

27621 - Data Analysis and Multivariate Techniques

Syllabus Information

Academic Year: 2019/20

Subject: 27621 - Data Analysis and Multivariate Techniques

Faculty / School: 109 - Facultad de Economía y Empresa

Degree: 450 - Degree in Marketing and Market Research

ECTS: 6.0

Year: 3

Semester: First semester

Subject Type: Compulsory

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, autonomous work, individual database analysis, tutorials and assessment tasks.

Further information regarding the course will be provided on the first day of class.

4.2.Learning tasks

The course includes the following learning tasks:

- Lectures and practice sessions. Sessions to develop concepts and theoretical developments of the course contents. In some of them, teacher's explanations will be used but encouraging participation and discussion in class. The teacher will rely on the computer to illustrate the practical use of the techniques explained by solving real cases using the databases of the course. In addition, the SPSS 22.0 package will be used to implement the techniques during the class.
- Tutorials in small groups. Optional classes are held throughout the course, agreed on by the teacher and the students. In these tutorials, the teacher will decide the most appropriate way to introduce concrete market research statistical methods.
- Tutorials. The student may attend the teacher's office to ask questions about the course. In the case of those students who cannot attend during the established office hours, they can send an email to make an appointment.

4.3.Syllabus

The course will address the following topics:

SECTION. INTRODUCTION

- Topic 0: Introduction
 - Objectives. Why multivariate analysis? Basic types of data and analysis. Preliminary steps in multivariate analysis in Marketing and Management.

SECTION I: EXPLORATORY DATA ANALYSIS

- Topic 1: Exploratory data analysis (A.E.D.)
 - Objectives. Organizing data. Data exploration: the use of pictures. Surveys in different contexts. Goals of research. Study of outliers and missing data.

SECTION II: DATA EXPLORATION AND DIMENSION REDUCTION

- Topic 2: Regression analysis
 - Introduction. Estimating the regression equation and prediction. Multiple linear regression. Variable selection in linear regression. Applying linear regression ideas.
- Topic 3: Factor analysis
 - Introduction. Principal component method. Examples. Choosing the number of factors. Rotation. Interpretation. Validity of the factor analysis model. Study of outliers.

SECTION III: STUDY OF CONTINGENCY TABLES

- Topic 4: Surveys and contingency tables.
 - Internet as a source of information. Contingency tables in samples from a data base. The $r \times c$ Contingency table. Study of some profiles. Interpretation.

SECTION IV: CLASSIFICATION ANALYSIS

- Topic 5: Cluster Analysis.
 - Introduction. Measures of similarity or dissimilarity. Hierarchical clustering. Single, complete and average linkage. Choosing the number of clusters. Cluster validity. Nonhierarchical methods.
- Topic 6: Discriminant analysis.
 - Introduction. The discriminant function for two groups. Interpretation of discriminant functions. Applications.

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the Faculty of Economics and Business website (<https://econz.unizar.es/>)

Provisional course planning

Timetable	TOPICS	METHOD
1st week	LEARNING OBJETIVES	Course presentation
	INTRODUCTION	Course presentation
2nd week	Topic 1	Theory and practice session
	Topic 1	Theory and practice session
	Topic 1	Theory and practice session
3rd week	Topic 1	Practice session
	Topic 2	Theory and practice session
4th week	Topic 2	Theory and practice session
	Topic 2	Theory and practice session
5th week	Topic 2	Theory and practice session
	Topic 2	Practice session

	Topic 3	Theory and practice session
6th week	Topic 3	Theory and practice session
	Topic 3	Theory and practice session
7th week	Topic 3	Practice session
	Test 1	
8th week	Topic 4	Practice session
	Topic 4	Practice session
9th week	Topic 4	Practice session
	Assignment	
10th week	Topic 5	Practice session
	Topic 5	Theory and practice session
11th week	Topic 5	Theory and practice session
	Test 2	
12th week	Topic 6	Theory and practice session
	EXAM	
13th week	Assignment	Presentation and defense
14th week		
15th week		

4.5. Bibliography and recommended resources