

ADVANCED PHARMACEUTICAL ENGINEERING

MASTER OF SCIENCE

ACCREDITATION

Accredited by the French Ministry of Higher Education and Research.

Master n°20151034, Decree 2015, July 10. Extension for 5 years in progress (acquired)

KEY WORDS

Pharmaceutical Engineering, Management, Quality by Design, Lean management, Supply chain, Logistics, Industrial Engineering, Advanced Galenics, Advanced Pharmaceutical Technology, Generics, Biosimilars, Innovative drugs, Biotech, Nano...

SCHOOL PROPOSING THE MASTER

Ecole des Mines d'Albi – In co- accreditation with Institut Mines-Télécom, Paris - France

INDUSTRIAL PARTNERS

Pfizer, Glaxo Smith-Kline, Novartis, Eli-Lilly, Sanofi, Roche, Pierre Fabre, Servier, Fareva, Merck-Serono, Bristol- Myers-Squibb, Johnson & Johnson, LMSD (Merck & Co), L'Oréal, Chanel, Teva, Bayer-Schering, Astra-Zeneca, IPSEN, Novo Nordisk, Ethypharm, Clarins, Roullier Group, Ferring Pharmaceuticals, Bertin Pharma, Danone, Meda, Norgine, Corbion-Purac, ...

LANGUAGE OF TEACHING

English.

ENVIRONMENT

The pharmaceutical industry is traditionally located in the Triad countries (north america - US & Canada-, Europe, and Japan). But the fast growing Pharmerging markets has recently displayed strong growth and will worth 50% of the global pharmaceutical market in 2020, with an annual growth of 15% a year. Austerity measures across the world impose cutbacks on healthcare spending. But the rapidly changing technical, pharmaceutical, and life- science environment is a source of development for generic manufacturers and innovative medicine developers. Most pharmaceutical industries will have to adapt, improve and increase their production and supply chain systems, in accordance with the current international regulations, and to develop new drugs, dosage forms and medical devices, in line with the best world standards.

COURSE AIMS

ADPHARMING course offers challenging opportunities for students interested in developing a career in the pharmaceutical industry. ADPHARMING aims at developing a new kind of leaders with a global high- level training for R & D, drug production, quality management, lean management, logistics and supply chain, in the field of pharmaceuticals, cosmetics, biotechnology...

PROGRAM

This is a full-time program of 2 years divided into four semesters: lectures, tutorials and practical work over the 3 academic semesters, followed by a one semester internship in a company or in an academic research laboratory, in France or another country. During the 6-month MSc thesis, students have the opportunity to improve and use the skills and knowledges being taught. Students are supervised by a tutor from the host organization, and by a senior lecturer from Mines-Albi. The Master Thesis is concluded by the preparation of a final report and an oral dissertation in front of a jury.

First semester: Introduction, scientific and technological bases.

> Cultural and linguistic integration

> Introduction to the pharmaceutical industry
> Fundamental sciences for pharmacy
> Transport phenomena and Participants must hold a Bachelor of Science or Engineering degree with related major (Chemical Engineering, Chemical Sciences, Pharmaceutical Engineering, Pharmaceutical Sciences...) or an equivalent degree.

> thermodynamics
> Bases of the pharmaceutical engineering
> Initiation to the corporate world, visits
> Generic tools for engineering
> Project 1: Bibliography and presentation

Semester 2: Bases of pharmaceutical engineering, project and production management.

> Pharmaceutical engineering today
> Pharmaceutical engineering: process engineering, modelling.
> Project management
> Production management
> Supply chain management
> Lean management
> Eco-design, circular economy, innovation
> Control systems, sensors
> French culture and language
> Project 2: Research, modelling, industrial topics, innovation

Semester 3: Advanced Pharmaceutical Engineering.

> Specificities of international pharmaceutical companies
> Regulatory agencies Good Manufacturing Practices
> Mechanism of drugs action
> QbD, PAT
> Green processes for pharmacy
> Pharmaceutical processes & development.
> Pharmaceutical engineering: dosage forms, advanced and innovative galenics.
> Quality management system, QRM
> Pharmaceutical environment (clean rooms...)
> French culture and language
> Project 3: Research and/or industry oriented

Semester 4: MSc Thesis.

> 6-month MSc thesis in industry or in an academic research laboratory (France or international).

The program also includes companies & research centers visits, as well as seminars and international conferences

LOCATION

The three academic semesters will be held at Mines-Albi Campus. Albi is located in South-West France 70 km from Toulouse, at the heart of the new dynamic region Midi-Pyrénées Languedoc- Roussillon.

