



Chimie Montpellier

Graduate Majors & employment



UNIVERSITÉ DE
MONTPELLIER

The main professional areas covered by the ENSCM

The first mission of the ENSCM is to train high-level chemical engineers able to adapt and access positions of responsibility in different fields of chemistry.

RESEARCH ASSOCIATES

Research associates (or research scientists) pilot the scientific aspects of innovative laboratory projects. They are essential interfaces between the designing and the development of new products. They follow the evolution of a project from laboratory to pilot scales.



CHEMICAL PROCESS ENGINEERS

Chemical process engineers ensure the industrial development of new production processes and contribute to the continuous improvement of existing processes. They make production tools more reliable by solving the issues of safety, performance and compliance with standards.



MANUFACTURING MANAGERS

Manufacturing engineers manage production workshops. They follow and plan manufacturing and supervise the teams of operator teams.

They coordinate the launching of new products.

They ensure the proper functioning of manufacturing tools.



ENVIRONMENTAL MANAGERS

Environmental managers are responsible for defining and implementing – both operationally and administratively – environmental management systems aimed at reducing environmental impacts: water and energy consumption, identification of polluting gas emissions, environmental risk analysis, integration of eco-design into processes.



PROJECT MANAGERS

Project managers plan, organize and coordinate projects from their design to their completion. Projects can be in research and development, manufacturing or reorganization of systems.



PRODUCT MANAGERS

Product managers are responsible for products (or product lines) existing or innovative products from their functional design to their commercialization. They evaluate the needs of the market, refer them to the R&D teams and accompany the launch of products (commercial development and good price positioning).



INGENIEUR D'AFFAIRES

Sales engineers perform the assembly, the control and the follow-up of commercial cases associating technical and financial aspects.

They identify the customers' needs and offer suitable products.



Graduate majors offered at the ENSCM

The graduate majors start in 4th academic year and deal with 2 major fields. Students can then specialise in several curricula.

Chemistry - Health

Chemistry and health majors offers training focused on health field based on organic chemistry (synthesis of compounds with medicinal therapeutic interests), biology (molecular approach of biological phenomena) and chemical engineering (processes involved in the production of a drug or a cosmetic product) through 3 following graduate majors:

- Fine Organic Chemistry
- Chemistry, Biology, Health
- Active Natural Ingredient Engineering*

Chemistry - Materials - Environment

Chemistry-Materials-Environment majors are based on materials chemistry (polymers and inorganic materials), the study, protection and restoration of the environment, the use of renewable and sustainable resources for the replacement of fossil carbon, and the nuclear cycle through 4 following graduate majors:

- Materials Chemistry
- Environmental Management and Pollution Remediation
- Chemistry and Bioprocesses for Sustainable Development *
- Nuclear Chemistry and Environment *

At least 30% of the teaching carried out in the 5th academic year is performed by professionals and/or by top-level researchers specialized in these fields.



An additional option «**Parcours Recherche Ingenieur**» is now open in the 3rd year of engineering degree (5th academic year) it focuses on training through research.

