



			[GDA30	2] MAT	HEMATICS I				
			GENE	RAL INF	ORMATION				
	Studies	DEGREE IN IND PRODUCT DEV	DUSTRIAL DESIGN AND ELOPMENT ENGINEERI	NG	Subject	MATHEMATIC	S		
	Semester Character	2 BASIC TRAININ	Course 1 G		Mention / Field of specialisation				
	Plan	2022	Modality Face	to-face	Language	EUSKARA			
	Credits	6	Hours/week 4.93		Total hours	88.8 class hou <u>hours</u>	rs + 61.2	non-class	hours = <u>150 tota</u>
			2030	AGEND	DA GOALS				
4 eeucation	8 BECENT WORK AND ECONOMIC SAUNTH 9 MR								
				PROFES	SORS				
	UBARRECI	HENA BELANDI	A, ARITZ						
	SALABERR	RIA CALVILLO, H	AIZEA			~ -			
			REQUIRED	PREVIO		GE			
ΜΔΤΗ		Subj	ects		[1]	Know	ledge		
W/ATT					[!]				
			I FA	RNING					
LEAF	RNING RESU	JLTS					кс з	SK AB	ECTS
G-RA apply	07 - To solve knowledge o	mathematical pr of: linear algebra	oblems that may arise in e geometry; differential geo	engineering	, demonstrating the differential and part	ability to ial differential		x	5,4
G-RTI becor impac avant	R1 - To devel ming aware c ct of the prop -garde, demo	lop interdisciplina of respect for hun osed solutions of onstrating the ab	ry projects specific to thei nan rights and fundamenta n the SDGs - to acquire an ility to work in multidiscipli	r specialty al rights, an nd/or apply nary teams	and of gradual comp d analyzing and ass basic, advanced an and/or undertake fu	olexity, - sessing the d/or urther studies		x	0,36
with a G-RTF coher sourc	a high degree R2 - To expre rent manner, æs, using inc	e of autonomy ess information, id orally and in writ dusive and non-d	deas and the arguments th ing, based on quality infor iscriminatory language	nat support mation, sel	them in an orderly, f-made or obtained	clear and from different		x	0,24
KC: Kr	nowledge or Cor	ntent / SK: Skills / AB	: Abilities					Total	: 6
ENA	EE LEARNI	NG RESULTS							ECTS
ENAE princ	E01 - Knowle iples in their	dge and understa branch of engine	anding: Knowledge and ur ering.	nderstandir	g of the underlying s	scientific and m	athematic	al	2
ENAE engir	E 02 - Knowle neering. E 05 - Analysi	dge and understa	Ability to apply their know	erstanding o	of the key aspects a	nd concepts of	their bran	ch of	1,8
engir	neering probl	ems using estab	lished methods.			intrying, torritar		Solving	,
								Total:	6
			SECONDA	RY LEA	RNING RESULT	rs			
2R	GD191 (2 so	em)				011			7//
		nd writing of room	rde reporte precontation	e audiovio	al material ato an	1.8.h	1.2	n h.	<u>3h.</u>
pro	jects/work e lividually and	xperience/challer //or in teams	nges/case studies/experim	ental inves	stigations carried out	t	1,2		5 m
EV	ALUATION	SYSTEM		w	MAKE-UP MECH	ANISMS			
Re cor exe	ports on the mputer exerc ercises, term	completion of ex ises, simulation projects, challen	ercises, case studies, exercises, laboratory ges and problems	100%		(No mec	hanisms)		





CH - Class hours: 1,8 h. NCH - Non-class hours: 1,2 h. TH - Total hours: 3 h.

2RGD193 (2 sem)

LEARNING ACTIVITIES			СН	NCH	ТН
Development and writing of records, reports, presentatior projects/work experience/challenges/case studies/experir individually and/or in teams	ns, audiovis mental inve	sual material, etc. on estigations carried out	2 h.	1 h.	3 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%		(No mech	anisms)	
H - Class hours: 2 h. CH - Non-class hours: 1 h.					

RGD113 [!] Modeliza y resuelve los problemas geométricos, los físicos y los de ingeniería, utilizando las ecuaciones diferenciales

LEARNING ACTIVITIES	СН	NCH	ТН		
Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experient individually and/or in teams	ns, audiovi mental inve	sual material, etc. on estigations carried out		2 h.	2 h.
Conducting tests, giving presentations, presenting defend checkpoints	g 2 h.		2 h.		
Computer simulation exercises, individually and/or in team		1 h.	1 h.	2 h.	
Presentation by the teacher in the classroom, in participa procedures associated with the subjects	es, of concepts and	17 h.	11 h.	28 h.	
Carrying out exercises and solving problems individually	eams		2 h.	2 h.	
EVALUATION SYSTEM	MAKE-UP MECHANIS	SMS			
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems		Individual written and/o coding/programming to	or oral tests o ests	or individual	
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: 20 h. NCH - Non-class hours: 16 h. TH - Total hours: 36 h.					

