



								Superior
[GOJ301] INDUSTRIAL STATISTIC								
		GENERAL INF	ORMATION					
Studies	DEGREE IN IND ENGINEERING	USTRIAL ORGANIZATION	Subject	QUANTITATIVE	METH	IODS		
Semester Character	1 COMPULSORY	Course 2	Mention / Field of specialisation					
Plan	2022	Modality Face-to-face	Language	EUSKARA/CAST	ELLA	NO		
Credits	3	Hours/week 2.28	Total hours	41 class hours + hours	34 no	n-clas	s hours	= <u>75 total</u>
		2030 AGENI	DA GOALS					
8 HEANTI HORK AND ECONOMIC GROWTH	ARTINESHIPS FOR THE GOALS							
		PROFES	SORS					
LEGARRE	TA ALEGRIA, JUA	AN LUIS						
		REQUIRED PREVIO	US KNOWLED	GE				
	Subje	ects		Knowle	dge			
(No	o specific previous	s subjects required)	()	Vo previous knowl	edge	requir	ed)	
		LEARNING	RESULTS					
LEARNING RESU	JLTS				ĸc	sк	AB	ECTS
GOR204 - To cate	gorize information	through data study				x		2,6
G-RTR1 - To deve becoming aware of impact of the prop avant-garde, dem	lop interdisciplina of respect for hum posed solutions or onstrating the abil	ry projects specific to their specialty an rights and fundamental rights, ar the SDGs - to acquire and/or apply lity to work in multidisciplinary teams	and of gradual comp ad analyzing and ass basic, advanced an and/or undertake fu	olexity, - sessing the id/or urther studies		x		0,24
G-RTR2 - To expre coherent manner, sources, using inc	with a high degree of autonomy G-RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and × 0,16 coherent manner, orally and in writing, based on quality information, self-made or obtained from different sources, using inclusive and non-discriminatory language					0,16		
KC: Knowledge or Co	ntent / SK: Skills / AB:	Abilities					Total:	3
								ECTS
ENAE02 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch of engineering.						0,08		
ENAE03 - Knowledge and understanding: Sufficient knowledge of their branch of engineering, including some knowledge at ^{0,3} the forefront of their field.							0,3	
ENAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.						0,3		
ENAE05 - Analysis in engineering: Ability to apply their knowledge and understanding in identifying, formulating and solving engineering problems using established methods.						0,3		
ENAE07 - Analysis in engineering: Ability to choose and apply relevant modelling and analytical methods.						0,3		
ENAE08 - Engineering projects: Ability to apply their knowledge in the development and completion of projects which meet						0,28		
ENAE12 - Resear	ch & innovation. 1	Fechnical and lab competences						0,3
ENAE13 - Practica	al application of e	ngineering: Ability to select and use	suitable equipment.	tools and method	s.			0,3
ENAE17 - Transv	ersal competence	s: To work effectively, both individua	ally and in a team.					0,28
ENAE18 - Transve	ersal competence	s: To use different methods to comn	nunicate effectively v	with the engineerir	ng cor	nmuni	ity	0,28
and society in general. ENAE19 - Transversal competences: Demonstrate that they are aware of the responsibility implied in the practical application 0,28 of engineering, the social and environmental impact, and show commitment with professional ethics, responsibility and regulations of the practical application of engineering.						0,28		
						Т	- Fotal:	3
		SECONDARYLEA		s				
1RG0291 (1 s	em)	JEGONDARTELA						
LEARNING AC	TIVITIES			СН	N	сн	т	н
Development a	nd writing of reco	rds, reports, presentations, audiovis	ual material, etc. on	-	2	h.	2	h.
projects/work e	xperience/challen	ges/case studies/experimental inves	stigations carried out	t				



