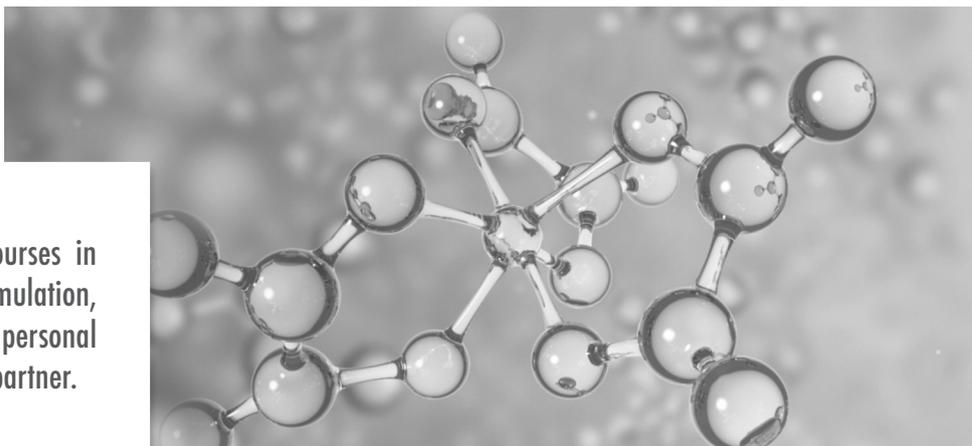




MASTER OF SCIENCE

Applied Formulation of Polymers and Colloids

From January to March, three month courses in Macromolecular Engineering and Formulation, including experimental training and a personal project in cooperation with an industrial partner.



COURSES

With the participation of industrial partners : Arkema, BASF, Dow Corning, L'Oréal, Michelin...

MODULE 1 [67H]

FORMULATION : BASIC CONCEPT AND TOOLS

- └ FORMULATION : PRINCIPLES AND APPLICATIONS
- └ POLYMERS AND SURFACTANTS IN SOLUTION
- └ POLYMERS AND SURFACTANTS AT INTERFACES
- └ SUSTAINABLE CHEMISTRY, ECODESIGN

Applications in *Cosmetics, Detergency, Building materials...*

MODULE 2 - [71H]

NANO- AND MESO-ORGANIZATION IN SOFT MATTER

- └ CONTROLLED POLYMERIZATIONS
- └ SELF-ASSEMBLING
- └ LATEX AND PARTICLES
- └ FOAMS AND EMULSIONS
- └ HYBRID MATERIALS AND NANOCOMPOSITES

Applications in *Coatings, Nanomedicine, Biomaterials...*

MODULE 3 - [72H]

CHARACTERIZATIONS OF FORMULATED SYSTEMS

- └ IMAGING TECHNIQUES
- └ SPECTROSCOPY
- └ CHROMATOGRAPHY
- └ RHEOLOGY
- └ WAVE SCATTERING

Applications in *Polymer materials, Adhesives, Paints...*

CALENDAR

September to November

International students start with a **3 months internship** in one of the academic partner laboratories.

French lessons

January to March

3 months courses

December

1 month opening module to choose among: Innovation/ Geoeconomy / Marketing & purchasing / Wine & Marketing / Aromas, Flavour...

April to August

5 months internship



PRICE: 7 300€

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230
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14th **USINENOUVELLE**
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March 2015

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KEY FIGURES

PROGRAMS 5 engineering training courses (Master)

- Chemistry - Physics
- Food Science
- Materials Engineering
- Structural Analysis of Composite Materials
- Food Production

3 Masters of Science

- Applied Formulation of Polymers and Colloids
- Inorganic Materials Design and Processing
- Micro- and Nanotechnology

RESEARCH & TECHNOLOGY TRANSFER 8 joint research centers

in the following fields : Chemistry, physics, Nutrition, Neuroscience, Oenology, Polymer, Condensed Matter, Molecular Science, Materials & System Integration, Nano Objects

64 academics and researchers

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MASTER OF SCIENCE

Inorganic Materials Design and Processing

From January to March, three month courses in materials design and processing, including practical case studies in laboratories and projects in cooperation with industrial partners.



COURSES

With the participation of industrial partners : Arcelor Mittal, Areva, EADS, Renault, Snecma...

MODULE 1 [78H] FROM MATERIALS SELECTION TO MATERIALS DESIGN

- └ MATERIALS (Engineering alloys, composite materials, functional materials)
- └ MATERIALS SELECTION (Material property charts, selection strategy, life-cycles of materials)
- └ MATERIALS BY DESIGN

MODULE 2 - [66H] FROM MICROSTRUCTURE MODELLING TO MICROSTRUCTURE CHARACTERIZATION

- └ MICROSTRUCTURE FORMATION
- └ PHASE DIAGRAM, COMPUTATIONAL THERMODYNAMICS, PHASE TRANSFORMATION MODELLING
- └ MICROSTRUCTURAL CHARACTERISATION OF MATERIALS
- └ NON-DESTRUCTIVE TESTING OF STRUCTURES

MODULE 3 - [72H] MATERIALS PROCESSING

- └ FORMING PROCESSES
- └ SURFACE TREATMENT PROCESSES
- └ NUMERICAL SIMULATION OF PROCESSES

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MASTER OF SCIENCE

Micro- & Nanotechnology

From January to March, three month courses in micro- and nanotechnology including different laboratory courses (AFM, STM, Microfluids...), a 1 week hands-on training in clean room conditions and a personal project in cooperation with an industrial partner.

COURSES

With the participation of industrial partners : Arkema, BASF, Merck, Rhodia, Thalès...

MODULE 1 [76H] FABRICATION TECHNIQUES AND CHARACTERIZATION

- └ NEAR-FIELD SCANNING TECHNIQUES
- └ CHARACTERIZATION TECHNIQUES
- └ HIGH-RESOLUTION SPECTROSCOPY
- └ NANO- AND MICROFABRICATION TECHNIQUES
- └ ENGINEERING OF SURFACES AND INTERFACES
- └ NANOBIOTECHNOLOGIES

MODULE 2 [62H] NANO-OBJECTS AND AUTO-ORGANISATION

- └ INORGANIC, POLYMER AND METAL NANOPARTICLES
- └ NANOTUBES AND NANOFIBRES
- └ NANOSTRUCTURED MATERIALS AND APPLICATIONS
- └ TOXICOLOGY OF NANOMATERIALS AND NANOTECHNOLOGIES

MODULE 3 [78H] APPLICATIONS

- └ MICRO-AND NANOFLUIDS
- └ ANALYTICAL NANOSYSTEMS
- └ SENSORS AND MICROSYSTEMS
- └ NANOPHONICS
- └ ORGANICS ELECTRONICS
- └ LAB COURSE ON MICROFABRICATION AND CLEAN ROOM TECHNOLOGY

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