Course: Operations Management I
Code: 10BBA40002

Type: Required  Year: 2  Semester: 1
ECTS Credits: 4  Language: Spanish
Coordination:

Faculty:
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Workload distribution:
Lectures: 28 hours
Participatory sessions: 14 hours
Independent work: 68 hours
Tutorials / feedback: 10 hours

Course contribution to the programme:
The course contributes to the programme by helping the students to:

1. Master the basic language related to the world of business, through introducing the basic concepts and tools of management in the area of operations.

2. Develop the abilities needed to give them a comprehensive general overview of organisations and the environment in which they move, beyond their functional aspects.

3. Develop the analytical skill and systematic vision of complex organisations when putting forward proposals for business modeling and trying to find a more efficient solution for the organisation seen as a whole.

Course learning objectives:
By the end of the course, students will:
1. Understand the function of Operations as an area of organisations that transforms input into output, creating value for the end customer.

2. Know the current focus of Operations Management, which includes Innovation, Production, Logistics and Quality.

3. Learn how Operations can create value in industrial and service companies, through more efficiency, quality, product/service innovation and so on.

4. Understand how Operations Strategy can be defined based on Competitive Strategy.

5. Be aware of the existence of techniques and tools that Operations Research has developed to solve problems, and know how to use them.

6. Know how to model complex organisational situations, and to apply the techniques and tools that lead to the best solution for planning problems in operations, design and improvement of services and planning and monitoring projects.

7. Make correct use of results obtained, as a basis for management and/or strategic decision-making.

**Skills developed:**

The ability to apply knowledge to get results.

The ability to develop strategic thinking and systematic thinking.

The ability to acquire, understand and structure knowledge critically.

The ability to work in a team and collaborate.

**Contents and methodology:**

**Theme 1. INTRODUCTION TO OPERATIONS**

**Objectives:**
- To identify the operations in any company, whether industrial or service.
- To understand the relationship between Operations and Finances, Marketing and Human Resources.
- To define operations strategy according to competitive variables.
- To study the different kinds of production processes.

**Contents**
- Introduction to and structure of material used in Operations Management.
- Introduction to Operations (what they are).
- The concept of Process as an object of study in Operations.
- Competition priorities.
- Operations strategy.
- Structural and infrastructural decisions.

Activities
- Introducing the Professor.
- Working in groups: Identifying competitive priorities.

Materials
- Notes.
- Reading: ‘Strategic Consensus’.
- Videos: Operations in services (concerts, cinema and so on.);
Operations in manufacturing.

Theme 2. OPERATIONS STRATEGY AND OPERATIONS MANAGEMENT IN SERVICES

Objectives
- To apply operations strategy to a specific case.
- To understand the effect of various alternative decisions.
- To introduce Operations Marketing in service companies.

Contents
- Developing an Operations Strategy.
- Production processes (project, workshop, non-continuous process, assembly line, processing plant).
- Product-process matrix.
- Basic decisions on type of production process.
- Characteristics of operations in services.

- Classification of services (intensity of workforce/degree of interaction-customisation) and management challenges.

Activities
- Introduction to the Professor.
- Work in groups: analysis of American Connector case study
- Monitoring.

Materials
- Notes.
- Reading: ‘The service profit chain’.
- Production process videos.

Theme 3. INTRODUCTION TO OPERATIONS RESEARCH
- Objectives
By the end of this theme, students should have a global vision of Operations Research as a set of techniques and tools that serve as a basis for business decision-making.

- Contents
Definition and characteristics.
Type of pure problems: Problems of distribution, sequential problems, queues, stocks, itineraries, decision and competence, renewal and search.

Theme 4. QUANTITATIVE SUPPORT FOR STRATEGIC AND MANAGEMENT DECISION-MAKING

- Objectives
By the end of this theme, students should be able to model a complex situation through the use of Linear Programming, in order to maximise a specific utility function dependent on a series of variables under a set of restrictions.

- Contents
Typical Operations Management problems: planning production, localising plants and warehouses, plant capacity, ‘manufacture or outsource’, designing the workforce, shifts, transport and distribution and so on.

Linear Programming as a tool. The Linear Model, characteristics and components. Model resolution.

Financial interpretation and sensitivity analysis of the best solution. Interpretation of the real variables, of slack, reduced cost and shadow price.

