



Course guide

320046 - DSF - Photovoltaic System Design

Last modified: 19/04/2023

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Joan Salaet Pereira

Others: Jordi Zaragoza Bertomeu

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:

1. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.
2. 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.
3. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.
4. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
5. EFFECTIVE USE OF INFORMATION RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Self study	90,0	60.00
Hours small group	30,0	20.00

Total learning time: 150 h

CONTENTS

(ENG) TEMA 1: INTRODUCCIÓ

Full-or-part-time: 6h

Theory classes: 2h

Practical classes: 1h

Self study : 3h

(ENG) TEMA 2: LA RADIACIÓ SOLAR

Full-or-part-time: 19h

Theory classes: 4h

Practical classes: 2h

Laboratory classes: 2h

Self study : 11h

(ENG) TEMA 3: LA CEL·LA SOLAR

Full-or-part-time: 31h

Theory classes: 6h

Practical classes: 5h

Laboratory classes: 3h

Self study : 17h

(ENG) TEMA 4: EL GENERADOR FOTOVOLTAIC

Full-or-part-time: 22h

Theory classes: 4h

Practical classes: 3h

Self study : 15h

(ENG) TEMA 5: ACUMULADORS D'ENERGIA

Full-or-part-time: 21h

Theory classes: 4h

Practical classes: 2h

Laboratory classes: 3h

Self study : 12h

(ENG) TEMA 6: SISTEMES FOTOVOLTAICS AUTÒNOMS

Full-or-part-time: 29h

Theory classes: 6h

Practical classes: 3h

Laboratory classes: 3h

Self study : 17h



(ENG) TEMA 7: SISTEMES FOTOVOLTAICS CONNECTAS A LA XARXA ELÈCTRICA PÚBLICA.

Full-or-part-time: 25h

Theory classes: 4h

Practical classes: 3h

Laboratory classes: 3h

Self study : 15h

GRADING SYSTEM

The assessment of the level of knowledge acquired by the student will be carried out based on her/his activity in the large, medium and small groups. In the first case two tests will be carried out, one at the end of the first two-month period (modules 1, 2 and 3) and the other at the end of the second one (modules 4, 5 and 6). With regard to his/her activity in the medium group, it will be evaluated by the correction of various exercises that the student will have to be delivering online (via Athena) during the course. Finally, their activity in the small group will be evaluated by the reports (given by the groups) of the laboratory sessions. The weighting of each assessment activity shall be as follows:

Exam of the first two-month period: 25%

Exam of the second two month period: 30%

Online exercises: 15%

Lab reports: 30%

BIBLIOGRAPHY

Basic:

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

- Messenger, R; Ventre J. Photovoltaic systems engineering. Boca Raton: CRC Press, 2000. ISBN 0849320178.

Complementary:

- Wenham, S. R. [et al.]. Applied photovoltaics. 2nd ed. London: Earthscan, 2007. ISBN 9781844074013.

- Luque, A.; Hegedus, S. (eds.). Handbook of photovoltaic science and engineering [on line]. 2nd ed. Chichester: John Wiley & Sons, 2011 [Consultation: 09/05/2022]. Available on:

<https://onlinelibrary-wiley-com.recursos.biblioteca.upc.edu/doi/book/10.1002/9780470974704>. ISBN 9780470974704.