*Graduate courses start in 5th academic year

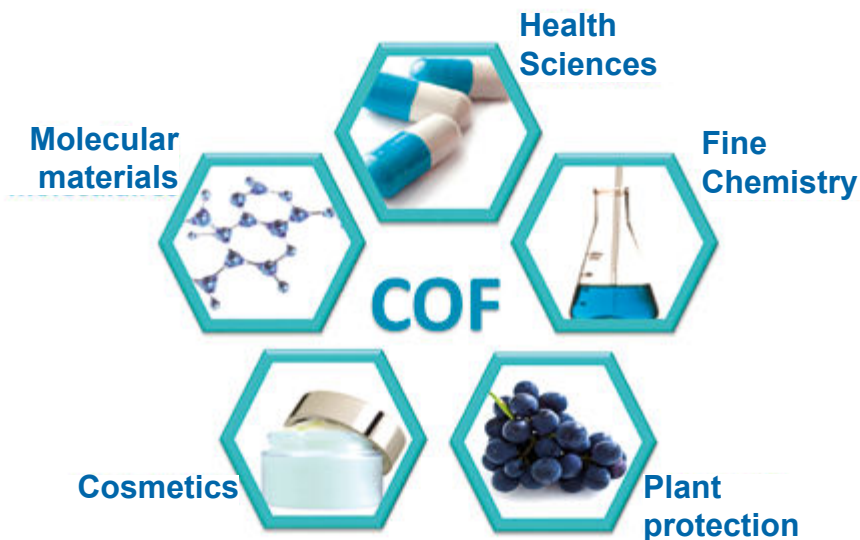
Major COF : Fine Organic Chemistry

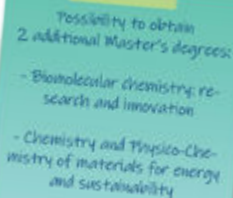
Objectives

The COF major targets all the fields in which chemistry knowledge and more specifically organic chemistry knowledge is used.



Business areas





Possibility to obtain
2 additional Master's degrees:

- Biomolecular chemistry: research and innovation
- Chemistry and Physico-Chemistry of materials for energy and sustainability

Courses

1. Organic Chemistry

- Multi-step synthesis, stereoselective synthesis
- Heterocyclic synthesis, heterochemistry, organometallic chemistry
- Stereospecific synthesis

2. Opening modules - multidisciplinary training

- Pharmacy (fundamental biomolecules: peptides, vectorization and targeting)
- Chemical specialties (agrochemicals, cosmetics and perfumes)
- Molecular materials (pi-conjugated systems, OLED / photovoltaic devices - magnetic materials)

3. Techniques and industrialization

- Mass spectrometry
- Supported and combinatorial chemistry
- Industrial chemistry



Career opportunities

Research associates
Manufacturing managers
Product managers
Sales engineers

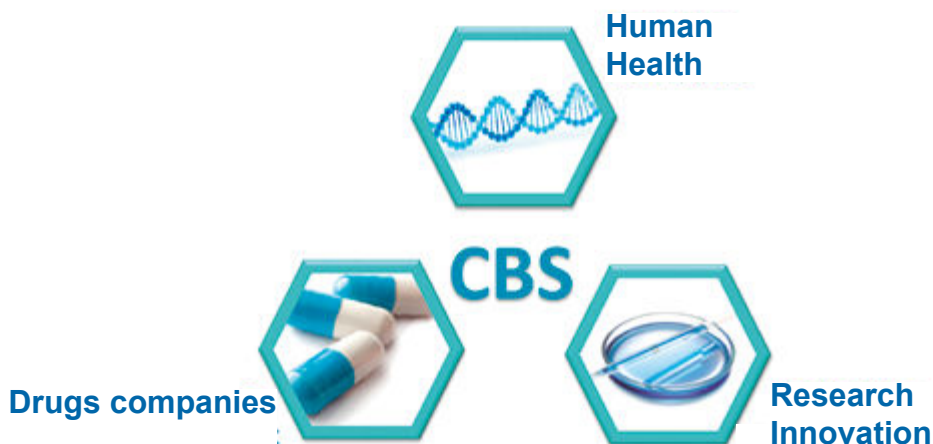
Major CBS : Chemistry, Biology, Health

Objectives

The CBS graduate major is geared towards therapy and is at the crossroads of chemistry and life sciences. It trains engineers with dual skills in both chemistry and biology.



Business areas





Possibility to obtain
an additional Master's degree:

- Biology-Health:
Translational Medical
Chemistry

Courses

1. Organic Chemistry

- Reaction mechanisms and reactivity
- Amino-acids and sugars
- Stereospecific synthesis

2. Biology: elective courses

- Cellular signalling: methods and concepts
- From biological target to drug: rational innovation
- Nanotechnologies for therapies and diagnostics
- Pharmacokinetics and pharmaco- toxicology

3. Methodologies

- Mass spectrometry, proteomic and omic's
- Molecular biology techniques
- Cell imaging techniques



Career opportunities

Research associates
Project managers
Product managers

Major IPAN : Active Natural Ingredient Engineering


Objectives

To acquire knowledge and skills in the treatment of natural active molecules: identification, extraction, separation and purification by gentle techniques, packaging in different pharmaceutical and cosmetic forms.



