UNIVERSITÉ SAVOIE MONT BLANC

SCIENCES, TECHNOLOGIES, SANTÉ

Energy for solar buildings and cities (Energie pour bâtiments et villes solaires)

Master Energie solaire (Solar energy)

Durée
2 années, 4 semestres

Langues d'enseignement
Anglais

Présentation

GRADUATE SCHOOL SOLAR ACADEMY

The Master program ESBC: Energy for Solar Buildings and Citites, is a highly innovative, new degree program preparing to tackle present and future challenges of the energy transition. It is a part of Solar Academy Graduate School recently awarded to University of Savoie Mont Blanc (USMB).

The Master program ESBC is a two-year full-time Master's degree, composed of 4 semesters representing a total of 120 ECTS (officially integrated in the European Bologna system of higher education).

This master program is jointly developed by the School of Engineering (Polytech Annecy-Chambery), School of Business and Administration (Institut d'Administration des Entreprises IAE Savoie Mont Blanc) and School of Law (Faculté de Droit) at USMB.

Located on the Bourget-du-Lac Campus of INES (National Institute for Solar Energy), you will participate in high quality education and multidisciplinary projects, stimulating your creativity and entrepreneurial skills.

Objectifs

The training combines practice and theory centered on the fields of solar energy engineering, building physics and materials science, with an opening to computer science, architecture and urban planning, law, economics and sociology.

The training provides the knowledge on how to deploy the energy transition in the building sector, with a particular focus on solar energy. It provides technical tools for system sizing and management, and develops an in-depth understanding of the energy transition, including its relationship with public policies, economic and industrial transformations, business models, legal concepts and tools specific to the renewable energy sector, in particular solar energy.

Dimension internationale

Courses are taught, in English, by international experts and highly recognized partners from national and international research institutions and industry as well as by academic staff of USMB.

Disciplinary and international mobility, as well as immersion in an international research environment, are an integral part

of the curriculum, bringing added value to students in terms of training and research. Grants for international mobility, awards for best projects as well as scholarships awarded for excellent academic results are available.

Les atouts de la formation

Innovative introduction to engineering sciences, focusing on solar energy (highly growing sector of renewable energy) and on energy efficiency in building sector (responsible for over 40% of world primary energy consumption) will give a unique multidisciplinary education.

Excellence scholarships will be awarded to selected candidates, and funded by the Solar Academy Graduate School, in order to attract students with an excellent academic level and a real motivation.

Organisation

Effectifs attendus

24 students for SoLEM (in 2021)

Aménagements d'études

https://www.univ-smb.fr/en/formation/amenagements-specifiques/

Date de début de la formation : September

Date de fin de la formation : June

Admission

A qui s'adresse la formation ?

General knowledge of engineering sciences and physics of transfers is desirable.

Conditions d'admission

The ESBC program recruits students with a bachelor degree in Engineering, Physics, Sciences and Technologies or equivalent. A minimum of 180 ECTS credits is required as well as a sufficient knowledge of English language.

Candidater et s'inscrire

Applications are only made online (Campus France, E-Candidate...). To know more about it

Et après

Poursuite d'études

Ph.D. in Economics, Law, Management, Engineering Sciences, in particular solar energy deployment and energy efficiency, within the Solar Academy Graduate Program.

Following the master's program, it is possible to continue with a doctoral program either at USMB or at a French or foreign university.

Métiers visés et insertion professionnelle

Real estate activities|Construction|Modelling and construction|Generation and distribution of electricity, gas, steam and air-conditioning | Specialized, scientific and technical activities | Specialized scientific and technical activities.

