

CHEMISTRY - PROCESS ENGINEERING

Training Programme

Academic Year 2026-2027



RECAP OF THE TRAINING PROGRAMME

Our training programme begins in year 3 (semester 5). The first two years of higher education (semester 1 to 4) are completed prior to qualifying for this program.

A French engineering degree represents 5 years of higher education studies. Therefore, a French engineering degree corresponds to a Master of Science (MSc level).

Year 3 - 3rd year of Bachelor

MAIN CLASSES: Molecular Chemistry - Analytical Sciences – Physical and Inorganic Chemistry - Process Engineering – Applied Mathematics and Computer Science – Languages – Human, Economic and Social sciences + Sports

Year 4 – 1st year of Master

MAIN CLASSES: Molecular Chemistry - Analytical Sciences – Physical and Inorganic Chemistry - Process Engineering – Applied Mathematics and Computer Science - Languages – Human, Economic and Social sciences

4 SCIENTIFIC MODULES (PRE-SPECIALIZATION): students must follow 4 of them among a series of possibilities and fields (organic chemistry, biochemistry, process, materials, formulation, etc.)

GAP YEAR – Optional

6 TO 12 MONTHS OF PROFESSIONAL EXPERIENCE IN A COMPANY (STARTING FROM JULY): Students can spend one full year in a company or do 2 internships of 6 months in different companies

YEAR 5 – 2nd year of Master

ONE SPECIALIZATION (SEMESTER 9):

- 1) Formulation - Implementation of divided solids 2) Advanced Process Engineering 3) Life Sciences and Biotechnologies (+ Languages & Human, Economic and Social sciences)
- Students have the possibility to complete semester 9 in a partner university, in France or abroad

END OF STUDIES PROJECT (SEMESTER 10):

- Internship/work placement of 6 months starting from February

YEAR 3 – 3RD YEAR OF BACHELOR'S DEGREE

Semester 5 - Fall term (30 ECTS)

ANALYTICAL SCIENCES

- Studies of equilibria in solution 3 ECTS
- Molecular spectroscopy (UV, IR, MS and NMR) 6 ECTS

MOLECULAR CHEMISTRY

- Organic chemistry 1 6 ECTS

PROCESS ENGINEERING

- Transport Phenomena: Fluid mechanics and dynamics 3 ECTS
- Thermodynamics and Heat Transfer 3 ECTS

PHYSICAL AND INORGANIC CHEMISTRY

- Physical chemistry and inorganic chemistry 3 ECTS

LANGUAGES AND INTERNATIONAL CULTURE

3 ECTS

- English
- 2nd Language

HUMAN, ECONOMIC AND SOCIAL SCIENCES + SPORTS

3 ECTS



Semester 6 - Winter Term (30 ECTS)

ANALYTICAL SCIENCES

- Chromatographic techniques 3 ECTS
- Electrochemistry, corrosion 3 ECTS

MOLECULAR CHEMISTRY

- Organic chemistry 2, biology and biochemistry 6 ECTS

PROCESS ENGINEERING

- Thermodynamics and mass transfer 3 ECTS

PHYSICAL AND INORGANIC CHEMISTRY

- Organometallic catalysis and theoretical chemistry 3 ECTS
- Transition to a low-carbon chemical industry 3 ECTS

APPLIED MATHEMATICS AND COMPUTER SCIENCE

- Mathematics, statistics and computer science 3 ECTS

LANGUAGES AND INTERNATIONAL CULTURE

- English 3 ECTS
- 2nd language

HUMAN, ECONOMIC AND SOCIAL SCIENCES + SPORTS

3 ECTS



YEAR 4 – 1ST YEAR OF MASTER'S DEGREE

Semester 7 - Fall term (30 ECTS)

MOLECULAR CHEMISTRY

- Sustainable organic chemistry and polymers 6 ECTS

ANALYTICAL SCIENCES

- Chemical analysis: elements, solids, pollutants 6 ECTS

PROCESS ENGINEERING

- Chemical kinetics, catalysis and ideal reactors 6 ECTS
- Processes involved in the production of solids 3 ECTS

LANGUAGES AND INTERNATIONAL CULTURE

3 ECTS

- English
- 2nd language

HUMAN, ECONOMIC AND SOCIAL SCIENCES

- Business issues 3 ECTS

SEMI OPTIONAL SCIENTIFIC MODULES (choose one subject)

