Industrial Organization

Academic Year: (2022 / 2023) **Review date: 20-05-2022**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: DURAN HERAS, ALFONSO

Type: Compulsory ECTS Credits : 3.0

Year : 4 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Introduction to Engineering Management

OBJECTIVES

By the end of this subject, students will be able to have:
1. knowledge and understanding of the basic concepts about production planning and control and logistics.
2. awareness of the wider multidisciplinary context of engineering applying knowledge of mathematics, statistics, economics and other scientific fields to the analysis of business situations.
3. the ability to apply their knowledge and understanding to identify, formulate and solve problems of industrial organization using established methods;
4. the ability to apply their knowledge and understanding to analyse engineering products, processes and methods;
5. the ability to apply their knowledge to develop and realise design and operation of productive and logistic systems;
6. the ability to select and use appropriate tools and methods in industrial organization;
7. an awareness of the non-technical implications of engineering practice;
8. demonstrate an awareness of project management and business practices, such as risk and change management, and understand their limitations;

DESCRIPTION OF CONTENTS: PROGRAMME

1. Organization of industrial firms.
1.1. Introduction to operations, production and the Supply Chain.
1.2. Qualitative and quantitative tools and techniques applicable in the organization of industrial firms.

2. Demand forecasting, inventory management and warehousing.
2.1. Demand management.
2.2. Independent demand inventory management models. Lot sizes.
2.3. Warehousing. Lifecycle: reception, warehousing, picking, expedition. Information Systems.

3. Logistics and manufacturing planning and control systems. MRP.
3.1. Manufacturing Planning and Control Systems (MPCS).
3.2. Materials Requirements Planning (MRP). Master Schedule. Needs breakdown and anticipation.

4. Alternative approaches for coordinating production.
4.1. Push, pull, hybrid.
4.2. JIT.

5. (Re-)Design of products and processes.
5.1. Product (Re-)Design.
5.2. Process (Re-)Design.
5.3. Work organization in industrial environments.

LEARNING ACTIVITIES AND METHODOLOGY

Lectures, exercises, practical sessions, cases and assignments to be carried out by the students and discussed during the sessions, readings assigned by the instructor or identified by the students.

ASSESSMENT SYSTEM

Partial exams will be held, approximately in the tentative weeks indicated in the schedule. Optionally, complementary evaluation system. May apply sampling based grading.
Final evaluation will be based on a written final exam that will provide a global assessment of the knowledge, skills and competences acquired.

Minimimum grade required in the final exam: 4

% end-of-term-examination:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

BASIC BIBLIOGRAPHY

- Instructor provided material: Slides, exercises... URLs and other Internet resources provided by the instructor, Through Aula Global..
- Jacobs, F.R.; Chase, R.B.; Aquilano, N.J. Operations and Supply Chain Management, Mcgraw-Hill, 16e (2019)

ADDITIONAL BIBLIOGRAPHY

- J. Heizer, B. Render Operations Management, Prentice Hall, 10e. (2011)

- R.G. Schroeder, S.M. Goldstein, M.J Rungtusanatham Operations management. Contemporary concepts and cases, Mc Graw-Hill, 5e (2010)