

230302 - SEMER - Renewable Energy

Coordinating unit:	230 - ETSETB - Barcelona School of Telecommunications Engineering		
Teaching unit:	748 - FIS - Department of Physics		
Academic year:	2019		
Degree:	BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Optional) BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional) BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional) BACHELOR'S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Teaching unit Optional) BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Optional) BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Teaching unit Optional)		
ECTS credits:	2	Teaching languages:	Catalan

Teaching staff

Coordinator:	Oriol Batiste
Others:	Oriol Batiste

Requirements

FUNDAMENTALS OF PHYSICS - Prerequisite

Teaching methodology

There will be assignments to be completed for the next session. The results will be discussed in class.

Learning objectives of the subject

Describe the physical principles and technologies that underpin the use of renewable energy sources. The student must acquire basic knowledge that allow him critically evaluate the potential of different energy sources as well as understand their role in the context of the global energy issue. The student will learn to calculate the cost of energy from renewable sources and compare it with non-renewable sources. We will describe how different legislations affect the development of renewable energy.

Study load

Total learning time: 50h	Hours large group:	20h	40.00%
	Self study:	30h	60.00%

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Content

1. Introduction	Learning time: 3h Theory classes: 3h
<p>Description:</p> <ul style="list-style-type: none"> 1.1. Use of energy in our society and problems related 1.2. Definition of physical energy. Conservation and conversion. Energy units 1.3. Concept of renewable energy 	
2. Evaluation of the potential of various renewable energy sources and technologies for its use	Learning time: 8h Theory classes: 8h
<p>Description:</p> <ul style="list-style-type: none"> 2.1. Solar energy for thermal uses 2.2. Transforming solar energy into electricity 2.3. Wind power 2.4. Biomass 	
3- Energy Storage. Physical principles, technologies, efficiency	Learning time: 2h Theory classes: 2h
<p>Description: content english</p>	
4- Costing energy	Learning time: 2h Theory classes: 2h
<p>Description: We will lear to calculate the cost of the energy produced by renewable sources.</p>	

Qualification system

The class assignments will be evaluated, optionally the students could do a special assignment proposed by the teacher.

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Bibliography

Basic:

Boyle, G. Renewable energy. 3rd ed. Oxford: Oxford University Press, 2012. ISBN 9780199545339.

Ristinen, R.A.; Krausshaar, J.J.. Energy and the environment. 2nd ed. New York [etc.]: Wiley, 2006. ISBN 0471739898.

Johanson, T.B. Renewable energy : sources for fuels and electricity. Washington, D.C.: Island Press, 1993. ISBN 1559631392.

Mackay, D. J. C. Sustainable energy : without the hot air. Cambridge: UIT, 2009. ISBN 9781906860011.

Others resources:

DAVID MCKAY

SUSTAINABLE ENERGY. WITHOUT THE HOT AIR.

<http://www.withouthotair.com/Contents>