Last update:

820755 - XI - Smart Grids (DRAFT VERSION)

Coordinating unit: 820 - EUETIB - Barcelona College of Industrial Engineering
Teaching unit: 709 - EE - Department of Electrical Engineering
Academic year: 2014
Degree: MASTER IN ENERGY ENGINEERING (Syllabus 2013). (Teaching unit Optional)
ERASMUS MUNDUS MASTER IN ENVIRONOMICAL PATHWAYS FOR SUSTAINABLE ENERGY SYSTEMS (Syllabus 2012). (Teaching unit Optional)
ECTS credits: 5 Teaching languages: English

Teaching staff

Coordinator: Rull Duran, Joan

Opening hours

Timetable: To fix at the beggining of the course

Prior skills

Basics on Electric Power Systems

Degree competences to which the subject contributes

Specific:

CEMT-3. Assess the economic, social and environmental impact of the production, use and management of energy, with a holistic view of the life cycle of the different systems, and recognise and value the most remarkable developments in the fields of energy efficiency and the rational use of energy.

Teaching methodology

Slides-based lecturing.
Some problems will be proposed as assignement.

Learning objectives of the subject

Study load

Total learning time: 125h	Hours large group:	0h	0.00%
	Hours medium group:	0h	0.00%
	Hours small group:	30h	24.00%
	Guided activities:	15h	12.00%
	Self study:	80h	64.00%

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Content

Hardware of transmission & distribution systems

Learning time: 22h 30m

Medium group/Practical: 15h
Guided activities: 7h 30m

Description:
Classical Grids & Smart Grids (uGrids, DER Distributed Electrical Resources)
Modeling & Calculus

Smart Grid Technical systems

Learning time: 22h 30m

Large group/Theory: 7h 30m
Medium group/Practical: 15h

Description:
content english

Specific objectives:
EMS (Energy Management Systems)
PMU (Phasor Measurement Units)
WAP (Wide Area Protection)
IED (Intelligent Electronic Devices)
FACTS (Flexible AC Transmission Systems)
sVAr (Static Var Compensators)

Qualification system

The mark are based on the assignements done by means of a weitghted average
The weigth of teach assignement depnds on it's complexity and time-spent. It will be notified during the course.
Exceptionally, in case of fail by assignements, it's possible to realize one final exam.

Bibliography

Basic:

Faulkenberry, Luces M; Coffer, Walter. Electrical power distribution and transmission. Englewood Cliffs, NJ: Prentice Hall, cop. 1996. ISBN 0132499479.

Acha, Enrique. FACTS : modelling and simulation in power networks. Chichester: John Wiley & Sons, cop. 2004. ISBN 0470852712.

Sen, Kalyan K; Sen, Mey Ling. Introduction to facts controllers : theory, modeling, and applications. New York: John Wiley & Sons, 2009. ISBN 9780470478752.