



# BIOPHAM

Bio & Pharmaceutical materials science  
EUROPEAN MASTER



<http://master-biopham.eu>

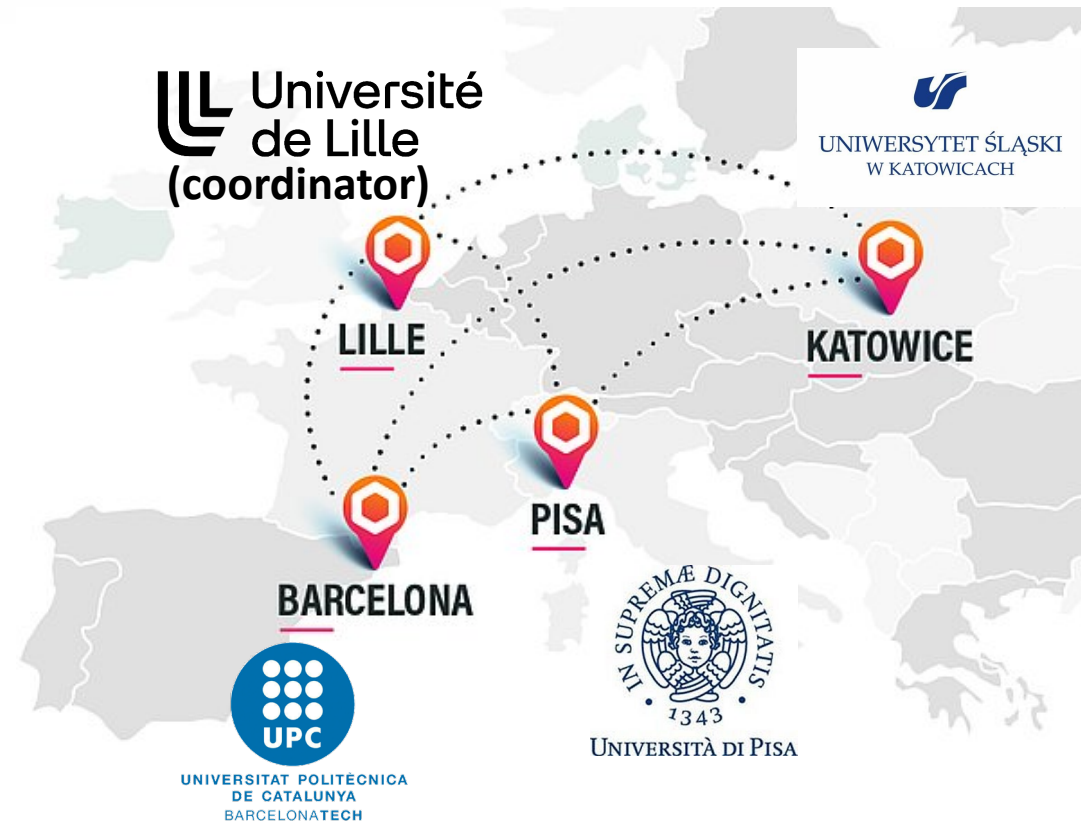


# BIOPHAM

Bio & Pharmaceutical materials science  
EUROPEAN MASTER

A unique international Master training in **materials science (physics-chemistry of materials)** focusing on pharmaceutical & biopharmaceutical materials

- 2-year international Master program (120 ECTS)
- All courses taught in English
- 3 Master's degrees granted
- Openings to PhD careers and/or highly qualified positions in industry worldwide. Opportunity to create a large network (Academic, Industry)
- Targeted students: Bachelor in Physics, Chemistry, Materials Science, Nanosciences,...
- Scholarships (1000 euros/month during 2 years)



**4 PARTNER UNIVERSITIES**



# BIOPHAM

Bio & Pharmaceutical materials science  
EUROPEAN MASTER

This is the important word !

