

MASTER IN CHEMISTRY

CHEMISTRY & LIFE SCIENCES TRACK

U N I V E R S I T É P S L

Because of their complexity, biological systems appear to chemists as the ultimate playground in terms of chemical reactivity, analytical challenges and modeling, while chemistry is often considered by biologists as the most appropriate level of description to unravel biological processes. Built on the renowned expertise of several schools and research institutes of Université PSL – École normale supérieure – PSL, Ecole nationale supérieure de Chimie de Paris – PSL, ESPCI Paris – PSL, Ecole nationale supérieure des Mines de Paris – PSL, the Curie Institute, the Pasteur Institute and the Collège de France – the Chemistry & Life Sciences track prepares students in exploring biological systems in new ways using the knowledge of chemistry and biology. Beyond the academic applications, exploring the chemical frontiers of living matters opens new opportunities for addressing important problems of our world.

OBJECTIVES

The Chemistry & Life Sciences track of the Master's degree of Chemistry (co-accredited by PSL University and Sorbonne University) aims at training highly motivated students interested in interrogating quantitatively and comprehensively biological systems at the molecular, cellular and network levels using various experimental and theoretical approaches.

It proposes high quality core courses in chemistry and biology, and a broad range of specialized courses covering various topics at the chemistry/biology interface. The track allows students to develop their creativity through various research projects and internships, and to learn the latest discoveries and innovations at the chemical frontiers of living matter through privileged interactions with faculty members.

CAREER OPPORTUNITIES

The Chemistry & Life Sciences track leads to a large number of opportunities, including:

- Academic research (PhD, postdocs)
- Private sector research, development and production
- Medical research
- Innovation and entrepreneurship
- Scientific patenting
- Consulting

PROGRAM

Master 1

Semester 1 (30 ECTS)

- Current challenges at the Chemistry & Life Sciences interface (6 ECTS)
- Chemistry & Life Sciences Seminar Series (3 ECTS)
- *n* courses to be chosen (21 ECTS)

Semester 2 (30 ECTS)

A 20-weeks lab internship or equivalent

Master 2

Semester 1 (30 ECTS)

- Research design and project conception (6 ECTS)
- Chemistry and Life Sciences Seminar Series (3 ECTS)
- *n* courses to be chosen

Semester 2 (30 ECTS)

Master thesis (20 weeks)

COURSES

Fundamentals in Chemistry and Biology:

Organic Chemistry, Biophysical Chemistry, Bioinorganic Chemistry, Biochemistry, Sustainability, Biointerfaces, Catalysis & Green Chemistry, Biological Chemistry, Colloid Chemistry, Biophysics, Chemometrics, Biocatalysis, Statistics, Molecular Biology & Genetics, Cell Biology, Genetics, Morphogenesis, Microbiology, Epigenetics, Oncology.

Chemical and Biological Engineering for Biotechnology and Sustainable Chemistry:

Synthetic Biology, System Biology, Chemical Biology, Applied Microbiology, Medicinal Chemistry & Biotechnology, Biomaterial Science, Tissue engineering, Hybrid Materials.

Modeling Approaches and Analytical Tools for the Study of Biological Systems:

Machine Learning, Big Data, Medical Imaging, Bioanalytics, Microfluidics, Analytical Physical Chemistry, Multiscale Theory and Computational Methods for Biomolecule Simulations, Principles and Applications of Fluorescence Microscopy.

LOCATION

Classes will be held in Paris on the campuses of the institutions involved in the program (École normale supérieure, Chimie ParisTech, ESPCI Paris, MINES ParisTech and the Collège de France).

ADMISSIONS

Application process for Master 1 and Master 2:
1/ Online application on PSL portal.

Submission deadlines for the academic year 2020–21: from March 30, 2020 to May 22, 2020
2/ Interview (for preselected candidates):
from June 1st to mid-June, 2020

PREREQUISITES

- **Master 1:** Bachelor degree or equivalent in Chemistry, Biology, Physics, Biochemistry etc.
 - **Master 2:** Master 1 or equivalent in the fields of study above-mentioned.
- C1 level in English recommended (Courses taught in English).

To apply

psl.eu/en/education/masters-degree-chemistry

Contact

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