

Academic Year: ( 2019 / 2020 )

Review date: 24-01-2020

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: GARCIA GUTIERREZ, ISABEL

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 1

## OBJECTIVES

- Skills to integrate knowledge, decision making, problem solving in multidisciplinary and/or new contexts.
- Skills to face the complexity of judging, using incomplete or limited information, including reflections on social responsibility and ethics linked to the application of their knowledge.
- Skills to investigate and learn autonomously.
- Skills and knowledge to organize and manage companies. Legal framework and occupational hazard prevention.
- Skills and knowledge on strategy and planning, applied to different organizational structures. Integrated project management. Environmental management.
- Knowledge on information systems, industrial organization, operations, supply chain and quality control.

## DESCRIPTION OF CONTENTS: PROGRAMME

- Introduction:
  - Definitions. Main decisions in the management of production and logistics systems.
  - Integration of the supply chain. Agents involved in supply chains.
  - Operations in the production and logistics systems.
  - Procurement, production, distribution, customer service, reverse logistics.
- Strategic management of the supply chain:
  - Key factors for the design and organization of production and logistics systems.
  - Performance metrics for the supply chain (KPIs).
  - Customer orientation. The supply chain at the strategy level.
  - Information systems for the integration of the supply chain.
  - Sourcing decisions.
  - Design and operation Integrated project management.
- Demand forecast:
  - Influence of demand on operations.
  - Demand planning and forecasting.
  - Key concepts in demand forecasting.
  - Quantitative forecast models.
- Supply and demand planning:
  - Supply and demand coordination. Main levers for coordination.
  - Planning added. Quantitative Models Offer planning.
  - Endemic nature of the solutions. Integrated analysis of coordination measures.
- Material flow planning:
  - Inventories. Types and role in the supply chain.
  - Inventory management systems. Multi-item models and quantity discounts.
  - Influence of demand variability in the flow and costs of inventories.
  - Stochastic models and service level.
- Network design decisions:
  - Types of decisions related to productive and logistic system configuration.
  - Location and size decisions.
  - Distribution network design.

- Sustainable Supply Chains:
  - Current situation and major challenges for sustainability.
  - Circular economy and supply chains.
  - Quality assurance systems. Occupational and environmental risk management.
  - Legal framework.

## LEARNING ACTIVITIES AND METHODOLOGY

Learning activities:

- Theoretical classes. Master expositions (0.77 ECTS).
- Practical theoretical classes. Explanation of quantitative models combined with illustrative exercises (0.69 ECTS).
- Practical classes. Exercises to consolidate the comprehension of quantitative models (0.5 ECTS).
- Practical theoretical classes. Discussion and sharing of case studies, with prior preparation by students (0.16 ECTS).
- Team work. Presentation, in groups of 3 students, of an in-depth analysis of a real company, prepared by the group (0.24 ECTS).
- Laboratory practices. Work sessions on the computer for the resolution of optimization exercises (0.16 ECTS).
- Individual and group work of the student. Tutoring, individual and collective (3.48 ECTS).

Methodology:

- Preparatory and previous work of the student. Analysis of exercises and critical reading of texts recommended by the teacher: Exercises, articles, audiovisual material, reports ..., either for further discussion in class, or to expand and consolidate knowledge.
- Master classes. Exhibitions in class of the teacher with support of computer and audiovisual media, in which the main concepts of the subject are developed and the materials and bibliography are provided to complement the learning.
- Practical sessions. Problem solving, etc. raised by the teacher individually or in a group.
- Laboratory practices. Teamwork sessions, with computer for the resolution of optimization exercises.
- Preparation of an extensive group work on a company of your choice.
- Class discussion, under teacher moderation, of case studies on companies selected by the teacher and previously worked by students individually. Oral presentation of the results of the report prepared by the students about the company of their choice. Peer evaluation activities, complementary to teacher evaluation.

## ASSESSMENT SYSTEM

Partial exams will be held (students will be previously informed of the dates) and homework handling. Optionally, complementary evaluation system.

Minimum grade required in the final exam: 4

<b>% end-of-term-examination:</b>	60
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	40

## BASIC BIBLIOGRAPHY

- Catherine Weetman A Circular Economy Handbook for Business and Supply Chains, Kogan Page, 2017
- Chopra, S.; Meindl, P. Supply Chain Management. Strategy, Planning & Operation, Prentice Hall, 2010
- Hugos, Michael H. Essentials of supply chain management, John Wiley & Sons, 2011

## ADDITIONAL BIBLIOGRAPHY

- Bowersox, D.J.; Closs, D.J.; Cooper, M.B. Administración y logística, McGraw-Hill, 2007
- Simchi-Levi, D.; Kaminsky, P., Simchi-Levi, E. Designing and Managing the Supply Chain, McGraw-Hill, 2000