

## [GCA303] MATHEMATICS III

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN ENGINEERING IN ECO-TECHNOLOGY IN INDUSTRIAL PROCESS		<b>Subject</b>	MATHEMATICS
<b>Semester</b>	1	<b>Course</b>	2	<b>Mention / Field of specialisation</b>
<b>Character</b>	BASIC TRAINING		<b>Language</b>	EUSKARA
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face	<b>Total hours</b> [!] 112 class hours + 173 non-class hours = <b>285</b>
<b>Credits</b>	6	<b>Hours/week</b>	6.22	<b>total hours</b>

### PROFESSORS

LIZARRIBAR MORAIZ, JATSU

### REQUIRED PREVIOUS KNOWLEDGE

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

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>GCR201</b> - To solve mathematical problems in the field of engineering using differential and integral calculus techniques, and numerical methods			x	5,4
<b>G-RTR1</b> - To develop interdisciplinary projects specific to their specialty and of gradual complexity, - becoming aware of respect for human rights and fundamental rights, and analyzing and assessing the impact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and /or avant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies with a high degree of autonomy		x		0,32
<b>G-RTR2</b> - To express information, ideas and the arguments that support them in an orderly, clear and coherent manner, orally and in writing, based on quality information, self-made or obtained from different sources, using inclusive and non-discriminatory language		x		0,28

Total: 6

KC: Knowledge or Content / SK: Skills / AB: Abilities

### SECONDARY LEARNING RESULTS

**RGC290** [!] *Proponer los objetivos y la planificación de un proyecto que le permita adquirir y/o reforzar los conocimientos de tecnologías propias de su especialidad,- que en ocasiones llegan a la vanguardia del conocimiento- y definir una estrategia de aprendiz*

#### LEARNING ACTIVITIES

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

CH

NCH

TH

4 h.

4 h.

#### EVALUATION SYSTEM

Self-assessment  
Co-assessment

W

50%  
50%

#### MAKE-UP MECHANISMS

(No mechanisms)

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

**RGC291** [!] *Establecer las responsabilidades de los miembros del equipo utilizando técnicas adecuadas para fomentar la eficiencia del equipo para el desarrollo del proyecto en los plazos establecidos (compartir recursos, aportar ideas, habilidades comunicativas*

#### LEARNING ACTIVITIES

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

CH

NCH

TH

4 h.

4 h.

#### EVALUATION SYSTEM

W

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

(No mechanisms)

CH - Class hours: 0 h.

NCH - Non-class hours: 4 h.

TH - Total hours: 4 h.

**RGC293** [!] *Redacta y estructura correctamente la memoria del proyecto, haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje. Para ello, busca y hace uso de las fuentes de información adecuadas.*

#### LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

4 h.

4 h.

#### EVALUATION SYSTEM

W

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

(No mechanisms)

CH - Class hours: 0 h.

NCH - Non-class hours: 4 h.

TH - Total hours: 4 h.

**RGC294** [!] *Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.*

#### LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

3 h.

3 h.

#### EVALUATION SYSTEM

W

#### MAKE-UP MECHANISMS

Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems

100%

(No mechanisms)

CH - Class hours: 0 h.

NCH - Non-class hours: 3 h.

TH - Total hours: 3 h.

**RGC201** [!] *Analiza y resuelve problemas físicos, sistemas eléctricos y mecánicos complejos mediante el cálculo integral, series de Fourier y la transformada de Laplace*

#### LEARNING ACTIVITIES

CH

NCH

TH

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

4 h.

4 h.

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams

17 h.

17 h.

Computer simulation exercises, individually and/or in teams

2 h.

2 h.

4 h.

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

15 h.

15 h.

Carrying out exercises and solving problems individually and/or in teams 11 h. 34 h. 45 h.

#### EVALUATION SYSTEM

W

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

20%

(No mechanisms)

Individual written and/or oral tests or individual coding/programming tests

80%

CH - Class hours: 32 h.

NCH - Non-class hours: 53 h.

TH - Total hours: 85 h.

### **RGC202** [!] *Aplica los conocimientos de las matemáticas para la resolución de problemas de varias variables*

#### LEARNING ACTIVITIES

CH

NCH

TH

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

4 h.

4 h.

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams

10 h.

10 h.

Computer simulation exercises, individually and/or in teams

2 h.

2 h.

4 h.

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

12 h.

12 h.

Carrying out exercises and solving problems individually and/or in teams

6 h.

14 h.

20 h.

#### EVALUATION SYSTEM

W

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

20%

(No mechanisms)

Individual written and/or oral tests or individual coding/programming tests

80%

CH - Class hours: 24 h.

NCH - Non-class hours: 26 h.

TH - Total hours: 50 h.

### **RGC201** [!] *Analiza y resuelve problemas físicos, sistemas eléctricos y mecánicos complejos mediante el cálculo integral, series de Fourier y la transformada de Laplace*

#### LEARNING ACTIVITIES

CH

NCH

TH

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

4 h.

4 h.

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams

17 h.

17 h.

Computer simulation exercises, individually and/or in teams

2 h.

2 h.

4 h.

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

15 h.

15 h.

Carrying out exercises and solving problems individually and/or in teams

11 h.

34 h.

45 h.

#### EVALUATION SYSTEM

W

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

20%

(No mechanisms)

Individual written and/or oral tests or individual coding/programming tests

80%

CH - Class hours: 32 h.

NCH - Non-class hours: 53 h.

TH - Total hours: 85 h.

**RGC202** [!] *Aplica los conocimientos de las matemáticas para la resolución de problemas de varias variables*

#### LEARNING ACTIVITIES

	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	4 h.		4 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams		10 h.	10 h.
Computer simulation exercises, individually and/or in teams	2 h.	2 h.	4 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	12 h.		12 h.
Carrying out exercises and solving problems individually and/or in teams	6 h.	14 h.	20 h.

#### EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

80%

Individual written and/or oral tests or individual coding/programming tests

#### MAKE-UP MECHANISMS

(No mechanisms)

CH - Class hours: 24 h.

NCH - Non-class hours: 26 h.

TH - Total hours: 50 h.

## CONTENTS

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Subject notes  
 Moodle Platform  
 Specific Master Software

### Bibliography

[http://katalogoa.mondragon.edu/janium-bin/janium\\_login\\_opac\\_re\\_Ink.pl?grupo=EKOTEKNOLOGIA21&ejecuta=5&\\_ST](http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_Ink.pl?grupo=EKOTEKNOLOGIA21&ejecuta=5&_ST)