

## [GBA201] MATHEMATICS I

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN BIOMEDICAL ENGINEERING		<b>Subject</b>	MATHEMATICS
<b>Semester</b>	1	<b>Course</b>	1	<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>
<b>Credits</b>	6	<b>Hours/week</b>	5.47	98.5 class hours + 51.5 non-class hours = <b>150 total hours</b>

### PROFESSORS

URIEN CRESPO, MIREN JOSUNE

### REQUIRED PREVIOUS KNOWLEDGE

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

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>G-RA01</b> - To solve mathematical problems that may arise in engineering, demonstrating the ability to apply knowledge of: differential and integral calculus; numerical methods; and optimization		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		0,28
<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		0,32
<b>Total:</b>				<b>6</b>

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

### SECONDARY LEARNING RESULTS

**RGB101** [!] *Utiliza el cálculo diferencial para resolver los problemas de optimización, de cálculo aproximado y la expansión de los errores*

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	11 h.	7 h.	18 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2,5 h.		2,5 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	2,5 h.		2,5 h.
Computer simulation exercises, individually and/or in teams	5 h.	2 h.	7 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	25 h.		25 h.
Carrying out exercises and solving problems individually and/or in teams	7 h.	19 h.	26 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	10%	Individual written and/or oral tests or individual coding/programming tests
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	10%	
Individual written and/or oral tests or individual coding/programming tests	80%	

**CH - Class hours:** 53 h.

**NCH - Non-class hours:** 28 h.

**TH - Total hours:** 81 h.

**RGB102** [!] *Utiliza el cálculo integral para resolver problemas físicos y geométricos*

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	8 h.	5 h.	13 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2,5 h.		2,5 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	2,5 h.		2,5 h.
Computer simulation exercises, individually and/or in teams	4 h.	2 h.	6 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	4 h.	11 h.	15 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	10%	Individual written and/or oral tests or individual coding/programming tests
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	10%	
Individual written and/or oral tests or individual coding/programming tests	80%	

**CH - Class hours:** 36 h.  
**NCH - Non-class hours:** 18 h.  
**TH - Total hours:** 54 h.

**RGB190** [!] *Conocer y aplicar las fases para desarrollar de forma guiada, con los objetivos y la planificación previamente definidos, un proyecto de complejidad técnica acorde con los conocimientos de formación básica de la ingeniería. Reflexiona sobre los cono*

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	2,5 h.	1,5 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%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems Observation (technical capacity, attitude and participation)

**CH - Class hours:** 2,5 h.  
**NCH - Non-class hours:** 1,5 h.  
**TH - Total hours:** 4 h.

**RGB191** [!] *Contribuir en la estrategia de funcionamiento del equipo priorizando los objetivos comunes, fomentando y valorando la participación de todas las personas y responsabilizándose de las tareas individuales, así como del cumplimiento de plazos.*

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	2 h.	1 h.	3 h.

individually and/or in teams

**EVALUATION SYSTEM**

	<i>W</i>
Self-assessment	25%
Co-assessment	25%
Observation (technical capacity, attitude and participation)	50%

**MAKE-UP MECHANISMS**

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems  
 Observation (technical capacity, attitude and participation)

**CH - Class hours:** 2 h.  
**NCH - Non-class hours:** 1 h.  
**TH - Total hours:** 3 h.

**RGB193** [!] *Redacta una memoria de proyecto clara y concisa utilizando las fuentes de información y estructura de memoria facilitadas, y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.*

**LEARNING ACTIVITIES**

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
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	2,5 h.	1,5 h.	4 h.

**EVALUATION SYSTEM**

	<i>W</i>
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

**MAKE-UP MECHANISMS**

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems  
 Observation (technical capacity, attitude and participation)

**CH - Class hours:** 2,5 h.  
**NCH - Non-class hours:** 1,5 h.  
**TH - Total hours:** 4 h.

**RGB194** [!] *Realiza una presentación oral y defensa del proyecto clara y concisa, haciendo uso correcto, inclusivo y no discriminatorio del lenguaje.*

**LEARNING ACTIVITIES**

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
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	2,5 h.	1,5 h.	4 h.

**EVALUATION SYSTEM**

	<i>W</i>
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

**MAKE-UP MECHANISMS**

Observation (technical capacity, attitude and participation)

**CH - Class hours:** 2,5 h.  
**NCH - Non-class hours:** 1,5 h.  
**TH - Total hours:** 4 h.

**CONTENTS**

1. Basic concepts and complex numbers
2. Limits and continuity of real valued functions
3. Derivatives of real valued functions and applications
4. Integration of real valued functions and applications

**LEARNING RESOURCES AND BIBLIOGRAPHY**

**Learning resources**

Subject notes  
Moodle Platform  
Class presentations  
Slides of the subject

**Bibliography**

Salas Hille. Calculus Volumen I. 4. edición. Editorial Reverté. 2002.  
ISBN: 978-84-291-5156-2  
Rogawski, J. Cálculo Una Variable. Segunda edición. Editorial  
Reverté. 2016. ISBN: 978-84-291-5194-7