

[GJE101] MATHEMATICS I

GENERAL INFORMATION

Studies	DEGREE IN MECHATRONICS ENGINEERING		Subject	?
Semester	1	Course	1	Mention / Field of specialisation
Character	BASIC TRAINING		Language	CASTELLANO/EUSKARA
Plan	2020	Modality	Face-to-face	Total hours
Credits	6	Hours/week	5	90 class hours + 60 non-class hours = 150 total hours

PROFESSORS

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REQUIRED PREVIOUS KNOWLEDGE

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

SKILLS

VERIFICA SKILLS

SPECIFIC

GJCE01 - To be able to solve the mathematical problems that may appear in engineering. To be able to apply knowledge of linear algebra, geometry, differential geometry, differential and integral calculus, differential and partial differential equations, numerical methods, numerical algorithms, statistics and optimisation.

CROSS

GJCTR2 - To be able to understand and apply knowledge to problem solving in complex work situations or specialised and professional environments calling for creative and innovative ideas, using self-developed arguments and procedures;

BASIC

G_CB5 - To have developed learning abilities required to embark on subsequent studies with a high level of autonomy.

LEARNING RESULTS

RGJ111 They use differential calculus to solve optimisation problems, perform numerical approximations and estimate errors.

LEARNING ACTIVITIES

	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc.	5 h.	3 h.	8 h.
Relating to projects/POPBLs carried out individually or in teams			
Individual study and work, tests and evaluations and check points	4 h.	23 h.	27 h.
Individual and team exercises	12 h.		12 h.
Individual and/or team computer simulation practice	5 h.	5 h.	10 h.
Classroom presentations of relevant concepts and procedures in participatory environments	24 h.		24 h.

EVALUATION SYSTEM

	W
Individual written and oral tests to assess technical skills of the subject	80%
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	10%
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	10%

MAKE-UP MECHANISMS

Individual written and oral tests to assess technical skills of the subject
Comments: Final mark: written second-chance exam (75%) + exam (25%). Laboratory practices and auto evaluations will be made-up by on-going evaluation

CH - Class hours: 50 h.

NCH - Non-class hours: 31 h.

TH - Total hours: 81 h.

RGJ112 They use integral calculus to solve physical and geometric problems.

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.	2 h.	6 h.
Individual study and work, tests and evaluations and check points	4 h.	12 h.	16 h.
Individual and team exercises	8 h.		8 h.
Individual and/or team computer simulation practice	2 h.	5 h.	7 h.
Classroom presentations of relevant concepts and procedures in participatory environments	17 h.		17 h.

EVALUATION SYSTEM

W

Individual written and oral tests to assess technical skills of the subject	80%
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	10%
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	10%

MAKE-UP MECHANISMS

Individual written and oral tests to assess technical skills of the subject
Comments: Final mark: written second-chance exam (75%) + exam (25%). Laboratory practices and auto evaluations will be made-up by on-going evaluation

CH - Class hours: 35 h.

NCH - Non-class hours: 19 h.

TH - Total hours: 54 h.

RGJ181 They communicate, search and structure written information: they write a clear and concise project report following the criteria established in the guide for written reports using the appropriate software.

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	2 h.	2 h.	4 h.
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EVALUATION SYSTEM

W

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

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence
Comments: Revision and correction of the written report of the semester project

CH - Class hours: 2 h.

NCH - Non-class hours: 2 h.

TH - Total hours: 4 h.

RGJ182 They communicate, search and structure orally the information correctly: they make a clear and concise oral presentation and defense of the project, considering the aspects gathered in the oral communication guide and using the proper software approp

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 h.	2 h.	4 h.
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EVALUATION SYSTEM

W

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%
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MAKE-UP MECHANISMS

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence
Comments: With the oral presentation of the project of the second semester

CH - Class hours: 2 h.

NCH - Non-class hours: 2 h.

TH - Total hours: 4 h.

RGJ191 They use the right methodology to find solutions to problems and to develop projects: analyse problems properly, look for meaningful information to face them and propose solutions.

LEARNING ACTIVITIES

	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc.	1 h.	3 h.	4 h.
Relating to projects/POPBLs carried out individually or in teams			

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

Comments: With the project of the second semester

CH - Class hours: 1 h.

NCH - Non-class hours: 3 h.

TH - Total hours: 4 h.

RGJ192 They use the right methodology to find solutions to problems and to develop projects: analyse problems properly, look for meaningful information to face them and propose solutions.

LEARNING ACTIVITIES

	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc.		3 h.	3 h.
Relating to projects/POPBLs carried out individually or in teams			

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

Comments: With the project of the second semester

CH - Class hours: 0 h.

NCH - Non-class hours: 3 h.

TH - Total hours: 3 h.

CONTENTS

1. Functions and Operations
2. Complex numbers
3. Limits and Continuity
4. Differentiation and applications
5. Integration and applications

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Subject notes
 Moodle Platform
 Specific Master Software

Bibliography

Jon Rogawski. Cálculo, una variable. 2ª edición. Editorial Reverté, 2012. ISBN: 9788429151664
 Robert T. Smith, Roland B. Minton. Cálculo, volumen 1. 2ª edición. Editorial McGraw-Hill, 2003. ISBN: 9788448179833
 Saturnino L. Salas, Einar Hille, Garret J. Etgen. Calculus I, 4ª edición. Editorial Reverté, 2002. ISBN: 9788429151572
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