Course guide
320151 - GID - Integral Design Management

Last modified: 11/04/2025

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 732 - OE - Department of Management.

Degree: BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2025 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Saura Agel, Mª José

Others: Saura Agel, Mª José
Torres Soto, Josep Lluís

PRIOR SKILLS

It is recommended to have passed the subjects of Probability and Statistics, and Manufacturing Processes.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CED20-DIDP. Ability to design and project in different environments of effective and efficient communication with the different agents involved in the industrial design and development process. (Specific technology module: industrial design).
CED54-DIDP. Ability to analyze, design, and project in design workshops. (Specific technology module: Industrial Design)
CED55-DIDP. Practical ability to analyze components and products. (Specific technology module: Industrial Design)
CED56-DIDP. Practical ability to analyze demand and market. (Specific technology module: Industrial Design)
CED57-DIDP. Practical ability to redesign products. (Specific technology module: Industrial Design)
CED59-DIDP. Practical ability to analyze prices. (Specific technology module: Industrial Design)
CED60-DIDP. Practical knowledge of complex component and product design and development. (Specific technology module: Industrial Design)

Generical:
CG03-DIDP. Contribution to the professional dimension a dimension of ethical and social responsibility, which involves raising awareness about the implications that professional activity has regarding human, social, cultural, economic, accessibility and environmental values.

Transversal:
CT01 N3. Entrepreneurship and innovation - Level 3. Using knowledge and strategic skills to set up and manage projects. Applying systemic solutions to complex problems. Devising and managing innovation in organizations.

TEACHING METHODOLOGY

The hours devoted to theory will introduce the students to the basic knowledge, ensuring the understanding of the different topics with real-situation problems.

In parallel, a project will be developed in the classes dedicated to practical activities. Every week the student will be completing a new aspect of the project with the knowledge acquired in the theory sessions. The project will be a practical case carried out in groups of 2 people. The project will be proposed by the professor, who will act as a guide in the execution of the project.

Finally, the completed work will be delivered and orally exposed along the last days of class.

LEARNING OBJECTIVES OF THE SUBJECT

The subject introduces the student to the concepts, principles and basic techniques of the management of operations and services, very closely related to the industrial design. Based on the introduction of the concepts on decisions, the subject addresses the usual management techniques used in the making of strategic, tactical and operational decisions within the functional area of â□□â□□operations.

STUDY LOAD

Type	Hours	Percentage
Hours medium group	15,0	10.00
Hours large group	45,0	30.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

PART 1: Introduction to Operations Management

Description:
The function of operations as a subsystem of the company.
Innovation as a strategic process.
The management of innovation in the company.
Circular economy in product design and manufacturing process

Full-or-part-time: 11h 30m
Theory classes: 3h
Practical classes: 1h
Self study : 7h 30m

PART 2: Product Selection and Design

Description:
The selection of products and services.
Product design and development.
The production documents associated with the designed product.
Models for the development of new products.

Full-or-part-time: 12h 30m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 30m

PART 3: Process Selection and Design

Description:
Different types of processes.
Process strategies.
Conditioners in the process design.

Full-or-part-time: 12h 30m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 30m

PART 4: Location decisions

Description:
Procedures to consider in the location decision-making process.
Factors that affect the location.
Evaluation methods to consider for location of facilities.

Full-or-part-time: 12h 30m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 30m

PART 5: Distribution in plant

Description:
Forms of distribution in plant.
Distribution by products.
Distribution by processes.
Distribution by working cells.
Other distributions.

Full-or-part-time: 12h 30m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 30m

PART 6: Design, measurement and compensation

Description:
Considerations in the design of work.
Measuring the work.
Compensation methods.

Full-or-part-time: 12h 30m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 30m

PART 7: Introduction to planning: Capacity control

Description:
Basic concepts of planning.
Determination of available capacity.
Determination of capacity needs.
Alternatives to adapt the available and necessary capacity in the short and medium term.