Business areas





Possibility to obtain
an additional Master :
- Management,
administration
of companies:
product manager /
marketing department

Courses

1. Active molecules from the plant world

- Knowledge of active molecules
- Properties
- Applications

2. Extraction and purification

- Extraction by solvents, by supercritical fluids
- Membrane separation
- Industrial chromatography

3. Conditioning

- Physical chemistry of colloids and interfaces
- Formulation and processing of pharmaceuticals
- Formulation and processing cosmetics



Career opportunities

Research associates
Product managers
Project managers
Manufacturing managers
Chemical process engineers

Major MAT : Materials Chemistry

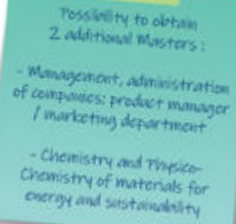
Objectives

Synthesis, formulation, shaping and applications of materials in all their diversity whether they are polymers, inorganic materials (ceramics to metals), hybrid materials or composites.



Business areas





Possibility to obtain
2 additional Masters:

- Management, administration
of companies; product manager
/ marketing department
- Chemistry and Physics-
Chemistry of materials for
energy and sustainability

Courses

1. Materials chemistry

- Polymer chemistry (synthesis, modification)
- Inorganic materials chemistry (ceramics, metals),
- Colloidal chemistry and nanomaterials
- Clean processes and materials for a sustainable development

2. Characterization

- Characterization and observation of materials
- Mechanics and rheology

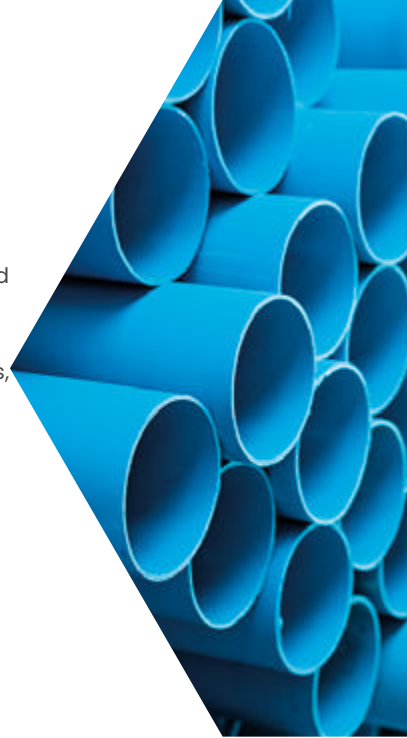
3. Processes, applications

- Shaping and implementation of materials (polymers and inorganic materials)
- Large applications: paints, adhesives, composites
- Materials for aerospace, automotive industry, electronics, construction, and cosmetics

Career opportunities



Research associates
Chemical process engineers
Manufacturing managers
Project managers
Product managers
Sales engineers



