[GOK201] ENERGY TECHNOLOGY

GENERAL INFORMATION

Studies	DEGREE IN INDUSTRIAL ORGANIZATION ENGINEERING			**Subject**	Sustainability
Semester	1	**Course**	3	**Mention / Field of specialisation**	
Character	OPTIONAL				
Plan	2017	**Modality**	Adapted Face-to-face	**Language**	ENGLISH
Credits	4,5	**Hours/week**	2.22	**Total hours**	40 class hours + 72.5 non-class hours = **112.5 total hours**

PROFESSORS

SAGREDO BLANCO, ENRIQUE

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	*(No previous knowledge required)*

SKILLS

VERIFICA SKILLS

SPECIFIC

GOC301 - To identify, be familiar with and select different existing sources of energy and to design the transformation process with energy efficiency in mind.

GOC309 - To solve problems and analyse the implications of the solution proposed by defining actions which hinder the reappearance of problems (stable solution) and taking part in various work teams.

GOC310 - To draft different types of documents, arguing and justifying the conclusions and solutions presented therein and to communicate, present and share the information appropriately.

GENERAL

GOCT08 - To identify fundamentals of the most common industrial installations and processes in an industrial environment.

BASIC

G_CB2 - To be able to apply knowledge to occupational or professional tasks; have the necessary skills to pose and defend arguments, and to solve problems within their field of study

G_CB4 - To be able to communicate information, ideas, problems and solutions to both expert and lay audiences

ENAEE LEARNING RESULTS	*ECTS*
ENAE02 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch of engineering.	1,8
ENAE05 - Analysis in engineering: Ability to apply their knowledge and understanding in identifying, formulating and solving engineering problems using established methods.	0,45
ENAE06 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and method engineering.	0,45
ENAE09 - Engineering projects: Understanding of the different methods and ability to use them.	0,45
ENAE15 - Practical application of engineering: Understanding of applicable methods and techniques and their limitations.	0,45
ENAE17 - Transversal competences: To work effectively, both individually and in a team.	0,45
ENAE18 - Transversal competences: To use different methods to communicate effectively with the engineering community and society in general.	0,44
Total:	**4,5**

LEARNING RESULTS

RG301 Assumes responsibilities in the work team, organizing and planning the tasks to be developed, facing the contingencies and encouraging the participation of its members.

LEARNING ACTIVITIES	*CH*	*NCH*	*TH*
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams		5 h.	5 h.

EVALUATION SYSTEM	*W*
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%

MAKE-UP MECHANISMS

(No mechanisms)

CH - Class hours: 0 h.
NCH - Non-class hours: 5 h.
TH - Total hours: 5 h.

RG302 Analyze the intervening variables in the problem and propose actions for a stable situation.

LEARNING ACTIVITIES	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams		5 h.	5 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	*(No mechanisms)*

CH - Class hours: 0 h.
NCH - Non-class hours: 5 h.
TH - Total hours: 5 h.

RG304 Define the problem, develop the solution and present the conclusions in a efficient manner, arguing and justifying each one of them in writing.

LEARNING ACTIVITIES	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams		4 h.	4 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	*(No mechanisms)*

CH - Class hours: 0 h.
NCH - Non-class hours: 4 h.
TH - Total hours: 4 h.

RG305 Define the problem, develop the solution and present the conclusions in a efficient manner, arguing and justifying each one of them in spoken form.

LEARNING ACTIVITIES	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams		4 h.	4 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	*(No mechanisms)*

CH - Class hours: 0 h.
NCH - Non-class hours: 4 h.
TH - Total hours: 4 h.

RGO301 [!] ***Identifica y calcula los consumos energéticos de una empresa y plantea acciones para promover la eficiencia***

energética.

LEARNING ACTIVITIES	CH	NCH	TH
Individual study and work, tests and evaluations and check points	2 h.	8,5 h.	10,5 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	8 h.		8 h.
Individual and team exercises	10 h.	10 h.	20 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and oral tests to assess technical skills of the subject	70%	Individual written and oral tests to assess technical skills of the subject
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	30%	Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices
Comments: Minimum grade: 5.		**Comments:** Students with less than 5 in the control point must retake the exam. Control point 25% and retake 75%.

CH - Class hours: 20 h.
NCH - Non-class hours: 18,5 h.
TH - Total hours: 38,5 h.

RGO302 **[!]** ***Clasifica las fuentes de energía y selecciona y dimensiona la más adecuada para un entorno o proceso dado.***

LEARNING ACTIVITIES	CH	NCH	TH
Individual study and work, tests and evaluations and check points		30 h.	30 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	2 h.		2 h.
Classroom presentations of relevant concepts and procedures in participatory environments	18 h.	6 h.	24 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and oral tests to assess technical skills of the subject	30%	Individual written and oral tests to assess technical skills of the subject
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	40%	Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices
Team oral tests for the evaluation of technical skills of the subject	30%	**Comments:** Correct the report and deliver it. Maximum grade: 5.
Comments: Minimum grade: 5.		

CH - Class hours: 20 h.
NCH - Non-class hours: 36 h.
TH - Total hours: 56 h.

CONTENTS

Part I: Fundamentals

- Energy definitions

- Units and magnitudes

- Energy consumption

- Essentials of fluid dynamics and heat transfer

- Energy and development

- Energy and environment

- Energy policies

Part II: Electricity system and energy efficiency

-Electricity system

-Electricity market

-Energy efficiency

Part III: Energy Technologies

- Electric System

- Efficiency

- Fossil Fuels

- Nuclear Power

- Hydropower

- Marine Power Generation

- Solar Power

- Wind Power

- Geothermal Power

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Moodle Platform	Paul Breeze (2019). Power Generation Technologies. Third Edition.
Class presentations	Ming Yang. Xin Yu (2015). Energy Efficiency. Benefits for Environment and Society.
Slides of the subject	John Twidell. Tony Weir (2015). Renewable Energy Resources. Third Edition.