

SCIENCES, TECHNOLOGIES AND HEALTH

Master in Physics

Physique



Target level
Baccalaureate
+5



ECTS
120 credits



Duration
2 years



Component
Grenoble
INP, Institut
d'ingénierie et
de management
- UGA, UFR
PhITEM
(physique,
ingénierie, terre,
environnement,
mécanique)



Language(s) of
instruction
English, French

Subprograms

- > Astrophysics
- > Complex matter living matter
- > Quantum matter
- > Subatomic physics and cosmology
- > Nanophysics
- > Photonics and semiconductors
- > Materials for energy
- > Medical physics
- > Optics and international marketing and sales (OptiCo)
- > Nuclear energy
- > Radioprotection



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, Complex matter living matter, Quantum matter and Subatomic physics and cosmology) offer high-level training in one of the Grenoble site's four main research themes. A Nanophysics program completes the courses available in fundamental physics. It is positioned at the interface between nanophysics and condensed-matter physics (as a complement to the Nanophysics program of the 2nd year's specialisation). 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 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 Nano, MatEng and PhysMed). 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. Four courses (Astrophysics, Complex matter / living matter, Quantum matter 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.

A Nanophysical course completes the training offer in fundamental physics. It is part of the interface between nanophysics and the physics of condensed matter (in addition to the nanophysics course of the 2nd year mention). 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 Medical physics 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 2019-2020 : 243 €

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](http://www.grenoble-inp.fr/masters/le-master-physique-14945.kjsp#page-presentation)

Useful info

Contacts

Program director

Thierry Klein

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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

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

Astrophysics

Complex latter living matter

Master 1st year (in French)

Semester 7 (in French)

	Nature	CM	TD	TP	Crédits
UE Quantum mechanics and atomic physics	Teaching Unit (UE)	33h	24h		6 credits
UE Solid state physics, magnetism and semiconductors	Teaching Unit (UE)	31,5h	25,5h		6 credits
UE Dynamic systems, chaos and applications	Teaching Unit (UE)	24h	15h	10h	6 credits
UE Nuclear physics and particles	Teaching Unit (UE)	22,5h	15h	12h	6 credits
UE Optics I: Lasers & Spectroscopy	Teaching Unit (UE)	22,5h	15h	12h	6 credits

Semester 8 (in French)

	Nature	CM	TD	TP	Crédits
UE Statistical physics	Teaching Unit (UE)	27h	21h		6 credits
UE English	Teaching Unit (UE)				3 credits
UE Occupational integration	Teaching Unit (UE)				3 credits
UE Fields and fluids	Teaching Unit (UE)				3 credits
UE Optical II: imaging and microscopy	Teaching Unit (UE)				3 credits

UE Advanced data analysis	Teaching Unit (UE)		3 credits
UE Structure and stellar evolution	Teaching Unit (UE)		3 credits
UE General relativity and cosmology	Teaching Unit (UE)		3 credits
UE Quantum relativistic mechanics	Teaching Unit (UE)		3 credits
UE Solid state physics 2: electronic structure	Teaching Unit (UE)	8h	3 credits
UE Magnetism and nanosciences	Teaching Unit (UE)	8h	3 credits
UE Semiconductors 2	Teaching Unit (UE)	12h	3 credits
UE Nanophysics with local probes	Teaching Unit (UE)		3 credits
UE Matter radiation interaction	Teaching Unit (UE)	19,5h 9h	3 credits
UE Waves and dynamics of the earth	Teaching Unit (UE)		3 credits

Master 2nd year

Semester 9

	Nature	CM	TD	TP	Crédits
UE Physics of biological systems	Teaching Unit (UE)				3 credits
UE Soft matter	Teaching Unit (UE)				3 credits
UE Complex fluids	Teaching Unit (UE)				3 credits
UE Large scale facilities	Teaching Unit (UE)				3 credits
UE Research project and professional integration	Teaching Unit (UE)				6 credits
UE Out-of-equilibrium statistical physics	Teaching Unit (UE)				3 credits