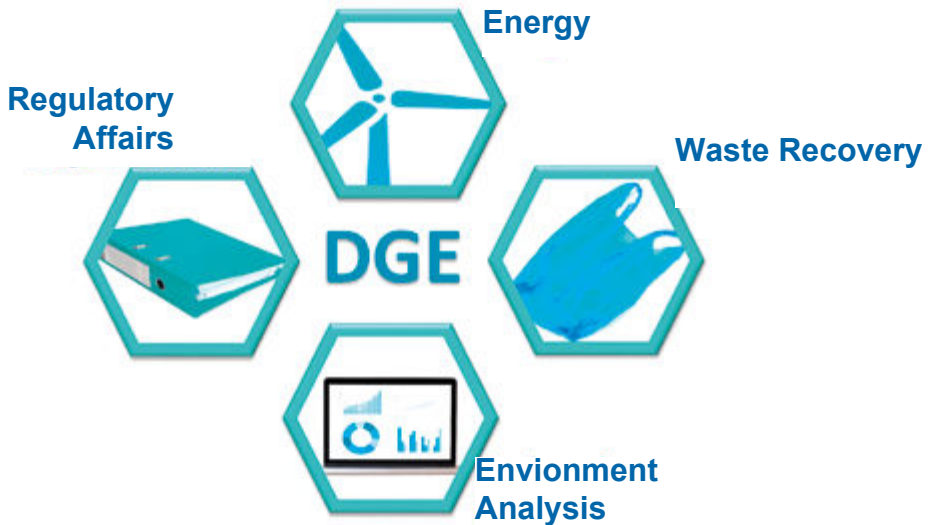
Major DGE : Environmental chemistry

Objectives

To acquire multidisciplinary scientific skills (chemistry, physico-chemistry, biology) and develop general technical skills (regulations, eco-design strategies) as well as specific skills (solid waste treatments, liquids ...) useful for the study, protection and restoration of the environment.



Business areas



Courses

1. Analysis and processes

- Experimental methods and analytical techniques
- Heterogeneous catalysis
- Life cycle analysis for eco-conception

2. Treatments

- Air, liquid effluent, solid waste, contaminated soil treatment
- Waste recovery

3. Environment management

- Environment law (REACH, ICPE...)
- QHSE management system (Quality Health Security and Environment)

Career opportunities

Environmental managers
Research associates
Chemical process engineers
Project managers



Major CBD2 : Chemistry and bioprocesses for sustainable development

Objectives

To acquire scientific knowledge and skills as well as methodological tools for the sustainable production of biomaterials, biofuels and other biomolecules of substitution. These bioproducts are made from renewable resources through eco-efficient transformation processes (green chemistry).



Business areas





Courses

1. Raw materials

- Knowledge and characterization of raw materials
- Selection and improvement of agroresources
- Manufacturing: green chemistry and agriculture

2. Biorefinery

- Extraction and separation techniques
- Microbial and enzymatic biotechnologies
- «Clean» chemical processes
- Engineering, reactors, modeling

3. Bioproducts

- Biofuels / Energy
- Polymeric biomaterials
- Biomolecules of interest

4. Socio-economic framework

- Regulatory and institutional watch
- Agro-industries: strategy and markets
- Industrial ecology
- Manufacturing management and industrial performance
- Analysis of life cycles and eco-assessments



Career opportunities

Research associates
 Environmental managers
 Project managers
 Sales engineers
 Manufacturing managers

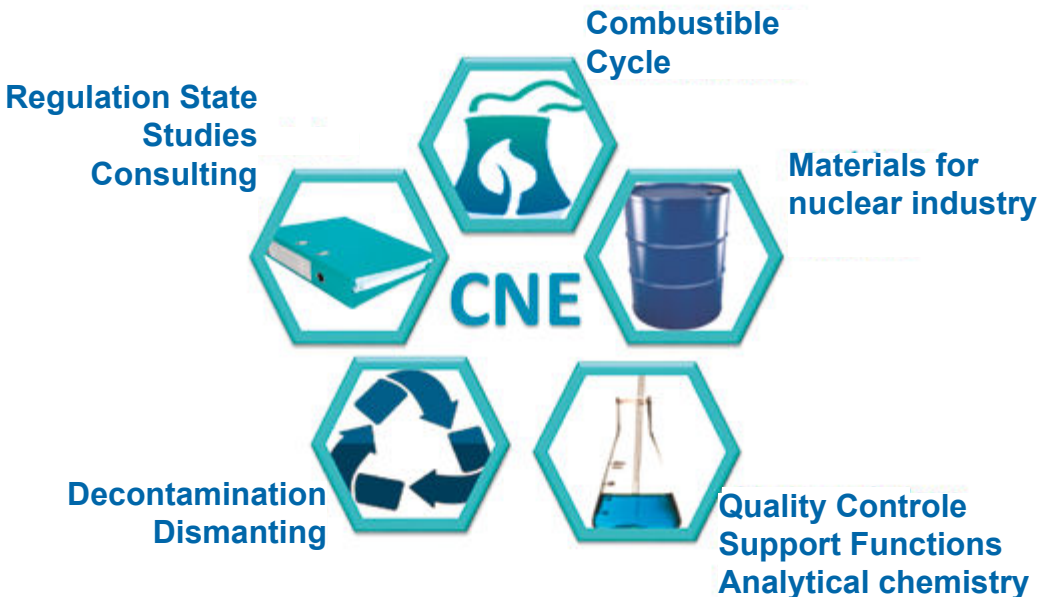
Major CNE : Nuclear Chemistry and Environment

