

Digitally Enhanced European Quantum Technology Master

University training programs to help Europe win the global race for quantum talent

December 01, 2022

In order to meet the emerging **need for a quantum-ready workforce in the coming decade**, university training efforts within Quantum Technology (QT) will not only have to be **massively scaled** up but also **comprehensively reformed**. There is an urgent need for a wider understanding of the underpinnings of the quantum revolution as well as an increased awareness for the commercial potential of quantum innovations in the coming generations of quantum physicists.

A large number of ICFO research groups conduct research in Quantum Science and Technology. With this expertise, ICFO is already an active member of the coordinating team of the Barcelona Master in Quantum Science and Technologies (coordinating Institute: Universitat de Barcelona), preparing graduates in Physics, Physical Engineering or equivalent degrees who want to continue specialization studies in Quantum Science and Technologies. It also organizes a series of Frontier Schools for talented young researchers and students

worldwide to introduce them to thematic research areas like Quantum Technologies, and runs a rich Outreach program with special activities that aim to motivate students in STEM to consider careers in Quantum Technologies.
? Now, ICFO will apply its extensive experience in academic programs in the Quant m Technologies arena to **DigiQ, a new European project** coordinated by Aarhus University (DK), that aims to **spearhead a transformation of the educational ecosystem by introducing both a series of didactical innovations as well as a multinational program structure ready to be scaled up to the rest of the European Higher Education Area**. Prof Robert Sewell, Head of Academic Affairs at ICFO comments that i¿½DigiQ is a great opportunity for ICFO to enhance the strong academic and outreach programs that we offer with inputs and know-how from internationally renowned leaders in the European quantum network. We are also keen to share what we have learned over the years through programs that we have designed and implemented to help train the quantum workforce, both in academia and industry, of the futurei¿?
. The program is designed to be flexibly implemented within a broad range of universi y partners covering core Physics and other areas, to support the transformation acro s universities of all levels of QT-specialization. This will involve upgrading existing QT Mast r programs, supporting the development of entirely new programs, and offering abridgi g program to transform non-specialist degrees to specialised ones which to align to the nee s of the QT work forc
. The four core elements of the project a

The production of a comprehensive ecosystem of didactically innovative short modules
The augmentation of existing courses both to increase the focus, quality and remote accessibility.
The operation of ongoing networks of students, university staff, and industry partners, facilitating workshops, QT events, and curating a social element to the program, and finally
A comprehensive mobility program supporting student exchange as well as research and industry internships in a network of over 100 industrial partners.

To ensure cohesion among the different educational initiatives, all efforts will be mapped to the Quantum Technology Competence Framework and aligned with the emerging specification of Qualification Profiles developed by the Quantum Flagship.