UE Fundamentals of structural biology	Teaching Unit (UE)	3 credits
UE Numerical methods	Teaching Unit (UE)	3 credits
UE Nano-pores and membranes technologies	Teaching Unit (UE)	3 credits

Semester 10

	Nature	CM	TD	TP	Crédits
UE Internship	Teaching Unit (UE)				27 credits
UE English	Teaching Unit (UE)				3 credits
UE Transversal teaching of choice	Teaching Unit (UE)				3 credits

Quantum matter

Subatomic physics and cosmology

Nanophysics

Photonics and semiconductors

Materials for energy

Medical physics

Optics and international marketing and sales (OptiCo)

Master 1st year (in French)

Semester 7 (in French)

	Nature	CM	TD	TP	Crédits
UE Quantum mechanics and atomic physics	Teaching Unit (UE)	33h	24h		6 credits
UE Solid state physics, magnetism and semiconductors	Teaching Unit (UE)	31,5h	25,5h		6 credits
UE Dynamic systems, chaos and applications	Teaching Unit (UE)	24h	15h	10h	6 credits
UE Nuclear physics and particles	Teaching Unit (UE)	22,5h	15h	12h	6 credits
UE Optics I: Lasers & Spectroscopy	Teaching Unit (UE)	22,5h	15h	12h	6 credits

Semester 8 (in French)

	Nature	CM	TD	TP	Crédits
UE Occupational integration	Teaching Unit (UE)				3 credits
UE English	Teaching Unit (UE)				3 credits
UE Statistical physics	Teaching Unit (UE)	27h	21h		6 credits
UE Optical II: imaging and microscopy	Teaching Unit (UE)				3 credits
UE Solid state physics 2: electronic structure	Teaching Unit (UE)			8h	3 credits
UE Semiconductors 2	Teaching Unit (UE)			12h	3 credits
UE Structure and stellar evolution	Teaching Unit (UE)				3 credits
UE Fields and fluids	Teaching Unit (UE)				3 credits
UE General relativity and cosmology	Teaching Unit (UE)				3 credits
UE Advanced data analysis	Teaching Unit (UE)				3 credits

UE Magnetism and nanosciences	Teaching Unit (UE)	8h	3 credits
UE Quantum relativistic mechanics	Teaching Unit (UE)		3 credits
UE Nanophysics with local probes	Teaching Unit (UE)		3 credits
UE Matter radiation interaction	Teaching Unit (UE)	19,5h 9h	3 credits
UE Waves and imagery in natural environments	Teaching Unit (UE)		3 credits
UE Dynamics of geophysical fluids	Teaching Unit (UE)		3 credits

Master 2nd year

Semester 9

	Nature	CM	TD	TP	Crédits
UE Imaging technologies for life sciences	Teaching Unit (UE)				3 credits
UE Knowledge of company management, accounting and logistics	Teaching Unit (UE)	40h	20h		3 credits
UE Marketing : an approach to foreign markets	Teaching Unit (UE)	24h	4h	12h	3 credits
UE Optics lasers and cross-training between selling and science	Teaching Unit (UE)				3 credits
UE Project management	Teaching Unit (UE)	4h	16h		3 credits
UE Principles of instrumental analysis	Teaching Unit (UE)				3 credits
UE Relationship with the professional world	Teaching Unit (UE)	24h	20h		3 credits
UE Sociological and cultural approach in different parts of the world	Teaching Unit (UE)	40h	20h		3 credits
UE Sales and commercial negotiation	Teaching Unit (UE)	40h	20h		6 credits

Semester 10

	Nature	CM	TD	TP	Crédits
UE Internship	Teaching Unit (UE)				27 credits
UE English	Teaching Unit (UE)				3 credits
UE Transversal teaching of choice	Teaching Unit (UE)				3 credits

Nuclear energy

Radioprotection