Last update: 23-07-2019

295301 - IGSE - Integration and Management of Energy Systems

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering
Teaching unit: 709 - EE - Department of Electrical Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: MARIA ELENA MARTIN CAÑADAS

Others: Primer quadrimestre:
MARIA ELENA MARTIN CAÑADAS - M11, M12
MONTSERRAT MATA DUMENJO - M11, M12

Prior skills

Basic knowledge of storing and generating heat and power systems

Degree competences to which the subject contributes

Specific:
CEENE-40. Tackle energy saving problems systematically by integrating processes and technologies.

Transversal:
05 TEQ N3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
06 URI N3. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.
07 AAT N3. 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

The teaching metodology will be project based learning.

Learning objectives of the subject

? Review and model the main electricity and heat generation and storage integrated technologies .
? Learning systematic methods of thermal systems analysis and design of heat exchanger networks .
? Learning systematic analysis methods of combined thermal and electrical systems.
? Employ tools and systematic identification procedures of opportunities for energy savings and reuse .

Last update: 23-07-2019

295301 - IGSE - Integration and Management of Energy Systems

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%

Content

Integrated technologies.

Learning time: 3h

Theory classes: 3h

Description:
Description and modeling of the main generation and storage technologies that will be part of the integrated energy systems .

Systematic methods for the analysis of thermal systems and design of heat exchangers networks.

Learning time: 14h

Theory classes: 14h

Description:
Exposition of methods for the analysis and design of thermal systems and heat exchangers networks .

Systematic analysis methods of combined thermal and electrical systems.

Learning time: 14h

Theory classes: 14h

Description:
Exhibition of systematic methods to perform analysis of combined systems of thermal and electric type.

Distributed systems.

Learning time: 14h

Theory classes: 14h

Description:
Determination of the optimal management of distributed systems.

Last update: 23-07-2019

295301 - IGSE - Integration and Management of Energy Systems

Qualification system

The final grade will be obtained from the following equation :
NF = 0.25 * 0.25 * P1 + P2 + P3 + 0.25 * 0.25 * PR

P1 , P2 , P3 : Projects 1, 2 and 3
PR : Practices

50 % of the mark of each project will result from its oral defense and the remaining 50% of the valuation of the written report.
This course will not have a re-evaluation exam.

Bibliography

Basic:

Dincer, Ibrahim; Midilli, Adnan; Kucuk, Haydar. Progress in Sustainable Energy Technologies: Generating Renewable Energy [Recurs electrònic] [on line]. Cham: Springer International Publishing, 2014Available on: <http://dx.doi.org/10.1007/978-3-319-07896-0>. ISBN 978-3-319-07896-0.

Sørensen, Bent E. Renewable energy : physics, engineering, environmental impacts, economy & planning. 4th ed. Burlington, Massachusetts [etc.]: Elsevier Academic Press, cop. 2011. ISBN 978-0-12-375025-9.

Others resources:

Hyperlink

Revistes electròniques Elsevier, IEEE

Electronic journals Elsevier, IEEE