

## [GCA303] MATHEMATICS III

### GENERAL INFORMATION

|                  |  |                   |                 |   |
|------------------|--|-------------------|-----------------|---|
| <b>Studies</b>   | DEGREE IN ENGINEERING IN<br>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> 58 class hours + 92 non-class hours = <b>150 total hours</b> |
| <b>Credits</b>   | 6  | <b>Hours/week</b> | 3.22            |   |

### 2030 AGENDA GOALS



### 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  |    | 0,36 |
| <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  |    | 0,24 |

Total: 6

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

### SECONDARY LEARNING RESULTS

#### 1RGC290 (1 sem)

#### 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  
3 h. 3 h.

#### EVALUATION SYSTEM

Self-assessment 50%  
Co-assessment 50%

#### MAKE-UP MECHANISMS

(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

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 17 h. 17 h.

interdisciplinary contexts, real and/or simulated, individually and/or in teams

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.

### 1RGC294 (1 sem)

#### 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.

### 1RGC292 (1 sem)

#### LEARNING ACTIVITIES

**CH**

**NCH**

**TH**

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

2 h.

1 h.

3 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:** 2 h.

**NCH - Non-class hours:** 1 h.

**TH - Total hours:** 3 h.

### 1RGC291 (1 sem)

#### 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

3 h.

3 h.

individually and/or in teams

#### EVALUATION SYSTEM

*W*

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

100%

#### MAKE-UP MECHANISMS

(No mechanisms)

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

**NCH - Non-class hours:** 3 h.

**TH - Total hours:** 3 h.

### 1RGC293 (1 sem)

#### 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*

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

100%

#### MAKE-UP MECHANISMS

(No mechanisms)

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

**NCH - Non-class hours:** 3 h.

**TH - Total hours:** 3 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

20%

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

80%

#### MAKE-UP MECHANISMS

(No mechanisms)

**CH - Class hours:** 24 h.

**NCH - Non-class hours:** 26 h.

**TH - Total hours:** 50 h.

## CONTENTS

1. Functions of several variables
2. Multiple integrals
3. Fourier series
4. Laplace transform

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

- [!] *Apuntes de la asignatura*
- [!] *Plataforma Moodle*
- [!] *Software específico de la titulación*

### Bibliography

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