Course guide
820340 - GEEE - Energy Management with Electronic Equipment

Last modified: 04/06/2026

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

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

Academic year: 2026 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: FRANCISCO JOSÉ CASELLAS BENEYTO

Others: FRANCISCO JOSÉ CASELLAS BENEYTO
OLIVER MILLÁN BLASCO

PRIOR SKILLS

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Analyse and simulate specific energy systems.
2. Determine the best way to store energy on a case-by-case basis.
3. Explain the operating principles of power conversion systems and their application to transport and distribution systems.
4. Design an energy saving system using different processes and technologies.

Transversal:
5. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

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

.

Description:
.

Full-or-part-time: 15h
Theory classes: 15h

.

Description:
.

Full-or-part-time: 45h
Theory classes: 45h

.

Description:
.

Full-or-part-time: 16h
Self study : 16h

GRADING SYSTEM

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the **Action Framework for Academic Integrity in Assessment at the UPC**.

BIBLIOGRAPHY

Basic:
- Wentworth, Peter; Elkner, Jeffrey; Downey, Allen B.; Meyers, Chris. How to think like a computer scientist : learning with Python 3 (RLE) [on line]. [Lloc de publicació no identificat]: [els autors], 2012 [Consultation: 22/01/2024]. Available on: http://openbookproject.net/thinkcs/python/english3e/.

Complementary:
- Alonso Abella, Miguel. Sistemas fotovoltaicos: introducción al diseño y dimensionado de instalaciones de energía solar fotovoltaicas. 2ª ed. Madrid: Publicaciones Técnicas, cop. 2005. ISBN 8486913128.
- Tudor, James; Valenzuela, Bernarda Rojas. Python para principiantes : Aprender Python en 5 días con orientación paso a paso y ejercicios prácticos [on line]. 2019. [Place of publication not identified]: Babelcube Books, 2019 [Consultation: 14/09/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5904156. ISBN 1071509268.
- Iyer, Shivkumar V. Simulating Nonlinear Circuits with Python Power Electronics : An Open-Source Simulator, Based on Python™ [on line]. Cham: Springer International Publishing, 2018Available on: https://link-springer-com.recursos.biblioteca.upc.edu/book/10.1007/978-3-319-73984-7. ISBN 3319739840.
- Chauhan, Rajeev & Chauhan, Kalpana & Singh, Sn & Kiliç, Heybet & Yilmaz, Musa.. Microgrids for rural areas : research and case

studies [on line]. London: Institution of Engineering and Technology, 2020 [Consultation: 19/09/2024]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=6225843. ISBN 9781785619991.