

SCIENCES, TECHNOLOGIES AND HEALTH

Master in Physics

Physique



Target level
Baccalaureate
+5



ECTS
120 credits



Duration
2 years



Component
UFR Chimie-
Biologie,
UFR PhITEM
(physique,
ingénierie, terre,
environnement,
mécanique),
UFR Médecine,
Grenoble
INP - Phelma
(Physique,
électronique
et matériaux),
UGA



Language(s) of
instruction
English, French

Subprograms

- > Basic research 1st year
- > Innovation and research 1st year
- > Astrophysics 2nd year
- > Nuclear energy 2nd year
- > Materials for energy 2nd year
- > Medical physics and radiation protection of humans and the environment 2nd year
- > Photonics and semiconductors 2nd year
- > Subatomic physics and cosmology 2nd year
- > Turbulences : Méthodes et Applications 2nd year

Presentation

Course co-accredited by the Université Grenoble Alpes, the National Polytechnic Institute of Grenoble and the Université Savoie Mont Blanc

The master in Physics is a general physics course. Its aim is to provide students with a solid knowledge base in physics, enabling them to specialise in any of the different physics fields.

The first year of the master consolidates this general physics base, through a substantial foundation programme, while preparing students for specialisation in one of the nine physics programs. More detailed information on this first year is available [from](#)

Four programs (Astrophysics, Quantum matter and Subatomic physics and cosmology) offer high-level training in one of the Grenoble site's four main research themes. The Materials for energy and photonics and semiconductors programs address the more applied aspects of physics through a "research and innovation" offer, and have been developed in close collaboration with Grenoble INP. Lastly, the Medical physics and radiation protection of humans and environment program is shared between the Physics and health engineering specialisations.

In semester 9, students can either choose all of their courses from within the same program, in order to acquire all the theoretical, experimental and/or digital concepts specific to the chosen theme, or they can substitute four modules (UEs) from their program with four from a second program (excluding MatEng and PhysMed and radiation protection of humans and the environment). This option should therefore interest students looking for a more cross-cutting (bidisciplinary) and also more theoretical course.

The master includes a 4-month internship carried out during semester 10 but also a "summer" internship that takes place at the end of the 1st year. This first internship (a minimum of two months from mid-May) is a real bridge between master 1st and 2nd years, and enables students to discover the research profession and finalise their specialisation choices. It is an integral part of the course and therefore contributes to obtaining the diploma (unless entering the 2nd year following a master obtained in another university).

Attention : The lessons of the first year of the master are taught in French; courses are fully taught in English from the second year

A general overview of the specialisation (structure, photo gallery, internships, teaching team etc) is available on the [website](#)

The Physics master is a general training in physics. It aims to provide a solid foundation of knowledge in physics allowing students to specialize in different areas of physics. It comes in 10 courses. The courses Astrophysics and Subatomic physics & cosmology make it possible to obtain a high-level training in one of the 4 main research themes of the Grenoble site.

The Materials for energy and Photonics & semiconductors courses address more applied aspects of physics through a "research and innovation" type of offer and have been built in close collaboration with Grenoble-INP .

Finally the course Mmedical physics and radiation protection of humans and the environment is divided between the Physical mention and the mention Engineering of the health.

International education : Internationally-oriented programmes

International dimension

The program Complex matter / living matter is proposed partly in English. Similarly, five courses in the Nanophysics course are taught in English.

Organisation

Admission

Access conditions

The master in Physics is open to all students who have completed a bachelor degree (licence) in Physics at a French or foreign university (subject to validation of the course by the attainment validation board). Access is possible for students who have completed a bachelor degree in Physics-chemistry, subject to the agreement of the course manager. For the second year of the master : students who have completed the first year of a compatible programme or one of equivalent level.

Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed a formation under the regime formation continues one of the 2 preceding years
- or if you are an employee, job seeker, self-employed

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

Candidature / Application

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](#)

Fees

Tuition fees 2023-2024 : 243 €+100E CVEC

Recommended prerequisites

Bases in analytical mechanics, statistical physics and / or quantum mechanics are a plus.

And after

Further studies

The programs Astrophysics, Complex matter / living matter, Quantum matter, Subatomic physics & cosmology and Nanophysics are very clearly oriented towards a continuation of PhD studies. The courses Materials for energy, Photonics & semiconductors and Medical physics can lead either to a continuation of studies in thesis or to an insertion in the professional environment (R & D engineer or physicist in a hospital environment) . The course Techniques of commercialization in optics is clearly professionalizing him (Technico-commercial engineer).

Study abroad

One or two semesters can be done abroad (for example in the framework of ERASMUS stay, subject to the agreement of the training manager). The end of study internship and the intermediate internship can be done in a foreign laboratory (or company).

Reorientation

Even if the master is built on a teaching offer over 2 years, a re-orientation remains possible at the end of the first year towards different specializations than those offered in Grenoble. Similarly, enrollment in the 2nd year is still possible for students who have followed a first year of a master's degree in Physics at another French or international university.

Additional information

Voir également : <http://www.grenoble-inp.fr/masters/le-master-physique-14945.kjsp#page-presentation>

Useful info

Contacts

Program director

Jonathan Ferreira

✉ Jonathan.ferreira@univ-grenoble-alpes.fr

Program administration

Application

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

Program administration

Registrar's Office for the Master in Physics

✉ phitem.master.physique@univ-grenoble-alpes.fr

Continuing education manager

Contact FC STS

✉ fc-sts@univ-grenoble-alpes.fr

Course location(s) - City

📍 Grenoble

Campus

 Grenoble - University campus

 Grenoble - La Tronche domaine de la Merci

 Grenoble - Scientific Polygon

Know more

Master website

 <https://master-physique.univ-grenoble-alpes.fr/>

Program

Basic research 1st year

Innovation and research 1st year

Astrophysics 2nd year

Nuclear energy 2nd year

Materials for energy 2nd year

Medical physics and radiation protection of humans and the environment 2nd year

Photonics and semiconductors 2nd year

Subatomic physics and cosmology 2nd year

Turbulences : Méthodes et Applications 2nd year

Master 2nd year

Semestre 9

	Nature	CM	TD	TP	Crédits
UE Physique theorique de la turbulence	Teaching Unit (UE)				3 credits
UE Ecoulements diphasiques turbulents	Teaching Unit (UE)				3 credits

UE Effet dynamo et rotation en turbulence	Teaching Unit (UE)	9h	12h		3 credits
UE Bilinguisme Anglais/Français compréhension	Teaching Unit (UE)			9h	3 credits
UE Méthodes expérimentales avancées	Teaching Unit (UE)	3h	12h	9h	3 credits
UE Méthodes numériques avancées	Teaching Unit (UE)				3 credits
UE Dynamique des plasmas astrophysiques	Teaching Unit (UE)				3 credits
UE Turbulence compressible	Teaching Unit (UE)				3 credits
UE Turbulence d'ondes	Teaching Unit (UE)				3 credits
UE Turbulence en couche limite atmosphérique	Teaching Unit (UE)				3 credits
UE Advanced Machine Learning in Earth Sciences	Teaching Unit (UE)			15h	3 credits
UE Dynamique des fluides géophysiques	Teaching Unit (UE)				6 credits
UE Contrôle et turbulence de paroi	Teaching Unit (UE)				3 credits
UE GPU Computing	Teaching Unit (UE)	18h		18h	6 credits
UE Data assimilation in geosciences	Teaching Unit (UE)				3 credits
UE Advanced Simulation Tools for Mechanics and the Environment	Teaching Unit (UE)			4h	6 credits
UE Transfert de chaleur	Teaching Unit (UE)	40h	40h		6 credits

Semestre 10

	Nature	CM	TD	TP	Crédits
UE Internship - 5 months	Teaching Unit (UE)				30 credits