ZRGD190 (2 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 2 h. 1 h. 3 h.







EVALUATION SYSTEM	W	MAKE-UP MECHANISM	//S		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%		(No mech	anisms)	
H - Class hours: 2 h. CH - Non-class hours: 1 h.					
H - Total hours: 3 h.					
RGD192 (2 sem)					
LEARNING ACTIVITIES			сн	NCH	тн
Carrying out/resolving projects/challenges/cases, etc. to p	provide sol	utions to problems in	1 h.	2 h.	3 h.
nterdisciplinary contexts, real and/or simulated, individual	lly and/or i	n teams			
EVALUATION SYSTEM	W	MAKE-UP MECHANISM	<u>IS</u>		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory	100%		(No mech	anisms)	
H - Class hours: 1 h					
CH - Non-class hours: 2 h.					
CH - Non-class hours: 2 h. I - Total hours: 3 h.					
CH - Non-class hours: 2 h. H - Total hours: 3 h.					
CH - Non-class hours: 2 h. H - Total hours: 3 h.					
CH - Non-class hours: 2 h. H - Total hours: 3 h.					
CH - Non-class hours: 2 h. H - Total hours: 3 h. RED1114 [!] Utiliza el álgebra lineal para modelizar y re	esolver pr	roblemas de ingeniería, ut	tilizando s	oftware mate	mático
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y re	esolver pr	roblemas de ingeniería, ut	tilizando s	oftware mate	mático
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y re	esolver pr	roblemas de ingeniería, u	tilizando s	software mate	mático
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y re	esolver pr	roblemas de ingeniería, u	tilizando s CH	software mate	mático TH
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y re LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin ndividually and/or in teams	esolver pr s, audiovis nental inve	roblemas de ingeniería, un sual material, etc. on estigations carried out	tilizando s CH 5 h.	software mate NCH 5 h.	r mático <u>TH</u> 10 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y respective de la construction de la con	esolver pi Is, audiovis nental inve es, taking	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing	tilizando s <u>CH</u> 5 h. 4 h.	software mate NCH 5 h.	emático <u>TH</u> 10 h. 4 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y ro LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin ndividually and/or in teams Conducting tests, giving presentations, presenting defenc checkpoints Computer simulation exercises, individually and/or in team	esolver pr Is, audiovis nental inve es, taking ns	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing	tilizando s <u>CH</u> 5 h. 4 h. 1 h.	software mate <u>NCH</u> 5 h. 1 h.	e mático <u>TH</u> 10 h. 4 h. 2 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y respective de lineal para modelinear y respective de lineal para modelizar y respective de linea	esolver pr Is, audiovis nental inve es, taking ns cory classe	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and	tilizando s CH 5 h. 4 h. 1 h. 48 h.	Software mate NCH 5 h. 1 h. 31 h.	emático <u>TH</u> 10 h. 4 h. 2 h. 79 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y restriction LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams Presentation by the teacher in the classroom, in participate procedures associated with the subjects Carrying out exercises and solving problems individually at	esolver pr Is, audiovia nental inve es, taking ns :ory classe and/or in te	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and eams	tilizando s <u>CH</u> 5 h. 4 h. 1 h. 48 h. 2 h.	Software mate <u>NCH</u> 5 h. 1 h. 31 h. 2 h.	emático <u>TH</u> 10 h. 4 h. 2 h. 79 h. 4 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD1114 [!] Utiliza el álgebra lineal para modelizar y reservation LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams Presentation by the teacher in the classroom, in participat procedures associated with the subjects Carrying out exercises and solving problems individually a EVALUATION SYSTEM	esolver pi is, audiovis nental inve es, taking ns ory classe and/or in te W	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and eams MAKE-UP MECHANISM	tilizando s <u>CH</u> 5 h. 4 h. 1 h. 48 h. 2 h. XS	Software mate NCH 5 h. 1 h. 31 h. 2 h.	emático TH 10 h. 4 h. 2 h. 79 h. 4 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y reservation Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in team Presentation by the teacher in the classroom, in participate procedures associated with the subjects Carrying out exercises and solving problems individually at Reports on the completion of exercises, case studies,	esolver pr rs, audiovis nental inve res, taking ns rory classe and/or in te <u>W</u> 10%	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and eams <u>MAKE-UP MECHANISM</u> Individual written and/or	tilizando s CH 5 h. 4 h. 1 h. 48 h. 2 h. Z h. MS oral tests	Software mate NCH 5 h. 1 h. 31 h. 2 h. or individual	emático TH 10 h. 4 h. 2 h. 79 h. 4 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y restriction LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in