Course guide
230302 - SEMER - Renewable Energy

Last modified: 25/05/2023

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 748 - FIS - Department of Physics.

Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).
BACHELOR'S DEGREE IN ELECTRONIC ENGINEERING AND TELECOMMUNICATION (Syllabus 2018). (Optional subject).

Academic year: 2023 **ECTS Credits:** 2.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: ORIOL BATISTE BOLEDA

Others: Segon quadrimestre:
ORIOL BATISTE BOLEDA - 10

TEACHING METHODOLOGY

There will be assignments to be completed for the next session. The results will be discused 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

Type	Hours	Percentage
Hours large group	20,0	40.00
Self study	30,0	60.00

Total learning time: 50 h

CONTENTS

1. Introduction

Description:
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

Full-or-part-time: 3h
Theory classes: 3h

2. Evaluation of the potential of various renewable energy sources and technologies for its use

Description:
2.1. Solar energy for thermal uses
2.2. Transforming solar energy into electricity
2.3. Wind power
2.4. Biomass

Full-or-part-time: 8h
Theory classes: 8h

3- Energy Storage. Physical principles, technologies, efficiency

Description:
content english

Full-or-part-time: 2h
Theory classes: 2h

4- Costing energy

Description:
We will lear to calculate the cost of the energy produced by renewable sources.

Full-or-part-time: 2h
Theory classes: 2h

GRADING SYSTEM

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

BIBLIOGRAPHY

Basic:
- Boyle, G. Renewable energy. 3rd ed. Oxford: Oxford University Press, 2012. ISBN 9780199545339.
- Ristinen, R.A.; Krausshaar, J.J.; Brack, J.T. Energy and the environment. 4th ed. Hoboken, New Jersey: Wiley, 2022. ISBN 9781119800255.
- 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 [on line]. Cambridge: UIT, 2009 [Consultation: 09/04/2021]. Available on: https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?docID=478265. ISBN 9781906860011.

RESOURCES

Other resources:
DAVID MCKAY
SUSTAINABLE ENERGY. WITHOUT THE HOT AIR.
http://www.withouthotair.com/Contents