

## 27447 - ICT for Decision-Making

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 27447 - ICT for Decision-Making

**Faculty / School:** 109 - Facultad de Economía y Empresa

**Degree:** 417 - Degree in Economics

**ECTS:** 3.0

**Year:** 4

**Semester:** First semester

**Subject type:** Optional

**Module:**

### 1. General information

This subject has a professional contribution. It introduces the student to the methods, models and techniques most used in the scientific resolution of real problems in the economic environment and applies the computer systems used as an aid to the decision. In short, it provides the necessary technical tool to apply the theoretical decision-making models to real problems, characterized by their great complexity and the high volume of data involved in their resolution.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of United Nations (<https://www.un.org/sustainabledevelopment/es/>). Specifically, the activities planned in the subject will contribute to the achievement of the Goals:

- 8. Decent Work and Economic Growth
- 9. Industry, innovation and infrastructure.
- 17. Alliances to Achieve goals.

### 2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

- Identify the needs and requirements prior to the resolution of a complex decision problem posed in the economic environment, characterized by the existence of multiple scenarios, actors and criteria (both tangible and intangible).
- know the most common optimization tools used in economic problems.
- Develop strategies to determine the most appropriate technique to solve a problem.
- Apply new information and communication technologies to the resolution of decision problems.
- Manage computer tools to represent a decision problem on the computer and apply an appropriate optimization technique.
- Familiarize the student with the usual procedures for managing computer data in an office system and in a corporate network
- Structure the available data of a decision problem in a manner suitable for computer processing.
- Use database technology to extract the information needed to solve a decision problem
- Familiarization with computer tools oriented to knowledge management and knowledge extraction techniques.

### 3. Syllabus

Unit 1: Introduction to Computerized Decision Support Systems

- 1.1 Problems and decisional processes
- 1.2 Components of an IT Decision Support System
- 1.3 Case study: Google Maps
- 1.4 Case study: tracking, filtering and classification of messages on social networks

Unit 2: Optimization of economic problems

- 2.1 Linear optimization
- 2.2 Distribution routes and networks
- 2.3 Decision making under uncertainty
- 2.4 Multi-criteria optimization techniques

Unit 3: Database design and operation

- 3.1 Data storage sources and technologies
- 3.2 Relational database model

- 3.3 Office and corporate database managers
- 3.4 Relational database design
- 3.5 Query design

#### 4. Academic activities

The presentation of the subject will alternate with the resolution of practical cases under the supervision of the teacher. The student's training will be complemented with a minimum of three group work sessions, according to the calendar that will be established at the beginning of the term.

The subject consists of 3.0 ECTS or 90 hours, distributed as follows:

- Master classes: 15 hours
- Practical classes: 15 hours
- Mandatory tutorials: 3 hours
- Personal Study: 40 hours
- Assessment tests. 2 hours

In principle, the teaching methodology and its evaluation is planned to be based on face-to-face classes . However, if circumstances so require, they may be carried out online.

#### 5. Assessment system

The subject will be evaluated by means of continuous and global evaluation in the first call and by means of global evaluation in the second call.

##### **Continuous assessment:**

Continuous evaluation will consist of the completion of four practical assignments, individually, and one group assignment.

Each group is required to attend three tutorials during the semester to guide the group work. The work should be defended in class during the last session of the subject.

In addition, voluntary work may be developed.

To pass the subject it will be necessary to obtain 5 or more points. The assessment of the tests will be:

Individual work: 3 points

Group work: 6 points, according to the following criteria:

1. Topicality and relevance of the subject: 0.5 points.
2. Modelling: 2 points.
3. Resolution: 2 points.
4. Exploitation and learning: 1 point.
5. Défense: 0.5 points.

Voluntary work: 1 point.

##### **Global Assessment**

The global evaluation will consist of an exam that will consist of solving a practical case.

It will be valued with a maximum of 10 points, being necessary to obtain at least 5 points to pass the subject.

##### **Assessment Criteria:**

Continuous assessment

1. Individual work: Mathematical approach, modelling and obtaining a correct solution.
2. Group work: Actuality and relevance of the work, modelling, resolution, exploitation and public defence.
3. Voluntary work: Topicality and relevance of the subject, correctness and rigor.

Global assessment:

1. Modelling: construction of a correct model.
2. Resolution: correct structuring of the data.
3. Exploitation: correct interpretation of the solution and proposal of validation controls.

#### 6. Sustainable Development Goals

8 - Decent Work and Economic Growth  
 9 - Industry, Innovation and Infrastructure  
 17 - Partnerships for the Goals