Màster en Emmagatzematge d'Energia Tèrmica (TES)

COURSE
2018-2019
PRE-REGISTRATION
01/05/18 fins al 05/10/18
REGISTRATION PERIOD
10/09/18 fins al 05/10/18
TUITION
3600 €

The standard registration fee is 3600 ?, and it applies to student from any European country (see 'Other information' section). For non-European countries, the registration fee will be 7200 ?.
ACADEMIC DEGREES EXPEDITION
The current rate will be applied at the time of issue of the title
MAXIMUM OF STUDENTS
0

TYPE
Màster
CATEGORY
Energy
CREDITS
60 ECTS
TRAINING MODALITY
No presencial

COORDINATION
Luisa F. Cabeza

+34 973 00 37 04
master_tes@udl.cat
ORGANIZATION
Centre de Formació Contínua UdL
C/Jaume II, 71
Campus de Cappont
25001 - Lleida

Tlf: 973703382
Fax: 973703377

formaciocontinua@udl.cat

PRESENTATION

The master on Thermal Energy Storage (TES) is a joint master offered by the University of Lleida and the University of Barcelona, and coordinated by the University of Lleida. The master consists of a unique and comprehensive selection of courses on this discipline. TES is a key technology to achieve the transition to a more green energy system, but it is also a very multidisciplinary technology, therefore this master is also very multidisciplinary. It includes training in technical aspects of TES and the energy system, but it also includes soft skills in patenting and entrepreneurship.
The master on TES consists of three modules:
- Module 1: 25 ECTS of basic compulsory courses on the energy system, energy storage and TES, intellectual property and entrepreneurship.
- Module 2: 20 ECTS of elective specialisation courses. The student can choose between one of the following four areas: materials for TES, heat transfer, TES for buildings, and TES for industrial applications.
- Module 3: 15 ECTS corresponding to the master thesis.
This master is addressed to engineers, architects, chemists, physicist, etc. not only from academia, but also for those already working at industry, and who would like to deepen their knowledge on this technology. A group of leader researchers from all over Europe are participating in the master as lecturers, all of them being part of the EU H2020 INPATH-TES project (www.inpathtes.eu). The master is prepared to be 100% online, but it is also possible to carry out the final thesis at one of the partners premises.
This is a master degree granted by the University of Lleida and University of Barcelona in accordance with the legislation on postgraduate studies and continuing education. In order to guarantee the quality of the master degree, it follows the same structure and pedagogic methodology as official university masters. It must be taken into account, however, that this type of master does not generally give access to a PhD. The recognition of the awarded degree depends on the requests of institutions to which the student that graduates this master considers for future studies.

SCHEDULE

Basic compulsory courses

- The energy system and policy drivers
- Introduction to energy storage and to TES
- TES technologies
- Intellectual property and patenting ideas
- Management and entrepreneurship
- **DATES AND HOURS**

There will be no schedule for teaching, but there will be a schedule dedicated to tutorship from October to January: 2 days per week in the morning (2 hours), 2 days per week in the afternoon (2 hours), and 1 Saturday per month in the morning.

Specialisation on materials for TES

- Introduction to TES materials and their characterisation
- Development of TES composites
- Methods of characterisation and testing
- Process-related properties characterization
- **DATES AND HOURS**
  There will be no schedule for teaching, but there will be a schedule dedicated to tutorship from February to May: 2 days per week in the morning (2 hours), 2 days per week in the afternoon (2 hours), and 1 Saturday per month in the morning.

Specialisation on heat transfer

- Multi-dimensional heat transfer-basic modes and analysis
- Mass transfer: basic modes and analysis
- Heat transfer with phase change: theoretical background and methods of solution
- Design and optimization of TES and component modelling
- Micro and nano-scale modelling of TES materials
- Simulation of TES systems
- **DATES AND HOURS**
  There will be no schedule for teaching, but there will be a schedule dedicated to tutorship from February to May: 2 days per week in the morning (2 hours), 2 days per week in the afternoon (2 hours), and 1 Saturday per month in the morning.

Specialisation on TES for building applications

- Thermal energy storage applications in building
- Simulation of TES in building applications
- TES in buildings: environmental and economic aspects
- Introduction, DSM implementation and strategies
- Legislation, social and economic aspects of DSM
- **DATES AND HOURS**
  There will be no schedule for teaching, but there will be a schedule dedicated to tutorship from February to May: 2 days per week in the morning (2 hours), 2 days per week in the afternoon (2 hours), and 1 Saturday per month in the morning.

Specialisation on TES for industrial applications

- Integration of TES in industrial and large facilities
- Recent research progress and promising scientific directions
- Experimental demonstration and field performance of TES in large-scale applications
- Simulation of TES in large-scale applications
- TES for industrial applications: environmental and economic aspects
- **DATES AND HOURS**
  There will be no schedule for teaching, but there will be a schedule dedicated to tutorship from February to May: 2 days per week in the morning (2 hours), 2 days per week in the afternoon (2 hours), and 1 Saturday per month in the morning.

Master thesis

- Master thesis
- **DATES AND HOURS**
  There will be no schedule for teaching, but there will be a schedule dedicated to tutorship from February to May: 2 days per week in the morning (2 hours), 2 days per week in the afternoon (2 hours), and 1 Saturday per month in the morning.

LECTURERS

DE GRACIA CUESTA, Álvaro

Dr. Ana Inés Fernández

Dr. Anna Laura Pisello

Dr. Arjan Frijns

Dr. Camila Barreneche

Dr. Camilo Rindt

Dr. Diana Bajare

Dr. Frédéric Kuznik

Dr. Gabriel Zsembinszki

Dr. Maciej Jaworski

Dr. Marilena de Simone

Dr. Mercè Segarra

Esther Galindo

Prof. Gennady Ziskind

Prof. Halime Paksoy

Prof. Luis Bragança

Prof. Luisa F. Cabeza

Prof. Michel de Paepe

Prof. Xavier Py

OTHER INFORMATION

ADMISSION REQUIREMENTS

The students need to have a finished university degree on engineering, architecture, chemistry, physics, and other similar degrees.

TEACHING PERIOD

Fecha inicio 15/10/18 - Fecha finalización 31/05/19

DATES AND HOURS

Since this is an online Master, there will be no schedule for teaching. The basic compulsory courses module will be taken from October to January, while the specialisation module and the Master thesis must be performed from February to May. There will be a schedule dedicated to tutorship: 2 days per week in the morning (2 hours), 2 days per week in the afternoon (2 hours), and 1 Saturday per month in the morning. Each lecturer will inform the students on his/her own schedule for tutorship.

COMPLEMENTARY INFORMATION

CV all lecturers.pdf
List_countries_reduced_fee.pdf