COURSE DATA

DATA SUBJECT

Code: 44866
Name: Logistics
Cycle: Master's Degree
ECTS Credits: 10
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2237 - Master's Degree in Business Process Planning and Management	Facultat d'Economia	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2237 - Master's Degree in Business Process Planning and Management	Logistics	COMPULSORY

COORDINATION

PLANA ANDANI ISAAC

SUMMARY

Logistics involves the organization, movement, and storage of materials. In today's economy, with increasingly competitive markets, efficient logistics management is required. Companies must solve the problem of having the appropriate materials in the right place at the right time.

Logistics activities include inventory management, demand forecasting, location problems, and distribution and transportation problems.

Inventory management is a critical aspect of resource management for companies. The goals of providing good customer service and efficient production must be achieved by maintaining inventories at a minimum level, which suggests the development of suitable models to handle inventory interactions under various circumstances.

Forecasts are important in any business organization for decision-making in management, as they form the basis for medium and long-term planning.

The transportation and distribution of goods must cover the wide range of real-life situations in which this

problem arises. Related models and the most efficient tools are studied to solve all these problems. The aim is to provide students with a range of methods and models that will enable them to deal with different situations that may arise in a business organization.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

COMPETENCES / LEARNING OUTCOMES

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Analyse and solve management problems by creating and validating models appropriate to the various fields of the company's activity, such as production planning and control, inventory management, distribution and logistics or project management. Work with available or possible data.

Be able to actively search for relevant information about the environment and the company, using different sources and procedures.

Be able to analyse the different components of the logistics system and to develop specific models that adapt to the real characteristics of a company.

Be able to integrate into teams, both as managers or coordinators and for specific and limited functions and in support of the team or of others.

Be able to integrate knowledge and handle the complexity of formulating judgments based on information that, while being incomplete or limited, includes reflection on social and ethical responsibilities linked to the application of knowledge and judgments.

Be able to model real situations as mathematical formulations, especially those involving decision making in complex scenarios.

Be able to synthesise and communicate the results, the conclusions of models and the solutions proposed in a rigorous and clear manner.

Be familiar with the optimisation and simulation tools available in the market and their possible adaptation to business problems. Consider the development of new applications.

Develop and apply knowledge and technologies in the context of business management.

Develop the technical and analytical skills needed for decision making based on complex and incomplete information, which is the central element of the managerial activity.

Have an integrated knowledge of the functional areas of a company and the most relevant aspects of its

economic environment.

Know how to work in multidisciplinary teams reproducing real contexts and contributing and coordinating their own knowledge with that of other branches and participants.

Know the different production problems and their relationships with other company processes.

Participate in, lead and coordinate debates and discussions, be able to summarize them and extract the most relevant conclusions accepted by the majority.

Show creativity when facing the resolution of complex problems and be able to evaluate the implications that the alternatives designed may have on the different agents involved.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

Students should demonstrate self-directed learning skills for continued academic growth.

Students should possess and understand foundational knowledge that enables original thinking and research in the field.

To know how to apply acquired knowledge and solve problems in new or unfamiliar situations within wider contexts (or multidisciplinary) related with their field of study.

Use different presentation formats (oral, written, slide presentations, boards, etc.) to communicate knowledge, proposals and positions.

DESCRIPTION OF CONTENTS

1. Logistics and supply chain. Mass customisation.

2. Inventory management and cost. Warehouse processes. Procurement.

3. Physical distribution. Logistics cost and outsourcing. Logistics dashboard. Technology applied to the supply chain. Logistics opportunities. Analysis of a real case.

4. Introduction to forecast analysis. Description of time series. Forecasting models for time series. Statistical analysis of time series.

5. Inventory models with known demand. Continuous review and periodic review models. Service level and safety stock in probabilistic inventory models with continuous and periodic review.

6. Inventory models for multiple products. Capacity constraints. Joint order management.

7. Warehouse systems design.

8. Logistics network design. Facility location problems. Covering location problems.

9. Vehicle routing problems. Classification. Vehicle routing problems with capacities: heuristic and exact methods. Routing problems with time constraints.

10. Long-haul freight transportation. Some transportation models.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	15,00
Seminar	12,00
Computer classroom practice	72,00
Total hours	**99,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	50,00
Independent study and work	0,00
Preparation of lessons	30,00
Preparation for assessment activities	46,00
Resolution of case studies	25,00
Total hours	**151,00**

TEACHING METHODOLOGY

The subject is designed to be developed through both face-to-face and non-face-to-face work.