Full-or-part-time: 12h 30m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 30m

PART 8: Aggregated Planning and Production Scheduling

Description:
Techniques for aggregated planning.
The master production schedule.
Approximated capacity planning.

Full-or-part-time: 14h 10m
Theory classes: 4h
Practical classes: 2h
Self study : 8h 10m

PART 9: Inventory Management

Description:
Concept and functions of inventory.
Factors that intervene in inventory management.
Article classification systems.
Inventory management models.

Full-or-part-time: 12h 30m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 30m

PART 10: Material Requirements Planning (MRP)

Description:
The Master Production Schedule (MPS).
MRP System and structure.
Batch Quantification.

Full-or-part-time: 14h 10m
Theory classes: 4h
Practical classes: 2h
Self study : 8h 10m

PART 11: Just in Time Manufacturing (JIT) and Theory of Constrains (TOC)

Description:
Concept of JIT philosophy.
Requirements to apply JIT.
Theory of Constrains (TOC).
Comparison between TOC, MRP and JIT.

Full-or-part-time: 12h 10m
Theory classes: 4h
Practical classes: 1h
Self study : 7h 10m

PART 12: Quality Management. Quality Control

Description:
Total quality management.
Quality control.
Quality control tools.
Quality standards.

Full-or-part-time: 10h 30m
Theory classes: 2h
Practical classes: 2h
Self study : 6h 30m

GRADING SYSTEM

Continuous assessment:

60% will be generated from the grades obtained during the various tests carried out during the first and second evaluation (25% of the first evaluation and 35% of the second evaluation).

40% will be generated from the project qualification (the work presented and the oral presentation evaluated by the professor).

Reevaluation:

In order to qualify for the reevaluation of this subject, it is essential to be enrolled in the subject and have obtained a final grade between 3.5 and 4.9. In addition, it is necessary to obtain a minimum of 4 out of 10 of the overall grade of the practical exercises with the weighting established in this teaching guide.

For those students who meet the requirements and take the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams). The grades obtained during the course for lab practices, works, projects and presentations will be kept.

If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

The final grade of the subject is calculated with these weights indicated, both in the ordinary test and in the reevaluation. If passed in the ordinary test, since the student will not appear in the minutes as a suspense, it will not be possible to reevaluate. However, if someone wants to stand up for a reevaluation note, they should talk to the teachers in the regular test review. The reevaluation of any test requires the presentation on the day / time of the reevaluation test in the classroom indicated in the test calendar proposed by the professor.

EXAMINATION RULES.

The written tests will be carried out without any reference material and without the help of electronic devices (with the exception of a calculator).

BIBLIOGRAPHY

Basic:
- Heizer, Jay H. ; Render, Barry. Dirección de la producción y de operaciones: decisiones estratégicas [on line]. 11a ed. Madrid [et al.]: Pearson Educación, cop. 2015 [Consultation: 15/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=5779. ISBN 9788490352878.

Complementary:
- Garriga Garzón, Federico. Problemas resueltos de teoría de la decisión [on line]. Barcelona: OmniaScience, cop. 2013 [Consultation: 30/09/2022]. Available on: http://dx.doi.org/10.3926/oss.9. ISBN 9788494062421.
- Garriga Garzón, Federico. Problemas resueltos de dirección de operaciones [on line]. Barcelona: OmniaScience, DL 2013-2014 [Consultation: 30/09/2022]. Available on: http://dx.doi.org/10.3926/oss.13. ISBN 9788494211836.
- Larrañeta, Juan; Onieva, Luis; Lozano, Sebastián. Métodos modernos de gestión de la producción. Madrid: Alianza Editorial, cop. 1988. ISBN 8420681229.
- Monden, Yasuhiro. Toyota production system: an integrated approach to just-in-time [on line]. 4th ed. Boca Raton: CRC Press, 2012 [Consultation: 14/07/2025]. Available on: https://doi-org.recursos.biblioteca.upc.edu/10.1201/b11731. ISBN 9781439820971.