SCIENCES, TECHNOLOGIES, SANTÉ, INGÉNIERIE

Parcours Quantum information and quantum engineering 2e année

Master Nanosciences et nanotechnologies

Niveau d'étude visé
Bac +5

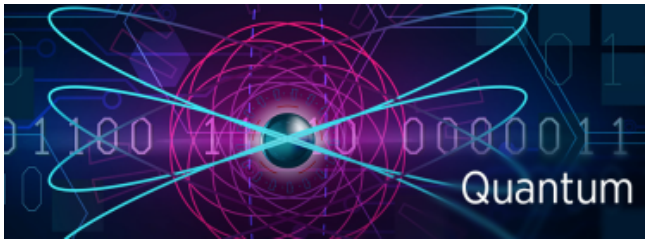
ECTS
60 crédits

Durée
1 an

Composante
Grenoble INP - Phelma (Physique, électronique et matériaux), UGA, UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)

Langue(s) d'enseignement
Français

Présentation



The emergence of quantum technologies already allows us to foresee the development of new simulation and optimization tools to address major global challenges. These technologies are a strategic global issue for universities, industries and startups, as they have the potential to revolutionize the design and implementation of computing, information, communication and sensing sciences and technologies. France has recently invested 1.8 billion euros in this field.

In view of Grenoble's internationally recognized position in Quantum Technologies, and in response to the needs of students and European and national programs, this Master's 2-year program, created in 2021, offers training that is perfectly suited to the new needs of research laboratories, industries, and startups working on cutting-edge subjects that are evolving very rapidly in the context of very strong international competition.

This 2nd year Master's program provides students with a high level of expertise in concepts at the interface between fundamental and experimental aspects of quantum physics, for the control of quantum objects and their applications to quantum technologies (Solid State Qubits, Quantum Optics, Quantum Algorithm, Practicals on the IBM-Q, Cryoelectronics and Microwaves, ...). This Master also reinforces the need for openness thanks to multidisciplinary teachings at the interface with mathematics and computer science. This training is in perfect adequacy with the current developments in Quantum Technologies, both at the level of the Grenoble eco-system, and at the national and international levels. This training allows students to finalize their training with numerous internship opportunities, and to pursue a thesis in fundamental or applied physics research laboratories, or in industrial companies and startups.

This program is aimed at national and international students with high potential and motivation, who have obtained a Master 1 or equivalent, and who wish to take up tomorrow's quantum challenges and develop their scientific ambitions and their research project. The students will be part of the Grenoble community, which is very active in the field of quantum technologies thanks to the QuantAlps research federation in Quantum Sciences and Technologies.

This training allows students to pursue the Quantum Thematic Program of the Graduate School , provided they have successfully completed the first year of this program, and also allows them to apply for the QuanTEdu Excellence Scholarships program, provided they do not already hold a grant based on academic criteria.

Formation internationale : Formation tournée vers l'international

Dimension internationale

Study abroad as an exchange student

As part of this track, you have the opportunity to study for a semester or a year at a UGA partner University abroad.

The International Relations Officers of your faculty will be able to provide you with more information.

More information on : https://international.univ-grenoble-alpes.fr/partir-a-l-international/partir-etudier-a-l-etranger-dans-le-cadre-d-un-programme-d-echanges/

Cette filière est affiliée au Master européen Erasmus Mundus EMM-Nano+ (partenariat avec les universités KU-Leuven, TU-Dresden, Chalmers-Goteborg et UB-Barcelone). Les étudiant(e)s de l'EMM Nano+ suivent les cours de seconde année des Master 2 Quantum Information-Quantum Engineering après avoir effectué une première année de Master à l'Université de KU-Leuven.

Admission

Conditions d'admission

You can apply for scholarships via the Quantum Graduate School program or to the QuanTEdu Excellence Grant program

National diploma conferring the degree of license in a field compatible with that of the master Title or acquired recognized equivalent by the admissions committee of the University of Grenoble Alpes

Public continuing education: You fall under continuing education:

- if you resume your studies after 2 years of interruption of studies
- or if you followed training under the continuing education regime in one of the previous 2 years or if you are an employee, job seeker, self-employed person

If you do not have the required diploma to integrate the training, you can undertake a process of validation of personal and professional achievements (VAPP)

For more information, see the web page of the Continuing Education and Learning Department

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- Entrée en 2nde année: étudiant.e.s ayant validé la 1ère année d'un master ou d'un parcours de niveau équivalent couvrant les unités d'enseignement de prérequis du Master 1 Nanophysique-quantum physique.

Public formation continue : Vous relevez de la formation continue :

- si vous reprenez vos études après 2 ans d'interruption d'études
- ou si vous suiviez une formation sous le régime formation continue l'une des 2 années précédentes

- ou si vous êtes salarié, demandeur d'emploi, travailleur indépendant

Si vous n'avez pas le diplôme requis pour intégrer la formation, vous pouvez entreprendre une démarche de validation des acquis personnels et professionnels (VAPP)

Pour plus d'informations, consultez la page web de la Direction de la formation continue et de l'apprentissage

Vous pouvez également Consulter les tarifs s'appliquant aux publics de la formation continue.

Candidature

Would you like to apply and register? Be aware that the procedure differs depending on the diploma, the degree obtained, or the place of residence for foreign students. Let us guide you simply by following this link

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Vous souhaitez candidater et vous inscrire à cette formation?

Laissez-vous guider simplement en suivant ce lien

Droits de scolarité

Consulter le montant des frais d'inscription

Et après

Insertion professionnelle statistiques

Retrouvez toutes les informations concernant le taux de réussite au diplôme et le devenir de nos diplômés.

Il est également possible de consulter nos documents-ressources *Des études à l'emploi* classes par domaines de formation.

Infos pratiques

Contacts

Responsable pédagogique

Franck Balestro

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Secrétariat de scolarité

Demande de candidature

phitem-candidature-etudiant@univ-grenoble-alpes.fr

Secrétariat de scolarité

Gestionnaire

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Responsable formation continue

Laura DI RUZZA

fc-phitem@univ-grenoble-alpes.fr

Établissement(s) partenaire(s)

This program can be followed as part of a double degree in partnership with Karlsruher Institut für Technologie (KIT) (Germany). Professor in charge of the Double Degree: Mr. Ingo SCHIENBEIN

Lieu(x) ville

Grenoble

Campus

Grenoble - Domaine universitaire

Programme

Master 2e année

Semestre 9

	Nature	CM	TD	TP	Crédits
UE Open Quantum Systems	UE				3 crédits
UE Quantum Optics	UE				3 crédits
UE Quantum Condensed Matter	UE	24h			3 crédits
UE Solid State Qubits	UE				3 crédits
UE Nanomagnetism, spintronics	UE				3 crédits
UE Quantum Algorithm	UE				3 crédits
UE From nanofabrication in research laboratories to VLSI	UE				3 crédits
UE Microwaves and Cryoelectronics	UE				3 crédits
UE Thematic and interdisciplinary projects	UE				6 crédits

Semestre 10

	Nature	CM	TD	TP	Crédits
UE Master Thesis	UE				30 crédits