Face-to-face work:
- A total of 30 sessions, each lasting three hours. Each session is divided into two parts: 2 hours of theoretical-practical content and 1 hour of supervised seminar focused on assisting in exercise resolution and studying complementary content to what was covered in the theoretical part. Some sessions will take place in a computer lab for problem-solving using various software programs, including the analysis of different databases and how to extract information from them.
- Visits to companies with a strong logistics component.

- Exam.
Non-face-to-face work:
- Study of the content and prior preparation for theoretical and practical classes. Students will be provided with recommended bibliographic or documentary material for each chapter, allowing them to read the content before the class.
- Resolution of practical exercises and problems to be carried out by students in small groups, under the supervision of the professor, using the software programs studied in the subject.

Recommendations:
- It is advisable for students to prepare the content of the sessions in advance and to thoroughly study the concepts covered.
- Students will work on solving questions posed by the professors and will submit reports on the exercises or problems assigned within the specified deadlines.

EVALUATION

Attendance, both in class and in the seminars associated with the course, is mandatory. Student learning will be assessed through in-class activities and theoretical-practical exams based on the following weightings:

Topics 1-3. Weight: 0.20

- Completion of exercises and assignments during class time: 100%.

Topic 4. Weight: 0.20

- Completion of exercises and assignments during class time: 100%.

Topics 5-7. Weight: 0.30

- Completion of exercises and assignments during class time: 60%.

- Theoretical-practical exam: 40%.

Topics 8-10. Weight: 0.30

- Completion of exercises and assignments during class time: 80%.

- Theoretical-practical exam: 20%.

A minimum score of 4 out of 10 must be obtained in each of the above sections to pass the module, and the overall weighted score must be at least 5 out of 10.

If the grade obtained by the student in the in-class exercises does not allow them to reach the minimum required to pass, they may choose to take a theoretical-practical exam equivalent to 100% of the course grade, both in the first and second examination sessions.

REFERENCES

Main bibliography:

- C. Bozart, R.B. Handfield, Introduction to Operations and Supply Chain Management, Prentice Hall, 3ª edición, 2012.
- S. Chopra, P. Meindl, Supply Chain Management. Strategy, Planning, and Operation, Prentice Hall, 5ª edición, 2012.
- J.P. García, M. Cardós, J.M. Albarracín, J.J. García, Gestión de stocks de demanda independiente, Universidad Politécnica de Valencia, 2004.
- G. P. Ghiani, G. Laporte and R. Musmanno, Introduction to Logistic Systems Planning and Control. John Wiley & Sons, 2ª edición, 2013.
- M.H. Hugos, Essentials of Supply Chain Management, Wiley, 3ª edición, 2011.
- E.A. Silver, D.F. Pyke, R. Peterson, Inventory Management and Production Planning and Scheduling, Wiley, 3ª edición, 1998.
- R.J. Tersine. Principles of Inventory and Materials Management, Prentice Hall, 4ª edición,1994.
- W.L. Winston, S.C. Albright, Practical Management Science, South-Western College Pub, 5ª edición, 2013.

Complementary bibliography:

- S.C. Albright, W. L. Winston, Spreadsheet modeling and applications: Essentials of Practical Management Science, South-Western College Pub 2004.
- N. Fernández, J. García, J. Martínez, L.A. San José, Gestión de Stocks: Modelos de Optimización y Software, Universidad de Valladolid 1999.
- F.S. Hillier, G.J. Lieberman, Investigación de Operaciones , McGraw-Hill. 9ª edición, 2010.
- S. Nahmias, Production and Operations Analysis, McGraw Hill. 6ª edición, 2013.
- C.T. Ragsdale, Spreadsheet modeling and Decision Analyisis: A Practical Introduction to Management Science , South-Western College Pub, 7ª edición, 2014.
- A. Ruiz Jiménez, J. A. Domínguez Machuca, M. J. Álvarez Gil, M. A. Domínguez Machuca, S. García González, Dirección de Operaciones : Aspectos Estratégicos en la Producción y los Servicios. Mc Graw-Hill, 1995.
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- H.A. Taha, Investigación de Operaciones, Pearson/Prentice Hall, 9ª edición, 2012.