

Academic Year: ( 2024 / 2025 )

Review date: 24-01-2025

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.

**LEARNING OUTCOMES**

RA1.1 Knowledge and understanding of the scientific and mathematical principles underlying their branch of engineering.

RA1.4 Awareness of the wider multidisciplinary context of engineering.

RA2.2 The ability to apply their knowledge and understanding to analyse engineering products, processes and methods.

RA3.2 An understanding of design methodologies, and an ability to use them.

RA5.1 The ability to select and use appropriate equipment, tools and methods.

RA5.4 An awareness of the non-technical implications of engineering practice.

RA6.1 Function effectively as an individual and as a member of a team.

RA6.3 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.

RA6.4 Demonstrate an awareness of project management and business practices, such as risk and change management, and understand their limitations.

CB1 Students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.

CB2 Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defence of arguments and problem solving within their field of study.

CG1 Ability to resolve problems with initiative, creativity decision-making and critical reasoning skills, and to communicate and transmit knowledge, skills and abilities in the Industrial Engineering area.

CG2 Knowledge and ability to organize and manage projects. Knowledge of organizational structure and the functioning of a project office.

CG5 Sound knowledge of the concept of business, and the institutional and legal framework of a company. Business organization and management.

CG7 Knowledge, capacity to analyze and assess the social and environmental impact of technical solutions, and to apply environmental, and sustainability technologies.

CT2 Ability to establish good interpersonal communication and to work in multi-disciplinary and international teams.

**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

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

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

40 % Continuous evaluation.

#### BASIC BIBLIOGRAPHY

- Navas López, J.E.; Guerras Martín, L.A. Fundamentals of Strategic Management, Thomson, 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](https://bibliotecas.uc3m.es/permalink/f/63b8kq/34UC3M_ALMA51302368630004213)