COURSE DATA

Data Subject	
Code	34932
Name	Production organization and management
Cycle	Grade
ECTS Credits	6.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
1404 - Degree in Industrial Electronic Engineering	School of Engineering	3	Second term

Subject-matter

Degree	Subject-matter	Character
1404 - Degree in Industrial Electronic Engineering	14 - Projects	Obligatory

Coordination

Name	Department
GIRBES JUAN, VICENT	242 - Electronic Engineering

SUMMARY

The course "Organization and Management of Production" is mandatory and is offered in the third year of the Degree in Industrial Electronics in the second quarter. The curriculum consists of a total of 6 ECTS. It is part of matter called "Projects", whose overall objective is that students gain the ability to apply knowledge gained to the design, development and evaluation of projects and reports, using the methodology and the basic principles of economics, management, quality and organization of production operations as well as legislation, regulation and standardization in the field of industrial engineering. The contents of the course are designed to prepare students in making rational decisions with regard to the production system of the company, considering also the particular given in the electronics industry.

Manage the production system involves complex activities of design, planning and control using several qualitative and quantitative tools. The study of decisions about the process, the workforce, the location, capacity, quality and safety, etc. requires both theoretical knowledge and practical approaches.

During the preparation of the contents of the subject, considering both the decisions of a strategic and tactical we cover most of the issues concerning the organization and production management in the company. However, as each decision itself can be very broad, we have selected the most relevant aspects of each of them and have chosen the most widespread techniques for solving problems related to such decisions.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

It does not require specific knowledge in this matter, due to the introductory level of the subject. However, because of its relationship with the content and skills to acquire, it is recommended to study Oficina Técnica and Ingeniería, Sociedad y Universidad subjects previously. We recommend a proactive attitude of the students, regular attendance and preparation prior to the theoretical and practical content of the course.

OUTCOMES

1404 - Degree in Industrial Electronic Engineering

- CG2 - Ability to manage the activities involved in the engineering projects described in the previous heading.
- CG4 - Ability to solve problems with initiative, decision-making skills, creativity and critical reasoning and to communicate and transmit knowledge, abilities and skills in the field of industrial engineering (with specific industrial electronics technology).
- CG5 - Knowledge to carry out measurements, calculations, assessments, appraisals, surveys, studies, reports, work plans and analogous work.
- CG6 - Ability to deal with specifications, regulations and mandatory standards.
- CG7 - Ability to analyse and assess the social and environmental impact of technical solutions.
- CG8 - Ability to apply the principles and methods of quality control.
- CG9 - Ability to organise and plan work in companies and in other institutions and organisations.
- CG10 - Ability to work in a multilingual and multidisciplinary environment.
- CG11 - Knowledge, understanding and ability to apply the necessary legislation for practising professionally as a qualified industrial engineer.
- CG26 - Basic knowledge of the main production and manufacturing systems.

- CG28 - Applied knowledge of business organisation.

LEARNING OUTCOMES

With the study of this subject students can acquire fundamental knowledge concerning models, tools and techniques for the management of the production, to apply them according to the strategic objectives of the company, identifying the key concepts of operations management and developing skills evaluation of production systems in its technical, economic, social and environmental dimensions. Specifically, this course allow them to obtain the following results of the learning:

2. Knowledge of production and manufacturing systems. (CG26)

3. Know the basics about safety in industrial processes. (CG6)

4. Be able to apply the principles and methods of quality. (CG8)

6. Design processes, equipment and facilities according to standards and specifications. (CG6)

7. Apply the environmental aspects in the design of process equipment and facilities. (CG7)

8. The economic evaluation processes. (CG2)

10. Know the professional organization and basic procedures. Learn about current legislation and, in particular, with regard to prevention and equality. (CG6, CG11)

11. Be able to work in multidisciplinary teams. (CG10)

12. Have capacity for the management of information and the use of information technologies and communications. (CG5)

13. Have capacity for organization and planning, in particular in the field of the company. Have applied knowledge of business organization. (CG9, CG28)

14. Possess ability of critical thinking, creativity and decision-making. (CG4)

15. Be able to collect and interpret information and make judgements on issues of social, scientific, technological or ethics. (CG7)

16. Have learning skills to continue and update your lifelong professional with a high degree of autonomy. (CG4)

DESCRIPTION OF CONTENTS

1. DIRECTION AND STRATEGY OF OPERATIONS

Duration: 2 h.
Contents: Introduction to the operations management. The company and the production subsystem. Objectives and decisions in the area of production. Competitive priorities. Development of the strategy of operations.

