

## [GAI107] ELECTRICAL POWER GENERATION AND TRANSPORT

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN ENERGY ENGINEERING		<b>Subject</b>	ELECTRICAL ENERGY
<b>Semester</b>	2	<b>Course</b>	3	<b>Mention / Field of specialisation</b>
<b>Character</b>	COMPULSORY		<b>Language</b>	EUSKARA
<b>Plan</b>	2017	<b>Modality</b>	Adapted Face-to-face	<b>Total hours</b>
<b>Credits</b>	4,5	<b>Hours/week</b>	2.06	37 class hours + 75.5 non-class hours = <b>112.5 total hours</b>

### PROFESSORS

GARAYALDE PEREZ, ERIK

### REQUIRED PREVIOUS KNOWLEDGE

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

### SKILLS

#### VERIFICA SKILLS

##### SPECIFIC

**GAES08** - To be able to calculate and design electrical lines and transport of electrical energy.

**GAES10** - To be able to design electric energy plants

##### GENERAL

**GACG3** - To take the initiative in problem solving, decision making and creativity, and to communicate and share knowledge and skills, understanding the ethical and professional responsibilities of the business activity in the field of Energy Engineering.

**GACG4** - To know how to perform measurements, calculations, valuations, studies, reports, task planning schemes, and other activities pertaining to the field of Energy.

**GACG5** - To be able to analyse and assess the social and environmental impact of technical solutions.

**GACG8** - To draft and develop energy engineering projects focusing on the design, development and operation of energy applications, systems and services, applying strategies which minimise its impact on the environment.

**G\_CB6** - To be able to respond adequately in complex situations or situations that call for innovative solutions in both the academic field and work environments within their field of study;

##### CROSS

**GACTR2** - To be able to do their job in cooperative, participatory environments, with awareness of social responsibility.

##### BASIC

**G\_CB3** - To be capable of gathering and interpreting relevant data (normally within their field of study) in order to make judgements, reflecting on relevant matters of a social, scientific or ethical nature

### 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

Development, writing and presentation of memorandums, reports, audiovisual material, etc.

Relating to projects/POPBLs carried out individually or in teams

CH

NCH

TH

5 h.

5 h.

#### EVALUATION SYSTEM

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

W

100%

#### MAKE-UP MECHANISMS

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

**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*

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

**MAKE-UP MECHANISMS**

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

**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*

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

**MAKE-UP MECHANISMS**

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

**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*

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

**MAKE-UP MECHANISMS**

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

**CH - Class hours:** 0 h.

**NCH - Non-class hours:** 4 h.

**TH - Total hours:** 4 h.

**RGA314** [!] *Analiza el sistema eléctrico y el funcionamiento del mercado eléctrico.*

**LEARNING ACTIVITIES**

*CH*

*NCH*

*TH*

Individual study and work, tests and evaluations and check points

1 h.

5 h.

6 h.

Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

2 h.

2 h.

Solving of multidisciplinary exercises or team study cases

4 h.

5 h.

9 h.

**EVALUATION SYSTEM**

*W*

Individual written and oral tests to assess technical skills of the subject

30%

**MAKE-UP MECHANISMS**

Team oral tests for the evaluation of technical skills of the subject

Team oral tests for the evaluation of technical skills of the subject 70%

**CH - Class hours:** 7 h.  
**NCH - Non-class hours:** 10 h.  
**TH - Total hours:** 17 h.

**RG315** [!] *Analiza las líneas de transporte y distribución de la energía eléctrica*

**LEARNING ACTIVITIES**

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Individual study and work, tests and evaluations and check points	2 h.	4 h.	6 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	10 h.		10 h.
Individual and team exercises	12 h.	8,5 h.	20,5 h.
Individual and/or team computer simulation practice	4 h.	8 h.	12 h.

**EVALUATION SYSTEM**

*W*

Individual written and oral tests to assess technical skills of the subject 70%

Written, coding/programming and individual oral tests for the evaluation of technical skills in the field 30%

**MAKE-UP MECHANISMS**

Individual written and oral tests to assess technical skills of the subject

**CH - Class hours:** 28 h.  
**NCH - Non-class hours:** 20,5 h.  
**TH - Total hours:** 48,5 h.

**RG316** [!] *Diseña sistemas de generación conectados a la red eléctrica*

**LEARNING ACTIVITIES**

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams		27 h.	27 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	2 h.		2 h.

**EVALUATION SYSTEM**

*W*

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

**MAKE-UP MECHANISMS**

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

**CH - Class hours:** 2 h.  
**NCH - Non-class hours:** 27 h.  
**TH - Total hours:** 29 h.

**CONTENTS**

**LEARNING RESOURCES AND BIBLIOGRAPHY**

**Learning resources**

Moodle Platform  
 Subject notes  
 Topic related web quires  
 Video projections  
 Specific Master Software

**Bibliography**

[http://katalogoa.mondragon.edu/janium-bin/janium\\_login\\_opac\\_re\\_in k.pl?grupo=ENERGIA32&ejecuta=20](http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in k.pl?grupo=ENERGIA32&ejecuta=20)

Slides of the subject

Class presentations