

## 820144 - ERIPE - Renewable Energy and Energy Planning

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|---------------------|---|
| Coordinating unit:  | 295 - EEBE - Barcelona East School of Engineering   |
| Teaching unit:      | 709 - EE - Department of Electrical Engineering   |
| Academic year:      | 2016  |
| Degree:             | BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)<br>BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional) |
| ECTS credits:       | 6   |
| Teaching languages: | Catalan   |

### Teaching staff

Coordinator: JORDI DE LA HOZ CASAS

### Degree competences to which the subject contributes

Specific:

1. Understand the applications of renewable energies.
2. Assess and compare the energy capacitance and potential of the energy resources available.
3. Analyse and simulate specific energy systems.
4. Design an energy saving system using different processes and technologies.
5. Summarise information and undertake self-directed learning activities.
6. Study the feasibility of a proposed project.

Transversal:

7. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

### Teaching methodology

The teaching methodology used is a mixed methodology based on the application of PBL methodology together with a theoretical introduction. This structure allows students contextualizing the work to be developed.

### Learning objectives of the subject

The aim of the course is to provide basic knowledge about the main objectives of energy policy in the field of renewable energies in the EU, what are and what were their main promotional tools. It also aims to provide basic knowledge about



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the operating principles of the leading renewable energy systems, as well as its design and the study of their economic viability.

### Study load

|                           |                     |     |        |
|---------------------------|---------------------|-----|--------|
| Total learning time: 150h | Hours large group:  | 45h | 30.00% |
|                           | Hours medium group: | 0h  | 0.00%  |
|                           | Hours small group:  | 15h | 10.00% |
|                           | Guided activities:  | 0h  | 0.00%  |
|                           | Self study:         | 90h | 60.00% |

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### Content

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|---|---|
| (ENG) Energy policy and renewable energy                              | Learning time: 7h<br>Theory classes: 3h<br>Self study : 4h  |
| (ENG) The regulation of renewable energy systems                      | Learning time: 14h<br>Theory classes: 6h<br>Self study : 8h   |
| (ENG) Renewable energy systems  | Learning time: 7h<br>Theory classes: 3h<br>Self study : 4h  |
| (ENG) Introduction to analysis and design of renewable energy systems | Learning time: 101h<br>Theory classes: 24h<br>Laboratory classes: 15h<br>Self study : 32h<br>Self study : 30h |
| (ENG) Introduction to economic analysis of renewable energy systems   | Learning time: 21h<br>Theory classes: 9h<br>Self study : 12h  |

### Qualification system

The grading will be carried out through the lab and its associated activities (20%) and the performing of a set of activities defined as project or projects (80%). Within these activities, generic skill associated with the subject will be developed. The generic skill will be a 5% of the previous 80%.

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### Bibliography

#### Basic:

Alonso Abella, M. Sistemas fotovoltaicos : introducción al diseño y dimensionado de instalaciones de energía solar fotovoltaica. 2ª ed. Madrid: Publicaciones Técnicas, cop. 2005. ISBN 8486913128.

Manwell, J. F.; McGowan, J. G.; Rogers, A. L. Wind energy explained : theory, design and application. [Chichester]: John Wiley & sons, cop. 2009. ISBN 9780470015001.