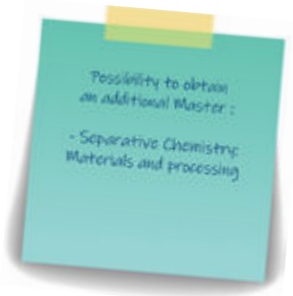
Objectives

This major deals with the entire nuclear cycle – from the mine to storage – in which chemistry plays a major role and guides the scenarios for the evolution of reactor fleets, in terms of recycling, separation, sanitation and dismantling.



Business areas





Possibility to obtain
an additional Master :
- Separative Chemistry:
Materials and processing

Courses

1. Radioactivity and nuclear energy

- Introduction to nuclear chemistry and nuclear energy
- Basic elements in radioactivity

2. Extractive chemistry and actinides

- Front end of the fuel cycle
- Chemistry of solutions applied to actinides
- Analytical strategy for actinides
- Membrane separation processes

3. Waste treatment and remediation of the nuclear and chemical industry

- Dismantling engineering
- Waste treatment and conditioning processes

4. Materials for nuclear industry

- Long-term behavior: Dissolution and irradiation of ceramic matrices
- Nuclear materials: Combustible synthesis and reprocessing
- Long-term behavior: Vitreous matrices
- Containment materials

5. Lecture series

Nuclear law, safety, regulation

Career opportunities



Research associates
Sales engineers
Chemical process engineers



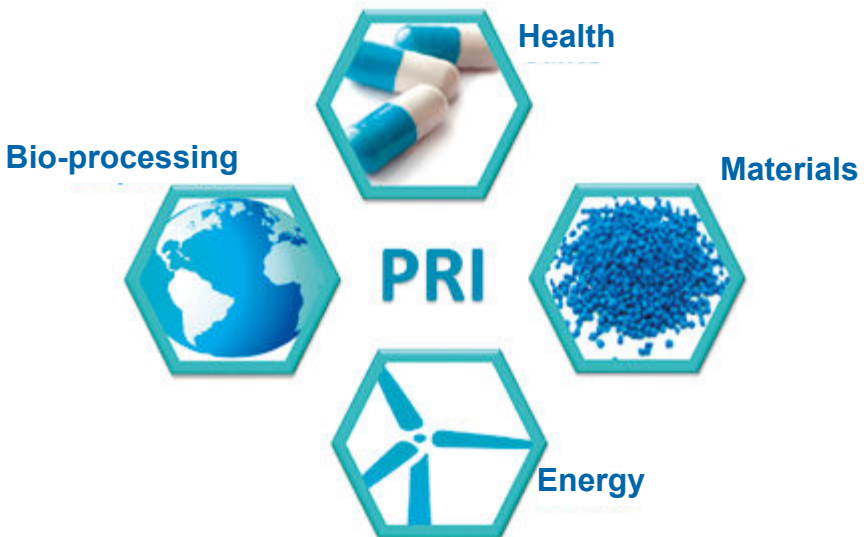
Major PRI : Parcours Recherche Ingénieur

Objectives

Train students through research: develop their critical sense / develop their scientific rigor / develop their creativity and taste for innovation.



