Universidad Zaragoza

Academic Year/course: 2022/23

30117 - Production Management

Syllabus Information

Academic Year: 2022/23
Subject: 30117 - Production Management
Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia
179 - Centro Universitario de la Defensa - Zaragoza
Degree: 425 - Bachelor's Degree in Industrial Organisational Engineering
563 - Bachelor's Degree in Industrial Organisational Engineering
ECTS: 6.0
Year: 425 - Bachelor's Degree in Industrial Organisational Engineering: 2
563 - Bachelor's Degree in Industrial Organisational Engineering: 3

Semester: 563 - First semester
425 - Second semester
Subject Type: Compulsory
Module:

1. General information

1.1. Aims of the course

The subject and its expected results respond to the following approaches and objectives:
The knowledge and use of basic instruments for the management of the production / operations area in organizations. In particular, we look for:
1. The understanding of the economic phenomena that affect them day by day, not only as future engineers but as individuals trained members of a society.
2. The approach to the operational reality of the company.
3. Knowledge of an economic and business glossary, necessary for analysis and discussion.
4. Start contact with the reading, the meaning and interpretation of the economic, financial and operational information of the company.
5. Present the basic concepts about the meaning of the production function in organizations and the interrelation that it generates with the rest of the areas of the organization.
6. Analyze, based on the available information, the organization of the productive activity of the company.
7. To be able to translate, through the resolution of practical cases published for that purpose, all the theoretical knowledge acquired, making an impact on their autonomous work, given the importance of non-contact credits within the framework of the European Higher Education Area (EHEA).

BUSINESS PROFILE

These approaches and objectives are in line with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/) in particular Goal 9: Indutry, innovation and infrastructure and Goal 12: Responsible production and consumption, in such a way that the acquisition of the course learning outcomes provides training and competence to contribute to their achievement to some degree.

DEFENSE PROFILE

These approaches and objectives are in line with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/) in particular Goal 9: Indutry,

innovation and infrastructure and Goal 12: Responsible production and consumption, in such a way that the acquisition of the course learning outcomes provides training and competence to contribute to their achievement to some degree.

1.2. Context and importance of this course in the degree

The subject "Direction of production" is a subject of 6 ECTS credits and compulsory that is part of the Degree in Industrial Organization Engineering.

Once the student has completed the basic subjects that provide an overview of the functioning of organizations, the subject "Production Management" will show you how to manage this functional area, recognizing that it should act in coherence with the rest of functional areas and that can be source of competitive advantage for the success of the company in its sector. The meaning of the subject in the degree is justified in that its design aims to introduce the student to the knowledge of the models and quantitative techniques which will lead to efficient decision making in the area of operations, which determines the productive activity of the company. In this way, it helps to train professionals capable of performing tasks of management, advice and evaluation in organizations, serving the general objective of the Degree in Industrial Organization Engineering.

DEFENSE PROFILE

This subject contributes to the formation of Army Officers by providing the knowledge and skills necessary for the task management and the optimisation of the use of human and material resources with an approach oriented towards the fulfilment of the mission.

1.3. Recommendations to take this course

Although there are no prerequisites for the completion of this subject, it is recommended that those who take it take into account the knowledge acquired in "Fundamentals of Business Administration" and in "Organization and Management of companies", for a better contextualization and understanding of it.

2. Learning goals

2.1. Competences

Upon passing the subject, the student will be more competent to acquire the following skills:

Basic and general competences:

- Ability to plan, budget, organise, manage and monitor tasks, people and resources (C02).
- Ability to solve problems and take decisions with initiative, creativity and critical reasoning (C04).
- Ability to apply Information and Communication Technologies (ICTs) within the field of engineering (C05).
- Ability to communicate knowledge and skills in Spanish (C06).
- Ability to analyse and evaluate the social and ecological impact of technical solutions, behaving ethically, with professional responsibility and social commitment, always striving for quality and continuous improvement (C08).
- Ability to work in a multidisciplinary group and in a multilingual setting (C09).
- Ability to manage information; skills to handle and apply technical specifications and the necessary legislation to practise engineering (C10).
- Ability to continue learning and develop self-learning strategies (C11).

Specific competences:

- Knowledge and capacities to design, manage and organize productive and logistic systems in a business (C29).

