

39713 - Operative Research

Syllabus Information

Academic year: 2024/25

Subject: 39713 - Operative Research

Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia

Degree: 608 -

ECTS: 6.0

Year: 2

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The modeling of real problems and their resolution by means of optimization techniques introduces the student to decision making. The aim of this subject is for the student to be able to identify, analyze, formulate and solve problems of decision related to organization and management. It will be essential for the student to acquire the ability to determine the best strategy for action.

2. Learning results

1. Identify and formulate operational research models from the verbal description of the real system.
2. Manage the mathematical foundations necessary for solving optimization problems.
3. Justify the model chosen and the solving technique employed given an optimization problem.
4. Use computer programs to solve the proposed models.
5. Prepare a report that presents the model and the resolution technique, analyzes the results, and proposes recommendations, in understandable language for decision making in management and industrial organization processes.

3. Syllabus

1. Methodology of Operations Research.
2. Linear programming: modeling, resolution methods, duality and sensitivity analysis.
3. Graph theory and flow models in networks.
4. Decision analysis in environments of uncertainty and risk.
5. Multi-criteria decision techniques.
6. Game theory.

4. Academic activities

The subject is structured with 4 hours of face-to-face classes during the 15 weeks of the term. All hours are taught in the computer classroom. Theoretical concepts are taught and reinforced with practical work through the use of statistical analysis programs.

Personal work: 60 hours

5. Assessment system

Continuous assessment system

Written tests: two written tests will be given throughout the subject. They will deal with theoretical and/or practical aspects of the subject. Its weight in the grade is 80%. The learning results with those that are related are 1, 2, 3, 4 and 5.

Participative controls: throughout the subject, the student will perform 4 participatory controls valued at 5% of the final grade, which will consist of the completion of practical exercises or evaluative questionnaires scheduled through the virtual platform Moodle. The learning results to which they are related are 1, 2, 3, 3, 4 and 5.

To add the grade of the controls to the final grade, the student must have obtained at least **10 points out of 40** in each of the written tests.

In both types of tests, the following will be evaluated:

- understanding of the mathematical concepts used to solve problems

- the use of efficient strategies and procedures in its resolution
- clear and detailed explanations
- the absence of mathematical errors in development and solutions
- correct use of terminology and notation
- clear, orderly and organized exposition

Global assessment.

Students who have not passed the subject with the continuous assessment system, must take a written test of obligatory character equivalent to the written tests and the participatory controls described above, whose weight in the final grade will be 100%.

6. Sustainable Development Goals

- 4 - Quality Education
- 5 - Gender Equality
- 9 - Industry, Innovation and Infrastructure