Business areas





Courses

1. Integration seminar

2. Transversal training module through Research in English

- Bibliographical monitoring
- Scientific writing
- Critical analysis of articles
- Scientific communication

3. Master class

Expert speakers on all areas related to innovation

Laboratory Research Project

Research subject with a degree of feasibility and scalable innovation (between 2 and 2.5 days/week).

- Acquire the scientific and technical knowledge necessary for the project (training in analytical techniques,)
- Use all necessary supports (courses or other educational resources) to successfully complete the project



Career opportunities

Academic or industrial PhD (France / World)
Research associates
Project managers

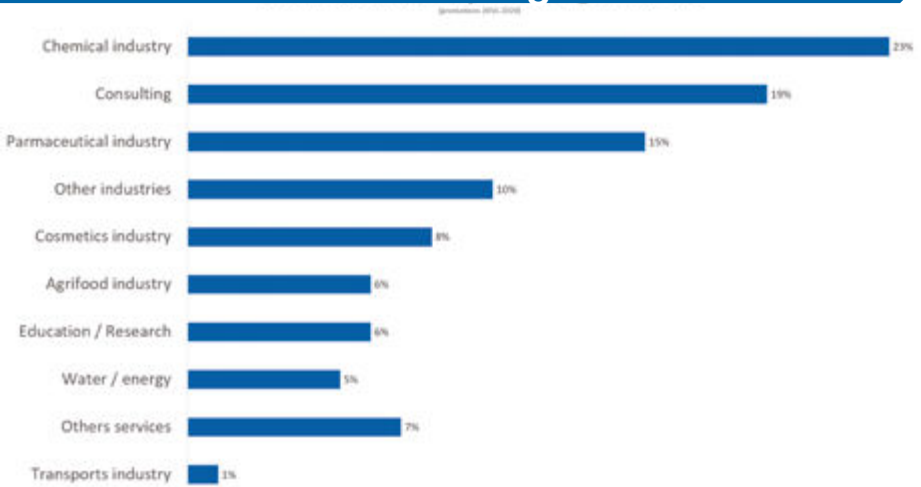
Career opportunities

Thanks to the training delivered at the ENSCM, its graduates hold high-ranking positions in various industry sectors.

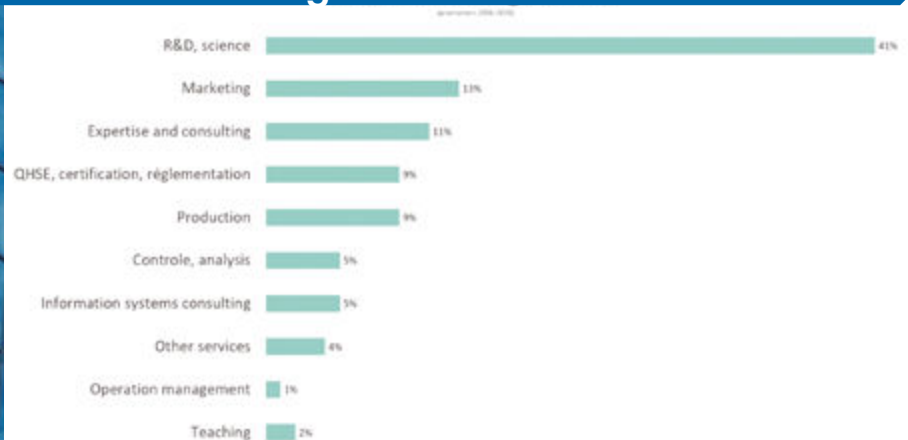


Employment

Sectors of activities for our graduates



Careers for our graduates





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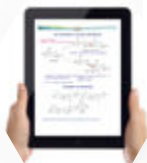
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ENSCM is ISO 9001 certified.
A real guarantee of quality,
seriousness and
professionalism.



More information
about iPad for
learning



*ENSCM is also
Apple distinguished school
for its innovative
digital pedagogy*