team Presentation by the teacher in the classroom, in participate procedures associated with the subjects Carrying out exercises and solving problems individually at Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory axercises, term projects, challenges and problems	esolver pr is, audiovia nental inve es, taking ns cory classe and/or in te <u>w</u> 10%	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and eams <u>MAKE-UP MECHANISM</u> Individual written and/or coding/programming tes	tilizando s <u>CH</u> 5 h. 4 h. 1 h. 48 h. 2 h. 2 h. oral tests ts	Software mate NCH 5 h. 1 h. 31 h. 2 h. or individual	emático TH 10 h. 4 h. 2 h. 79 h. 4 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y reservation LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in team Presentation by the teacher in the classroom, in participate procedures associated with the subjects Carrying out exercises and solving problems individually at Checkpoints Computer simulation exercises, individually and/or in team Presentation by the teacher in the classroom, in participate procedures associated with the subjects Carrying out exercises and solving problems individually at EVALUATION SYSTEM Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory axercises, term projects, challenges and problems Presentation and defence of exercises, case studies.	esolver pr ls, audiovia nental inve es, taking ns cory classe and/or in te <u>w</u> 10%	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and eams MAKE-UP MECHANISM Individual written and/or coding/programming tes	tilizando s <u>CH</u> 5 h. 4 h. 1 h. 48 h. 2 h. 2 h. oral tests ts	Software mate NCH 5 h. 1 h. 31 h. 2 h. or individual	emático TH 10 h. 4 h. 2 h. 79 h. 4 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD1114 [!] Utiliza el álgebra lineal para modelizar y restriction LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams Conducting tests, giving presentations, presenting defenc checkpoints Computer simulation exercises, individually and/or in team Presentation by the teacher in the classroom, in participate procedures associated with the subjects Carrying out exercises and solving problems individually at EVALUATION SYSTEM Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory axercises, term projects, challenges and problems Presentation and defence of exercises, case studies, computer practical work, simulation practical work,	esolver pr is, audiovis nental inve res, taking ns cory classe and/or in te <u>w</u> 10%	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and eams <u>MAKE-UP MECHANISM</u> Individual written and/or coding/programming tes	tilizando s <u>CH</u> 5 h. 4 h. 1 h. 48 h. 2 h. 2 h. MS oral tests ts	Software mate NCH 5 h. 1 h. 31 h. 2 h. or individual	emático TH 10 h. 4 h. 2 h. 79 h. 4 h.
CH - Non-class hours: 2 h. H - Total hours: 3 h. RGD114 [!] Utiliza el álgebra lineal para modelizar y restriction Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in team Presentation by the teacher in the classroom, in participate procedures associated with the subjects Carrying out exercises and solving problems individually a Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems Presentation and defence of exercises, case studies, computer practical work, simulation practical work, aboratory practical work, term projects, end of degree	esolver pr is, audiovis nental inve es, taking ns tory classe and/or in te <u>W</u> 10%	roblemas de ingeniería, un sual material, etc. on estigations carried out examinations and/or doing es, of concepts and eams <u>MAKE-UP MECHANISM</u> Individual written and/or coding/programming tes	tilizando s CH 5 h. 4 h. 1 h. 48 h. 2 h. 2 h. MS oral tests ts	Software mate NCH 5 h. 1 h. 31 h. 2 h. or individual	emático TH 10 h. 4 h. 2 h. 79 h. 4 h.
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CH - Class hours: 60 h. NCH - Non-class hours: 39 h. TH - Total hours: 99 h.

2RGD194 (2 sem)



Goi Eskola Politeknikoa | Mondragon Unibertsitatea Course: 2024 / 2025 - Course planning



LEARNING ACTIVITIES			СН	NCH	ТН
Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams	2 h.	1 h.	3 h.		
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
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 mech	anisms)	
CH - Class hours: 2 h. NCH - Non-class hours: 1 h. TH - Total hours: 3 h.					

CONTENTS

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
[!] Plataforma Moodle	Robert Smith, Roland Minton. Cálculo, tomos 1 y 2 (McGraw-Hill,
[!] Presentaciones en clase	2007)
[!] Realización de prácticas en ordenador	Salas, S. L., Hille, E. & Etgen, G. J. Calculus: una y varias variables
[!] Transparencias de la asignatura	(Reverte, 2003)
[!] Proyección de videos	Lay, D. C. & Murrieta, J. M. Algebra lineal y sus aplicaciones
[1] Apuntes de la asignatura	(Pearson Educación, 2007)
	Poole, D. Algebra lineal: una introducción moderna (Cengage Learning Editores, 2011)