

## 220011 - Statistics

Coordinating unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit:	715 - EIO - Department of Statistics and Operations Research
Academic year:	2019
Degree:	BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
ECTS credits:	6
Teaching languages:	Catalan

### Teaching staff

Coordinator: MONTSERRAT PEPIO VIÑALS

Others: MARIA ALBAREDA SAMBOLA - INES M. ALGABA JOAQUIN - SALVADOR CASADESUS PURSALS - ALEJANDRO JURADO LEYDA

### Degree competences to which the subject contributes

#### Specific:

CE1. The ability to solve mathematical problems that may arise in an engineering context. The ability to apply knowledge of linear algebra; geometry; differential geometry; differential and integral calculus; differential and partial differential equations; numerical methods; numerical algorithms; statistics and optimisation

#### Generical:

CG8T. THE ABILITY TO ANALYSE AND SYNTHESISE: The ability to think abstractly about the fundamental concepts of a text or exposition and to intelligibly present the result of one's work.

### Teaching methodology

In order to motivate the student, in the beginning of each topic an introduction about the problem faced would be developed, insisting on the tools and methodologies.

The subject development could be made by the lecture of a recommended text and doing all of the development made in the blackboard. In order to understand difficult concepts multimedia material developed by the teachers will be used. It is going to be found in Atenea in PDF format.

The students have access to a solved collection of problems. Every week the next week exercises are fixed in order to favor the participation. During theory lessons little examples will be implemented too.

At the end of each topic, a problems collection will be available in Atenea, destined to the self-evaluation.

Observation: Although the documentation is in Catalan this course might be taught in Spanish, if needed.

### Learning objectives of the subject

The objective of the subject is to train the future engineer to guarantee the quality levels of products and processes, select suppliers, compare results. Essentially, making decisions under random context.



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### Study load

Total learning time: 150h	Hours large group:	46h	30.67%
	Hours medium group:	14h	9.33%
	Self study:	90h	60.00%

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### Content

<p>1. Introduction.</p>	<p>Learning time: 10h Theory classes: 1h Self study : 9h</p>
<p>Description: -</p> <p>Related activities:</p>	
<p>2. Patterns of probabilistic behavior.</p>	<p>Learning time: 44h Theory classes: 15h Practical classes: 5h Self study : 24h</p>
<p>Description:</p>	
<p>3. Statistical sampling</p>	<p>Learning time: 22h Theory classes: 6h Practical classes: 2h Self study : 14h</p>
<p>Description:</p>	
<p>4. Statistical inference.</p>	<p>Learning time: 42h Theory classes: 12h Practical classes: 5h Self study : 25h</p>
<p>Description: -</p>	

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5. Lineal model.	Learning time: 19h Theory classes: 6h Practical classes: 1h Self study : 12h
Description: .	
6. Reliability.	Learning time: 13h Theory classes: 6h Practical classes: 1h Self study : 6h
Description:	

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### Planning of activities

1. THEORY CLASSES	Hours: 77h Theory classes: 42h Self study: 35h
2. PROBLEMS CLASSES	Hours: 29h Practical classes: 14h Self study: 15h
3. SELF-ASSESSMENT	Hours: 18h Self study: 18h
4. DIRECTED ACTIVITY	Hours: 9h Self study: 9h
5. CONTINUOUS ASSESSMENT WITH QUESTIONNAIRES	Hours: 2h Self study: 2h
6. PARTIAL EXAM	Hours: 7h Theory classes: 1h 30m Self study: 5h 30m
7. FINAL EXAM	Hours: 8h Theory classes: 2h 30m Self study: 5h 30m

### Qualification system

Continuous evaluation: weigh 10%  
Second midterm exam: weigh 40%  
Second midterm exam: weigh 40%  
Practices: weigh 10%

Any student who cannot attend to the midterm exam (activity 6) or that wants to improve the obtained grade, will have the opportunity to improve that grade by taking an additional written exam that will take place the same day as the final exam (activity 7). The grade obtained in this test will range between 0 and 10, and will replace that of the midterm exam in case it is higher.

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### Regulations for carrying out activities

In case someone doesn't attend to an evaluation activity, this activity would be qualified as 0.

### Bibliography

#### Basic:

E. Walpole, Ronald [et al.]. Probabilidad y estadística para ingeniería y ciencias. 8a ed. México: Pearson Education, 2007. ISBN 9789702609360.

Ipiña, Santiago L. Inferencia estadística y análisis de datos. Madrid: Perason Educación, 2008. ISBN 9788483224045.

Montgomery, Douglas C. Probabilidad y estadística aplicadas a la ingeniería. 2a ed. México: Limusa, 2002. ISBN 9789681859152.

#### Complementary:

Rohatgi, V.K. Statistical inference. New York: John Wiley, 1984. ISBN 9780486428123.

Lawless, Jerald F. Statistical models and methods for lifetime data. 2a ed. Hoboken: Wiley-Interscience, 2003. ISBN 0471372153.

#### Others resources:

##### Hyperlink

[http://aprenestadistica.gencat.cat/secundaria/activitats/common/glossari\\_estadistic.jsp](http://aprenestadistica.gencat.cat/secundaria/activitats/common/glossari_estadistic.jsp)