Introduction to engineering management

Academic Year: (2023 / 2024) **Review date: 20-04-2023**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: PAZ APARICIO, CARMEN

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

SKILLS AND LEARNING OUTCOMES

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.
COCIN4. Ability to resolve problems with initiative, decision-making, creativity, and critical reasoning skills and to communicate and transmit knowledge, skills and abilities in the Industrial Engineering field.
COCIN9. Ability to organize and plan within a company as well as in other institutions and organizations.
CEB6. Sound knowledge of the concept of business, and the institutional and legal framework of a company. Business organization and management.
CER11. Applied knowledge of business organization.
CT2. Ability to establish good interpersonal communication.

By the end of this content area, students will be able to have:
RA1.1. Knowledge and understanding of concept of private companies and their institutional and legal framework, as well as with the essentials of business management.
RA1.4. Awareness of the wider multidisciplinary context of engineering, applying knowledge of mathematics, statistics, economics and other scientific fields to the analysis of business situations.
RA2.1. The ability to apply their knowledge and understanding to analyse engineering processes and methods.
RA3.2. An understanding of methodologies, and an ability to use them in the analysis of business situations.
RA5.1. The ability to select and use appropriate methods in the management of the companies.
RA5.4. An awareness of the non-technical implications of engineering practice within the management of the companies.
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.

OBJECTIVES

Upon successful completion of this course, students will be able to:
1. Have knowledge and understanding of the fundamentals of business organization and management, the concept of company, institutional and legal framework of the company.
2. Be aware of the multidisciplinary context of industrial engineering, applying knowledge of mathematics, statistics, economics and other scientific fields to the analysis of business situations.
3. Have the ability to apply their knowledge and understanding to the analysis of process engineering and methods.
4. Have an understanding of the different methods and the ability to use them to analyze business situations.
5. Be able to select and use appropriate methods for business management.

6. Be aware of the implications of engineering practice in business management.
7. Function effectively both individually and as a team.
8. Demonstrate awareness of the responsibility of engineering practice, social and environmental impact, and commitment to professional ethics, responsibility and standards of engineering practice.
9. Demonstrate awareness of business practices and project management, as well as risk management and control, and understand their limitations.

DESCRIPTION OF CONTENTS: PROGRAMME

1. The Firm. Types
1.1. Concept and nature of the firm. The entrepreneur and the firm
1.2. Business processes and business functions
1.3. The role of engineering and engineers in Business Administration
1.4. Types of companies & legal forms

2. Value creation: environment and competitive advantage
2.1. Value creation and firm¿s goals
2.2. The business environment and competence
2.3. Firm¿s internal analysis and value chain
2.4. Competitive strategy and business models

3. Financial management (I)
3.1. Introduction to Accounting
3.2. Firm¿s Financial-economic structure. Financial statements
3.3. Alternatives for financing the firm

4. Financial management (II)
4.1. Firm¿s economic and financial viability
4.2. Ratios and financial leverage analysis
4.3. Investment analysis: NPV and IRR

5. Marketing and sales management
5.1. The marketing Plan
5.2. Segmentation and positioning
5.3. The marketing mix variables

6. The management function.
6.1. The role of management
6.2. Human resource management
6.3. Projects and teams management

7. Entrepreneurship and innovation: Technology-based companies
7.1. Concept and types of innovation
7.2. Innovation Management. Strategies for the protection and exploitation of technology
7.3. Technological entrepreneurship. Technology-based companies

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.

ASSESSMENT SYSTEM

60% Final exam
40% Continuous evaluation (20% Business Plan, 15% Partial Exams, 5% Individual Participation)

It is compulsory to obtain a minimum of 4 points over 10.

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

BASIC BIBLIOGRAPHY

- S Rudansky-Kloppers, B Erasmus, J Strydom, JA Badenhorst-Weiss, y otros (eds.) Introduction to Business Management., Oxford University Press, 2013

ADDITIONAL BIBLIOGRAPHY

- Schilling, M. Strategic Management of Technological Innovation, McGraw Hill, 2017