



SLOVAKIA 2010 TRNAVA

IGIP-SEFI

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STATISTICAL TOPICS IN UPM ENGINEERING DEGREES

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ACADEMIC YEAR 2009-2010 IN THE MADRID POLYTECHNIC UNIVERSITY (UPM)

Higher Schools of Engineering,
Higher Technical Schools,
University Faculties

5 years
6 years

“engineer”, “architect”, “graduate”

10 degree courses

University Schools

3 years
4 years

“technical engineer”

14 degree courses



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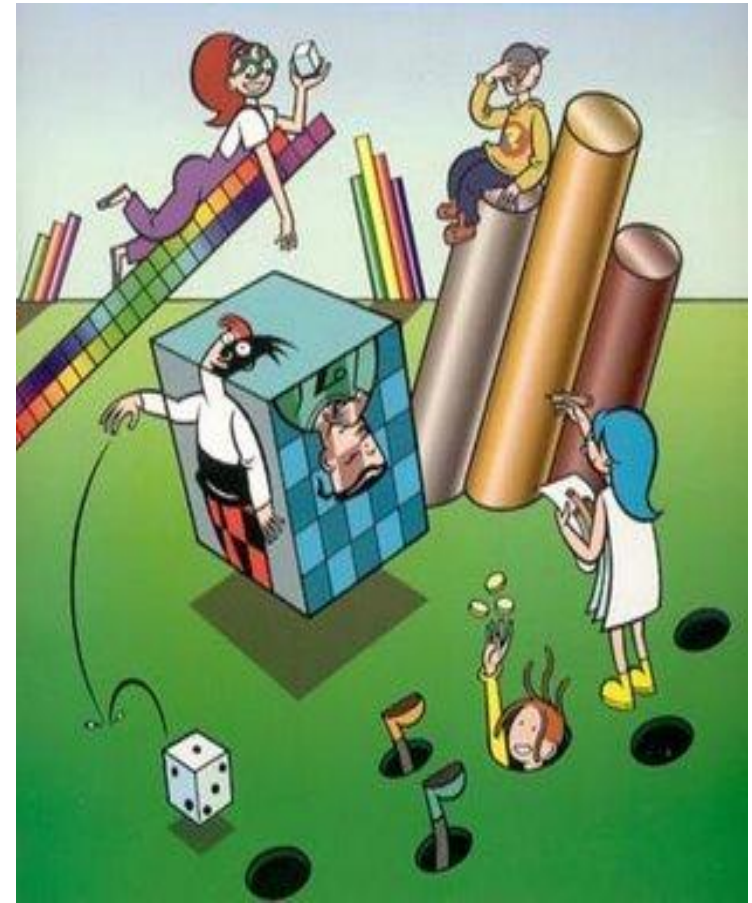
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Statistics is one of the common features of the degree courses.

Depth to which it is studied depends on the knowledge required for the remaining subjects.





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Comparing the different Statistics contents, the learning outcomes and the abilities and skills.

Re-evaluated them with a view to adapting the degree courses to the EHEA



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<http://www.upm.es/institucional/UPM>

The Technical University of Madrid



The UPM

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Statistics in Higher Technical Degrees (5-6 years). Compiled by authors

DEGREE COURSE	SUBJECT NAME	YEAR	TYPE	CREDITS
Aeronautical E.	Applied statistics	3	Obligatory	6
Agricultural E.	Fundamentals of statistics	2	Core	6
Architecture	Statistical Methods I	2, 3, 4, 5	Optional	2,5
	Statistical Methods II	2, 3, 4, 5	Optional	2,5
Civil E.	Applied statistics	3	Obligatory	12
Geodesics and cartography	Fit of observations and optimisation	1	Obligatory	4,5
Geology	Applied statistics	3	Obligatory	6
Industrial E.	Statistics	2	Obligatory	9
Computer science	Statistical inference	2	Obligatory	4,5
	Probability and statistics	2	Core	6
Forestry E.	Applied statistics	3	Obligatory	12
Mining E.	Statistical methods	4	Obligatory	6
Naval E.	Introduction to statistics	3	Core	4,5
Environmental sciences	Mathematics and applied statistics	1	Core	7,5
Telecommunications E.	Introduction to random signals	2	Obligatory	6
Physical education and Sports sciences	Data analysis in P.E. and S.S.	2	Obligatory	4
	Introduction to research in P.E. and S.S.	3	Obligatory	4

