

# Processes and polymers

Applied graduate studies



Language:  
English

Duration:  
16 months



The fast-moving industry of polymers is based on innovation and new markets. Always facing new challenges, talents are searched to develop new trends such as energy efficient processes, bioplastics manufacturing and plastics recycling.

Our Processes and Polymers program offers skills for the petrochemical and polymer companies, in a multicultural environment: a recognized Master program where you will embrace a sector where innovation knows no bounds!

## IFP School's Master's degree/ Specialized engineering degree (Diplôme d'ingénieur spécialisé)

We cannot imagine our daily life without the help of polymers all around us, in our car, our clothes, or our house. This industry keeps on growing thanks to new applications in fields such as medicine, construction, energy, electronics, and consumer goods. Innovation to develop lightweight materials, with required properties to meet customer demand is a permanent challenge.

The Processes and Polymers Master program offers you overall knowledge and know-how of the petrochemical chain from different kind of resources to plastics. Throughout this chain, you are trained in each value-adding manufacturing step: refining processes, base chemical production, industrial polymerization and plastic processing.

We place a strong focus on technical skills in chemical engineering and in project management for the development, design and operation of safe and clean processes. But the Master program is more than that: you will also gain insight into petrochemical economics: how to define where the market is, the price you can expect for your product, how to choose the right technology.

Our program adapts to the main industry trends. Environmental care requires the development of processes that rely on energy efficiency, plastics recycling, lifecycle assessment and management. We also explore the development of bio-sourced polymers. The program includes multiple field trips to plants in Europe and several team projects based on real cases. Up-to-date pedagogical methods like e-learning, micro-learning and serious games, have been introduced



to ensure that all students have the same background knowledge before the course, while real-time quiz stimulate interaction between you and the lecturers.

We give you solid technical and interpersonal skills. You will quickly be operational and adapt easily to a multicultural professional environment. We are proud of the cosmopolitan atmosphere you will find in this program.

Sharing your experience and culture with students from many different countries will help you become an open-minded and responsible professional.

After the Processes and Polymers program, in a sector stimulated by the development of new applications, you will be offered career opportunities in process development and optimization, product development, project engineering, operations and sales.

## CAREER OPPORTUNITIES

- Process development and optimization
- Product development
- Engineering
- Energy optimization
- Operations and HSE management
- Logistics and sales



More information: [www.ifp-school.com](http://www.ifp-school.com)





## HIGHLIGHTS

- Continuous or alternating school/ company program
- Complete value chain from feedstock processing to petrochemicals and polymer manufacturing
- Classmates from more than 10 countries
- Many field trips in refining and petrochemical plants and plasturgy centers

## Typical class profile/main sponsors

Students in this program are almost all sponsored by companies (through sponsorships or apprenticeships) that finance their living expenses during the academic period and contribute towards their tuition.

Among these companies, the following have been IFP School partners in recent years (non-exhaustive list): Arkema, Axens, Bostik, ExxonMobil, IFPEN, Ineos, Infineum, LyondellBasell, Michelin, Plastic Omnium, S-Oil, Technip Energies, TotalEnergies.

## Program content

### Chemical engineering fundamentals, operation and safety management for everyone

- Design and operational issues of main equipment: heat exchangers and rotating machinery
- Chemical reactor technologies design and operation
- Polymer reaction engineering
- Separation processes
- Engineering projects in petrochemistry: PFD, PID, project cost estimation and management
- Risk management and process operation safety

### Processes for everyone

- From Oil and Gas to Hydrogen processes
- Base chemicals and petrochemical intermediates

### Elective path 1: Plastics chain value

- Plastics chain value & manufacturing
- Overview of plastic processing
- Recycling processes

### Elective path 2: Innovative and Sustainable chemicals

- How to create a new process ever more sustainable (ecodesign)
- Biosources markets & Bio-polymers processes
- Environmental impact of polymers through Life Cycle Analysis



## Program schedule

The two examples of schedules shown below correspond to the most frequently encountered cases for students in this program: 16-month continuous program for students with a 4- or 5-year engineering degree; alternating school/company 16-month program for students with a 5-year engineering degree.

### 16 months



Continuous program

### 16 months



Alternating school/company program

● IFP School ● Company

There are other possible cases, such as: a 22-month alternating school/company program for students in their penultimate year of a major European school or university having signed a double-degree agreement with IFP School.

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