



Teaching Guide

Identifying Data					2022/23
Subject (*)	Distributed Generation, Polygeneration and Micropower-Nets. Smartgrid		Code	730547011d	
Study programme	Máster Universitario en Eficiencia Enerxética e Sustentabilidade (a distancia)				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	2nd four-month period	First	Optional	3	
Language	SpanishGalician				
Teaching method	Non-attendance				
Prerequisites					
Department	Enxeñaría Industrial				
Coordinador	Masdias y Bonome, Antonio	E-mail	antonio.masdias@udc.es		
Lecturers	Masdias y Bonome, Antonio	E-mail	antonio.masdias@udc.es		
Web	pcmasdias.cdf.udc.es				
General description					

Study programme competences

Code	Study programme competences
A1	CE1 - Apply methodologies and regulations for efficient energy management
A2	CE2 - Analyze and implement energy saving and efficiency measures in the industrial, tertiary and residential sectors
A16	CE16 - Search, analyze, identify and apply new sources of electrical energy or new electricity management techniques under criteria such as efficiency, sustainability or cooperation, as well as the use of these on new applications
B1	CB6 - Possess and understand knowledge that provides a foundation or opportunity to be original in the development and/or application of ideas, often in a research context
B2	CB7 - That students know how to apply the knowledge acquired and their ability to solve problems in new or little-known environments within broader (or multidisciplinary) contexts related to their area of study
B3	CB8 - That students are able to integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments
B5	CB10 - That students have the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous
B10	CG5 - Boost creativity
B15	CG10 - Know the current legislation and regulations applicable to the renewable energy and energy efficiency sector
C2	CT2 - Master the oral and written expression and comprehension of a foreign language
C3	CT3 - Use the basic tools of information and communication technologies (ICT) necessary for the exercise of their profession and for learning throughout their lives
C5	CT5 - Understand the importance of entrepreneurial culture and know the means available to entrepreneurs
C7	CT7 - Develop the ability to work in interdisciplinary or transdisciplinary teams, to offer proposals that contribute to sustainable environmental, economic, political and social development

Learning outcomes

Learning outcomes	Study programme competences		
You will learn concepts and terms of generation, cogeneration and polygeneration, as well as the different elements in electrical networks and micro-grids	AC1	BC1	CC2
	AC2	BC2	CC3
	AC16	BC3	CC5
		BC5	CC7
		BC10	
		BC15	



Will have knowledge about elements used in micro-grids, generation elements with or without renewable energy, as well as energy storage elements and elements of energy consumption or supply to specific loads	AC1 AC2 AC16	BC1 BC2 BC3 BC5 BC10 BC15	CC2 CC3 CC5 CC7
Know the basic methods and processes related to the elements that are part of micro-grids that are notable from an energy efficiency point of view	AC1 AC2 AC16	BC1 BC2 BC3	CC2 CC3 CC5 CC7
Have knowledge to understand the fundamentals of intelligent micro-grids, as well as the management of the interconnection between micro-grids within an energy efficient analysis	AC1 AC2 AC16	BC1 BC2 BC3 BC5 BC10 BC15	CC2 CC3 CC5 CC7

Contents	
Topic	Sub-topic
Distributed generation, opportunity and development needs. Regulatory Framework Integration of Generation (Self-consumption and Net balance) Deployment of Meters and Network Management Teams Participation of Clients in the Electricity Market. Polygeneration, New Technologies of generation, storage and distribution. Management of Smart Grid and Smart Metering Energy Networks. Infrastructure and Control Technologies Smart Network Devices Advanced Metering Infrastructure (AMI) Application and management of Distributed Energy Resources (DER) Advanced Network Management. (DMS). EMS systems (Energy Management System).	

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
ICT practicals	A1 A2 A16 B1 B2 B3 B5 B10 B15 C2 C3 C5 C7	0	14	14
Case study	A1 A2 A16 B1 B2 B3 B5 B10 B15 C2 C3 C5 C7	0	50	50
Objective test	A1 A2 A16 B1 B2 B3 B5 B10 B15 C2 C3 C5 C7	1	0	1
Document analysis	A1 A2 A16 B1 B2 B3 B5 B10 B15 C2 C3 C5 C7	0	9	9
Personalized attention		1	0	1



(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
ICT practicals	
Case study	
Objective test	
Document analysis	

Personalized attention	
Methodologies	Description
Case study	

Assessment			
Methodologies	Competencies	Description	Qualification
ICT practicals	A1 A2 A16 B1 B2 B3 B5 B10 B15 C2 C3 C5 C7		25
Case study	A1 A2 A16 B1 B2 B3 B5 B10 B15 C2 C3 C5 C7		25
Objective test	A1 A2 A16 B1 B2 B3 B5 B10 B15 C2 C3 C5 C7		50

Assessment comments

Sources of information	
Basic	
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.