Teaching Guide				
Identifying Data				2019/20
Subject (*)	Energy, Cooperation and Sustainability		Code	770523016
Study programme	Mestrado Universitario en Eficiencia e Aproveitamento Enerxético			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	First	Optional	3
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Industrial			
Coordinador	Rodríguez Gómez, Benigno Antonio	E-mail	benigno.rodriguez@udc.es	
Lecturers	Rodríguez Gómez, Benigno Antonio	E-mail	benigno.rodriguez@udc.es	
Web	moodle.udc.es/			
General description	Traditionally, energy consumption have been used as a variable (along with others) helping to evaluate the development of countries. Today this view is changing from the perspective of sustainability: the satisfaction of current needs can not commit the resources of future generations. Among the Millennium Development Goals it is in seventh place: Ensuring access the safe, sustainable and affordable modern energy for all. The development cooperation projects and carries out actions in order to achieve this and other goals. This subject explores and deepens in these fields, not only from an altruistic vision but considering the business opportunity that represents for companies wishing to enter new markets using a social license.			

Study programme competences	
Code	Study programme competences
A13	Capacidad para analizar, aplicar y optimizar los sistemas de aprovechamiento energético.
B1	Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio.
B2	Que los estudiantes sean capaces de integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre las responsabilidades sociales y éticas vinculadas a la aplicación de sus conocimientos y juicios.
B3	Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación.
B5	Que los estudiantes sepan comunicar sus conclusiones y los conocimientos y razones últimas que las sustentan a públicos especializados y no especializados de un modo claro y sin ambigüedades.
B6	Buscar y seleccionar alternativas considerando las mejores soluciones posibles.
B7	Desarrollar las capacidades de análisis y síntesis; fomentar la discusión crítica, la defensa de argumentos y la toma de conclusiones.
B9	Extraer, interpretar y procesar información, procedente de diferentes fuentes, para su empleo en el estudio y análisis.
B10	Potenciar la creatividad.
B16	Valorar la aplicación de tecnologías emergentes en el ámbito de la energía y el medio ambiente.
B18	Plantear y resolver problemas, interpretar un conjunto de datos y analizar los resultados obtenidos; en el ámbito de la eficiencia energética y la sostenibilidad.
C2	Fomentar la sensibilidad hacia temas medioambientales.
C4	Desarrollar el pensamiento crítico
C5	Adquirir la capacidad para elaborar un trabajo multidisciplinar

Learning outcomes	
Learning outcomes	Study programme competences

The students will be able to value and to manage Energy Indexes and Sustainability Indexes	AJ13	BC1 BC2 BC3 BC6 BC9 BC16 BC18	CC2 CC4
The students will be able to look for solutions to implement stable, accessible and suitable energy systems.	AJ13	BC2 BC7 BC10	CC2 CC4 CC5
The students will be able to plan cooperationn projects for sustainable human development with the logframe approach.		BC1 BC3 BC5 BC16 BC18	CC2 CC4 CC5

Contents	
Topic	**Sub-topic**
Energy sustainability	Introduction Energy indicators for sustainable development Selection and use of energy indicators
Development cooperation	Concepts and definitions Actors in the international system of cooperation for development Human development and intervention strategies
Participation in development cooperation projects	The instruments of international cooperation for development Cycle management of cooperation actions The logical framework approach

Planning				
Methodologies / tests	**Competencies**	**Ordinary class hours**	**Student?s personal work hours**	**Total hours**
Panel discussion	B3 B1 B2 B5 B7 C2 C4	2	4	6
Supervised projects	A13 B3 B1 B2 B6 B9 B10 B16 B18 C5	6	12	18
Collaborative learning	B3 B1 B5 B7 B9 B10 B18 C5	8	6	14
Document analysis	A13 B3 B5 B9 C4 C5	0	5	5
Guest lecture / keynote speech	A13 B3 B6 C2 C4	9	18	27
Personalized attention		5	0	5
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	**Description**
Panel discussion	Cooperation agents with experience in development projects will be invited to one or more discussion sessions related to the field of energy. Students should prepare questions for the panel, and they may be asked to prepare a subsequent document based on the discussions.
Supervised projects	The student will have to develop one or more works based on the logical framework approach, following the guidelines given by the teacher. They can be individual or collective character.

Collaborative learning	Small groups for the development of some issues will be formed. Each member will have to act as trainer for the other members of the group.
Document analysis	The students will have to analyze and extract information from sources suggested by the teacher, and from other sources proposed by them.
Guest lecture / keynote speech	The teacher will do an introduction to the issues and proposing activities, which will develop in the classroom and beyond. It is intended that these sessions be as participatory as possible.

Personalized attention	
Methodologies	**Description**
Collaborative learning	The students will have the collaboration of the teacher as advisor to the preparation of the subject that corresponds within their group.

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Panel discussion	B3 B1 B2 B5 B7 C2 C4	The following aspects will be assessed: Attendance, involvement and active participation in the debate. Preparation of subsequent documents if delivery is requested	20
Supervised projects	A13 B3 B1 B2 B6 B9 B10 B16 B18 C5	The development process and the final result achieved will be assessed, taking in account the effort, and the interest of achieved end product	30
Collaborative learning	B3 B1 B5 B7 B9 B10 B18 C5	Participation in the group will be assessed, and the achieved results to be demonstrated by exposure or presentation of a document individually or together.	25
Document analysis	A13 B3 B5 B9 C4 C5	This activity can serve as a basis for tutored work and collaborative learning, but it can also be independent of them. It will be asked for delivery of an individual work on the analyzed sources	25

Assessment comments
Other means of evaluation can be granted in an individual way, when there be reasonable grounds. Techniques of co-evaluation and self-evaluation could be applied in order to obtain the final grade of the subject.

Sources of information	
Basic	- Fernández Franco, Lorenzo y Román Marugán, Paloma (2013). Manual de cooperación al desarrollo. Madrid:Síntesis - OIEA (2014). Indicadores energéticos del desarrollo sostenible: directrices y metodologías. Viena:OIEA Indicadores energéticos del desarrollo sostenible: directrices y metodologías
Complementary	- Jonker Geral/ Jan Harmsen (2013). Ingeniería para la Sostenibilidad. Barcelona:Reverté

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.