for awarding marks

- Relevant for the Theory assessment: correctness of answers, clarity of answers, ability to summarize, deep understanding of experimental designs, methodologies, and data analysis techniques.
- Relevant for the Practice assessment: creativity, skills in critical thinking, identification of interesting research questions, effectiveness in the results and lessons learned presentation.

### Required readings

- Software Metrics – A Rigorous & Practical Approach. N. Fenton, S. Pfleeger.
- Students will be exposed to current topics of research by reading papers provided during the lectures

### Supplementary readings

- Research articles provided during the course
- Nardi P., Doing Survey Research: A Guide to Quantitative Methods, 2006 [UNIBZ Library, MR 2400 N223 (2.06)]

### Software used

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