



Teaching Guide

Teaching Guide				
Identifying Data				2017/18
Subject (*)	Statistics		Code	730G03008
Study programme	Grao en Enxeñaría Mecánica			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	First	FB	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	EconomíaEmpresa			
Coordinador	Garcia del Valle, Alejandro	E-mail	alejandro.garcia.delvalle@udc.es	
Lecturers	Crespo Pereira, Diego	E-mail	diego.crespo@udc.es	
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Web				
General description	This subject teaches the concepts of Statistics applied to Industrial Engineering			

Study programme competences

Code	Study programme competences
A1	Capacidade para a resolución dos problemas matemáticos que poidan formularse na enxeñaría. Aptitude para aplicar os coñecementos sobre: álgebra lineal; xeometría; xeometría diferencial; cálculo diferencial e integral; ecuacións diferenciais e en derivadas parciais; métodos numéricos; algorítmica numérica; estatística e optimización.
B2	Que os estudantes saiban aplicar os seus coñecementos ao seu traballo ou vocación dunha forma profesional e posúan as competencias que adoitan demostrarse por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da súa área de estudo
B3	Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitiren xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética
B4	Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como leigo
B5	Que os estudantes desenvolvan aquelas habilidades de aprendizaxe necesarias para emprenderen estudos posteriores cun alto grao de autonomía
B6	Ser capaz de concibir, deseñar ou poñer en práctica e adoptar un proceso substancial de investigación con rigor científico para resolver calquera problema formulado, así como de comunicar as súas conclusións e os coñecementos e razóns últimas que as sustentan a un público tanto especializados como leigo dun xeito claro e sen ambigüidades
B7	Ser capaz de realizar unha análise crítica, avaliación e síntese de ideas novas e complexas
C1	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C4	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.

Learning outcomes

Learning outcomes	Study programme competences		
Ability to solve statistical problems encountered in engineering.	A1		C1
Using statistical software for solving engineering problems involving randomness and large volume of data.	A1		C1
Capacity for abstraction, understanding, analysis and simplification of instances and processes.	A1	B2 B3 B4 B5 B6 B7	C1 C4



Contents	
Topic	Sub-topic
The following topics develop the contents established in the tab of the Verification Memory that are:	Exploratory analysis of data. Univariate and multivariate probability distributions. Regression. Statistical inference. Estimation by points and intervals. Contrast of hypotheses. Regression and analysis of variance.
Introduction to Statistics	
2. Exploratory data analysis.	
3. Probability.	
4. Random variables.	
5. Discrete random variables and probability distributions.	
6. Continuous random variables and probability distributions.	
7. Joint probability distributions.	
8. Statistical inference.	
9. Point estimation of parameters.	
10. Statistical intervals for a single sample.	
11. Test of hypotheses for a single sample.	
12. Regression and analysis of variance (ANOVA).	

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student's personal work hours	Total hours
Guest lecture / keynote speech	A1 B6 B7 C1 C4	30	36	66
Problem solving	B3 B4 B5 C1 C4	20	18	38
ICT practicals	A1 B6	10	10	20
Mixed objective/subjective test	A1 B2 B3 B4 B5	3	9	12
Objective test	A1 B2 B3 B4	3	9	12
Personalized attention		2	0	2

(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	Lectures about the course topics.
Problem solving	Solving exercises and statistical problems encountered in engineering.
ICT practicals	Resolution of practical cases of statistical problems by Excel.
Mixed objective/subjective test	Midterm exam of the first issues of the subject.
Objective test	Final exam

Personalized attention	
Methodologies	Description
ICT practicals Mixed objective/subjective test Objective test	The personalized attention will be made in the tutorials.

Assessment			
Methodologies	Competencies	Description	Qualification

ICT practicals	A1 B6	Evaluation of case studies solved in small groups.	25
Mixed objective/subjective test	A1 B2 B3 B4 B5	Midterm exam with test questions and troubleshooting.	25
Objective test	A1 B2 B3 B4	Final exam with test questions and troubleshooting.	50

Assessment comments

IMPORTANT: Attendance to at least the 80% of classes is required in order to pass the course, unless justified and authorized by the professor. Students who do not meet this requirement will have the qualification of SUSPENSE. The "students with recognition of a part-time academic and exemption of assistance" will communicate at the beginning of the course your situation to the teachers of the subject, as established by the "Standard that regulates the dedication to the study of undergraduates in the UDC "(Art.3.be 4.5) and the" Standards for evaluation, review and claim of the qualifications of undergraduate and master's degree (Art. 3 and 8b). Students in this situation will be assessed on the date approved by the School Board, by an objective test consisting of solving exercises on the contents of step 3 of the Guide.

Sources of information

[illegible]

Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Industrial Management/730G03024

Simulation of Industrial Processes and Optimization/730G04065

Other comments

There is a very extensive and updated bibliography on Statistics in the library of the Polytechnic School (much of it in English). The notes of the subject will be available in Moodle as well as the proposed cases.

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.