

Introduction to engineering management

Academic Year: (2023 / 2024)

Review date: 28-04-2023

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: HERNANDEZ PAZ, VIRGINIA

Type: Basic Core ECTS Credits : 6.0

Year : 2 Semester : 2

Branch of knowledge: Engineering and Architecture

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

No prerequisites.

OBJECTIVES

By the end of this subject, students will be able to have:

1. knowledge and understanding of the scientific and mathematical principles underlying the branch of industrial engineering;
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 analyse engineering products, processes and methods;
4. an understanding of methodologies, and an ability to use them in the analysis of business situations;
5. the ability to select and use appropriate methods in the management of the companies;
6. an awareness of the non-technical implications of engineering practice within the management of the companies;
7. function effectively as an individual and as a member of a team;
8. demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a societal and environmental context, and commit to professional ethics, responsibilities and norms of engineering practice;
9. demonstrate an awareness of project management and business practices, such as risk and change management, and understand their limitations;

DESCRIPTION OF CONTENTS: PROGRAMME

1. The Firm: management and organization
 - 1.1. Concept and nature of the firm. The entrepreneur and the firm
 - 1.2. The management function. Business function
 - 1.2. Types of companies and legal forms
 - 1.4. Corporate governance
 - 1.5. The role of engineering and engineers in Business Administration
2. Strategic analysis and value creation
 - 2.1. Strategic analysis. Objectives and strategies of the firm
 - 2.2. Analysis of the business environment. Competition and externalities
 - 2.3. Firm's internal analysis and value chain
 - 2.4. Value creation. Competitive strategy and business models.
3. Financial management: firm's economic-financial analysis
 - 3.1. Accounting and financial statements
 - 3.2. Accounting principles. Auditing
 - 3.3. Preparation of the financial statements
 - 3.4. Analysis of economic and financial performance
4. Financial management: investment and financing
 - 4.1. Investment decisions
 - 4.2. Time value of money
 - 4.3. Evaluation of investment projects
 - 4.4. Financing decisions. Internal and external sources of financing

5. Marketing and sales management
 - 5.1. The marketing Plan
 - 5.2. Segmentation and positioning
 - 5.3. Sales objectives. Demand estimation
 - 5.4. Marketing-mix decisions

6. People and team management
 - 6.1. The management role. Leadership and motivation
 - 6.2. People management
 - 6.3. Projects and teams management

7. Innovation and business growth. Tech companies
 - 7.1. Concept and types of innovation
 - 7.2. Innovation Management. Strategies for the protection and exploitation of technology
 - 7.3. Tech companies. Tech ecosystems

LEARNING ACTIVITIES AND METHODOLOGY

Lectures, exercises, business plan, 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. In addition, the students carry out a group assignment, applying the knowledge acquired in the course.

ASSESSMENT SYSTEM

60% Final written exam. Minimum grade required in the final exam: 4/10
 40 % Continuous evaluation.

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

BASIC BIBLIOGRAPHY

- Navas López, J.E.; Guerras Martín, L.A. Fundamentals of Strategic Management, Thomsom, 2018

ADDITIONAL BIBLIOGRAPHY

- Erasmus, B; Rudansky-Kloppers, S.; Strydom, J.; Badenhorst-Weiss, JA; y otros (eds.). Introduction to Business Management, Oxford University Press., 2019
- Schilling, M. Strategic Management of Technological Innovation, McGraw Hill, 2017

BASIC ELECTRONIC RESOURCES

- Navas López, J.E. y Guerras Martín, L.A. . Fundamentals of strategic management. Thomson.: https://bibliotecas.uc3m.es/permalink/f/63b8kq/34UC3M_ALMA51302368630004213