Faculté
de **physique** et **ingénierie**
Université de Strasbourg

Study at the Faculty of Physics and Engineering

Our faculty provides a comprehensive range of courses in the fields of physics and engineering sciences. These courses span a wide spectrum, covering the study of elementary particles, condensed matter, material-and nano-sciences, while also extending to applications in mechanics and electronics.

Teaching takes place across three distinct locations: the Historical Campus, the CNRS Campus in Cronenbourg, and the Technology Hall in Illkirch-Graffenstaden.

Our diverse training offers include approximately twenty degree programs, featuring alternatives such as work/study apprenticeship contracts, internships, international partnerships, and dual-qualifications with engineering schools.

What sets our program apart is its close affiliation with nationally and internationally acclaimed laboratories, as well as collaborations with the regional industrial sector.

This connection provides students with valuable opportunities for hands-on learning and professional experience and provides our faculty with significant visibility in the field of physics and engineering.

Master

Teaching in English

Sciences and technology major in physics

Cell physics | CP

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An integrated program with physicists, biologists, chemists, mathematicians.
Objectives of this year program are to train students in physics, biology, chemistry, and maths, with practicals. The focus is targeted on biological functions and translations between scientific fields.

Topics
Systems biology, cell physics, developmental biology, statistical mechanics, collective effects, experimental physics, chemical biology.

Practicals
Molecular biology, cell biology, developmental biology, numerical simulations, machine shop, microfabrication and microfluidics, electronics, Imaging.

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More information on physique-ingenierie.unistra.fr and cellphysics-master.com

INTERNATIONAL PROGRAM
CELL PHYSICS MASTER II

Training

Duration of the course: 2 years

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Programme and courses

M1 *(Taught in English)*

Semester 1 (S1) in Strasbourg

- Quantum mechanics and statistical mechanics (112h)
- Programming and actual research (58h)
- Experimental physics (60h)

1 free UE + 2 optional courses (56h) :

- Mechanics of continuous medias (in French)
- Astrophysical objects and their observations
- Group theory
- Ionizing radiation and detection methods
- General relativity
- Direction of time & Advanced statistical mechanics
- Variational principles and analytical mechanics
- Elements of quantum theory of collisions
- Photonics for quantum science and technology
- Soft condensed matter
- Project

Semester 2 (S2)

- Nuclear physics and elementary particles-Solid state physics (112h)
- Computer programming and numerical simulations (22h)
- Laboratory physics (16 days)

1 free UE + 1 optional course (56h) :

- Particles and astroparticles
- Stellar physics
- Atomic and molecular physics
- Introduction to physics of living systems
- Relativistic quantum mechanics
- Numeraical methods in physics
- Electronics for quantum science and technology
- Critical phenomena and non-equilibrium statistical physics
- Project

M2 *(Taught in English)*

- Basics in Physics/Biology/Maths/Chemistry are given in September
- Then students follow lectures in Physics of living matter (60h)
- Systems biology and classics in cell physics (60h)
- Chemistry for grafting and screens (20h)
- Maths for biology (20h) until February
- The lectures gather and bridge formalisms and experiments for active gels dynamics, tissue rheology, origin of life, force measurements, collective effects and Navier-Stokes equation, systems biology.

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Targeted skills

Students who will graduate from this program will have a deep understanding of living matter and its complexity. With basics at the beginning of the year in biology, physics, maths, chemistry, and the students from any scientific backgrounds will be prepared to follow lectures by 20 lecturers from Europe in this integrated course.

Each week, a master meeting will allow to debate ideas in lectures and in the field. Introductions to scientific writing and patents will be given throughout the year.

Partnerships → In association with Écoles universitaires de recherche and scientific departments from the University of Strasbourg (Unistra) : Faculté des sciences de la vie, Médecine-Science, UFR de mathématique et d'informatique, Faculté de chimie, École supérieur de biotechnologie (esbs), Télécom Physique (TPS), Institut National des sciences appliquées (INSA), Faculté de pharmacie.

Laboratory internship

Internships start in March and typically 80 offers are received for about 10 students accepted in the cell physics master.

Career opportunities

This program prepares for doctoral studies in France and abroad. It leads to jobs in the public and private sectors (scientists, engineers,lecturers, project managers, journalists).

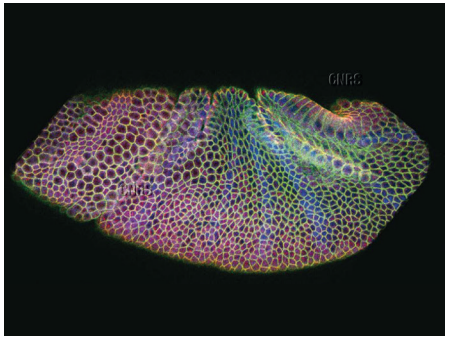
Key figures

95%

success rate (over the last 4 years)

90%

professional integration rate (results of 4 most recent professional integration surveys at 18 months carried out by ORESIPE)



Fly (Drosophila) embryo with cellular resolution

Light microscopy to observe living cells

Contacts

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Scolarité | assistance-etudiant.unistra.fr

Admission and applications

Entry level

M1

→ Academic files and interview; eligible through master I or equivalent diploma.

Admission : monmaster.gouv.fr or **Campus France**

M2

Admission : ecandidat.unistra.fr or **Campus France**

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