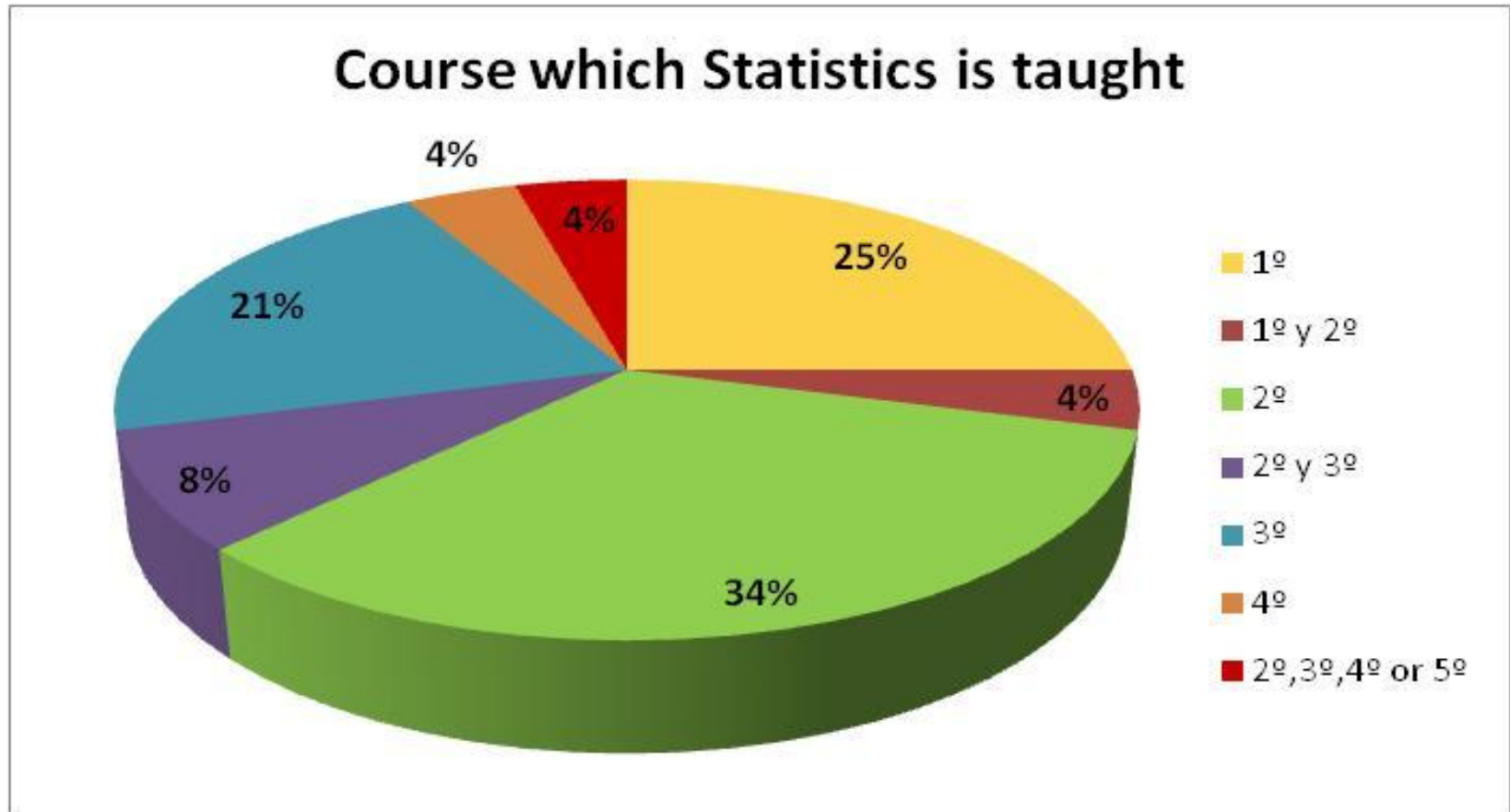


Statistics in Technical Degrees (3 years). Compiles by authors

DEGREE COURSE	SUBJECT NAME	YEAR	TYPE	CREDITS
Aeronautical E.	Experimental techniques	1	Obligatory	4.5
Agricultural E.	Applied statistics	1	Core	4.5
Architecture	Extension of mathematics	2 and 3	Optional	6
	Experimental design and regression	2 and 3	Free choice	6
Forestry E.	Statistics	1	Core	12
Industrial E.	Statistical methods in engineering	2	Core	6
Computer science	Statistics	2	Core	9
Mining E.	Extension of mathematics	2	Core	6
Civil E.	Linear algebra (statistics)	1	Core	6
Telecommunications E.	Statistics and stochastic processes	2	Obligatory	6
	Statistics	2	Obligatory	4.5
Topography E.	Mathematics I	1	Core	1.5
	Mathematics II	2	Core	3.5
	Fit of observations	2	Obligatory	7.5



