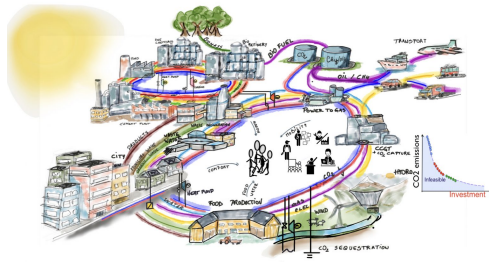




MINOR IN ENERGY



EFFICIENT USE AND CONVERSION OF ENERGY IS ONE OF THE MAJOR CONCERNS OF THE 21ST CENTURY. PAVING THE WAY TOWARDS NET-ZERO SOCIETY IS ONE OF THE MOST EXCITING CHALLENGE FOR ENGINEERS. IT REQUIRES A «POLYTECHNICAL» CURRICULUM TO TACKLE PROBLEMS WITH A SYSTEMIC VISION THAT GOES FROM NEW MATERIALS DEVELOPMENT TO THE OPTIMAL OPERATION OF LARGE, COMPLEX AND HIGHLY INTERCONNECTED SYSTEMS AND NETWORKS.

The goal of the Minor in Energy is to provide students with a strong methodological background to tackle the challenges of energy efficiency and the integration of renewable energy resources from micro to giga scales in different domains: households, transport, tertiary sector and industry.

The Minor in Energy is offered to various Master programs of EPFL and aims at broadening the scope of each Major by adding the multidisciplinary dimension of energy. Emphasis is put on the efficient use and conversion of energy, the integration of renewable energy resources, and the environmental impact assessment considering sustainable development criteria. The program, with a strong emphasis on project-based learning, consists of 30 credits selected in the Minor that complement 90 credits taken in the Major program.

CURRICULUM

The lectures focus on advanced energy conversion and distribution systems, energy conversion modeling, analysis and optimisation, electricity distribution, storage and conversion, nuclear energy, renewable energy, chemical engineering and buildings energy. The program combines theoretical lectures and project work that are coordinated with the Major program. Courses are selected from different Master programs of EPFL and are targeted to add multidisciplinary “energy-related” skills to the Major.

PROFESSIONAL PROSPECTS

Nowadays, the energy efficiency skills offer many opportunities for a professional career in scientific, public or industrial sectors in different areas such as technology manufacturing, process and energy systems engineering, operation and transportation, energy management and urban planning, electricity production, distribution and usage. The multidisciplinary nature of the Minor in Energy prepares to careers in both management and engineering.



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Additional education

Mentioned in the Diploma Supplement.

A minor consists of a 20-credit set of courses designed to acquire a complementary education in a specific field, opening up additional professional prospects, plus 10-credits of a project in energy

This *Minor* is recommended alongside one of the following programs:

- *Electrical & Electronic Engineering*
- *Materials Science & Engineering*
- *Mechanical Engineering*
- *Microengineering*
- *Physics and Applied Physics*
- *Civil Engineering*
- *Environmental Sciences & Engineering*
- *Chemistry and Chemical Engineering*

CODE	MATIERES	ENSEIGNANTS sous réserve de modification	LIVRET DE COURS	CREDITS ECTS	NBRE PLACES	PERIODE DES COURS	
						AUT	PRI
Groupe "Mineur"				30			
Projet obligatoire du mineur en Énergie							
ME-450	Projet en énergie	Divers enseignants	--	10		A ou P	
Cours à option							
ME-451	Advanced energetics	Maréchal	GM	5		A	
ENV-409	Air pollution	Reimann/Takahama	SIE	5			P
CIVIL-411	Dam engineering	De Cesare/Manso	GC	3		A	
CIVIL-407	Energy and comfort in buildings	Khovalyg/Licina/Sonta+Khovalyg/Licina/Sonta/Favero	GC	5		A	
ME-409	Energy conversion and renewable energy	Maréchal/Nguyen T.-V.	EL	4		A	
CIVIL-444	Energy geostructures (pas donné en 2025-2026)	Laloui	GC	4			P
EE-466	Energy storage systems	Sossan	EL	3		A	
ME-551	Engines and fuel cells	van Herle	GM	4		A	
MICRO-565	Fundamentals & processes for photovoltaic devices	Ballif	MT	3			P
ChE-310	Fundamentals of separation processes	Agrawal	CGC	4			P
ChE-403	Heterogeneous reaction engineering	Lutrbacher	CGC	4		A	
ME-453	Hydraulic turbomachines	Vagnoni	GM	4		A	
EE-485	Industrial electronics I	Dujic	EL	4		A	
EE-565	Industrial electronics II	Dujic	EL	4			P
ME-464	Introduction to nuclear engineering	Scolaro	GM	2			P
ENV-510	Life cycle assessment in energy systems	Margni	EL	3		A	
ME-454	Modelling and optimization of energy systems	Maréchal	GM	4		A	
PHYS-423	Plasma I	Theiler	PH	6		A	
PHYS-424	Plasma II	Reimerdes	PH-ING	6			P
ChE-459	Process development	Gouveia Braz/Maréchal	CGC	8			P
EE-472	Smart grids technologies	Paolone	EL	5			P
ENV-500	Solid waste engineering	Ludwig	SIE	4		A	
ENV-461	Sustainability assessment of urban systems	Binder	SIE	3			P