

DENSYS

MASTER ERASMUS MUNDUS DECENTRALISED SMART ENERGY SYSTEMS

With the support of the Erasmus+ Programme of the European Union



What is DENSYS?

DENSYS is an Erasmus Mundus Joint Master Degree dedicated to the **Decentralised Smart Energy Systems**, supported by the European Union and developed in collaboration by:

- University of Lorraine (Nancy, France) - Coordinator
- KTH Royal Institute of Technology (Stockholm, Sweden)
- Polytechnic Institute of Torino (Torino, Italy)
- Universitat Politècnica de Catalunya (Barcelona, Spain)

DENSYS also involves **12 associated partners to broaden students' perspectives**: major industrial groups, start-ups and spin-offs, academic partners such as ESADE Business School and the University of Liège (Belgium), ETH Zurich (Switzerland), a regional research center, and an association of European research organizations.

Pioneering the Future of Energy Transition

To tackle global warming, transitioning to low-carbon energy systems is imperative. This involves integrating renewable energy sources, producing decarbonized energy carriers, and reducing emissions in energy end-uses to achieve the ambitious goal of a carbon-neutral world by 2050. These **technological advancements** must be accompanied by robust **political frameworks** that ensure large-scale implementation while fostering a just transition, a cornerstone of the European Green Deal to leave no one behind.

At the heart of this effort are decentralized smart energy systems, crucial for efficiently integrating renewable energy. This vision drives **DENSYS**. The program's overarching goal is to train **highly skilled engineers with a multidisciplinary, multiphysics approach** - spanning electrical, mechanical, and chemical engineering - equipping them to design, size, optimize, and manage decentralized smart energy systems while addressing societal needs holistically.

A Vision for the Future

DENSYS aims to train engineers and researchers who not only excel in designing innovative energy systems but also grasp the human and societal dimensions of sustainability. By combining fundamental knowledge acquisition, key energy transition technologies, extensive exposure to the humanities, diverse educational pathways, specialization opportunities, challenge-based learning, practical experience, mobility, and cultural exchange, the program empowers its graduates to drive the global transition toward a sustainable and carbon-neutral future.



UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

Why Choose DENSYS?

1

Comprehensive and interdisciplinary Training

Students acquire solid engineering knowledge alongside key competencies in economics and humanities, recognizing that the energy transition is fundamentally a societal challenge.

2

Multicultural Experience

DENSYS fosters intercultural understanding, allowing students to share local perspectives and craft energy solutions tailored to diverse contexts.

3

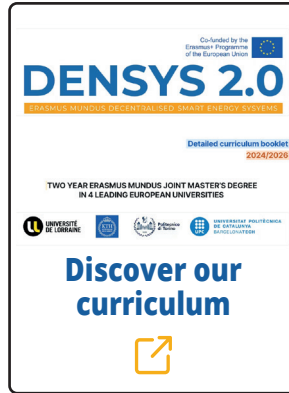
Holistic Approach

By emphasizing technical expertise and societal awareness, DENSYS prepares students to become responsible engineers and researchers at the forefront of the energy transition.

