Course guide
320151 - GID - Integral Design Management

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: 2022  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:
5. DES: Knowledge of design tools for their use in design projects and product redesign.
6. DES: Knowledge of the design methodology
7. DES: Ability to detect changes in society.
8. DES: Ability to identify the language of shapes, their values and their relations with the cultural setting.
9. DES: Ability to design and project in different situations, effectively and efficiently with different agents involved in the process of design and industrial development.
10. DES: Capability for packaging design.

Transversal:
1. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.
2. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
3. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.
11. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
12. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
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 operations.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>45,0</td>
<td>30.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>15,0</td>
<td>10.00</td>
</tr>
</tbody>
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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:

Complementary: