COURSE DATA

DATA SUBJECT

Code: 44867
Name: Production
Cycle: Master's Degree
ECTS Credits: 6
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	Production	COMPULSORY

COORDINATION

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SUMMARY

For most companies, whether or not they have physical production activities, the topic of production planning and scheduling management is of utmost importance. We could consider that manufacturing products and providing services are two sides of the same coin.

The fundamental and advanced aspects of production management, planning, scheduling, and control have been covered in two topics:

- Production Planning

- Production Scheduling and Control

Both topics have been designed to be taught consecutively, sharing objectives, methodology, and evaluation.

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 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.

Carry out and coordinate projects for technological improvement and innovation in management.

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

Develop the ability to manage information, with special emphasis on quantitative information. Adequately design the process of data collection and processing.

Have a proactive attitude towards possible changes that may occur in their professional and/or investigative work.

Know how to communicate conclusions and the knowledge and rationale underpinning these, to specialist and non-specialist audiences, clearly and unambiguously.

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.

Know the production management tools at different levels.

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. Production Planning and Management

1.1. Introduction to production systems and methods for Production Management.
1.2. Measurement of operations. Definition of standard times.
1.3. Definition of Capacity in complex production systems.
1.4. Aggregate planning. Disaggregation of decisions and aggregation of information.
1.5. Master Production Schedule. Approximate Capacity Analysis
1.6. Material and Capacity Requirements Planning
1.7. Production Planning and Lean manufacturing

2.1. Introduction to production scheduling
2.2. Heuristic Mmethods for production problems
2.3. Exact methods for production problems
2.4. Metaheuristic methods for production problems

2. Production Scheduling and Control

2.1. Introduction to production scheduling
2.2. Heuristic Mmethods for production problems
2.5. Solving production problems in practice

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Seminar	9,00
Computer classroom practice	48,00
Total hours	**57,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	48,00
Independent study and work	0,00
Preparation of lessons	0,00
Preparation for assessment activities	29,00
Resolution of case studies	16,00
Total hours	**93,00**

TEACHING METHODOLOGY

The teaching methodology will consist of face-to-face classes, both theoretical and practical, and a series of assignments to be completed by the student. The face-to-face classes will be divided into:

- Theoretical classes, where the basic concepts of each topic will be presented.
- Practical classes, where practical exercises related to the topics covered in the theoretical classes will be carried out to reinforce understanding. These classes will also provide opportunities to generate new perspectives and approaches not covered in the theoretical classes, as well as to assess the students' level of theoretical knowledge acquisition.

Additionally, the student will be required to complete a series of assignments with the guidance of the teacher, which will involve project development. These assignments will allow the student to assess their level of assimilation of the concepts covered in the subject. These assignments should be primarily practical in nature, although they may also cover theoretical aspects discussed in the subject.

EVALUATION

The course is assessed by combining continuous assessment and a final exam. To be eligible for the **continuous assessment system**, the student must have attended **at least 75% of the classes and seminars of the course**. Otherwise, the final exam will account for 100% of the final grade.

Additionally, in order to pass the course, it is mandatory to obtain a **minimum grade of 5 out of 10 in the final exam**. If this grade is not achieved, the maximum grade that can appear on the transcript will be 4.5.

The assessment is distributed as follows:

I. Final exam (30%)
It will take place on the officially scheduled date. It will consist of solving problems and/or theoretical-practical questions.

II. Continuous assessment (70%)

- **Part 1 - Planning (30%)**: Evaluation of assignments and exercises proposed by the teaching staff, which must be submitted within the established deadline. Any extension must be justified and previously agreed with the teaching staff.
- **Part 2 - Scheduling (30%)**: Includes activities and tasks carried out in class, as well as a final project with an oral defense.
- **Attendance (10%)**: Assessed according to the percentage of attendance to classes and scheduled activities throughout the course.

REFERENCES

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- Stephen N. Chapman (2005) Fundamentals of Production Planning and Control. Prentice Hall.
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- Jay Heizer, Barry Render, Yago Moreno López and José Luis Martínez Parra (2007) Dirección de la Producción y de Operaciones. Decisiones Estratégicas. Pearson Educación, octava edición.
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- Sunil Chopra and Peter Meindl (2015) Supply Chain Management: Strategy, Planning and Operations. Prentice Hall, sexta edición.

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- Richard W. Conway, William L. Maxwell and Louis W. Miller (2003) Theory of Scheduling. Dover Publications.
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- Chase, R. and Jacobs, F. R. (2014) Administración de operaciones: producción y cadena de suministros. McGraw-Hill/Interamericana.
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