**BIOPHAM is a Master in Materials Science**

**focusing on Pharmaceutical and Biopharmaceutical materials**

**BIOPHAM IS NOT a Master in: Biology, Biochemistry,  
Biotechnology, Biomedical sciences, Biomaterials, Pharmacy  
or Pharmaceutical sciences**

**(in which one may have some Materials science courses)**

# Examples of BIOPHAM courses

## Condensed-Matter Physics & Chemistry

- Quantum matter & condensed matter physics
- Disordered and off-equilibrium systems
- Mechanical behaviour of materials
- Chemistry of soft matter
- Molecular and soft condensed matter
- Polymer science and engineering
- Thermodynamics and phase transformations
- Dynamics in the amorphous materials

## (bio)-Materials & (bio-)Pharmaceutics

- Biomaterials
- Biomaterials toxicology
- Complexity in biophysics
- Molecular biophysics
- Materials science & pharmaceutical developments
- Thermodynamics and solid state physics of drugs
- Drug chemistry and technology of drug forms
- Pharmacology and Pharmacognosy

## TOOLS & TECHNIQUES

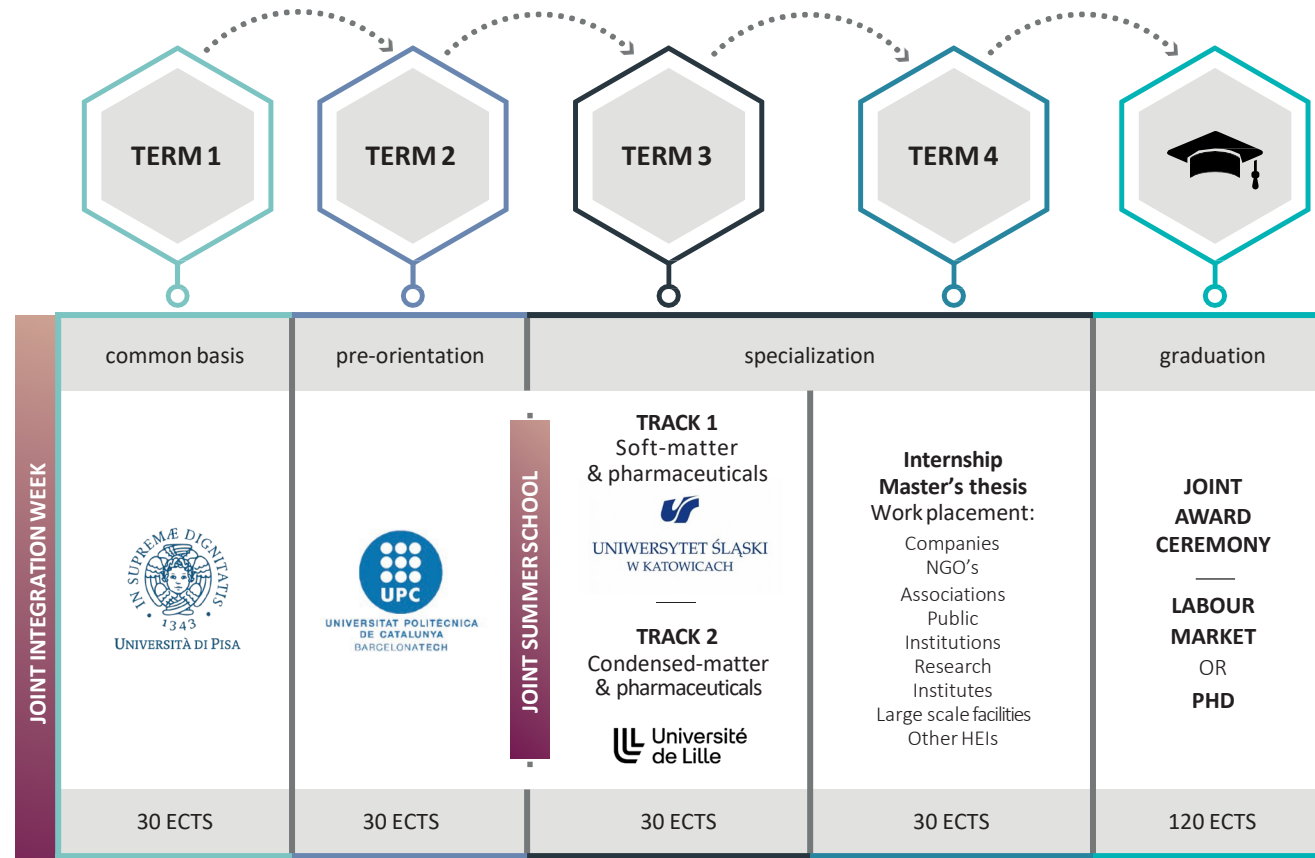
### Numerical

- Computational material science
- Machine learning with neural networks
- Stochastic methods for optimization/simulation
- Fundamentals of molecular modelling
- Atomistic modelling : from the gas phase to solids