2. DESIGN AND DEVELOPMENT OF PRODUCTS AND SERVICES

Duration: 4 h.
Contents: Product and service concepts. Selection of new products. Phases of product design. Design techniques. Time factor. Outsourcing. Design and development services

3. SELECTION OF TECHNOLOGY AND PROCESS DESIGN

Duration: 4 h.
Contents: Concept of process. Types of design processes. Selection criteria: in production and services. The role of ICT. Analysis and measurement of processes. Automation in the design of processes and services. Process reengineering. Maintenance

4. CAPACITY AND LOCATION OF FACILITIES

Duration: 3 h.
Contents: Factors for the location of facilities. Levels. Quantitative methods. Concept and capacity classes. Determination. According to needs in capacity planning. Decision factors and models of location

5. DISTRIBUTION IN PLANT

Duration: 3 h.
Contents: Objectives and basic principles. Study of the process. Process diagrams. Types of plant distributions. Systematic planning: SLP method

6. MANAGEMENT OF THE QUALITY

Duration: 4 h.
Contents: Concept. Dimensions. Costs. Gurus. Total Quality (TQM). Awards for excellence. Basic tools of quality control. Assurance (ISO 9001: 2000)

7. STATISTICAL CONTROL OF QUALITY

Duration: 4 h.
Contents: Statistical methods. Attributes and variables. Sampling. Statistical control of processes (SPC, Six Sigma, etc.). Taguchi methods

8. HUMAN FACTOR

Duración: 2h.
Contenidos: Gestión de RRHH. El papel directivo. Equipos. Diseño del trabajo. Métodos de trabajo. Análisis y productividad. Medición. Planes de Incentivos. Formación.

9. SAFETY AND HEALTH IN THE INDUSTRIAL FIELD

Duration: 10 h.
Contents: Basic concepts on occupational safety and health. Legal framework in the industrial field. Risk management. Prevention. Concepts of environmental safety.

10. THE SUPPLY CHAIN MANAGEMENT

Duration: 4 h.
Contents: Definition. Impact factors. Logistics management. Management of supplies. Warehouses. The distribution. Transport. Reverse logistics.

11. PLANNING OF OPERATIONS

Duration: 4 h.
Contents:. Hierarchy of plans. Planning production Attaché (PAP). (PMP) master plan. Very short term planning. Linear programming (SIMPLEX)

12. INDEPENDENT DEMAND INVENTORY SYSTEMS

Duration: 2 h.
Content: Concept inventory. Reasons. Costs. Independent vs. demand. dependent. Types of inventory systems. Models. Other aspects about direction of inventories.

13. SYSTEMS OF INVENTORY DEMAND DEPENDENT (MRP)

Duration: 4 h.
Content: Material requirements planning. Elements of the system. Examples. Evolution. Planning (CRP) capacity needs. Other aspects on MRP.

14. LEAN PRODUCTION (JIT)

Duration: 4 h.
Content: Philosophy "Just In Time". Push vs. pull. JIT elements. Leveled. Kanban system. Final considerations.

15. OPTIMIZED PRODUCTION (OTP)

Duration: 3 h.
Content: The optimized production technology. Principles and rules of the theory of constraints. DBR solution.

16. CASE STUDY

Duration: 3 h.
Content: PLANT FOR THE PRODUCTION OF ELECTRONIC EQUIPMENT

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	35,00	100
Classroom practices	15,00	100
Laboratory practices	10,00	100
Development of group work	40,00	0
Study and independent work	10,00	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	10,00	0
Preparation of practical classes and problem	5,00	0
Resolution of case studies	20,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

The development of the subject is carried out through theory classes, applied classes and laboratory practice classes.

