66337 - Distributed Generation, Smartgrids and electric movility

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	535 - Master's in Renewable Energies and Energy Efficiency
ECTS	5.0
Course	1
Period	Second semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The teaching methodology of this subject is based on:

- Theoretical sessions the basic concepts are explained and related to the technical characteristics of processes using short exercises. In both cases these sessions are addressed through lectures.
- Practical sessions consist on laboratory experiments and computer sessions.
- Several subject works are also included, in which the student will demonstrate the skills acquired progressively.

5.2.Learning activities

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Lectures : Contents will be shown by presentation or explanation from a lecturer, including practical exercises on the blackboard.

Problem-solving sessions : problems and cases will be solved with the participation of students. The student will be encouraged to work the problems previously.

Tutorial : performed by a tutor to review and discuss the materials and topics presented during lectures.

Carrying out information search : activity in which the student must apply the knowledge learned during the subject to develop a complementary work, including literature search and review of the information analysed.

Presentations : presentation of the results of a case, work, project, critical or expository work on a topic, etc. before the public, responding to the end questions. This presentation can be individual or group.

Personal study : time spent by the student to understand and assimilate the information received during the course, mainly in lectures, but also through recommended readings, results of work, etc.

5.3.Program

- The future of the electricity grid
- The need for distributed generation (DG) and microgrids
- Current Vision: The three fundamental technologies: Storage, Solar PV and Power Electronics
- Introduction to electrical energy storage
- Storage technologies
- Evolution of different storage technologies and future prospects
- Technological progress in photovoltaics applied to DG and microgrids
- Technological progress in Power Electronics, Sensoring and Control applied to DG and microgrids
- History of the Electric Vehicle (EV)
- The need for EVs
- Reduced-emissions vehicles
- Structure of the EV
- EV recharging systems
- EVs in the Smart City

5.4.Planning and scheduling

Classroom and practical sessions are held according to schedule set by the EINA.

Each lecturer will inform about the tutoring hours.

Other activities will be planned depending on the number of students and will be announced in good time.

More information on the EINA website:
https://eina.unizar.es/estudios/index.php?option=com_content&view=article&id=85&catid=79

5.5.Bibliography and recomended resources