Teaching Guide				
Identifying Data				2019/20
Subject (*)	Energy Efficiency Certification		Code	770523001
Study programme	Mestrado Universitario en Eficiencia e Aproveitamento Enerxético			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Obligatory	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Industrial			
Coordinador	Rodríguez García, Juan de Dios	E-mail	de.dios.rodriguez@udc.es	
Lecturers	Couce Casanova, Antonio Rodríguez García, Juan de Dios	E-mail	antonio.coucec@udc.es de.dios.rodriguez@udc.es	
Web	moodle.udc.es/			
General description	This course presents a practical approach on the procedure for the energetic certification of buildings of different morphologies and types of activity, by using the Lider Calener Unified tool (HULC), according to the provisions of Real Decreto 235/2013 Energetic Certification for Existing Buildings. During the development of course they are intended to gain knowledge on: Regulatory framework. Methodology for carrying out energy efficiency certification of buildings. HULC energy certification procedure. Energetic rehabilitation.			

Study programme competences	
Code	Study programme competences
A1	Análise e aplicación de metodoloxías e normativa para unha xestión eficiente da enerxía.
A3	Capacidad para la elaboración de Auditorias Energéticas.
A4	Análisis de consumos energéticos y de su costes asociados.
A5	Capacidad para la elaboración certificaciones Energéticas de Edificios.
A11	Capacidad para aplicar métodos de análisis de datos para la creación de sistemas energéticos eficientes.
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.
B9	Extraer, interpretar y procesar información, procedente de diferentes fuentes, para su empleo en el estudio y análisis.
B10	Potenciar la creatividad.
B11	Adquirir nuevos conocimientos y capacidades relacionados con el ámbito profesional del máster.
B15	Conocer la legislación vigente y reglamentación aplicable al sector de las energías renovables y de la eficiencia energética.
B17	Desarrollar la capacidad para asesorar y orientar sobre la mejor forma o cauce para optimizar los recursos energéticos en relación con las energías renovables.
C1	Adquirir la terminología y nomenclatura científico-técnica para exponer argumentos y fundamentar conclusiones.
C3	Aplicar una metodología que fomente el aprendizaje y el trabajo autónomo.
C5	Adquirir la capacidad para elaborar un trabajo multidisciplinar
C6	Dominar la expresión y la comprensión de un idioma extranjero.

Learning outcomes	
Learning outcomes	Study programme competences

Is able to handle the information in the applicable regulations	AJ3	BC15	CC1 CC3 CC6
Acquires knowledge about the utility and requirements for energy performance certificate in buildings	AJ1		
It is able to collect data needed from the building in order to obtain the energy performance certificate	AJ5	BC9	
It is able to select and use appropriate calculation procedure for the processing of data extracted from the building and obtaining the corresponding of energy performance certificate	AJ4 AJ5	BC9	
He is able to apply the method to different types of buildings in the area of housing, small and large tertiary	AJ5 AJ11		
It is able to propose arrangements such about the building envelope as the building facilities for the enhancement of the energy rating of the building		BC5 BC10 BC11 BC17	CC5

Contents	
Topic	**Sub-topic**
UNIT 1. Regulatory context; fulfillment of 235/2013	1.1. Object, purpose and scope 1.2. Contents energy performance certificate 1.3. Certification of energy efficiency in a building of new construction 1.4. Certification of energy efficiency in an existing building 1.5. Energy efficiency label 1.6. penalty regime
UNIT 2. Process for obtaining a certificate	2.1. Data collection from the building 2.2. Data processing 2.3. Selection of the calculation software 2.4. Calculation and obtaining energy certificate 2.5. Proposed improvement arrangements 2.6. Generation of documentation 2.7. Registering the certificate to the competent agency
UNIT 3. Regulatory context; confluence with CTE.	3.1. Compliance with DB HE0 3.2. Compliance with DB HE1

Planning				
Methodologies / tests	**Competencies**	**Ordinary class hours**	**Student?s personal work hours**	**Total hours**
Guest lecture / keynote speech	A1 A4 B15	15	30	45
Supervised projects	A5 B9 B10 B11 C1 C5	21	42	63
Collaborative learning	A11 C3 C6	12	24	36
Oral presentation	A3 B5 B17	1	5	6
Personalized attention		0		0
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	**Description**

Guest lecture / keynote speech	The subject will be conducted in theoretical and practical modules of 1.5 hours. Prior to the day when the subject is imparted, the ratio of the background needed and the summary of the concepts that will work is indicated, providing correspondente bibliographic information. Each topic will begin with the teacher's presentation, which will help the student to extract the most relevant concepts, marking the objectives pursued. The essential theoretical aspects will be introduced to support the practical content.
Supervised projects	The student will face a series of practical cases that will present the teacher, in order to become proficient with the software tool and gain experience in applying it to different types of thermal installations and envelopes.
Collaborative learning	In order to prepare students for independent learning, will be performed works always guided by the teacher and will be exposed. The objectives are, among others, the student: - Manage, select and be able to synthesize the information he needs. - Know and correctly apply existing regulations which must take into account professional engineering work. - Develop and enhance students skills in communication, information search, problem solving.
Oral presentation	Students must present oral argument of a real practical work done for them, energy certification of a building proposed by the professors

Personalized attention	
Methodologies	**Description**
Supervised projects	It is provided personalized attention in tutoring schedules of the subject to answer questions about the topics covered in this matter

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Oral presentation	A3 B5 B17	Defense made about the project proposed by professors will be scored. Oral exposure and graphic support will be taken into account	45
Collaborative learning	A11 C3 C6	Class attendance and documentation generated in the project proposed will be scored	45
Supervised projects	A5 B9 B10 B11 C1 C5	Assistance to class will be scored	5
Guest lecture / keynote speech	A1 A4 B15	Assistance to class will be scored	5

Assessment comments
As entregas de traballos obrigatorios y adicionais da asignatura así como os libros prácticas de taller realizados polos alumnos serán en formato digital, y preferentemente a través da platafoma Moodle.

Sources of information	
Basic	- (2013). Código Técnico de la Edificación. Documento Básico HE. Ahorro de Energía (Ed. 2013). Ministerio de Fomento - (2013). Real Decreto 235/2013, de 5 de abril, por el que se aprueba el procedimiento básico para la certificación de la eficiencia energética de los edificios.. Ministerio Industria, Energía y Turismo - (2007). Reglamento de Instalaciones Térmicas en los Edificios, . Ministerio Industria, Energía y Turismo - (2013). Respuestas a preguntas frecuentes sobre el RD 235/2013. Ministerio Industria, Energía y Turismo

Complementary	- (2012). Manual de fundamentos técnicos de calificación energética de edificios existentes CE3X. IDAE - (2015). Manual de usuario de calificación energética de edificios existentes CE3X. IDAE - (). http://www.sedecatastro.gob.es/. - (). http://www.inega.es/eficienciaenerxetica/RGEE/. INEGA - (). http://www.minetur.gob.es/energia/desarrollo/EficienciaEnergetica/CertificacionEnergetica/DocumentosReconocidos/Paginas/procedimientos-certificacion-proyecto-terminados.aspx. Ministerio Industria, Energía y Turismo - (2017). Manual Herramienta unificada Lider Calener - HULC. Ministerio de Fomento

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.