Course guide
820329 - REEN - Energy Resources

Last modified: 08/08/2024

Unit in charge: Barcelona East School of Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: GUILLERMO VELASCO QUESADA

Others: Primer quadrimestre:
JOSE ANTONIO FERNANDEZ VARO - Grup: T11, Grup: T12
GUILLERMO VELASCO QUESADA - Grup: T11, Grup: T12

PRIOR SKILLS

Those of the compulsory subjects of the previous semesters.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEENE-19. Explain energy resources, their characteristics and where they come from.
CEENE-20. Assess and compare the energy capacitance and potential of the energy resources available.

Transversal:
04 COE N2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.

TEACHING METHODOLOGY

In the face-to-face sessions, different teaching methodologies will be used so that, on the one hand, the student reaches the cognitive objectives of the subject and, on the other hand, the student works on the generic competence developed by the subject. These methodologies are used to involve, to varying degrees, the student body as an active agent in their own learning process. The following stand out:

- Master class with multimedia support. The teacher is the active element and the student collects information. It will be used to launch new themes or concepts.

- I work for equals. Generally in groups of two students, to carry out the work proposed in the subject. It is used in work sessions in the classroom. It imposes a direct participation of the student body, which is why the assimilation of information is high and allows working on the competence of group work.

- Problem-based teaching. Usually done individually. It is used in practice sessions, where the resolution of certain problems and the correct documentation of their solution are proposed to the student body. The process of preparing the reports and documents generated by the student body during these sessions allows working on the competence of effective oral and written communication.

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours large group	45,0	30.00
Hours small group	15,0	10.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

(ENG) Relacions entre energia i societat

Full-or-part-time: 6h
Theory classes: 2h
Self study : 4h

(ENG) Conceptes bàsics d'energia.

Full-or-part-time: 6h
Theory classes: 2h
Self study : 4h

(ENG) Formes d'energia, transformacions energètiques bàsiques i el seu rendiment.

Full-or-part-time: 12h
Theory classes: 4h
Self study : 8h

(ENG) Recursos energètics renovables i no renovables.

Full-or-part-time: 22h
Theory classes: 4h
Laboratory classes: 10h
Self study : 8h

(ENG) Recursos d'origen no renovable: Fòssil i nuclear.

Full-or-part-time: 36h
Theory classes: 12h
Self study : 24h

(ENG) Recursos d'origen renovable: Solar, geotèrmic o gravitatori.

Full-or-part-time: 57h
Theory classes: 19h
Self study : 38h

(ENG) Caracterització dels recursos energètics.

Full-or-part-time: 11h
Theory classes: 2h
Laboratory classes: 5h
Self study : 4h

GRADING SYSTEM

- Evaluation of the theory (NTEO1 and NTEO2).
The evaluation of the theory will be carried out through a test that will be scheduled by academic ordination as a "final exam". It will consist of a global exam of the subject and will have two parts: The first part will evaluate the theoretical content and can be done by consulting any type of documentation. The second part will correspond to the resolution of problems and will be carried out without any documentary support. The grade obtained in these tests will have a weight of 60% of the final grade of the course (30% per part).

- Evaluation of practices (NLAB).
Throughout the semester, 6 laboratory sessions will be held and students must present a report for each of them that includes the work carried out in each session. Each report will be evaluated separately, so that at the end of the semester the student will obtain a practical qualification, NLAB. Completion of the practices is mandatory and the final grade will be determined as the average of the grades of the six scheduled practices. In the case of not carrying out a minimum of three practices, the qualification of this part of the subject will be of not presented (NP). This grade will have a weight of 20% of the final grade for the course.

- Evaluation of the work carried out (NTRA).
During the semester each student, as a member of a group of two or three students, will carry out a thematic work related to the contents of the subject. The group of students must prepare and deliver a written report and a presentation. The work will be evaluated with a note, NTRE, which will be obtained in equal parts from the evaluation of the report and the presentation made by each group. The qualification of this work will have a weight of 20% on the final qualification of the course.

- Final grade of the course (NFC).
In accordance with the evaluations mentioned above, the final grade for the course is obtained using the following expression:
NFC = 0.30 NTEO1 + 0.30 NTEO2 + 0.20 NLAB + 0.20 NTRA
If NFC is less than 5.0, the student will obtain an ECTS score of F (fail), equivalent to failing, and must take the subject again.

- To qualify for the pass, it is essential to take all the assessment tests for the subject. The non-participation in any evaluation test implies being able to obtain a maximum grade of 4.0 in the final grade of the subject.

- There is no re-evaluation exam.

EXAMINATION RULES.

The final test of the subject is divided into two parts:
1. It will evaluate theoretical content and can be done by consulting any type of documentation that the student considers appropriate, the use of a laptop or tablet being advisable.
2. It will correspond to the resolution of problems and will be carried out without any type of documentary support.

BIBLIOGRAPHY

Complementary:
- Sørensen, Bent E. Renewable energy : physics, engineering, environmental impacts, economy & planning. 4th ed. Burlington, Massachusetts [etc.]: Elsevier Academic Press, 2011. ISBN 9780123750259.
- Lambert, Tom; Gilman, Paul; Lilienthal, Peter. "Micropower System Modeling with HOMER". Farret, Felix A. Integration of alternative sources of energy : and alternative energy resources [on line]. West Sussex: John Wiley & Sons, 2006. Cap. 15Available on: http://onlinelibrary.wiley.com/book/10.1002/0471755621.

RESOURCES

Audiovisual material:
- BP Statistical Review of World Energy <http://www.bp.com>- World Energy Outlook <http://www.worldenergyoutlook.org>- La Energía en España <http://www.mityc.es/energia/es-ES/Paginas/index.aspx>

Other resources:
Statistical bulletins published by different national and international official bodies