

30634 - Operative Research

Syllabus Information

Academic year: 2024/25

Subject: 30634 - Operative Research

Faculty / School: 109 - Facultad de Economía y Empresa

Degree: 432 - Joint Law - Business Administration and Management Programme

ECTS: 5.0

Year: 6

Semester: First semester

Subject type: Optional

Module:

1. General information

The main goal of this subject is that the student acquires the necessary knowledge for scientific decision making in a business context. To this end, it presents the methods, models and techniques, both unicriteria and multicriteria, most commonly used in scientific problem solving and introduces the computer systems used as decision aids. In short, it seeks to provide scientific rigor to all stages of the decision-making process through the use of decisional tools.

These approaches and goals are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of the United Nations (United Nations (<https://www.un.org/sustainabledevelopment/es/>), specifically, the activities planned in the subject will contribute to the achievement of goals 1, 4, 8, 9, 11, 12 and 17.

2. Learning results

- Know the different scientific approaches followed throughout history to approach the scientific resolution of economic-business problems.
- Know what are the new challenges and needs posed by scientific decision making in the so-called Knowledge Society.
- Handle traditional decisional tools with a cognitive orientation in accordance with the holistic vision of reality.
- Be aware of the new scientific approaches (multi-criteria) used in the resolution of complex problems characterized by multiple scenarios, actors and criteria (both tangible and intangible).
- Be able to integrate in the decision-making processes the objective, rational and tangible associated to traditional science with the subjective, emotional and intangible associated to the human factor.
- In short, he/she must be able to provide scientific rigor to the resolution of any type of decisional problem.

3. Syllabus

Item 0: Foreword

Presentation, Objectives, Approach, Approach, Program, Evaluation

Unit 1: Fundamentals of Decision Making

Decisional problems and processes. Basic Concepts and Techniques

Unit 2: Linear Programming

General model, Simplex method, Postoptimal analysis, Software and applications

Unit 3: Distribution and Transportation

Transportation, Transshipment and Allocation Problems, Software and Applications

Unit 4: Entire Programming

Case studies, Software and applications

Unit 5: Multicriteria Decision. Multi-target

Generating techniques. Commitment-based programming, Goal-based programming, Software and applications

Unit 6: Multicriteria Decision. Multi-attribute

Discrete multicriteria decision. MAUT, AHP and Overcoming Methods, Software and applications.

4. Academic activities

Master classes: 15 hours

Practical classes: 35 hours

Personal Study: 75 hours

Assessment tests. 2h

5 ECTS = 125 hours

In principle, the teaching methodology and its assessment 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 course will be assessed by continuous or global assessment in the first call; and exclusively by global assessment in the second call.

Continuous assessment:

Part 1 (unicriteria): individual computer test applying the decisional tools seen in class (50% of the grade).

Part 2 (multi-criteria): presentation and defense of a group work in which the decisional tools seen in class are applied to a problem as real as possible selected by the student (50% of the grade).

Global Assessment

It consists of a test that will include the two previous parts, taking into account that the work (part 2) must be individual.

Assessment Criteria:

In part 1 the assessment will take into account modeling, solving and interpretation, and use of the software. In part 2, will also assess the topicality and relevance of the selected problem, the exploitation and learning obtained and the defense.

To pass the subject you must obtain at least a grade of 5 out of 10, adding the two parts.

6. Sustainable Development Goals

4 - Quality Education

8 - Decent Work and Economic Growth

11 - Sustainable Cities and Communities