

## ADMINISTRATIVE STAFF

Faculty of sciences and technology

Department of Electronics, Electrical engineering,  
Automatic

- University of Lille - Campus cité scientifique
- Pedagogical Secretariat :  
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## CONTINUING EDUCATION & WORK-STUDY PROGRAMS

- Service formation continue et alternance  
fst-fca@univ-lille.fr  
Bâtiment A18

## COORDINATOR

Coordinator - Abdelmounaim TOUNZI  
For more information : master-ase.univ-lille1.fr

## APPLICATIONS

- The selection is performed at the level of the first year of the master (M1) for candidates holding a bachelor degree. It should be noticed that the first year of the master is taught in French. Applications should be made online using website ecandidat
- If you hold an equivalent foreign diploma, depending on your country native, different procedures have to be followed such as a request for validation of studies or an application on the CEF (center for studies in France) .

## LAYOUT OF STUDIES

In order to offer the best conditions for success for the students it hosts, the University of Lille sets up various systems that allow students to start and pursue their studies as best they can depending on their situation: student with a disability, athlete and high level artist, civic service, student in exile ... [More info on https://www.univ-lille.fr/etudes/amenagements-des-etudes/](https://www.univ-lille.fr/etudes/amenagements-des-etudes/)

## INTERNATIONAL RELATIONSHIPS

- The University of Lille has a policy of supporting international access to its courses. That's why it has introduced special procedures to make international students feel welcome and form collaborations.

<https://www.univ-lille.fr/home/international-student/>

- Practical information for your stay at the University of Lille

<https://www.univ-lille.fr/home/international-student-tool-box/>

## RECRUITMENT CALENDAR

- Information on application dates on the site <http://master-ase.univ-lille1.fr/>

## FACULTY OF SCIENCE AND TECHNOLOGY

The faculty of science and technology is a training and research unit of the University of Lille.

It brings 9 training departments and 27 research structures in the following areas :

- Biology ; Chemistry ; Electronics, Electrical engineering, Automatic ; Computer Science ; Mathematics ; Mechanics ; Physics ; Earth Science ; Station Marine Wimereux.

The faculty of science and technology of the University of Lille offers a multidisciplinary training offer quality, from Bachelor to PhD, through professional bachelors and master's degrees. The faculty hosts every year on the campus more than 7 000 students in initial training.

Responsable de la rédaction : Vice-présidence Formation- Coordination : SUAIO - Maquette et réalisation : Service Communication - Impression : Imprimerie Université de Lille - Document non contractuel - Imprimé en décembre 2022

Master

MASTER 2

*Mention*

Automatique et Systèmes électriques

*Parcours*

Electrical engineering for  
sustainable development



## MASTER MENTION AUTOMATIQUE ET SYSTÈMES ÉLECTRIQUES (ASE)

**MASTER 2**  
parcours Electrical  
engineering for  
sustainable development  
(E2SD)

**MASTER 2**  
parcours Gestion des  
réseaux d'énergie  
électrique (GR2E)

**MASTER 2**  
parcours Systèmes,  
machines autonomes  
et réseaux de terrain  
(SMaRT)

**MASTER 2**  
parcours Véhicules  
intelligents élec-  
triques (VIE)

## OBJECTIVES

The Master E2SD is a degree co-authorized by the University of Lille, Arts et Métiers ParisTech Lille Center, and Centrale of Lille. Moreover, the master E2SD offers a double degree with Harbin Institute of Technology (HIT-China) and Ghent University (Belgium).

It allows acquiring a specialized knowledge in electrical engineering applied to environmental problems. It therefore constitutes an effective preparation for PhD in the areas of power conversion, design of electromechanical actuators with high performance, sustainable transport, integration of renewable energy sources in the grid

The aim of the Master «Electrical engineering for Sustainable Development» is to train students in advanced methods of design and control of electrical systems to increase the contribution of renewable energies in the generation of electricity and as sources for transport and to improve the performance and the energy efficiency of electrical systems in order to move towards a more rational use of natural resources and to greater respect of environmental heritage.

