29005 - Applied statistics

Información del Plan Docente

Academic Year	2016/17
Academic center	228 - Facultad de Empresa y Gestión Pública
Degree	429 - Degree in Public Management and Administration
ECTS	6.0
Course	1
Period	Half-yearly
Subject Type	Basic Education
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

5.2.Learning activities

Given the fact that this is mostly an applied subject, practical aspects will prevail in the methodology used. Nevertheless, students will need to master basic theoretical content to be able to solve mathematical problems with the appropriate tools, as well as to interpret results accurately.

During the second term, the students' timetable marks two two-hour-face to face sessions for this subject. The blackboard, together with the projection of lecture notes, previously available to students at the ADD and some other

online resources, will be used to expose theoretical and practical content. Content related mathematical problems, whose solution will be shown through EXCEL spreadsheets, will also be done in the classroom.

In the periods allocated for practices, more in depth work will be done in small groups involving problem solving and essay writing.

At face-to-face tutorial time, students will be individually catered for to solve any doubts that might arise during their learning process.

5.3.Program

MODULE I: DESCRIPTIVE STATISTICS

1. Introduction. General concepts. Meanings of the term Statistic. A brief history. Applications of statistics in different fields of knowledge, paying particular attention his presence in the field of Public Administrations.
2. Frequency distribution. Graphic representations. Statistical variable. Attribute. Frequency distributions.
3. Measures of location. Arithmetic mean and properties. Geometric mean. Harmonic mean. Median. Mode. Quartiles.
4. Measures of variability. Range, semi-interquartile range, mean deviation, variance, standard deviation. Coefficient of variation.
5. Shape and concentrations parameters. Pearson's coefficient of skewness. Fisher's coefficient of skewness. Bowley's coefficient of skewness. Kurtosis coefficient g2. The GIM Index. The Lorenz curve.
6. Bivariate distributions. Bivariate frequency distribution. Graphic representation. Marginal distributions. Conditional distributions. Independent Statistics. Covariance.
7. Adjustment methods. The Method of Least Squares. The Linear adjustment.
8. Regression and correlation. Regression lines. Regression coefficient. Linear correlation coefficient.

MODULE II: SPECIAL TECHNIQUES

9. Index numbers. Simple and composite index numbers. Price index numbers. Quantity index numbers. Deflation (inflation adjustment). Consumer price index (CPI)

10. Time series. Numerical and graphical representations. Time series components: trend, cyclical, seasonal and irregular. Additive and multiplicative models.

MODULE III: PROBABILITY AND RANDOM VARIABLES

11. Introduction to Probability. Sample space. Events. Formal definition of probability. Counting techniques.

12. Conditional probability and independence. Total probability theorem. Bayes theorem.

13. Random variables and probability distributions. Discrete probability distributions: binomial and Poisson. Mean and standard deviation of a discrete probability distribution.

14. Continuous probability distributions: Normal distribution. The probability density function of the normal distribution. Applications.

5.4.Planning and scheduling

Schedule sessions and presentation of Works:

Week		Duration
1	**Teacher presentation . Comment of the teaching guide. 1. Introduction.** **2. Frequency distribution. Graphic representations .**	**4 hours**
2	**3. Measures of location. 4. Measures of variability**	**4 hours**
3	**5. Shape and concentrations parameters**	**4 hours**
4	**5. Shape and concentrations parameters**	**4 hours**
5	**6. Bivariate distributions** **7. Adjustment methods**	**4 hours**
6	**8. Regression. Correlation** **8. Regression. Correlation**	**4 hours**
7	**9. Index numbers**	**4 hours**
8	**9. Index numbers**	**4 hours**
9	**1 0. Time series**	**4 hours**
10	**10. Time series**	**4 hours**
11	**10. Time series** **11. Introduction to Probability**	**4 hours**
12	**12. Conditional probability and independence** **13. Random variables and probability distributions**	**4 hours**
13	**13. Discrete probability**	**4 hours**

	distributions	
14	**14. Continuous probability distributions : Normal distribution**	**4 hours**
15	**Probability problems**	**4 hours**

5.5.Bibliography and recomended resources

The updated bibliography can be found in the University Library (go to 'bibliografia recomendada' in ' http://psfunizar7.unizar.es/br13/eBuscar.php?tipo=a ')