

# Battery Engineering\*

Applied graduate studies

\*Undergoing labellisation



Language:  
English

Duration:  
12 months



## Advanced-master degree *Mastère Spécialisé*

### Gain a competitive edge in Battery Engineering:

Understanding how technologies, policies and regulations, markets and costs shape the industry will give you a competitive edge in engineering projects. Our battery training program offers an unparalleled opportunity to dive deep into the intricacies of the battery industry.

### Learning by doing with real case studies

Our program employs an active learning approach, using real case studies and lectures delivered by professionals with extensive experience in the field. This hands-on method ensures that you gain practical, applicable knowledge, positioning you for a fast track towards a successful career in battery engineering and business development.

### Comprehensive curriculum

Our program is designed to give you a holistic understanding of the battery value chain, encompassing every step of the battery circular economy. You will gain insights into:

- Technical dimensions: Master the principles of battery design, engineering and manufacturing processes.
- The regulatory landscape: Navigate the complex policies and regulations that govern the battery industry.
- Industrial applications: Understand the industrial processes and innovations in battery technology.
- Safety standards: Learn the essential safety protocols for battery usage and handling.
- Environmental considerations: Assess the environmental aspects of battery production, use and recycling.
- Life Cycle Assessment: Evaluate the cost and environmental impact of battery life cycles.

Embark on this educational journey with us and emerge as a leader in the evolving world of battery technology.



**Boost your career with IFP School's Battery Engineering program!**

**Are you ready to excel in a fast-moving sector?**

Join our Advanced-Master degree - *Mastère Spécialisé* in Battery Engineering at IFP School and develop the skills and knowledge you need to thrive in the dynamic battery industry. Our Battery Engineering program was designed to empower you with a comprehensive understanding of the battery value chain in a circular economy.

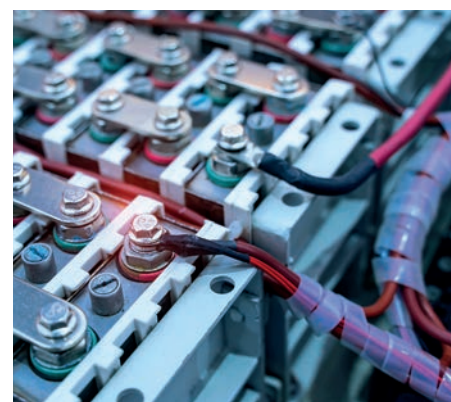
### Why batteries matter?

Batteries are pivotal to the energy mix and mobility sector of the future. They are the backbone of electric vehicles, renewable energy storage and numerous other applications that drive sustainable development.

### Join us today!

Boost your career with our specialized training and become a part of the battery revolution. At IFP School, we are committed to empowering you with the expertise needed to shape the future of energy and mobility.

Your journey to a successful career in battery engineering starts here!



Find out more: [www.ifp-school.com](http://www.ifp-school.com)



- Part of Europe's leading energy R&D center
- Comprehensive Battery Engineering program
- Expert-led lectures
- Multidisciplinary teamwork
- Hands-on laboratory experience
- Innovative teaching methods
- Circular economy focus
- International program
- Real-world case studies
- Prepare for high-demand roles in the energy and mobility sectors.

## Program content

### Materials

- Raw materials
- Up stream: mining & refining
- Anode and cathode materials
- Supply chain and circular economy
- Markets

### Manufacturing

- Regulations (storage and distribution)
- Cell, module and pack manufacturing processes
- Manufacturing modeling and optimization

### Design

- Regulations. Safety. Fundamentals of chemistry, processes, electrochemistry and electricity
- Cell, module and pack design.
- Cell and pack modeling & simulation
- Technologies (LFP vs NMC, Solid-state battery, Sodium (NA Ion), Lithium-Sulfur Battery ...)
- Architecture: Cell to Pack concept vs Cell to chassis
- Battery ageing and durability. Cooling, BMS
- Data science & use of AI in batteries design
- Power electronics around the battery
- Battery testing and validation

### Use

- Regulations
- Infrastructure: Charging stations
- Smart Grid - Vehicle to Grid

### End-of-life

- Battery life cycle analysis
- Battery reuse & recycling

## Admission

- Required: an engineering or master's degree or a Bachelor's degree with 3-year of professional experience in the energy sector
- Background: chemical engineering, materials, energy, electricity, etc.

## Public

- Working professionals engineers
- Young engineers



## Program schedule

Short full-time program 8-month courses + 4-month internship

**12 months**

**Continuous program**



● IFP School ● Company

Find out more: [www.ifp-school.com](http://www.ifp-school.com)