2.2. Learning goals

To overcome this subject, the student must attain the following learning goals:

- Distinguishes the different production strategies as well as identifies the influence of the globalisation of operations on the company's production strategy and plans them.
- Relates the types of production processes with the life cycle of the product in the market and selects the production process according to different parameters.
- Knows how to apply analysis techniques to select the most suitable equipment for the production process.
- Relates the types of plant layout with the type of production system. Knows how to carry out the balancing an assembly line.
- Applies plant layout techniques by process.
- Knows how to use the different diagrams for the representation of working methods.
- Identifies the different stages in the improvement of a production process.
- Applies time measurement and task time calculation techniques.
- Organises the planning, programming and production control of a company. Knows and differentiates the different stages.
- Uses techniques and applications to manage the company's production process. Is able to put them into practice in real environments.

- Makes production scheduling decisions taking into account capacity analysis.
- Applies operations scheduling techniques and models to make decisions on job allocation and sequencing.
- Knows and knows how to use techniques for the continuous improvement of the company's production processes.

2.3. Importance of learning goals

The organisations produce goods and/or services, which they release to the market and, for this, they must coordinate a set of elements that configure their operations; interrelating them with the rest of activities in the areas of marketing, finance and accounting, etc.

The students knowledge of the adequate quantitative techniques will allow efficient decision making in the operations area. In this way, it contributes to training professionals capable of performing management tasks, counsel and evaluation in organisations, in order to support the general objective of the Degree in Industrial Organization Engineering.

Among the different types of engineering professionals companies are looking for, there are: (i) managers of companies in different functional areas, such as production/operations, logistics, or quality, (ii) project managers and (iii) purchasing and supply managers, among others. In order to carry out the previous professional tasks effectively and efficiently, it will be necessary to master the contents of the subject.

Furthermore, the learning goals of this subject are also essential for future Army Officers, since most of their task focuses on the management of activities in which human and material resources must be optimised in order to carry out the entrusted missions as effectively and efficiently as possible.

The importance of the learning goals of this subject lies in knowing the importance of concepts such as production, productivity, break-even point, yield management, MRP (Material Requirements Planning) and ERP (Enterprise Resource Planning), among others.

Knowledge of how the production/operations area of the organizations works and the capacity to perform any work related to their management is considered essential to access jobs that involve decision making in the production/operations area as well as the decisions made by the people responsible for planning activities.

3. Assessment (1st and 2nd call)

3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

SPECIALIZATION IN BUSINESS

CONTINUOUS EVALUATION TEST

Following the spirit of Bologna regarding the degree of involvement and continued work of the student throughout the course, the evaluation of the subject contemplates the method of Continuous Evaluation as the most appropriate to be in line with the guidelines set by the framework of the EEES.

However, in order to improve the student's motivation and without restricting the right to opt for continuous assessment, attendance at daily class activities will be mandatory. For these purposes, it will be considered valid if the attendance to class is accredited in more than 80%.

Therefore, different activities have been designed, consisting of Evaluation Tests on the thematic blocks in which the subject of the course has been structured.

The evaluation process will be carried out according to the:

? Direct observation of the student to know his / her attitude towards the subject and the work it demands (attention in class, completion of commended assignments, resolution of issues and problems, active participation in the classroom, etc.).

? Checking their progress in the conceptual field (questions in class, comments in the classroom, etc.).

? Performing oral and / or written tests periodically to assess the degree of knowledge acquired, as well as the qualities of expression that, at this educational level, must be widely corrected.

The detail of the evaluation tests is as follows:

? The Assessment Tests will consist of written tests and practical work with a value of 100% of the final grade, specifically:

1. Written tests. For the evaluation of the learning results will consist of TWO theoretical-practical tests of the contents seen to date, consisting of the development of theory questions and problem solving. The evaluation criteria for the questions go through the accuracy, relevance and clarity in the answer to them. Constitutes 60% of the valuation

2. PRACTICAL Tests. For the evaluation of the learning results will consist in the preparation of works that will be published in the Moodle platform. The evaluation criteria for these tests are the obtaining of results, analysis and interpretation of the same. It constitutes 40%.

? To compensate partials with jobs it is essential to approve both.

? In the event that a result of less than 5 and greater than 4 points out of 10 is obtained in some partial and an average score of more than 7 points would serve to approve the suspended partial.

? For the first call may be submitted those students who suspend a partial and only examine the partial suspended.

? For the second call may present those students who had not passed the subject in the first call with the entire agenda.