### Experimental

- Large facilities: synchrotron and neutron sources
- Physicochemical properties and characterization
- Application of vibrational spectroscopy in therapeutic substance studies
- Advanced experimental characterization methods

# Mobility scheme

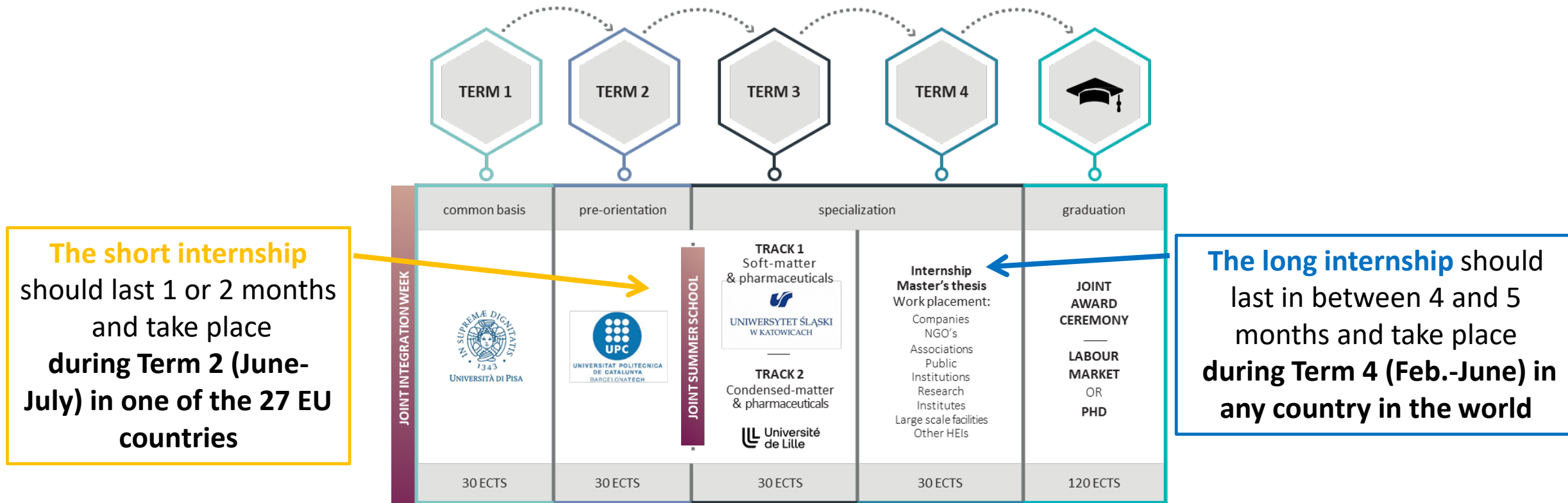


**3 Official  
DIPLOMA  
Granted**

- 1) Master Degree in Materials and Nanotechnology (UNIPi)
- 2) Master Degree in Engineering Physics (UPC)
- 3) Master Degree (Field: "biophysics") (USK) or Master Degree in Applied and Fundamental Physics (ULILLE)

**+ A joint diploma supplement** presenting the details of the BIOPHAM academic programme and academic achievement

# Short and Long Internships



The short and long internships can take place in academic or industry laboratory, large scale research facility or computer center, public institutions, other HEIs,...

**TOPICS OF THE SHORT AND LONG**  
**INTERNSHIPS SHOULD BE RELATED TO THE BIOPHAM TRAINING PROGRAMME**

# BIOPHAM : A very large partnership

## 15 large and small companies

→ Big pharma, SME's, spin-offs, start-ups, contract research organizations

→ Active in basic research, drug discovery and design, early drug development, drug physical/chemical characterizations,...

**6 large scale facilities (synchrotron and neutron sources):** ESRF (France), ILL (France), PSI (Switzerland), ELETTRA (Italy), SESAME (Jordan), ALBA (Spain)

## 25 European and non-European associated Universities

- Participate to the advisory board
- Specialized seminars & lectures
- Excursion to the company's premises
- Work placements – Short & Long internships

