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MASTER IN QUANTUM SCIENCE AND TECHNOLOGY

www.ehu.eus
INTRODUCTION & OBJECTIVES

Quantum physics lies at the center of science and engineering in our new century. This Master’s program squarely recognizes this fact by providing a solid foundation in several facets of quantum science and technology. Teaching and mentoring responsibilities are undertaken by University teaching staff and Ikerbasque researchers, with proven track record in both teaching and research. The students can choose among two possible career paths: Fundamental Physics or Information and Technology (or even a superposition of the two).

ENTRY PROFILE

This Master’s degree is primarily aimed at Science (Physics, Chemistry) and Engineering Graduates, in particular Electrical/Communications Engineering Graduates. There are also places for exceptional Graduates from other branches of Science and Engineering, as well as other Graduates that the Master’s Committee deem suitably qualified and motivated for this course.

CAREER OPPORTUNITIES

This is a research-oriented master that can be considered a step towards doctoral studies. The program provides students with transferable skills in acquisition, creation and presentation of knowledge, with special emphasis in individual work and initiative within a research group.

ABOUT THE COURSE

Teaching place: Faculty of Science and Technology (Leioa).
Teaching type: On-site.
Teaching language: English.
Approximate fees: 2.150-2.350 €.
Calendar: October-June.

TEACHING LOAD

<table>
<thead>
<tr>
<th>Compulsory subject courses</th>
<th>Optional subject courses</th>
<th>Research Projects</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>20 Credits ECTS</td>
<td>20 Credits ECTS</td>
<td>20 Credits ECTS</td>
<td>60 Credits ECTS</td>
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TRAINING SYLLABUS

MANDATORY SUBJECTS

- Advanced quantum mechanics
- Quantum Field theory
- Quantum optics and information
- Quantum statistical physics and condensed matter.

RESEARCH PROJECT

- Cosmology
- General Relativity and Gravitation
- Field Theory
- Condensed Matter Physics
- Cold Matter
- Quantum Simulation
- Quantum Information
- Quantum Optics
- Quantum Control.

OPTIONAL COURSES

- Fields and particles
- Mathematical Tools
- Quantum aspects of cosmology and astrophysics
- Superstrings and supersymmetry
- Cold matter physics
- Quantum information: formalism and physical implementations
- Quantum Technologies
- Advanced Quantum Optics
- Semiconductor physics, Transport and Spintronics
- Topics in Fundamental Physics.