

Centre	University College of Engineering of Vitoria-Gasteiz
Name of subject	25973 – Statistical Methods in Engineering
Qualification	Degree in Mechanical Engineering
Brief description of the subject content	Fundamentals and non-deterministic methods of analysis applied to engineering problems. Statistics and optimisation.
Type	Compulsory
Credits	6 ECTS
Year	1
Term(s)	2nd
Department	Applied Mathematics
Language	Spanish and Basque

Outcomes / Objectives

1. Handle and clearly distinguish the basic elements of statistics, among them, and as a priority, the concepts of population and sample, and correctly classify the type of data being handled and summarise it graphically and numerically.
2. Understand the mathematical concept and the role of probability in statistics as a tool for formulating models, controlling any errors made in making statistical inferences and comparing the different ways to make these.
3. Recognise in specific situations the most commonly used probability models, defining and unambiguously classifying the relevant random variable and be able to answer probability questions relevant to those situations.
4. Make statistical inferences from a set of data: estimating population parameters and putting forward appropriate contrasting hypotheses from which statistical conclusions can be drawn, controlling error.

Syllabus

Unit 1: Descriptive statistics.

Unit 2: Regression and correlation.

Unit 3: Probability.

Unit 4: Discrete random variables.

Unit 5: Continuous random variables.

Unit 6: Estimation

Unit 7: Comparing hypotheses.

Methodology

Teaching Method

Face-to-Face Teaching Hours

Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
48.0	0.0	12.0						

Student Hours of Non Face-To-Face Activities

Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
72.0		18.0						

Assessment System

General criteria

1. Written essay exam
2. Practical activities (exercises, cases or problems)

Clarification regarding assessment

In the normal exam session:

The written exam accounts for 80% of final grade.

Practical activities account for 20% of final grade.

In the re-sit exam session:

The written exam accounts for 100% of final grade.

Bibliography

Basic Bibliography

- Lecciones de Estadística Descriptiva. Tomeo,V., Uña,I. Ed. Thomson
- Lecciones de Cálculo de Probabilidades. Uña,I., Tomeo,V. Ed. Thomson
- Curso y Ejercicios de Estadística. Quesada,V., Isidor,A., López, L.A. Ed. Alhambra Universidad
- Probabilidad y Estadística. Aplicaciones y Métodos. Canavos G.C. Ed. McGraw-Hill
- Estadística. Spiegel Murray R., Stephens Larry J. Ed. McGraw-Hill
- Estatistikaren oinarriak. Ariketak. Agirre Basurko, Elena. Udako Euskal Unibertsitatea
- Probabilitate Teoria eta Inferentzia Estatistikoa. Ariketak. Fernández K.; Orbe J.; Zubia M. UEUK argitaratua.

In-depth Bibliography

- Probabilidad y estadística para Ingeniería y Ciencias. Mendenhall, W. - Sincich, T. Ed. Prentice Hall Hispanoamericana, S.A.
- Probabilidad y estadística para Ingeniería y Ciencias. Walpole, Myers, Myers, Ye. Ed. Prentice Hall Hispanoamericana, S.A.
- Problemas de probabilidad y estadística. Sarabia, A. y Mate, C. Ed. Clagsa
- Problemas de estadística. Descriptiva, probabilidad e inferencia. Casas, J.M.; García, C.; Rivera, L.F. y Zamora, A.I. d. Pirámide

Websites

- <http://www.vc.ehu.es/matematicaaaplicada/>
- <http://www.ine.es/>
- <http://www.eustat.es/>