## JOB OPPORTUNITIES & FURTHER STUDIES

Since this M2 is taught in English, more than 40% of the students enrolled are of foreign nationalities (China, Vietnam, Morocco, Russia, Iran, Argentina, Spain, Algeria,...). This share is also increasing following a better promotion of our training on specialized sites.

The employments concerned, after the PhD, are those relative to research in public and private industrial groups and High Education:

- Associate professor (Universities, Engineering Schools),
- Researcher in public laboratories (CNRS, IFSTTAR, etc...) or industrial laboratories (EDF, etc.),
- Frame / Project Manager in groups, SMEs / SMI (Siemens, Alstom, Valeo, etc.) and public structures (Region)

The doctoral pursuit rate is about 35% (average value since 2008), and increases to more than 50% for students in single registration (who follow only the master degree). Other students find work in industry in France or in their home country.

## STRENGTHS OF TRAINING

- The strengths of the M2 E2SD lie, on the one hand, in the international character of the training that allows a mix of students from different nationalities and therefore an openness to different cultures and ways of thinking and, on the other hand, in courses taught by active teacher-researchers, thus providing knowledge from the latest research.
- Students also benefit from the environment of a recognized research laboratory as well as its network of national and international industrial and academic partners. Lastly, the high rates of professional integration and doctoral pursuit show that the E2SD master is well identified and appreciated by industry and provides good candidates for research.

## TARGETED SKILLS

At the end of the training, the students are able to apprehend a scientific problem of electrical engineering with a sustainable development dimension and are able to implement adequate tools to bring solutions to it, such as:

- Definition of advanced power electronic systems for sustainable applications and analysis of complex energy conversion system for control purpose.
- Use of skills for energy modelling and their application to the concept of eco-design.
- Analysis of electromechanical conversion at low-frequency and use of issues and approaches to achieve optimal design
- Study of new energy storage systems in future transportation systems;
- Developpement of future traction systems using a systemic optimization and multi-physical modelling
- Study of solutions involving the integration of renewable energies in the electricity system and design of subsystems for renewable energy systems



## TRAINING'S ORGANIZATION

*Parcours E2SD*  
MASTER 2 - Semestre 3

**BKS3 PERSONAL DEVELOPMENT**

- English/Com

**BKS4 IMPLEMENTATION OF METHODS AND TOOLS IN THE EE DISCIPLINARY FIELD**

- Bibliographical Project

**BKS11 MASTER THE METHODS AND TOOLS FOR INNOVATION IN ELECTRICAL ENGINEERING**

- Energy Conversion
- Electromagnetic, Energy Conversion and Eco-Design

**BKS 12 MASTER THE TRANSITION FROM METHODS TO INNOVATIVE APPLICATIONS**

- Sustainable Development
- Optional :
  - Advanced Transportation Systems
  - Renewable Energy Production

*Parcours E2SD*  
MASTER 2 - Semestre 4

**BKS4 IMPLEMENTATION OF METHODS AND TOOLS IN THE EE DISCIPLINARY FIELD**

- Scientific project
- Internship

For more information on the national diplomas offered by the faculty of science and technology of the University of Lille, consult the training catalog: [www.univ-lille.fr/formations.html](http://www.univ-lille.fr/formations.html)

## PROFESSIONAL TRAINING

Within the framework of the Master 'Electrical Engineering for Sustainable Development', professional training (internship) has a great importance and takes place during the last semester, for at least 4 months.

The master student works under one scientist supervision, on an innovative topic, and presents his results through a written report and an oral defense at the end of the training period. Professional training can be achieved either in a research lab or in an industrial context with the following objectives:

- Application of concepts studied in the previous semester
- Autonomy learning to work on a new and scientific project
- Development of initiative capabilities and research methodology application
- State of the art and a synthesis of scientific results for oral and written presentation