

Academic Year/course: 2022/23

## 25813 - Economic and business aspects of design

### Syllabus Information

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**Academic Year:** 2022/23

**Subject:** 25813 - Economic and business aspects of design

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 558 - Bachelor's Degree in Industrial Design and Product Development Engineering

**ECTS:** 6.0

**Year:** 2

**Semester:** Second semester

**Subject Type:** Basic Education

**Module:**

## 1. General information

### 1.1. Aims of the course

The subject Economic and Business Aspects of Design is an introduction to the company and its organization from the point of view of the design of products and processes, being a basic training of the engineer. It includes contents of Economy and Business, with special importance of strategic planning, organization, leadership management and teamwork, decision making, economic evaluation and any other aspect directly related to the design and development of the product.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDGs, of the 2030 Agenda (<https://www.un.org/sustainabledevelopment/en/>) and certain specific goals, in such a way that the acquisition of the Learning outcomes of the subject provide training and competence to the student to contribute to a certain extent to their achievement:

- Objective 4: Ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all.
  - Target 4.7: By 2030, ensure that all students acquire the theoretical and practical knowledge necessary to promote sustainable development, including through education for sustainable development and sustainable lifestyles, human rights, equality of gender, the promotion of a culture of peace and non-violence, world citizenship and the appreciation of cultural diversity and the contribution of culture to sustainable development.
- Objective 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
  - Target 8.2: Achieve higher levels of economic productivity through diversification, technological modernization and innovation, including by focusing on sectors with high added value and intensive use of labor.
  - Target 8.3: Promote development-oriented policies that support productive activities, the creation of decent jobs, entrepreneurship, creativity and innovation, and promote the formalization and growth of micro, small and medium-sized enterprises, including through access to financial services.
- Objective 12: Guarantee sustainable consumption and production patterns.
  - Target 12.2: By 2030, achieve sustainable management and efficient use of natural resources.
  - Target 12.5: By 2030, significantly reduce waste generation through prevention, reduction, recycling and reuse activities.

### 1.2. Context and importance of this course in the degree

The subject corresponds to the basic formation of the degree and mandatory character with an allocation of 6 credits.

The subject is located in the second semester of 2nd year, once the student has acquired basic training in Mathematics and is taught at the same time as the subject of Statistics, with which it is complemented in a special way in the strategic analysis of the particular environment in the module work. On the other hand, the course anticipates and provides basic knowledge that will be useful in the 3rd year for the development of the subject of Marketing and Legal Aspects of Design.

### 1.3. Recommendations to take this course

This is a subject with a high practical content it is recommended that it be taken in person. Emphasis is placed on teamwork and participation. It requires the use of computer tools of spreadsheet type, presentation and diagrams. Students must

develop a joint module work with the rest of the semester subjects. For those students who, exceptionally and always justifiably, can not do it in person, it is planned to take an exam.

## 2. Learning goals

### 2.1. Competences

#### BASIC COMPETENCES

CB01. Students have demonstrated knowledge and understanding in a field of study that is part of the general secondary education curricular, and is typically at a level which, although it is supported by advanced textbooks, includes some aspects that involve knowledge of the forefront of their field of study.

CB02. Students can apply their knowledge to their work or vocation in a professional manner and have competences typically demonstrated through devising and defending arguments and solving problems within their field of study.

CB03. Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include an important reflection on social, scientific or ethical issues.

CB04. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

CB05. Students have developed those skills needed to undertake further studies with a high degree of autonomy.

#### GENERAL COMPETENCES

GC02. Ability to analyze and assess social and environmental impact of technical solutions, acting with ethics, professional responsibility and social commitment.

GC03. Ability to design and develop design projects in aspects related to the nature of products and services, their relevance to the market, usage environments and user, and based on their manufacture, the selection of materials and processes most appropriate in each case considering relevant aspects such as quality and product improvement.

GC06. Ability to generate the necessary documentation for the proper transmission of ideas through graphics, reports and technical documents, models and prototypes, oral presentations in Spanish and other languages.

GC08. Ability to learn continuously, to develop autonomous learning strategies and to work in multidisciplinary groups with motivation and determination to achieve goals.

GC09. Knowing the industries, organizations, regulations and procedures and other elements to be considered in industrial design projects.

GC10. Ability to plan, budget, organize, direct and control tasks, people and resources.

#### SPECIFIC COMPETENCES

SC06. Adequate knowledge of the concept of enterprise, institutional and legal framework of the company. Organization and management of companies.

SC20. Ability to adequately perform business strategy, develop action plans and economic evaluation of design projects and product development in the context of the company.

SC25. Ability to design a project according to the requirements of a client, according to the regulations and legislation, planning deadlines, costs and resources and generating all necessary documentation to carry it out.

### 2.2. Learning goals

**The student, to overcome this subject, must demonstrate the following results ...**

1. Be able to adequately carry out strategic planning for the development and launch of a new product to the market.
2. To know how to prepare action plans for the development of such planning over time, to solve the problems that are posed and to make decisions about the necessary resources, according to the product life cycle.
3. Be able to economically evaluate the investment project needed for the development and launch of the new product.
4. Know how to locate the production plant, select the necessary production equipment, distribute them, estimate the necessary human resources, calculate the associated costs, establish the margin and calculate the final price of the new product.
5. Know how to carry out the feasibility study of the investment project for this new product and make the right business decisions.
6. To be able to seek the necessary, real and relevant information from diverse sources, to summarize this information and to use it in the face of the resolution of the real problem that is presented to it.
7. Be able to present in writing, in the form of a report, and orally, in the form of presentation, the work done taking special care in highlighting the main conclusions, always duly justified using the appropriate terminology.

