DATOS GENERALES

Curso académico	Curso 2024/2025
Tipo de curso	Máster de Formación Permanente
Número de créditos	60,00 Créditos ECTS
Matrícula	3.000 euros (importe precio público)
Requisitos de acceso	Students who have completed chemical, industrial or energy engineering (English is mandatory). Professionals with a degree who have the above-mentioned knowledge (English is mandatory).
Modalidad	On-line
Lugar de impartición	Online
Horario	Online

Dirección

Organizador	Escola Tècnica Superior d'Enginyeria (ETSE-UV)
Dirección	José Gabriel Torres País Profesor/a Titular de Universidad. Departament d'Enginyeria Electrònica. Universitat de València María Teresa Gil Agustí Responsable del área de Química Aplicada, Biotecnología y Nuevos Materiales. Instituto Tecnológico de la Energía Consuelo Gómez-Zarzuela Quel Technical training team leader. Power Electronics S.L.

Plazos

Preinscripción al curso	Hasta 04/11/24
Fecha inicio	Octubre 24
Fecha fin	Julio 25

Más información

Teléfono	961 603 000
E-mail	informacion@adeituv.es

PROGRAMA

Introduction and Applications

1.1 The energy system: present and future.
1.2 Importance of energy storage - flexibility needs and the role of battery storage.
1.3 Introduction to batteries.
1.4 Battery storage: potential and applications and challenges.
1.5 Battery Energy Storage: Grid-Scale.
1.6 Battery Energy Storage: Behind the meter.
1.7 Battery Energy Storage: Electrical Mobility.
1.8 Battery Energy Storage: Industrial Applications.

Electrochemical Concepts

2.1 Electrochemical concepts behind batteries.

Battery technologies and raw materials

3.1 Current Battery Technologies.
3.2 Emerging battery Technologies.
3.3 Raw materials.

Production and manufacturing of batteries

4.1 Production and manufacturing.

Battery Management

5.1 Introduction to Power Electronic Converters.
5.2 Power conversion and efficiency in battery system.

Battery connection and control

6.1 Power electronics and grid connection.
6.2 Battery management systems.

Battery testing and modeling

7.1 Battery testing.
7.2 Modeling, control and simulation of batteries.

Batteries end-of-life: Reuse and recycling

8.1 Batteries end of life: Reuse and recycling.

Battery storage: Business models, market and regulation

9.1 Business Modeling.
9.2 Investment scenarios and business models for battery energy storage systems.
9.3 European Legislation and Policy.
9.4 Cost assessment of battery-based storage solutions.
9.5 Business Models and Business examples.

Trabajo Final de Máster

The contents of the Master's Thesis will be different depending on the specific objectives of the project to be carried out.
The subject of the Master's thesis can be all those that are specific to the Master's studies. In particular, all kinds of systems and devices may be designed, using any procedure as current engineering allows.
The Master's Thesis may also include research and development work, as well as and the theoretical or numerical modeling of systems and their components.
It may also be considered as subjects of the Master's Thesis may also include studies related to the contents of the Degree and related to equipment, factories, installations, services, planning, management or operation.
Therefore, the contents of the the subject will be different depending on the specific Master's thesis selected by the student.

PROFESORADO

Andrea Amaro Pérez

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Daniel Valero Beltrá

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Leire Zubizarreta Saenz De Zaitegui

Doctora en Química. Área de Química Aplicada, Biotecnología y Nuevos Materiales del Instituto Tecnológico de la Energía (ITE)

OBJETIVOS

Las salidas profesionales que tiene el curso son:

The energy transition cannot be understood without the support of batteries to mitigate the intermittency of renewable energy generation. Batteries are and will play a fundamental role in this transition, both for stationary storage and for electric mobility with electric vehicles, among others. Many companies require professionals both for the production of batteries from raw materials to the battery pack, and for the integration of these batteries into the grid.
This Master, will allow students to reinforce fundamental aspects of batteries and achieve a very valuable knowledge of production, integration of batteries in the current and future market. This will enable them to work in companies that produce batteries, design and manufacture battery packs, integrate them into the energy system, process engineering, recycling and second life...

This Master is aimed at recent graduates and professionals in the area of chemical, energy and industrial engineering, who wish to complete their training in aspects related to battery production, the battery industry, battery integration into the grid, battery recycling..... In addition, the Master has an international teaching staff, allowing the online mode to have the best representatives for each subject. The support teachers will guide and clarify the doubts of the students, giving a plus of knowledge and closeness to the students.
Other objectives to be achieved with this Master:
- To train professionals, with the knowledge and certifications most demanded by technology companies related to the battery sector.
- To train experts from the basis of chemistry to the production of batteries.

METODOLOGÍA

The master is 100% online, with all training recorded online and available on demand. This means that each student can organize its own study and monitoring of the training in the schedule he/she wants within the duration of the module. In addition to this, the MBATT will have industry professionals who will provide part of the training in live online sessions. There will usually be one live session per week (in some cases there may be two), normally during the afternoons (CET). Nevertheless, the sessions will be recorded for anyone that cannot join live. All questions about the course can be solved through the virtual classroom chats and possible personalized mentoring meetings.
Regarding the evaluation criteria, the grade for each module is divided with different percentages between short quizzes, practical exercises and a final exam (or a final project). The percentage of each module and the types of work proposed depend on each teacher, but a minimum of 4 out of 10 must be reached in each evaluable part.
The TFM will have a deadline of approximately 2 months to be completed, the topic can be proposed by the student according to his/her interests or chosen by the student among proposals from professors. It can also be done while in the optional extracurricular internship and is equivalent to 6 credits of teaching load. The TFM will be delivered online and will be defended by videoconference for all students.
As for the schedule, the master¿s degree consists of 9 modules, each module will be taught for 3 weeks, where registration must be for all modules.
No required internships are included, but students are able to realize student-managed voluntary extracurricular internships.