



Universitat de Lleida

DEGREE CURRICULUM
**RENEWABLE ENERGY
RESOURCES**

Coordination: CHEMISANA VILLEGAS, DANIEL

Academic year 2019-20

Subject's general information

Subject name	RENEWABLE ENERGY RESOURCES			
Code	102141			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Not informed	2	COMPULSORY	Attendance-based
	Bachelor's Degree in Energy and Sustainability Engineering	2	COMPULSORY	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA	TEORIA
	Number of credits	0.6	2.4	3
	Number of groups	2	1	1
Coordination	CHEMISANA VILLEGAS, DANIEL			
Department	ENVIRONMENT AND SOIL SCIENCES			
Teaching load distribution between lectures and independent student work	40% lectures 60% independent student work			
Important information on data processing	Consult this link for more information.			
Language	Catalan and Spanish			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CHEMISANA VILLEGAS, DANIEL	daniel.chemisana@udl.cat	3,6	
LAGUNA BENET, GERARD	gerard.laguna@udl.cat	3	

Competences

Básicas

CB2. Que los estudiantes sepan aplicar sus conocimientos a su trabajo o vocación de una forma profesional y posean las competencias que suelen demostrarse por medio de la elaboración y defensa de argumentos y la resolución de problemas dentro de su área de estudio

CB3. Que los estudiantes tengan la capacidad de reunir e interpretar datos relevantes (normalmente dentro de su área de estudio) para emitir juicios que incluyan una reflexión sobre temas relevantes de índole social, científica o ética

CB5. Que los estudiantes hayan desarrollado aquellas habilidades de aprendizaje necesarias para emprender estudios posteriores con un alto grado de autonomía

Transversales

CT2. Adquirir un dominio significativo de una lengua extranjera, especialmente del inglés

CT5. Adquirir nociones esenciales del pensamiento científico

Generales

CG2. Comprender y dominar los conceptos básicos sobre las leyes generales de la mecánica, termodinámica, campos y ondas y electromagnetismo y su aplicación para la resolución de problemas propios de la ingeniería.

CG16. Tener conocimientos básicos y aplicación de tecnologías medioambientales y sostenibilidad.

Específicas

CE4. Tener conocimientos y capacidades para la aplicación de la ingeniería de materiales.

CE12. Tener conocimiento aplicado sobre energías renovables.

CE15. Adquirir capacidad para comprender, interpretar y aplicar las normas regulatorias sobre energía y medio ambiente.

CE16. Adquirir capacidad para valorar los impactos de los recursos energéticos mediante el conocimiento del medio natural y realizar auditorías energéticas y ambientales.

CE17. Adquirir capacidad de identificar, evaluar y cuantificar los recursos energéticos disponibles

Subject contents

Topic 1. Energy and society

- History of the use of energy
- Global and national energy context.
- Policy and energy framework.
- Definitions of energy and its units

Topic 2. Forms of energy, performance of the basic energy transformations

- Type of energy: Electrical, thermal, mechanical, ...
- Energy transformations. Electrical and thermal engines.
- Basic principles of electric and thermal engines.

Topic 3. Non-renewable energy resources

- Fossil energy resources.
- Energy resources of nuclear origin.
- Distribution of energy resources and their transportation.
- Environmental impact of the use of fossil and nuclear resources.

Topic 4. Renewable energy resources: Solar energy

- The sun, elemental concepts of astronomy and solar position
- Fundamentals of thermal and photovoltaic generation
- Thermal solar systems (ACS, heating and industrial processes)
- The photovoltaic solar cell
- Photovoltaic technologies
- Photovoltaic systems
- Dimensioning of solar energy systems

Topic 5. Renewable energy resources: Other sources of renewable energy.

- Wind power
- Sea tide energy
- Geotermic energy
- Other renewable energy sources.
- Environmental impact of the use of renewable energy resources

Topic 6. Characterization of renewable energy resources

- Capacity and energy potential of the different energy resources.
- Relations between resources used and energy obtained.

Methodology

The development of the subject is based on four actions:

1) Master classes

Exposure of the concepts , principles and relations of each topic
Approach examples illustrating the application

2) Problem resolution classes

Discussion and resolution of problems and applications related to the concepts of each topic
The proposed problems are basically those of the subject collection of problems

3) Lab

Practical demonstration of the concepts reached

4) Work

Group work and oral presentation

Development plan

Week	Methodology	Topic	Lecture hours	Autonomous work hours
1	Master class. Problems.	T1	4	6
2	Master class. Problems.	T2	4	6
3	Master class. Problems.	T2/T3	4	6
4	Master class. Problems.	T3	4	6
5	Master class. Problems.	T4	4	6
4	Master class. Problems.	T4	4	6
7	Master class. Problems.	T4	4	6
8	Master class. Problems.	T4	4	6
6		Evaluation. Written exam, topics 1-4		
10	Master class. Problems.	T4	4	6
11	Master class. Problems.	T5	4	6
12	Master class. Problems.	T5	4	6
13	Master class. Problems.	T5	4	6
14	Master class. Problems.	T6	4	6
15	Master class. Problems. Group work	T6	4	6
14		Evaluation. Written exam, topics 4-6.		
17				
18		Tutoring period		
16		Recovery exams		

Evaluation

Exams :

1st exam (30%) , will be held in the ordinary period.

2nd exam (40%) , will be held in the ordinary period.

Recovery exam (70%) , will be held in the ordinary period.

Lab (15%). It is necessary to have approved practices to pass the subject .

Group work (15%) . It will be held in pairs and delivered / exposed at the end of the course .

AN AVERAGE EXAMS' DEGREE OF 3 WILL BE NECESSARY TO PASS THE SUBJECT

Bibliography

Twidell, J. . Renewable Energy Resources.(2015) London: Routledge.

Tushar K. Ghosh; Mark A. Prelas. Energy Resources and Systems. (2009 vol1, 2011 vol2) Springer.

Paul Breeze; Aldo Vieira et all. Renewable Energy Focus Handbook. (2009). Elsevier.

Martin Kaltschmitt; Wolfgang Streicher; Andreas Wiese. Editors. Renewable Energy, Technology, Economics and Environment. (2007). Springer.

Ibañez, M., Rosell, J.R., Rosell, J. I. Tecnologia Solar. (2005). Mundiprensa.

Adaptations to the contents due to COVID-19

Los contenidos de la asignatura son exáctamente los mismos que los planificados inicialmente.

Adaptations to the methodology due to COVID-19

Todas las clases se realizan mediante videoconferencia y las prácticas se realizarán de forma virtual. En cuanto a la evaluación, los diferentes ítems y porcentajes no han cambiado.

Adaptations to the development plan due to COVID-19

Atendiendo a las indicaciones de la Universitat, el primer parcial se realizó en horario de clase, dado que la semana de primeros parciales quedó anulada.

Adaptations to the evaluation due to COVID-19

La evaluación no se ha visto alterada.