### 2.3. Importance of learning goals

The daily decisions in the companies are mainly based on the expected economic results. Based on this, an engineer must be able to seek information and draw his own conclusions from the necessary information, and then be able to make the most beneficial decision for the organization respecting ethical and moral criteria. This course teaches the basic principles, as well as the necessary tools, to make the most appropriate decisions based on economic criteria.

The resolution of problems with real data and equally real cases, mainly in equipment, allows the students to prepare themselves for the labor world when developing the necessary competences for it.

### 3. Assessment (1st and 2nd call)

#### 3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student must demonstrate that he / she has achieved the expected learning outcomes through the following assessment activities

Test 1: Module work (20% + 10% of the final grade).

The note of the module work will be obtained mainly from the results obtained in the work, presented in the final session, but also will take into account the evolution of the work, and the active participation in the work mentoring sessions.

20% will be obtained from the part of the module work corresponding to the subject Economic and Business Aspects of Design, and 10% will be a note agreed upon by all teachers of the module that takes into account the overall result of the work. This note is joint for the group.

The work to be done will always be the work of module, regardless of whether or not the student has enrolled in all subjects. Although it will only be noted in one of the modules of the module, the work must include the same sections as if it were to have a note in all subjects.

Test 2: Written exam (30% of the final grade).

The 2 hour exam will consist of a theoretical part that will account for 40% of the grade and a practical part (mainly problems) that will represent 60% of the grade, both of which will cover the content of the marks.

Do not perform or not pass any other test of the other 3 provided, will increase the weight of 30% of the exam in the corresponding proportion. For example: not performing the continuous evaluation will mean that the exam will have a weight of 70% in the final grade.

Test 3: Continuous assessment (40% of final grade).

This note will be obtained mainly from the evolution of each student in the theoretical or practical classes, but especially in the resolution of small cases that will be solved individually or in a group. Class attendance with active participation will also be taken into account.

Conditioners.

The grade obtained in each of the four sections is kept during the current course, but not for subsequent courses.

You must pass the exam in order to be able to mediate the rest of the tests in the final grade and therefore pass the subject.

Note: Following the regulations of the University of Zaragoza in this respect, in the subjects that have systems of continuous or gradual evaluation, a global assessment test will be programmed for those students who decide to opt for this second system.

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It is based on active participation, case studies, teamwork, etc., that favors the development of communicative skills and critical thinking. A wide range of teaching and learning tasks are implemented, such as lectures, practical activities, practice sessions, autonomous work, tutorials, and academic guidance.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

#### 4.2. Learning tasks

The course includes the following learning tasks:

- Lectures (1.2 ECTS): 30 hours.
- Practice sessions (1.2 ECTS): 30 hours.
- Guided assignments (1.72 ECTS): 43 hours.

- Autonomous work (1.8 ECTS): 45 hours.
- Assessment (0.08 ECTS): 2 hours.

Lectures: the professor will explain the theoretical contents of the course and solve illustrative applied problems. These problems and exercises can be found in the problem set provided at the beginning of the semester. Lectures run for 2 weekly hours. Although it is not a mandatory activity, regular attendance is highly recommended.

Practice sessions: they can involve discussion and presentation of case studies, practical work outside the classroom (fieldwork or visits), and seminars.

Guided assignments: students will complete assignments, problems, and exercises related to concepts seen in practice sessions and lectures.

Autonomous work: students are expected to spend about 75 hours to study theory, solve problems, preparation of practice sessions and seminars, and take exams.

Tutorials: professors' office hours can be used to solve doubts and to follow-up students' work. The professor's office hours will be posted on Moodle and the degree website to assist students with questions and doubts. It is beneficial for the student to come with clear and specific questions.

Assessment: final examination

### 4.3. Syllabus

The course will address the following topics:

- Section I. COMPANY AND INFORMATION
  - Topic 1. Introduction to Economics and Business.
  - Topic 2. The Company as a System. Concept and Types of Company.
  - Topic 3. The Entrepreneur and the Management Process. The Creation of the Company.
- Section II. FUNCTIONAL AREAS OF THE COMPANY
- Section II.1. The Directive Function.
  - Topic 4. Strategic Planning.
  - Topic 5. Decision Making.
  - Topic 6. Corporate Social Responsibility.
- Section II.2. The Function of Administration and Management of Human Resources.
  - Topic 7. Administration and Management of Human Resources. Teamwork and leadership.
- Section II.3. The Financial Function.
  - Topic 8. Selection and Evaluation of Investments.
- Section II.4. The Commercial Function
  - Topic 9. Market and Product Research.
- Section II.5. The Productive Function.
  - Topic 10. Location of the Production Plant.
  - Topic 11. Election, Design of the Productive Process and Plant Distribution.
  - Topic 12. Procurement and Distribution Management.
  - Topic 13. Quality Management.

### 4.4. Course planning and calendar

The student has 4 hours of class a week for the 15 weeks of the semester. For further details concerning the timetable, classroom and further information regarding this course, please refer to the "Escuela de Ingeniería y Arquitectura" website (<https://eina.unizar.es/>). The distribution of the subjects over time is conditioned by the performance of the work module.

Consult the school's website <https://eina.unizar.es/> for information about:

- ? Academic calendar (period of classes and non-academic periods, holidays, examination period).
- ? Schedules and classrooms.
- ? Dates in which the examinations of the official examinations of the subject will take place.
- ? Teacher tutoring schedules.

### 4.5. Bibliography and recommended resources

<https://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=25813>