PPN Master Degree Presentation

The PPN master at E/PHI graduate School addresses modern concepts and state-of-the-art techniques in photonics, optical communications, nanotechnology, laser technology, quantum technologies and spectroscopy. Special emphasis is given to femtosecond laser science, nonlinear fiber optics, nano-optics, quantum control and quantum information, molecular spectroscopy, nanoscale biophysics, nanosensors & nano-characterization.

Designed for R&D engineer positions in big international companies or smaller High-Tech industries, this degree can also be the springboard for a career as Researcher or Professor.

The PPN master is strongly supported by the ICB laboratory and the FEMTO-ST institute, two major BFC research institutions with high international recognition in the physical sciences and engineering.

### PROGRAM (Dijon Campus)

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<tr>
<th>YEAR</th>
<th>Core Courses with Research Project</th>
<th>Crossdisciplinary Courses</th>
<th>Soft Skills Courses</th>
<th>Crossdisciplinary Courses</th>
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<tbody>
<tr>
<td>1</td>
<td>24 ECTS</td>
<td>6 ECTS</td>
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<td>2</td>
<td>18 ECTS</td>
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**Specialized Courses with Research Project**

- **24 ECTS**

**Research Internship**

- **30 ECTS**

**Core Course List: 42 ECTS**

- NANO-OPTICS
- ULTRASTRUCTURE
- QUANTUM TECHNOLOGIES
- ADVANCED RESEARCH PROJECTS

**Cross-disciplinary Course List: 12 ECTS**

- NUMERICAL METHODS
- SIGNAL PROCESSING
- MICRO NANO FABRICATION AND CLEAN ROOM

**Specialized Course List: 24 ECTS**

- ADVANCED PHOTOGRAPHY: ATOMIC & MOLECULAR DYNAMICS
- NANO-TECHNOLOGIES & NANOFABRICATION

**Soft Skills Course List: 12 ECTS**

- FOREIGN LANGUAGE
- DIGITAL SKILLS
- TRANSVERSAL SKILLS
- ENTREPRENEURIAL SKILLS
Photonics, Nanotechnology, Quantum Technologies

2 RESEARCH LABORATORIES

6 SCIENTIFIC DEPARTMENTS

Photonics: Submicron optics and nanosensors
- Near-field optics & Nano-photonic
- Femtosecond processes & intense light
- Softgine, Lasers and Optical Communication

Optics & Photonics
- Nano-Optics
- Nonlinear Optics
- Quantum Information & Systems
- Ultrastable nonlinear dynamics and materials
- Photonics artificial intelligence and applications

Quantum Interaction & Control
- Molecular Spectroscopy
- Molecular Spectroscopy
- Cytosine Processes
- Quantum & Nonlinear Dynamics
- Quantum Technologies
- Quantum Control & Nonlinear Dynamics

Micro Nano Sciences & Systems
- Bio-Micro Devices
- Phononics
- Micro Nano Materials and Surfaces
- Micro-Opto-Electro Mechanical Systems

Nano Sciences: Opto-electronics sensors, Nanodesign, and Characterization
- Physics applied to Protons
- Nanoparticles & Nanostructures

Time Frequency
- Wave, Clocks & Metallurgical Systems
- Micro-Acoustic Devices
- Acoustics, Electronics & Piezoelectric

3 Main Technological Platforms
- Platforms
  - ARCEN
  - PICASSO
  - FLAIR

Institute

Research

Industries

University