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individually and/or in teams					
EVALUATION SYSTEM	W	MAKE-UP MECHAN	ISMS		
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: 0 h. NCH - Non-class hours: 2 h. TH - Total hours: 2 h.					
RGO207 [!] Identifica relaciones lineales entre datos co	uantitativ	vos			
RG0207 [!] Identifica relaciones lineales entre datos cu LEARNING ACTIVITIES	uantitativ	ros	сн	псн	тн
RG0207 [!] Identifica relaciones lineales entre datos contractores LEARNING ACTIVITIES Conducting tests, giving presentations, presenting defence checkpoints	u antitativ s, taking	ros examinations and/or doi	CH ing ^{1 h.}	NCH	<u>тн</u> 1 h.
RG0207 [!] Identifica relaciones lineales entre datos contractores LEARNING ACTIVITIES Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams	uantitativ s, taking	ros examinations and/or doi	CH ing 1 h. 4 h.	NCH 5 h.	<u>тн</u> 1 h. 9 h.
RG0207 [!] Identifica relaciones lineales entre datos control LEARNING ACTIVITIES Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams Presentation by the teacher in the classroom, in participato procedures associated with the subjects	s, taking s, taking ry classe	ros examinations and/or doi s, of concepts and	CH ing 1 h. 4 h. 10 h.	<u>NCH</u> 5 h.	тн 1 h. 9 h. 10 h.
RG0207 [!] Identifica relaciones lineales entre datos control LEARNING ACTIVITIES Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams Presentation by the teacher in the classroom, in participato procedures associated with the subjects Carrying out exercises and solving problems individually arr	s, taking s, taking ry classe	ros examinations and/or doi s, of concepts and ams	CH ing 1 h. 4 h. 10 h.	NCH 5 h. 5 h.	<i>TH</i> 1 h. 9 h. 10 h. 5 h.
RG0207 [!] Identifica relaciones lineales entre datos control LEARNING ACTIVITIES Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams Presentation by the teacher in the classroom, in participato procedures associated with the subjects Carrying out exercises and solving problems individually art EVALUATION SYSTEM	s, taking s, taking ry classe nd/or in te w	ros examinations and/or doi s, of concepts and ams MAKE-UP MECHAN	CH ing 1 h. 4 h. 10 h. ISMS	NCH 5 h. 5 h.	<i>TH</i> 1 h. 9 h. 10 h. 5 h.
RG0207 [!] Identifica relaciones lineales entre datos control LEARNING ACTIVITIES Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams Presentation by the teacher in the classroom, in participato procedures associated with the subjects Carrying out exercises and solving problems individually ar EVALUATION SYSTEM Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	s, taking s, taking ry classe nd/or in te <u>w</u> 25%	ros examinations and/or doi s, of concepts and ams <u>MAKE-UP MECHAN</u> Individual written and coding/programming	CH ing 1 h. 4 h. 10 h. ISMS //or oral tests tests	NCH 5 h. 5 h. or individual	<u>ТН</u> 1 h. 9 h. 10 h. 5 h.
RG0207 [!] Identifica relaciones lineales entre datos completeres in the classification of the subjects Conducting tests, giving presentations, presenting defence checkpoints Computer simulation exercises, individually and/or in teams Presentation by the teacher in the classroom, in participato procedures associated with the subjects Carrying out exercises and solving problems individually and subjects Computer exercises, simulation exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems Individual written and/or oral tests or individual coding/programming tests	s, taking s, taking ry classe nd/or in te <u>w</u> 25%	ros examinations and/or doi s, of concepts and ams <u>MAKE-UP MECHAN</u> Individual written and coding/programming	CH ing 1 h. 4 h. 10 h. ISMS //or oral tests tests	NCH 5 h. 5 h. or individual	ТН 1 h. 9 h. 10 h. 5 h.

CH - Class hours: 15 h. NCH - Non-class hours: 10 h. TH - Total hours: 25 h.

1RGO292 (1 sem)

LEARNING ACTIVITIES			СН	NCH	ТН	
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams			1 h.	1 h.	2 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)		
CH - Class hours: 1 h. NCH - Non-class hours: 1 h. TH - Total hours: 2 h.						

