

SUBJECT TEACHING GUIDE

G899 - Tools for Operational Decision-making

Double Degree in Physics and Mathematics
Degree in Business Administration and Management
Degree in Mathematics
Academic year 2019-2020

1. IDENTIFYING DATA					
Degree	Double Degree in Physics and Mathematics Degree in Business Administration and Management			Type and Year	Optional. Year 5 Compulsory. Year 3
Faculty	Faculty of Economics and Business Studies				
Discipline	Subject Area: Operations Mention in Economics, the Enterprise and Financial Markets Module: Training in Business Organisation				
Course unit title and code	G899 - Tools for Operational Decision-making				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. ADMINISTRACION DE EMPRESAS
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Other lecturers	BEATRIZ BLANCO ROJO MONICA ARNAIZ MONAR

3.1 LEARNING OUTCOMES

- Being able to identify the problems of the Operations area of a company
- Being able to identify the Operations Management decisions, distinguishing between short and long term decisions, based on their strategic or tactic nature.
- Selection of the most convenient products based on economic and strategic criteria.
- Identifying the basic characteristics of the different production systems and selecting the most appropriate one based on economic and strategic criteria.
- Designing a production process, incorporating decisions related to resources (technology and human resources) and capacity, based on economic and strategic criteria.
- Selecting the location of an activity, based on economic and strategic criteria.
- Identifying the problems related to the development of a production plan, integrating aspects related to products, resources and objectives.
- Proposing alternative production plans consistent with the objectives of the company, analysing their advantages and disadvantages.
- Choosing judiciously among the different production alternatives .
- Establishing a control system for the production plan
- Modeling business problems for decision-making, through operation research tools: Linear programming and its extensions; Transport; Multiobjective programming; PERT; Stocks; Queues; Acquisition, maintenance and renewal of equipment.

4. OBJECTIVES

Knowing and applying several tools that support the decision making process: linear programming, duality, sensitivity analysis, complete and parametric linear programming; transport; multi-objective; PERT; stocks; equipment acquisition, maintenance and renovation; queuing theory).

6. COURSE ORGANIZATION

CONTENTS	
1	Linear programming (Graphic resolution, Excel resolution, sensitivity analysis, duality, parametric, whole, bivalent, transport problem)
2	Multi-objective decision tools
3	PERT- Project planning and control tools.
4	Stock management
5	Queuing theory
6	Equipment acquisition, maintenance and renovation

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Description. Mid-term exam 1. Computer resolution (linear programming and multi-objective decision tools)	Laboratory evaluation	Yes	Yes	10,00
Description. Mid-term Exam 2. Written exam (linear programming and multi-objective decision tools)	Written exam	Yes	Yes	30,00
Description. Mid-term exam 3. Computer resolution (PERT)	Laboratory evaluation	Yes	Yes	13,00
Description. Mid-term exam 4. Written exam (PERT and stock management)	Written exam	Yes	Yes	17,00
Description. Mid-term exam 5. Computer resolution (Queueing theory and equipment acquisition, maintenance and renovation)	Laboratory evaluation	Yes	Yes	30,00
TOTAL				100,00
Observations				
<p>Warning! There is not a final exam in the ordinary examination</p> <p>The final mark in the ordinary examination will be the sum of the marks obtained in the mid-term exams (continuous assessment). In order to pass the course, the student has to obtain a final mark equal or greater than 5 (over 10).</p> <p>Those students who do not pass the subject in the ordinary examination will have to do another exam in the extraordinary examination. This exam will be about the content of all the modules and its structure will be similar to the mid-term exams developed for the continuous assessment. Students will have to complete only the failed mid-term exam as the mark of the passed mid-term exams is maintained for the extraordinary examination.</p>				
Observations for part-time students				
<p>Part-time students could pass the subject by obtaining a final mark equal or greater than 5 points in a final exam whose weight will be 100% of the final mark. Those students will have two opportunities: ordinary and extraordinary examination. The exam will be about the content of all modules and its structure will be similar to the continuous assessment mid-term exams.</p> <p>Alternatively, part-time students may chose to do the mid-term exams (continuous assessment) as full-time students. In this case, the mark obtained in mid-term exams will be maintain for the extraordinary examination (as full-time students). The final exam in the extraordinary examination will be the same day of the full- time students' exam.</p> <p>Those students from the University of Cantabria who are taking part in exchange programs (Erasmus...) and are not able to do mid-term exams (continuous assessment) will receive the same treatment that part-time students.</p>				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- LAWRENCE, J.A. y PASTERNAK, B.A. (2004): Ciencias administrativas aplicadas. John Wiley & sons. CECSA.
- MATHUR, K. Y SOLOW, D. (1996): Investigación de Operaciones. El arte de la toma de decisiones. Prentice-Hall Hispanoamericana, Mexico.
- TAHA, H.A. (2004): Investigación de operaciones. Pearson Education. Prentice Hall. 7ª Ed.
- DOMINGUEZ MACHUCA, J. A. (Coord.) (1995): Dirección de Operaciones. Aspectos tácticos y operativos en la producción y los servicios. McGraw-Hill. Madrid.
- HILLIER, F.S. Y LIEBERMAN, G.J. (2015): Investigación de Operaciones. McGraw-Hill. ISBN: 978-607-15-1292-5

