

# MASTER'S DEGREE IN PHYSICS (ICFP)

UNIVERSITÉ PSL

Located in the heart of Paris, the International Center for Fundamental Physics (ICFP) offers a comprehensive and diverse Master's education in the theoretical and experimental aspects of fundamental physics. Led by the Ecole normale supérieure, the PSL Master's program of Fundamental Physics is a prestigious degree that is specifically intended for outstanding French and international students wishing to obtain a first-class education in fundamental physics. The curriculum spans a broad spectrum of disciplines, including high energy physics, statistical physics, atomic physics, condensed matter physics, astrophysics, and physics for biology. Courses are jointly organized with the following partner universities and institutions: Sorbonne Université, Université Paris Diderot, Université Paris-Sud and Ecole Polytechnique.

## MAIN ASSETS

- **Unprecedented collaboration** between some of the most prestigious institutions in France in the field of fundamental Physics.
- **Immersion in an advanced research ecosystem**, working closely with a major laboratory and scientific innovation, in an exceptional scientific and intellectual spirit embraced by the academic staff members on a day-to-day basis.
- **Very large variety of courses** taught by more than 130 researchers.
- **International exposure**: students will be taught by a unique blend of internationally leading researchers from ENS and its partner institutions.
- **Individual tutorials, advice and support** from the faculty regarding choices of courses, research internships and overall academic future.
- **Wide range of career opportunities**, both in public or industrial research.
- **Merit-based scholarships available** to applicants with exceptional academic records and potential.
- **Localization** at the very lively and cultural heart of Paris.

## RESEARCH

World-leading research at the ENS physics department (both experimental and theoretical) covers a large part of fundamental physics and its interfaces: Quantum-physics; Biophysics; Non-linear physics and hydrodynamics ; Theoretical and statistical physics.

## CAREER OPPORTUNITIES

The two-year program prepares students for doctoral studies in fundamental physics, focusing mainly on a general education during the first year and in-depth studies during the second year. Thesis subjects offered by the host laboratories cover most of the fields in fundamental physics as well as more applied fields. After completing their thesis, most students go on to academic careers, based in universities, research institutes or laboratories, but many also embark in the increasing range of science-related career paths. An introduction to research careers is organized for physics students during the second year.

## CURRICULUM

### Master 1 (60 ECTS)

#### 1 single track proposed

International Centre for Fundamental Physics

#### Compulsory and optional courses

#### Seminars

#### 6-month internship in a research laboratory

usually abroad (full-time undertaking)

### Master 2 (60 ECTS)

#### 4 programs

Condensed matter Physics, Soft matter and biological physics, Quantum Physics, Theoretical Physics

#### Very large variety of optional courses

#### Seminars

#### 3-month internship in a research laboratory

(experimental or theoretical), in France or abroad

#### Research career advice

## LEARNING OUTCOMES

The first year offers a wealth of lectures covering a wide range of topics in modern physics, from fundamental interactions to biophysics, and also several aspects of quantum mechanics and condensed matter physics, to name just a few. Students follow those lectures, chosen according to their interests and for a total of 30 ECTS during the first semester. The second semester is devoted to a 6-month research internship in French or foreign laboratories, in any field of physics or its interfaces.

The second year is organized around four different programs: Condensed Matter Physics; Soft Matter and biological physics; Quantum physics: from atoms to the solid state; Theoretical Physics.

The first semester is dedicated to courses (30 ECTS). Each student enrolls in a program in which he/she follows compulsory and optional courses. In second semester, four optional courses will be chosen from any program (4x3 ECTS). These optional courses must be approved by the head of the studies.

Students are expected to complete an internship relevant to their course of study (18 ECTS) April to June, in France or abroad.

## TEACHING LOCATION

Classes are held in the heart of Paris on the campuses of the participating institutions.

### More information

[phys.ens.fr](http://phys.ens.fr) > Education > ICFP Masters program

### Contact

[applicationicfp@phys.ens.fr](mailto:applicationicfp@phys.ens.fr)

## ADMISSION

### Prerequisites

The International Centre for Fundamental Physics welcomes applications from highly qualified French and international students with a solid background in physics and mathematics who hold a Bachelor's degree or an equivalent academic qualification.

Direct admission into the second year is possible for suitably qualified French and international students. As a general rule, students from French engineering schools and students who already hold a minimum of 60 ECTS in the field of interest at post-graduate level are welcomed.

Please note that this master's degree is part of the study program of the International Centre for Fundamental Physics at Ecole normale supérieure. Admission to each level is highly selective, and an overall assessment will be made of the applicant's suitability to complete the full curriculum.

**Languages:** good working ability in English is required. There is no formal French language requirement.

### Application process

Online application (via [applicationicfp.phys.ens.fr](http://applicationicfp.phys.ens.fr)).  
2019/20 academic year: application packages to be submitted between February 1<sup>st</sup>, 2019 and **May 1<sup>st</sup>, 2019**.

**Université PSL**  
[psl.eu](http://psl.eu)

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Partner institutions:



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UNIVERSITÉ

université  
PARIS-SACLAY

université  
PARIS  
DIDEROT

