Université de Lille

Advanced Physics of Pharmaceutical Materials (M1-M2)

Master Physique fondamentale et applications

Durée
2 ans

Composante
Faculté des sciences et technologies

Langue(s) d'enseignement
Anglais

Présentation

A2PM aims to meet the growing international demand for highly qualified graduates with both theoretical and applied high-level training in materials science (physics-chemistry) and its applications to pharmaceutical and biopharmaceutical materials. The programme offers a comprehensive education and training curriculum covering soft matter, biomaterials, the physical states and transformations of drugs, artificial intelligence, modelling, and advanced experimental characterization techniques, including the use of instruments available at large-scale research facilities. One of A2PM's primary objectives is to foster the emergence of the new discipline of "pharmaceutical materials science" addressing the significant shortage of skilled professionals in this field. This initiative is particularly relevant to the research-based pharmaceutical sector, including large pharmaceutical companies, small and medium-sized enterprises (SMEs), spin-offs, start-ups, contract research organizations, drug manufacturers and international cluster of public and private organizations.

Savoir-faire et compétences

Upon completion of the Master's programme, students will have developed strong technical and cross-disciplinary skills thanks to the multidisciplinary training. The main skills and expertise are as follows:

Technical/Scientific:
Mastery of the fundamental principles of physics, chemistry and materials science: quantum, solid state, polymers, transport, disordered materials.
In-depth knowledge of pharmaceutical materials: stability, formulation, physicochemical behaviour.
Ability to use modelling and simulation techniques: atomistic modelling, stochastic simulation, machine learning, etc.
Mastery of advanced experimental techniques: synchrotron, neutronics, spectroscopy (IR, Raman, NMR), imaging, tomography, calorimetry, etc.
Knowledge of pharmaceutical formulation processes: manufacture of co-forms, amorphous forms, cocrystals, industrial processes.
Ability to carry out and defend a research project/dissertation in an academic or industrial context.

Transversal/soft skills:
Entrepreneurship and project management skills.
Scientific communication: bibliographic research, synthesis, article writing, oral presentations, communication in English.
Intercultural communication: ability to work in international environments.
Adaptability and flexibility: autonomy and ability to integrate.

Les + de la formation

The A2PM programme, in conjunction with the European BIOPHAM master's degree, offers specialised preparation by combining a solid background in physics, chemistry and materials science with opportunities for mobility within a

network of European universities and an introduction to research.

Organisation

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The master's programme is organised into different knowledge and skills blocks (BCC):

BCC - Implement fundamental physics tools and approaches to produce highly specialised knowledge;

BCC - Produce and communicate highly specialised knowledge, including in a professional context related to the field of physics;

BCC - Solving complex problems by applying fundamental physics concepts

Stages

Optionnel en M1, obligatoire en M2

Admission

Conditions d'admission

For European students and no EEF students:
Application: Submit your application by following this link: https://monmaster.gouv.fr

For EEF students: Etudes en France

Et après

Poursuite d'études

After completing this master's degree, the student can continue his studies with a PhD.

Insertion professionnelle

R&D engineer in pharmaceutical companies, technical sales engineer, researcher.

Pour en savoir plus sur l'insertion professionnelle des diplômés de l'Université de Lille, consultez les répertoires d'emplois publiés par l'*ODiF (Observatoire de la Direction des Formations)*

Les fiches emploi/métier du *Répertoire Opérationnel des Métiers et des Emplois* (ROME) permettent de mieux connaître les métiers et les compétences qui y sont associées.

Infos pratiques

Autres contacts

Contact administratif :
FST-master-pfa-appm@univ-lille.fr

Contact pédagogique :
FST-master-pfa-appm@univ-lille.fr

Lieu(x)

Villeneuve d'Ascq - FST

Campus

Campus Cité scientifique

Université de Lille

En savoir plus

Faculté des Sciences et Technologies - FST
https://sciences-technologies.univ-lille.fr/