GLOBAL EVALUATION TEST

Those students who so wish may be eligible, in the manner and within the term that the center considers, for the possibility of being evaluated through an Extraordinary Global Evaluation in the call, in front of the Continuous Evaluation collected above.

The Extraordinary Global Assessment will consist of a single global test with which 100% of the student's grade will be evaluated. Said test will gather the content of all the material treated throughout the course, by means of theoretical and

practical questions of the same type and maintaining the same criteria for its correction as those indicated for the Continuous Evaluation.

For the knowledge of the dates of the aforementioned test, I refer to the EUPLA website (http://www.eupla.unizar.es).

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First Call

Continuous assessment:

The students will be able to pass the total of the subject by the continuous assessment procedure. To do this, they must demonstrate that they have achieved the expected learning outcomes by passing the assessment instruments indicated below, which will be carried out throughout the semester:

1. Continuous work activities. These must be carried out within a predetermined period of time and may consist of previous readings, short written assignments or short questionnaires. Some of these activities will be carried out in the student's study time and others in the face-to-face sessions. Their weight in the final mark is 30%.
2. Practical cases that will consist of the group resolution of simulated situations proposed to meet the objectives set and using the specific methodological tools indicated. Their weight in the final mark is 40%.
3. A theoretical-practical integration test consisting of a final test covering all the contents of the course. Its weight in the final grade is 30%.

In the final mark of the continuous assessment (100%) all the assessment instruments carried out throughout the course and its weight will be taken into account. To pass the subject, he student?s final grade must be equal to or greater than 5 and have achieved a minimum mark of 4 in each of the 3 assessment instruments.

Final Exam:

The students who do not pass the subject by continuous assessment or who would like to improve their grades, will have the right to take the Final Exam set in the academic calendar, prevailing, in any case, the best of both grades. This global assessment will be equivalent to the continuous assessment test described and will have the 100% weight in the final grade. This Final Exam will consist of an exam with theoretical and practical multiple-choice questions, as well as problem solving using the tools described in the course. To pass the subject, the student?s final grade must be equal to or greater than 5.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

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The learning process designed for this subject is based on the following:

Strong interaction between the teacher/student. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The subject is conceived as a combination of contents, yet organized into two fundamental and complementary forms, which are: the theoretical concepts of each teaching unit and the solving of problems or the resolution of questions at the same time supported by other activities.

The organization of teaching will be carried out using the following steps:

- Lectures: Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamental, structuring them into topics and or sections, interrelating them.
- Practice Sessions: The teacher resolves practical problems or cases for demonstrative purposes. This type of teaching complements the theory shown in the lectures with practical aspects.
- Individual Tutorials: Those carried out giving individual, personalized attention with a teacher from the department. These tutorials may be in person or online.

The approach, methodology and assessment of this guide are intended to be the samefor any teaching scenarios. They will be adapted to the social-health situation at anyparticular time, as well as to the instructions given by the authorities concerned.

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In order to achieve the objectives mentioned in section 3.1, a methodology based on active student learning and formative assessment will be applied. The main methodological tools to be applied will be the following:

- Flipped classroom.
- Lectures.
- Practice session
- Tutorials.

The approach, methodology and assessment of this course is prepared to be equivalent in any teaching scenario. It will be adjusted to the socio-sanitary conditions of each moment, as well as to the indications given by the competent authorities.

4.2. Learning tasks

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Throughout the semester the course includes the following learning tasks:

Face-to-face generic activities:

1. Lectures: the theoretical concepts of the subject will be explained and practical examples will be developed by the teacher.

2. Practice tutored problems and cases for discussion: Students will develop examples and conduct problems or case studies concerning the theoretical concepts studied.

Generic non-class activities

1. Tutored autonomous activities: These activities will be guided by the teacher of the subject. They will focus both papers, either individually or in small groups, as the study methodology necessary or convenient for the assimilation of each of the aspects developed in each subject.
2. Reinforcement activities: Through the virtual learning portal Moodle various activities that reinforce the basic contents of the subject will be published. The implementation of these activities will be personalized and controlled.
3. Individual tutorials: They may be actual or virtual.
4. Independent learning activities: Students must carry out the for:
? The study and assimilation of the theory presented in lectures.
? Understanding and assimilation of solved problems and practical cases.
? The preparation of seminars, solving proposed problems, etc.
? The preparation of the written tests Continuous Assessment and Global Assessment.