Results



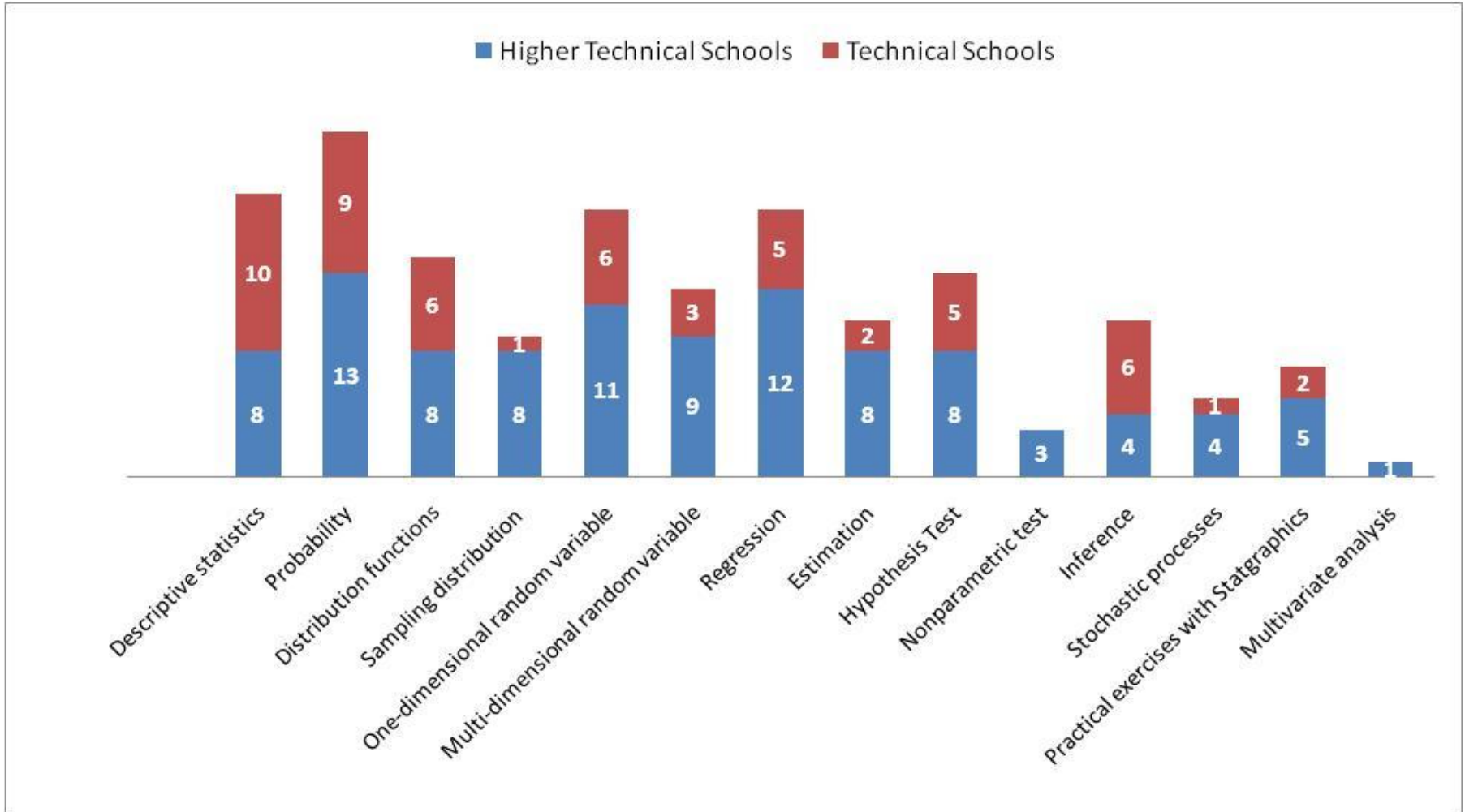
Percentage of degree courses according to year



Results

TOPICS	Higher Technical Schools	University Schools	TOTAL TOPICS
Descriptive statistics	8	10	18
Probability	13	9	22
Distribution functions	8	6	14
Sampling distribution	8	1	9
One-dimensional random variable	11	6	17
Multi-dimensional random variable	9	3	12
Regression	12	5	17
Estimation	8	2	10
Hypothesis Test	8	5	13
Nonparametric test	3	0	3
Inference	4	6	10
Stochastic processes	4	1	5
Practical exercises with Statgraphics	5	2	7
Multivariate analysis	1	0	1
TOTAL TOPICS	102	56	158

Statistics topics taught in UPM degree courses



Topics according to type of degree course



Results

Accumulated frequency	Credit interval	Credits assigned
1	[2.3)	2.0
1	[3.4)	
5	[4.5)	4.5; 4.5; 4.5; 4.5
6	[5.6)	5.0
14	[6.7)	6.0; 6.0; 6.0; 6.0; 6.0; 6.0; 6.0; 6.0
15	[7.8)	7.5
16	[8.9)	8.0
18	[9.10)	9.0; 9.0
20	[10.11)	10.5; 10.5
20	[11.12)	
24	[12.13)	12.0; 12.0; 12.0; 12.5

Credits taught in UPM degree courses



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Conclusions

To adapt the UPM's degree courses to the EHEA it is necessary to review the contents.

Statistics is a common feature of the degrees (compulsory for most) offered by the UPM.

Classroom time: two and a half hours per week on average.

Use of statistical software for the teaching is not widespread.



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