Building control and technical diagnostics|Engineering and civil engineering studies|Engineers and managers in building and public works|Building control and technical diagnostics|

Engineering and civil engineering studies|Engineers and managers in energy production and distribution, water| Consulting engineers in technical studies|Management and engineering studies, research and industrial development| Researchers in public research|Engineers and technical-commercial managers in building, public works|Higher education teachers

Infos pratiques

Contacts

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Campus

Le Bourget-du-Lac / campus Savoie Technolac

En savoir plus

Solar Academy Graduate School
https://www.univ-smb.fr/solaracademy/

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Programme

M1 - Energy for solar buildings and cities

Semestre 7

	Nature	CM	TD	TP	Crédits
UE701 Core solar	UE				4
Solar ressource, radiation and optics	EC	9h	12h	6h	3
Application to solar systems	EC	4,5h	6h	3h	1
UE702 Core building	UE				4
Energy needs and performance	EC	4,5h	6h		1
Building energy : envelope and HVAC	EC	6h	19,5h	3h	3
UE703 Physics and materials for solar systems and buildings	UE				4
Thermodynamics and heat transfer	EC		30h		3
Materials for energy	EC	6h	6h		1
UE704 Introduction to economics	UE				4
Introduction to economics	EC	9h	9h		2
Public economics	EC	9h	9h		2
UE705 Sustainability for energy transition	UE				8
International and european regulations	EC	9h	10,5h		2
SEMINARS Human sciences for solar energy	EC	15h			2
Sustainability analysis	EC	9h	6h	9h	2
Foreign language choice	CHOIX				
Foreign language (French)	EC		30h		2
Foreign language English	EC		30h		2
UE706 Introduction to research	UE				6
Library research tools and methods	MODULE		4h		
Literature review project	EC	6h		24h	6

Semestre 8

	Nature	CM	TD	TP	Crédits
UE801 Power generation	UE				6
Solar power generation	EC		13,5h		2
Energy vectors & Energy storage	EC	6h	12h	3h	2
Energy grids	EC		3h	18h	2
UE802 Advanced tools - experimental	UE				4
Experimental methods	EC		6h	12h	2
Application to solar systems	EC		4,5h	16h	2
UE803 Modelling of transfers phenomena	UE				4

Computational fluid mechanics (CFD)	EC			16h	2
Building performance simulation (BPS)	EC			12h	1
Radiation modeling in complex media	EC		2h	12h	1
UE804 Introduction to management	UE				2
Strategic management	EC	9h	9h		2
UE805 Energy environment and society	UE				6
Specific energy contracts and fiscal law	EC	9h	10,5h		2
SEMINARS International energy policies	EC	18h			2
Foreign language choice	CHOIX				
Foreign language (French)	EC				2
Foreign language English	EC				2
UE806 Innovation, creativity and research	UE		22h		8
Creativity through biomimicry for solar cities	EC		22h		2
Research project	EC			24h	6
Optional Internship/Work placement	MODULE				

M2 - Energy for solar buildings and cities

Semestre 9

	Nature	CM	TD	TP	Crédits
UE901 Advanced solar systems	UE				6
Solar thermal systems	EC		12h	9h	2
Building integrated PV (BIPV-BIPVT)	EC		9h	6h	2
Solar power generation	EC		15h	9h	2
UE902 Tools for solar cities	UE				6
Urban metabolism: energies, anergy, geothermy…	EC	3h	9h		2
Solar cadastre, solar performance	EC	6h	12h	4h	2
Environmental regulation for buildings and systems	EC	6h	12h		2
UE903 Advanced methods	UE				4
Artificial intelligence	EC	6h	1,5h	6h	2
Operational research for urban solar development	EC	3h	3h	18h	2
UE904 Urban development	UE				6
Case study common project	EC	9h	10,5h	16h	2
Performance indicators and information processing	EC	6h	12h		1
Urban planning and architectural integration	EC	10h		3h	1
Foreign language choice	CHOIX				
Foreign language (French)	EC		30h		2
Foreign language English	EC		30h		2
UE905 Research and innovation project	UE				8
Multidisciplinary project	EC	6h		24h	6
Entrepreneurship, innovation challenge	EC	6h			2

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Semestre 10

	Nature	CM	TD	TP	Crédits
UE001 Internship	UE				30
Internship	EC				30