RGO209 [!] Utiliza herramienta/s (software) para el procesamiento de datos				
LEARNING ACTIVITIES	СН	NCH	тн	
Computer simulation exercises, individually and/or in teams	3 h.	1 h.	4 h.	
Presentation by the teacher in the classroom, in participatory classes, of concepts and	1 h.		1 h.	



Course: 2024 / 2025 - Course planning



P MECHANISMS I written and/or oral tests or inc rogramming tests	dividual
I written and/or oral tests or inc rogramming tests	dividual
СН	NCH TH
l, etc. on	2 h. 2 h.
eria	erial, etc. on as carried out

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: 2 h. TH - Total hours: 2 h.		

1RGO293 (1 sem)					
LEARNING ACTIVITIES			СН	NCH	ТН
Development and writing of records, reports, presentations, audiovisual material, etc. on 2 h. 2 h. projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams					
EVALUATION SYSTEM	W	MAKE-UP MECHANIS	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 mecha	anisms)	
CH - Class hours: 0 h. NCH - Non-class hours: 2 h. TH - Total hours: 2 h.					

 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.







EVALUATION SYSTEM	W	MAKE-UP MECHANISN	IS		
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		(No mech	anisms)		
CH - Class hours: 0 h. NCH - Non-class hours: 2 h. TH - Total hours: 2 h.					
RG0208 [!] Encuentra relaciones entre variables para d	definir re	glas		NOU	71
			CH	NCH	
Conducting tests, giving presentations, presenting defences checkpoints	s, taking (examinations and/or doing	2 n.		2 n.
Computer simulation exercises, individually and/or in teams	3		4 h.	7 h.	11 h.
Presentation by the teacher in the classroom, in participato procedures associated with the subjects	ry classe	s, of concepts and	12 h.		12 h.
Carrying out exercises and solving problems individually ar	nd/or in te	ams		5 h.	5 h.
EVALUATION SYSTEM	w	MAKE-UP MECHANISN	IS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	25%	Individual written and/or oral tests or individual coding/programming tests			
Individual written and/or oral tests or individual coding/programming tests	65%				
Observation (technical capacity, attitude and participation)	10%				
CH - Class hours: 18 h. NCH - Non-class hours: 12 h. TH - Total hours: 30 h.					

CONTENTS

- 1. Introduction to R
- 2. Descriptive Data and Outlier Analysis
- 3. Correlation and Regression
- 4. Analysis of Variance (ANOVA)
- 5. Regression and classification trees

LEARNING RESOURCES AND BIBLIOGRAPHY					
Learning resources	Bibliography				
 [!] Transparencias de la asignatura [!] Apuntes de la asignatura [!] Consultas en páginas web relacionadas con el tema [!] Software específico de la titulación [!] Realización de prácticas en ordenador 	 Hahsler, M., & Chelluboina, S. (2011). Visualizing association rules:Introduction to the R-extension package a rulesViz. R project module, 223-238. Peña, D. (2018). Análisis de series temporales, Madird Alianza Editorial. Peña, D. (2010). Análisis de datos multivariantes. McGRAW-HILL (Madrid) Box, G.E.P., Hunter, J.S., Hunter, W.G. (2008). Estadística para investigadores: Libro diseño, innovación y descubrimiento. Barcelona Reverté. Prat, A., Tort-Martorell, X., Grima, P., Pozueta, L. (1997). Métodos estadísticos Libro control y mejora de la calidad. Ed. UPC, Barcelona, 1997. ISBN 84-8301-222-7. Contreras, J., Molina, E., & Arteaga, P. (2010). Introducción a la programación estadística con R para Profesores. Universidad de Granada, Grupo de Educación Estadística. Zhao, Y. (2012). R and data mining: Examples and case studies. 				





Academic Press.

Joaquín Amat Rodrigo (2017). Bibliografía sobre estadística, bioestadística, data science y programación en R. [s.] 2020.