

[GOJ301] INDUSTRIAL STATISTIC

GENERAL INFORMATION

Studies	DEGREE IN INDUSTRIAL ORGANIZATION ENGINEERING		Subject	QUANTITATIVE METHODS
Semester	1	Course	2	Mention / Field of specialisation
Character	COMPULSORY		Language	CASTELLANO/EUSKARA
Plan	2022	Modality	Face-to-face	Total hours
Credits	3	Hours/week	2.22	40 class hours + 35 non-class hours = 75 total hours

PROFESSORS

LEGARRETA ALEGRIA, JUAN LUIS

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
BASIC STATISTICS [!] matemáticas	(No previous knowledge required)

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GOR204 - To categorize information through data study		x		2,6
G-RTR1 - 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		0,16
G-RTR2 - 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:				3

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

ENAE LEARNING RESULTS

ENAE LEARNING RESULTS	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 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 specific requirements.	0,28	
ENAE12 - Research & innovation: Technical and lab competences.	0,3	
ENAE13 - Practical application of engineering: Ability to select and use suitable equipment, tools and methods.	0,3	
ENAE17 - Transversal competences: To work effectively, both individually and in a team.	0,28	
ENAE18 - Transversal competences: To use different methods to communicate effectively with the engineering community and society in general.	0,28	
ENAE19 - Transversal competences: Demonstrate that they are aware of the responsibility implied in the practical application of engineering, the social and environmental impact, and show commitment with professional ethics, responsibility and regulations of the practical application of engineering.	0,28	
Total:		3

SECONDARY LEARNING RESULTS

RGO290 [!] *Proponer los objetivos y la planificación de un proyecto que le permita adquirir y/o reforzar los conocimientos de tecnologías propias de su especialidad,- que en ocasiones llegan a la vanguardia del conocimiento- y definir una estrategia de aprendiz*

LEARNING ACTIVITIES

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 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.

RG0291 [!] *Establecer las responsabilidades de los miembros del equipo utilizando técnicas adecuadas para fomentar la eficiencia del equipo para el desarrollo del proyecto en los plazos establecidos (compartir recursos, aportar ideas, habilidades comunicativas)*

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 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.

RG0293 [!] *Redacta y estructura correctamente la memoria del proyecto, haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje. Para ello, busca y hace uso de las fuentes de información adecuadas.*

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.

RG0294 [!] *Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.*

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.

RG0207 [!] *Identifica relaciones lineales entre datos cuantitativos*

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.		1 h.
Computer simulation exercises, individually and/or in teams	4 h.	5 h.	9 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	10 h.		10 h.
Carrying out exercises and solving problems individually and/or in teams		5 h.	5 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	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: 15 h.
NCH - Non-class hours: 10 h.
TH - Total hours: 25 h.

RG0208 [!] *Encuentra relaciones entre variables para definir reglas*

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.		2 h.
Computer simulation exercises, individually and/or in teams	4 h.	7 h.	11 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		5 h.	5 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	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.

RG0209 [!] *Utiliza herramienta/s (software) para el procesamiento de datos*

LEARNING ACTIVITIES		CH	NCH	TH
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 procedures associated with the subjects		1 h.		1 h.
Carrying out exercises and solving problems individually and/or in teams		3 h.	2 h.	5 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	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: 7 h.				
NCH - Non-class hours: 3 h.				
TH - Total hours: 10 h.				

CONTENTS

1. Introduction to R
2. Descriptive analysis and outliers identification
3. Correlation and regression
4. Analysis of variance (ANOVA)
5. Regression and classification trees

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Slides of the subject	Hahsler, M., & Chelluboina, S. (2011). Visualizing association rules: Introduction to the R-extension package a rulesViz. R project module, 223-238.
Subject notes	Peña, D. (2018). Análisis de series temporales, Madrid Alianza Editorial.
Topic related web quires	Peña, D. (2010). Análisis de datos multivariantes. McGRAW-HILL (Madrid)
Specific Master Software	Box, G.E.P., Hunter, J.S., Hunter, W.G. (2008). Estadística para investigadores: Libro diseño, innovación y descubrimiento. Barcelona Reverté.
Computer practical training	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.l.] 2020.