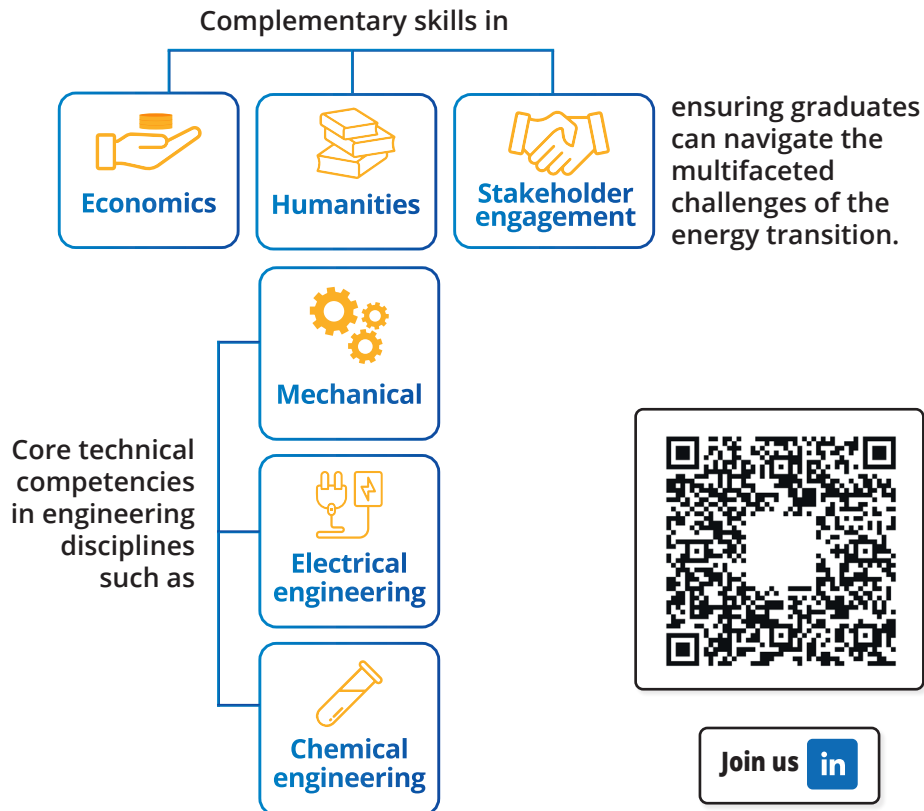
DENSYS

MASTER ERASMUS MUNDUS | DECENTRALISED SMART ENERGY SYSTEMS

With the support of the Erasmus+ Programme of the European Union



DENSYS adopts a “T-shaped” educational approach



International mobility scheme

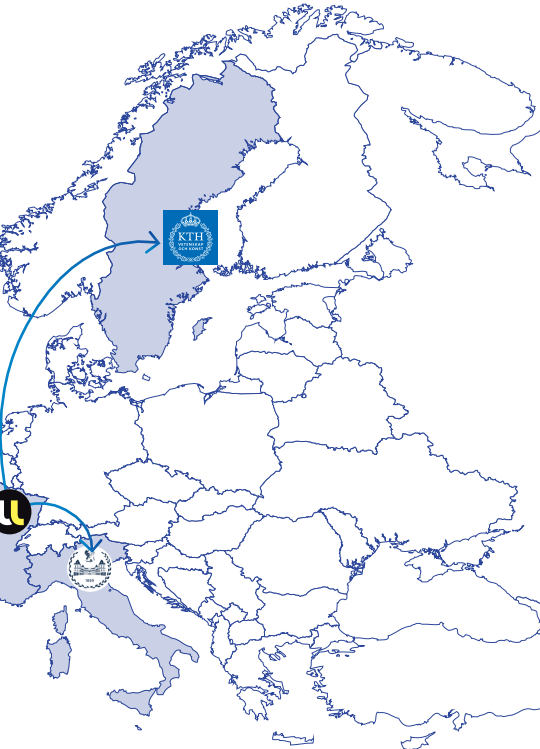
The program follows a mobility scheme, beginning with two semesters at UL in France, followed by a specialized third semester in one of three distinct domains, and concluding with a Master's thesis in the fourth semester.

Semestre 1 and 2 at UL
60 ECTS
Core curriculum in Energy engineering and breadth courses

Semester 3 at UPC
30 ECTS
Track Thermal Energy Management

Semester 4
30 ECTS
Master thesis / Internship in a research institution or a company

Semester 3 at KTH
30 ECTS
Track Decentralised smart energy systems in a global energy system



Semester 3 at POLITO
30 ECTS
Track Power-to-X, Innovative Pathways for Energy Storage

Application procedure

Application Process

All applications are submitted through a dedicated platform. Detailed guidelines are available on our website, and step-by-step support is provided via a Discord server.

Application Period

The application window for the program and financial support is open from mid-October to the end of January for the academic year starting the following September.

Funding & Participation Options

There are three ways to join the program:

- 1 Receive an EMJM Scholarship with payment of the full Participation Costs (16 available per intake)
- 2 Be awarded a Reduction in Participation Costs (without a scholarship)
- 3 Enroll as a self-paying participant (without a scholarship)

Key figures on DENSYS



DENSYS

MASTER ERASMUS MUNDUS | DECENTRALISED SMART ENERGY SYSTEMS

With the support of the Erasmus+ Programme of the European Union



An immersive experience



“They talk about it better than we do!”

Cohort 2023-2025



Gandharva Shelar

I chose DENSYS because I didn't just want to study energy - I wanted to understand its impact on the world. This program has pushed me beyond my comfort zone, connected me with brilliant minds, and shown me the power of innovation in shaping our future. If you're looking for more than a degree, but a journey that transforms how you see energy and the world, and truly prepares you for the future of energy DENSYS is where you belong.

Cohort 2024-2026



Teresa Hallste Pérez

I applied to DENSYS because I wanted to effectively participate in the energy transition. Today, it is for me a lesson on humanity, humbleness and sustainability. I encourage you to participate if you're looking for an eye-opener, engineering program where interdisciplinarity is key to sculpt together the future energy system.

Join us