Universidad Zaragoza

**Academic Year/course: 2023/24**

# 61760 - Modeling methods

## Syllabus Information

**Academic year:** 2023/24
**Subject:** 61760 - Modeling methods
**Faculty / School:** 109 - Facultad de Economía y Empresa
**Degree:** 555 - Master's in Management, Strategy and Marketing
**ECTS:** 3.0
**Year:** 1
**Semester:** Second semester
**Subject type:** Optional
**Module:**

## 1. General information

The objective of this subject is the study of data analysis methods, with emphasis on the formulation of theoretical models and the measurement of variables, as well as on empirical exercises to validate and verify their relationships. More specifically, it will focus on: the formulation and operationalisation of conceptual models, the measurement and modelling of perceptual versus objective variables, the knowledge of different methodological approaches to data processing and, consequently, the application of statistical software according to the nature of the variables and the theoretically proposed relationships (R, SPC, SPC).

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/). Specifically, the learning activities foreseen in this subject will contribute to the achievement of SDG 4: "Quality Education".

An adequate level of English and basic data analysis skills are required.

## 2. Learning results

In general, the student is expected to be able to identify the methodology used in a research/article, and to evaluate its adequacy, as well as the results and conclusions, providing a critical assessment. More specifically, the student is expected to: use statistical tools to extract relevant information from the data in order to prepare and defend projects. To know and apply the scientific process to a research, discern between the different existing methodologies and determine which one is the best for the object of study and the objectives to be achieved in a research project. To interpret statistical results and contrast hypotheses obtained from the application of different methodologies, develop a research project where the acquired knowledge is applied. To communicate ideas both orally and in writing.

## 3. Syllabus

Topic 1. Definition and formulation of conceptual models

Regression model

Measurement model

Mediation and moderation model

Topic 2. Information analysis

Types of data

Scales of measurement, coding and tabulation

Relationships between variables and between cases

Topic 3. Structural Equation Modelling (SEM)

Model specification and identification

Model estimation

Model evaluation

## 4. Academic activities

This subject has an academic approach, based both on the review of different research methodologies and published empirical exercises. It offers a practical approach focused on the application of statistical programs. More specifically, the training activity is focused on:

- classroom lecture and content discussion (20 hours)
- academic readings and practical applications (5 hours)
- presentation and defence of completed works (5 hours)
- autonomous work of the student (reading and comprehension, preparation of presentations, writing of research papers) (45 hours).

Consequently, the teaching methodologies will be: lecture presentation, solving of exercises and/or cases, presentation and defence of recommended readings and autonomous study.

## 5. Assessment system

**Continuous assessment**

Work1. To apply descriptive and inferential statistics to a database (approximately 5 pages in length), according to the following outline: a) present the motivation (selection of a database); b) define the objectives of the work (relationships between variables); c) present the methodology (type of analysis to be performed); d) summarize the main results (30%).

Work2. To apply the knowledge acquired to a published research article (approximately 10 pages in length), according to the following outline: (a) present a brief summary of the article (objectives, analysis methodology, data, measurement instruments and main results-conclusions); (b) describe and analyse the proposed hypotheses in order to assess the adequacy of the selected methodology; (c) analyse the contrast of the hypotheses, results presented and conclusions; (d) general impressions (50%).

Data analysis project, approximately 3-5 pages long, detailing and describing: the objective of the analysis and hypothesis, the data base(s) and variables and the selected methodology (20%).

**Global test**: Students who do not opt for continuous assessment, do not pass the subject by this method or who wish to improve their grade are entitled to take the global test which will consist of a written test including open-ended questions about the contents of the syllabus.

In the second call, the assessment will be carried out by means of the global test described above.