Course guide
270223 - EI - Entrepreneurship and Innovation

Last modified: 11/07/2024

Unit in charge:	Barcelona School of Informatics
Teaching unit:	732 - OE - Department of Management.
	739 - TSC - Department of Signal Theory and Communications.
	723 - CS - Department of Computer Science.

Degree:	BACHELOR'S DEGREE IN DATA SCIENCE AND ENGINEERING (Syllabus 2017). (Compulsory subject).

Academic year: 2024   **ECTS Credits:** 6.0   **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer:	FERRAN SABATE GARRIGA
Others:	Primer quadrimestre:
	ELISENDA BONET CARNÉ - 11
	SUSANA GIMENEZ BUENDIA - 12, 13
	ALEXANDRE GRACIA CALVO - 13
	CARLOS LOPEZ MARTINEZ - 12
	MARTA RODRÍGUEZ MARTÍNEZ - 11, 12, 13
	FERRAN SABATE GARRIGA - 11, 12, 13

PRIOR SKILLS

Not applicable

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE11. Within the corporate context, understand the innovation process, be able to propose models and business plans based on data exploitation, analyze their feasibility and be able to communicate them convincingly.

Generical:
CG3. Work in multidisciplinary teams and projects related to the processing and exploitation of complex data, interacting fluently with engineers and professionals from other disciplines.
CG4. Identify opportunities for innovative data-driven applications in evolving technological environments.
CG5. To be able to draw on fundamental knowledge and sound work methodologies acquired during the studies to adapt to the new technological scenarios of the future.

Transversal:

CT1. Entrepreneurship and innovation. Know and understand the organization of a company and the sciences that govern its activity; Have the ability to understand labor standards and the relationships between planning, industrial and commercial strategies, quality and profit.

CT2. Sustainability and Social Commitment. To know and understand the complexity of economic and social phenomena typical of the welfare society; Be able to relate well-being to globalization and sustainability; Achieve skills to use in a balanced and compatible way the technique, the technology, the economy and the sustainability.

CT3. Efficient oral and written communication. Communicate in an oral and written way with other people about the results of learning, thinking and decision making; Participate in debates on topics of the specialty itself.

CT4. Teamwork. Be able to work as a member of an interdisciplinary team, either as a member or conducting management tasks, with the aim of contributing to develop projects with pragmatism and a sense of responsibility, taking commitments taking into account available resources.

CT5. Solvent use of information resources. Manage the acquisition, structuring, analysis and visualization of data and information in the field of specialty and critically evaluate the results of such management.

CT7. Third language. Know a third language, preferably English, with an adequate oral and written level and in line with the needs of graduates.

Basic:

CB2. That the students know how to apply their knowledge to their work or vocation in a professional way and possess the skills that are usually demonstrated through the elaboration and defense of arguments and problem solving within their area of ??study.

CB3. That students have the ability to gather and interpret relevant data (usually within their area of ??study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

CB4. That the students can transmit information, ideas, problems and solutions to a specialized and non-specialized public.

CB5. That the students have developed those learning skills necessary to undertake later studies with a high degree of autonomy

TEACHING METHODOLOGY

The course combines the "presentation of contents" on the different aspects involved in the creation of a start-up focused on offering new innovative products and/or services (or on facilitating the innovation of products or services in established companies) with the "application" of these contents in a real project of definition and planning of a business model that responds to the challenge posed to each team at the start of the course by a company or institution.

Each course offers different challenges, proposed by companies and external institutions, which are assigned to work teams of 5 students. Based on the methods explained in the theory sessions and always through interaction with the client and potential users, the teams identify the most relevant needs, identify the product or service with market potential and generate a detailed analysis in the form of a Business Plan with the idea of justifying the viability of the proposed new business or innovation. The practical work will be carried out in work sessions of 3 hours per week in small groups (laboratory) and in corresponding time of autonomous work. The product or service resulting from the work in "Entrepreneurship and Innovation" will be executed and implemented in the subject "Engineering Projects".

LEARNING OBJECTIVES OF THE SUBJECT

1. Understand and describe the business environment and its role in society.
2. Understand and describe how innovation processes work in the business context.
3. Conceive and analyse different business models based on data exploitation. Define the financial aspects of the model and learn about the different ways of presenting the business model.
4. Communicate through a solid and convincing speech developing the business idea, its opportunity and its business plan.
5. Identify and analyze the needs of a given environment. Use appropriate methodologies to identify customers, potential users and other stakeholders. Identify and analyze the various solutions to the needs. Define and improve your value proposition.
6. Identify the market, its segmentation and positioning towards customers. Establish the access channels and the differentiation of the product or service.
7. Identify and assess key activities, resources and partnerships.
8. Define and analyze the basic financial aspects: Costs and investments.
9. Define the planning of a project using standard or agile methodologies.
10. To apply the methodologies included in the course in a practical case working as a team from a challenge specified by an external company or institution.
11. Design a business model based on the exploitation of data and analyse its viability. Define and analyse its global dimension.
12. Analyze several key aspects of the business model using the Business Canvas methodology

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Hours small group	30,0	20.00
Hours large group	30,0	20.00

Total learning time: 150 h

CONTENTS

1) Justification and presentation of the subject and projects.