Theme 5. PROJECT MANAGEMENT

- Objectives
By the end of this theme, students should know the techniques and tools available for optimum planning of a project and the subsequent monitoring of it during the development.

- Contents
Planning and/or monitoring the carrying out of a project.
Path graphs and algorithms as tools.
The Gantt chart and the Roy and Pert methods.
Uncertainty management in project development management.
Resource management on a project and time-cost optimisation.

Theme 6. IMPROVING SERVICE QUALITY IN QUEUING PHENOMENA
- Objectives
By the end of this theme, students should be able to determine and understand the relevant parameters in a situation where queuing phenomena are produced (machine maintenance service in a factory, emergency services in a hospital, toll booths on a motorway, landing strips and check-in desks at airports and so on) in order to design the service mechanism that can minimise the overall cost of the system, also improving quality of service.

- Contents
Relevant components and characteristics in a queue situation.
Stochastic processes as a tool.
Determining parameters for service quality.
Optimal design for service mechanism.

- Activities in themes 3, 4, 5 and 6:

  a.) Classroom based:

  a.1.) Lectures: The frames of reference and tools are presented, as are the keys for their use in analysis of complex situations.
  a.2.) Participatory sessions: The concepts and tools are used so that the students can solve problems and case studies, and then present and discuss them.

  b.) Non-class based:

  b.1.) Students will work individually on set problems and present them in the participatory sessions and/or tutorials.

  b.2.) Students will carry out two tasks applying the techniques presented on the course, in groups of five. The deadline for presentation of the works is the final exam date.

- Materials in themes 3, 4, 5 and 6:

Notes, readings, technical notes, case studies, exercises and problems concerning the various themes.

- Tutorials in themes 3, 4, 5 and 6:

Students will have a weekly chance to carry out tutorials with the course Professors, each of whom will dedicate three hours to them after the weekly session.

**Evaluation:**
There will be a test at the end of session 3. Preparation, carrying out and assessment of the test constitute the method for presenting and evaluating the following competencies:
The ability to apply knowledge to obtain results. The assessment criteria will be:
1. The student mentions concepts.
2. The student relates concepts.
3. The student explains the concepts and the relationship that s/he establishes.

The ability to develop strategic thought and systematic thought. The assessment criteria will be:
1. The student demonstrates a global vision of operations materials.
2. The student demonstrates an integrated vision of operations within a company.

The Test of Themes 1 and 2 is weighted at 20% of the course total, and counts for the ordinary and extraordinary exam sessions.

The competencies selected for themes 3, 4, 5 and 6 are the following:

The ability to acquire, understand and structure knowledge critically.
- Activity contributing to the development of competence 1:
  Responses to questions for reflection.
- Assessment criteria:
  The answer given demonstrates that the student understands the concepts involved in the question.
  Correct use of specific vocabulary.

The ability to apply knowledge to obtain results.
- Activity contributing to the development of competence 2:
  Explanation of the problem-solving process followed.
- Assessment criteria:
  Clear understanding of what is being asked for.
  Correct use and relation of concepts presented.

Competence 18 (C18): The ability to work in a group and collaborate.
- Activity contributing to the development of competence 18:
  Both tasks, carried out and presented in groups of five, applying some of the techniques presented in Themes 3, 4, 5 and 6.
- Assessment criteria:
  Each member of the team will assess his or her colleagues in terms of their collaboration and participation.

Assessment of Themes 3, 4, 5 and 6 of the course:
The final grade for these themes represents 80% of the total grade for the course, and tiene carácter liberatorio in the ordinary and extraordinary exam sessions.
It is made up as follows:
- Individual final exam: 40%
- Group work: 30% (15+15)
- Continuous assessment (participation in classes, tutorials, problems, case studies and so on): 10%

Students must achieve a minimum grade of 4 out of 10 in the final exam in order to pass this section of the course.

Core Bibliography:


Winston, W.L.; 'Investigación de Operaciones. Aplicaciones y Algoritmos'; Thomson; 2005

Martin, Q.; 'Investigación Operativa'; Pearson, Prentice Hall; 2003

Arreola, J. Y Arreola, A.; 'Programación Lineal. Una introducción a la toma de decisiones cuantitativa'; Thomson; 2003

Martin, Q., Santos, T. Y De Paz, Y.; 'Investigación Operativa. Problemas y ejercicios resueltos'; Pearson, Prentice Hall; 2005