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In order to achieve the objectives mentioned in section 3.1, the following activities will be carried out:

- Flipped classroom: Activities in which, based on previous individual work, the topic is analysed in depth under the guidance of the teacher.
- Lectures: Theoretical and practical activities in which student participation is encouraged. In addition, the contents will be illustrated with examples and real cases of their future professional activity.
- Practical sessions: Discussion activities and group work to solve problems.
- Tutorials: These may be both individual and group, and may be organised either at the proposal of the students or at the suggestion of the teaching team.

These activities may be supported by the use of different digital technologies.

4.3. Syllabus

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The contents of the subject are essential for achieving learning outcomes.

The choice of the content of the various teaching units was made seeking the express clarification of the final objective so that with the combination of knowledge the student obtains a structured and assimilable knowledge to a student in Industrial Management Engineering
The theoretical basis articulated in ten teaching units encompassed in four thematic sections. These topics collect the contents needed for the acquisition of predetermined learning outcomes.

SYNTHETIC CONTENT

Topic 1. INTRODUCTION TO OPERATIONS MANAGEMENT

Topic 2: PURCHASING MANAGEMENT

Topic 3: DEMAND ANALYSIS, FORECASTING AND PLANNING

Topic 4: INVENTORY MANAGEMENT

Topic 5: STATISTICAL QUALITY CONTROL FOR FINISHED PRODUCTS

Topic 6: PROGRAMMING AND CONTROL PROJECT

Topic 7: PRODUCTION STRATEGY

Topic 8: METHODS of ENGINEERING. WORK STUDY

Topic 9: TIME AND MOTION STUDY

Topic 10: PLANT LAYOUT

Topic 11: LEAN MANUFACTURING

Each topic exposed has associated practices in this regard, whether through practical cases, interpretation and commentary on readings associated with the subject and/or work leading to obtaining results and their analysis and interpretation. As topics are developed they will go raising practices in the classroom or through the Moodle platform.

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The different parts of the program are made up of various themes and thematic groupings, as shown in the synthetic content presented below

- Block I: Introduction
  - Production Strategies. Global enviroment
  - Clasification and selection of Production Processes
- Block II: Design of the Production Process
  - Work Management
  - Plant Distribution
- Block III: Production schedule, Programming and Control.
  - Production mangement
  - Master Production Schedule
  - Capacity planning
  - Production Scheduling and Control
- Block IV: Techniques for Continuous Improvement.
  - Total Productive Maintenance
  - Lean Manufacturing
  - Industry 4.0

4.4. Course planning and calendar

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The subject has 6 ECTS credits, which represents 150 hours of student work in the subject during the semester, in other words, 10 hours per week for 15 weeks of class.

The summary of the timing of the course activities would be the following:

? Lectures: 35 hours

? Practical classes: 14 hours

? Assessment tests: 6 hours

? Tutored practices: 5 hours

? Tutored Independent learning activities: 32 hours

? Independent learning activities: 58 hours

In the lecture, the theoretical exposition is combined with problem-solving.

The practical classes are directed to the realization of problems, presentation, and discussion of cases. The above activities are distributed weekly in four hours of lecture.

The weekly distribution of the course is done in three blocks of content that structure the subject matter and may vary depending on the evolution of teaching.

? Block I: Week 1 to Week 3
? Block II: Week 4 to Week 9
? Block III: Week 10 to Week 14
? Block IV: Week 15

The dates of the final exams will be published officially in http://www.eupla.unizar.es.

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The subject has 6 ECTS credits, which represents 150 hours of work for the student. These work hours are distributed as follows:

- PRESENTAL GENERAL ACTIVITIES (55 hours)
  - Theory and practice sessions: 45 hours (in 30 sessions)
  - Tutorials: 4 hours
  - Evaluation: 6 hours
- NON-CLASSROOM BASED ACTIVITIES (95 hours)
  - Preparation of flipped classroom sessions (30 hours)
  - Comprehension and assimilation of contents (25 hours)
  - Self-assessment activities (10 hours)
  - Preparation of the written evaluation tests (20 hours).

At the beginning of the course, the teaching staff will publish the detailed programme, as well as the specific tasks and activities to be carried out and their deadlines. In addition, this information will be available throughout the course on the Moodle platform, which you can consult by logging in with your username and password at http://moodle.unizar.es.

The dates of the final exams will be published officially at: http://cud.unizar.es/calendarios

4.5. Bibliography and recommended resources

SPECIALIZATION IN BUSINESS

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30117

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http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30117