

Academic Year: (2022 / 2023)

Review date: 30-05-2022

Department assigned to the subject: Department of Mechanical Engineering

Coordinating teacher: GARCIA GUTIERREZ, ISABEL

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

It is required to have knowledge of Industrial Organization and Fundamentals of Business Management of the degrees of the Industrial family. It is also recommended (although not essential) to have knowledge of Design and Simulation of Production Systems.

OBJECTIVES

- Skills to integrate knowledge, problem solving in multidisciplinary and/or new contexts, decision making and ability to argue about their suitability in light of knowledge acquired.
- Skills to investigate and learn autonomously.
- 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 and knowledge to organize and manage companies. Environmental management. Legal framework and occupational hazard prevention.
- Skills and knowledge on strategy and planning applied to different organizational structures and to project 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.
- 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.
- 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.
 - Integrated analysis of coordination measures.

- Network design decisions:
 - Types of decisions related to productive and logistic system configuration.
 - Location and size decisions.
 - Distribution network design.

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. Sustainability and Supply chains. Preparation and presentation in public of an extensive group work (3 people) (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 a group project on a specific subject.
- 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 group project. Peer evaluation activities, complementary to teacher evaluation.

ASSESSMENT SYSTEM

Partial exam will be held and homework handling.

Minimum grade required in the final exam: 4

% end-of-term-examination:	60
% of continuous assessment (assignments, laboratory, practicals...):	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, 2015
- Hugos, Michael H. Essentials of supply chain management, John Wiley & Sons, 2011

ADDITIONAL BIBLIOGRAPHY

- Catherine Weetman A Circular Economy Handbook for Business and Supply Chains, Kogan Page, 2017
- Hugos, Michael H. Essentials of supply chain management, John Wiley & Sons, 2011