Series 1: 3 ECTS

- Thermodynamics properties for industry
- Advanced separative methods and speciation
- Advanced organic chemistry and stereochemistry
- Introduction to biotechnology and bioproduction

Semester 8 - Winter Term

PHYSICAL AND INORGANIC CHEMISTRY

- Scarcity of chemical elements 3 ECTS

PROCESS ENGINEERING

- Process safety and process industrialization 6 ECTS

APPLIED MATHEMATICS AND COMPUTER SCIENCE

- Chemometrics and experimental design 3 ECTS

LANGUAGES AND INTERNATIONAL CULTURE

3 ECTS

- English
- 2nd language

PROJECT

- Scientific project 6 ECTS

SEMI OPTIONAL SCIENTIFIC MODULES (choose one subject out of each series)

Series 2: 3 ECTS

- Biocatalysis and metabolism
- Steady-state Process Simulation
- Advanced NMR and MS
- Organic synthesis strategies
- Macromolecular synthesis
- Nuclear chemistry, measurement, analysis

Series 3: 3 ECTS

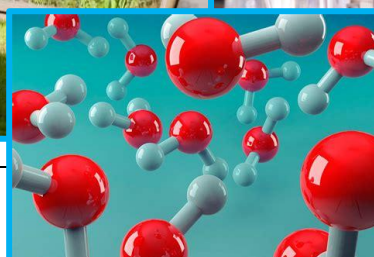
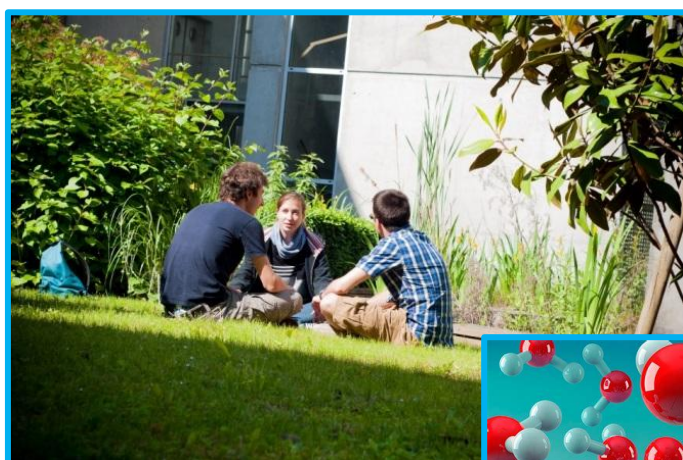
- Analytical strategies
- Synthesis of bioactive molecules
- Advanced chemical reaction engineering
- Nanochemistry
- Drug Design

- Cosmetic formulation science

Series 4:

3 ECTS

- NMR for organic synthesis
- Numerical methods for process engineering
- Molecular Biology and Vaccines
- Eco-friendly Polymer Materials
- Transition to renewable energy



YEAR 5 – 2ND YEAR OF MASTER'S DEGREE

Semester 9 - Fall term (30 ECTS)

The student chooses one of the three specializations offered by the School or may complete Semester 9 at a partner university abroad.

Alternatively, they can opt to pursue it at a partner university in France to specialize in a field of chemistry not available at the School (e.g., a research-oriented master's degree in Organic Chemistry or Analytical Sciences).

SPECIALIZATIONS (21 ECTS)

ADVANCED PROCESSES ENGINEERING

- Polyphasic reactors
- Energy industrial and sustainable development
- Dynamic modelling of the processes
- Bioreactors and separation
- Sustainable industry and process intensification
- Process control

FORMULATION - IMPLEMENTATION OF DIVIDED SOLIDS

- Development of products in the solid form
- Dispersed media formulation
- Polymers in formulation
- Experimental research
- Applied Formulation
- Project

LIFE SCIENCES AND BIOTECHNOLOGIES

- Biotechnology basis
- Molecular biology and genetic engineering
- Applied Biotechnology
- Bioprocess engineering
- Industrial project

LANGUAGES AND INTERNATIONAL CULTURE

3 ECTS

- English
- 2nd language

HUMAN, ECONOMIC AND SOCIAL SCIENCES

- Developing an Innovative Product
- Principles of Management

3 ECTS

3 ECTS

Semester 10 – Winter term (30 ECTS)

Engineering internship (internship done in year 4 or gap year)	9 ECTS
Final year project (internship of 6 months)	21 ECTS