ADMISSION REQUIREMENTS

Participants must hold a Bachelor of Science or Engineering degree with related major (Chemical Engineering, Chemical Sciences, Pharmaceutical Engineering, Pharmaceutical Sciences...) or an equivalent degree. Participants holding a first industrial experience are also much welcome.

LANGUAGE REQUIREMENTS

English: B2 Level

> Mother tongue or
> Study in an English speaking country or • English Language Qualification
– TOEFL IBT 80
– ELTS 6.0
– TOEIC 750
– Cambridge CAE (Certificate of Advanced English).

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French:

A good knowledge of French language is not mandatory before arrival in France, but TEF II or an equivalent level may be required to obtain a visa.

STRONG POINTS OF THE SCHOOL/ PROGRAM

- > International Faculty and Campus
- > Mines-Albi is accredited by the French Ministry of Economy, Industry and Numerics (Commission du Titre d'Ingénieur - CTI)
- > Mines-Albi is accredited by the French Ministry of Higher Education and Research (4 Masters, including ADPHARMING)
- > Masters taught entirely in English and in small groups
- > Taylor-made program adapted to various initial formations
- > Strong links and interaction with industries (projects, research programs, partnerships, internships...)
- > 1000 alumni (engineers and pharmacist-engineers) working in French & European pharmaceutical industry
- > 6-month master thesis in industry or/ and in a research lab
- > Master boosted by the research department RAPSODEE (CNRS UMR 5302) and its federative platform GALA (Advanced Galenics = Pharmaceutical Technology and Engineering) www.platforme-gala.com
- > Good grounding in a core set of engineering competencies
- > Access to impressive and up-to-date pilot-scale facilities
- > An international team for international students
- > A quality-chartered "Welcome to International Students" package
- > Free French language courses
- > Scholarships based on academic excellence are available for outstanding candidates

SKILLS ACQUIRED AND GLOBAL LEARNING OUTCOMES

Knowledge of state of the art specificities of the international pharmaceutical industry;

- > Advanced knowledge of state of the art specificities of the international regulations of pharmaceutical industry (GMP, PAT...), and the pharmaceutical quality;
- > In-depth knowledge of the drug life cycle ;
- > Ability:
 - to use state of the art sciences, technology and regulatory aspects to conceive and develop sustainably innovative drugs and advanced galenics.
 - to use process engineering to design pharmaceutical processes in a sustainable way;
 - to use project and lean management methods in the pharmaceutical and related fields.
 - to undertake complex projects as leader, animator and/or partner in an international team environment.
 - to develop a sense of responsibility, including social, and of decisionmaking.
 - to develop the ability to work in an international context: fluency in English, cultural and international awareness, knowledge of French culture and language.
 - to communicate efficiently with written reports and by oral presentation.

TYPICAL JOBS

- > The master ADPHARMING provides the opportunity to enter a high-level career in the pharmaceutical industry or to continue for the preparation of a doctoral thesis
- > R&D engineer / manager in advanced galenics
- > Formulation project leader
- > Quality system manager
- > PAT project manager
- > Pilot Plant manager
- > Plant performance & process excellence manager
- > Plant manager
- > Auditor, Consultant or Expert in the field
- > Production Planner, Production Analyst
- > Deputy Head of Bioproduction
- > Lean project manager or leader
- > Supply chain manager
- > QA - Supplied Materials manager
- > Technology transfer manager/ supervisor
- > Interface big pharma/ academic partner/ biotech start-up

COST

9,000 euros per year
Possible payment by installments

SCHOLARSHIP

Scholarships are available depending on academic records and countries of origin (companies, governments, sponsors, embassies...). Internships are paid and cover living expenses during the last semester.

CALENDAR

One intake per year in September.

- > **Year 1:** Two academic semesters at Mines Albi.
- > **Year 2:** One academic semester at Mines Albi + a 6-month Master thesis in industry and/or in a research lab (France or International)

LODGING

Individual furnished studio apartments are available for international students during their stay. The residences are located in Albi (our campus and city center) and offer all the comfort and facilities to the students. Living expenses are quiet low in Albi compared to other locations in France. Accommodation at the students' Residence : about 330 Euros per month. The total amount should not exceed 6,000 Euros per year (on campus food and accommodation).

CONTACT

Mines Albi - International students office
Campus Jarlard - Route de Teillet -
81013 Albi cedex 09
France

Our knowledgeable staff will be happy to assist with any inquiries you may have.

www.mines-albi.fr/adpharming

www.mines-albi.fr/admissionprocess-master-science

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