

PROCESSES AND POLYMERS

APPLIED GRADUATE STUDIES

Language: **English**

Duration: **16 months**

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



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!

HIGHLIGHTS

- Continuous or alternating school/company program
- Complete value chain from feedstock processing to petrochemicals and polymer manufacturing
- Classmates from more than 10 countries
- More than 20 days of field trips in refining and petrochemical plants, in Europe

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 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.

CAREER OPPORTUNITIES

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



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.

Find out more: www.ifp-school.com



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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, ExxonMobil, IFPEN, Michelin, Siam Cement Group, S-Oil, TechnipFMC, Total.



PROGRAM CONTENT

→ The program is divided into 4 major themes

Chemical engineering fundamentals

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

From refining processes to petrochemicals

- Hydrocarbons physico-chemistry
- Crude oil fractionation units, refining processes and conversion processes for heavy ends
- Base chemicals and petrochemical intermediates
- Petrochemical economics

From petrochemicals to plastic manufacturing

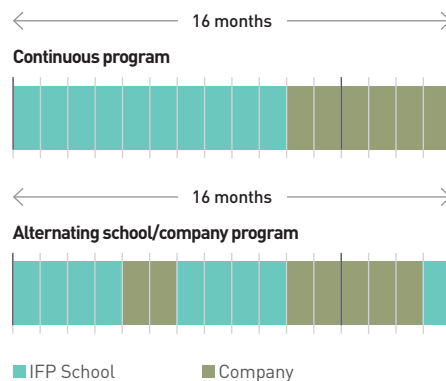
- Commodity plastics value chain
- Main engineering and high performance plastics
- Overview of plastic processing
- Production planning and supply chain
- Polymer market outlook

Safety management and sustainable development

- Risk management
- Process operation safety
- Energy efficiency
- Bio-polymers
- Environmental impact of polymers through Life Cycle Analysis, and recycling technologies

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.



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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