Theoretical activities will be exposed through theory classes (T). In these classes, the lecture or master class model will be used. The teacher will present by means of presentation and/or explanation the contents of each subject focusing on those key points for the understanding of the same. (CG5, CG6, CG7, CG8, CG9, CG11, CG26)

The **applied or practical activities** (P) will be developed according to the following model: Certain lessons or practical exercises selected by the teacher, will be prepared by all the students, which will be organized in small groups of 2 or 3 students. Before the end of the class, there will be a round of questions by the teacher and a discussion will begin to exchange ideas between the different groups. (CG2, CG4, CG5, CG8, CG9, CG10, CG26)

The **laboratory sessions** (L) will contain activities for the introduction of the practice to be carried out, activities for the development of the experimentation and activities for the analysis and treatment of results. Students will have practice scripts and the experimentation will be carried out entirely by them under the supervision of the teacher. (CG9, CG10, CG28)

EVALUATION

The knowledge acquired by the student may be assessed in the following two ways: on the one hand by means of a continuous assessment; or by means of a final examination.

Continuous Evaluation System. Through this system, those students who regularly participate in training activities will be evaluated. At the beginning of the course, groups of 2 or 3 students will be formed, who will work together. The work will have 3 deliveries with a weight of 15% each (N_E1-N_E3), where the groups will present a report with the results of the proposed exercises. In the last class sessions there will be an oral presentation of the works with a weighting of 10% on the final grade (N_EXP). The knowledge acquired in the laboratory classes will be evaluated by means of a report that will be delivered at the end of each session. In total there will be 3 laboratory practices with a weight of 5% each (N_L1-N_L3). The knowledge acquired in the theory classes will be evaluated by means of an individual objective test, consisting of an examination with theoretical and practical questions of the contents studied throughout the course. The final theory exam grade will contribute 30% of the final grade (N_TEO).

Equation for obtaining the mark in the mode of continuous assessment:

GRADE = 0.15*(N_E1+N_E2+N_E3) + 0.1*N_EXP + 0.05*(N_L1+N_L2+N_L3) + 0.3*N_TEO

In order to pass the subject in this evaluation modality, it is necessary to obtain a final grade equal to or higher than 5.

To be able to average in any of the weights, it will be necessary to obtain a minimum grade of 4. Otherwise, the final grade will be the minimum vale of the part/s with a mark lower than 4.

Single Evaluation System. For those students who for any reason are unable to attend classes regularly or have not passed the continuous assessment, in any of their different evaluations, the assessment of the knowledge acquired will be made through a final exam that will coincide with the final Theory exam of students who have opted for the continuous assessment system. This exam will include the contents of all the face-to-face activities carried out and will consist of three parts: Theory, Problems and Laboratory. The mark of the Theory exam will contribute 30% of the final grade (N_TEO), the mark of the Problem exam will have a weight of 55% (N_PROB), while the mark of the Laboratory exam will contribute to the 15% of the final grade (N_LAB).

Equation for obtaining the mark in the mode of single assessment:

GRADE = 0.3*N_TEO + 0.55*N_PROB + 0.15*N_LAB

In order to pass the subject in this evaluation modality, it is necessary to obtain a final grade equal to or higher than 5.

To be able to average in any of the weights, it will be necessary to obtain a minimum grade of 4. Otherwise, the final grade will be the minimum vale of the part/s with a mark lower than 4.

Students who have not passed the subject in the first call will have to take the exam of a second call on an official date, and the final grade will be calculated following the same criteria as in the single evaluation option of the first call.

In any case, the evaluation system will be governed by the provisions of the Regulation of Evaluation and Qualification of the Universitat de València for Degrees and Masters (https://webges.uv.es/uvTaeWeb/MuestraInformacionEdictoPublicoFrontAction.do?accion=inicio&idEdictoSeleccionado=5639)

REFERENCES

Basic

- Chase, R.; Jacobs, F. y Aquilano, N. (2013): Administración de Operaciones. Producción y cadena de suministros, 13a edición. McGraw Hill. ISBN: 9786071510044
- Heizer, J. y Render, B. (2014): Principios de Administración de Operaciones, 9a edición. Prentice-Hall. ISBN: 9786073223362
- Nahmias, S. (2014): Análisis de la Producción y las Operaciones, 6a edición. McGraw-Hill. ISBN: 9786071511850
- Garriga Garzón, F. (2013): Problemas resueltos de dirección de operaciones, OmniaScience.
- Instituto Nacional de Seguridad y Salud en el Trabajo (https://www.insst.es/)