Description:
a) Justification: Entrepreneurship and Digital Transformation.
b) The functioning of the subject.
c) Presentation of projects.
d) Team building and project assignment.

2) Management of innovation projects

Description:
a) Classical techniques: Scope, Temporal Planning (Gantt), Economic Management, Risk Management;
b) Agile methodologies: Lean Startup; Kanban; Scrum / Agile;
c) Base model: Business plan, Business Canvas and Lean Canvas

3) Techniques for generating ideas, business opportunities and proposing value

Description:
a) Creativity;
b) Brainstorming;
c) Design Thinking

4) Models for entrepreneurship and innovation: Business Model Canvas / Lean Canvas / Business Plan

Description:
a) Business Plan;
b) Business Model Canvas and Lean Canvas;
c) Conference EmprenUPC

5) Strategy and definition of the product (value proposition)

Description:
a) Mission, Vision, Values;
b) Porter and SWOT
c) Critical success factors;
d) Design Thinking

6) Market research and benchmarking (value proposition)

Description:
a) Innovation and benchmarking axis 1: Identification of long-term market trends;
b) Innovation and benchmarking axis 2: Technology evolution as a source of ideas;
c) Innovation and benchmarking axis 3: Ethical business models as a source of innovation and ideas;
d) Survey acceptance.

7) Segmentation, positioning and relationship with customers. Marketing-mix

Description:
a) Strategic marketing. Differentiation.
b) Place
c) Product
d) Price
e) Promotion

8) Conference: Presentation of a real project of entrepreneurship

Description:
a) An entrepreneur presents a real start-up project.

9) Search for resources and economic-financial aspects

Description:
{Simulating, if necessary, a start-up scenario}
a) Resource requirements. Alliances. The construction of the initial balance of the company;
b) Forecast of operating account (basic profit and loss forecast) for the first two years. Cash-flow;
c) Treasury plan;
d) Economic-financial ratios.

10) Communication and presentation techniques

Description:
a) The entrepreneur as the main seller;
b) Some communication and presentation techniques;
c) Preparation of the presentation.

ACTIVITIES

Exhibition sessions

Description:
Exhibition of the contents of the subject

Specific objectives:
1, 2, 3, 4, 5, 6, 7, 8, 11, 12

Related competencies :
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CT2. Sustainability and Social Commitment. To know and understand the complexity of economic and social phenomena typical of the welfare society; Be able to relate well-being to globalization and sustainability; Achieve skills to use in a balanced and compatible way the technique, the technology, the economy and the sustainability.
CT4. Teamwork. Be able to work as a member of an interdisciplinary team, either as a member or conducting management tasks, with the aim of contributing to develop projects with pragmatism and a sense of responsibility, taking commitments taking into account available resources.
CT7. Third language. Know a third language, preferably English, with an adequate oral and written level and in line with the needs of graduates.

Full-or-part-time: 28h
Self study: 14h
Theory classes: 14h

Guest lectures

Description:
Conferences on entrepreneurship and management of projects carried out by external experts.

Specific objectives:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

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Full-or-part-time: 2h
Theory classes: 2h

Individual checks

Description:
Carrying out two individual checks, one at mid-year and the other at the end, on knowledge of the aspects dealt with in the theory and on the different parts of the group project.

Specific objectives:
1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12

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Full-or-part-time: 26h
Self study: 24h
Theory classes: 2h

Project

Description:
Carrying out, as a team, the different phases of the project from the challenge proposed by the company or external institution.

Specific objectives:
4, 5, 6, 7, 8, 9, 10, 11, 12

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Full-or-part-time: 82h
Self study: 52h
Laboratory classes: 30h

Project (enter group; two teachers in class)

Description:
Scheduled as one more hour of laboratory, with the whole group in class and two teachers supporting

Full-or-part-time: 12h
Theory classes: 12h

GRADING SYSTEM

The evaluation of the subject is based on two aspects:

- Two controls, one intermediate (C1) and another at the end (C2), to evaluate the individual knowledge on the topics worked on in the theory sessions and also the individual knowledge of all the aspects developed by the team in the project (40%). C2 will include all the subject matter and if your grade is better than C1 (C2> C1), C1 will be replaced by C2.

- Evaluation of the project (60%) according to a rubric that integrates the different aspects, taking into account both the final result of the project and its development. A score is determined by the team that is dynamically modulated at an individual level on the basis of the co-evaluation carried out by the team members of the level of involvement in the implementation of the project of the rest of the members. From this modulation results the NPMI mark. The modulation will consist of transferring points from those people in whom there is evidence of having worked less (and having negatively affected the group dynamics) to those people who have worked more. On an individual basis, a member of the group may have his mark increased or decreased by a maximum of 4 points (in relation to the project mark, which is equivalent to 2.4 points in relation to the overall mark for the subject).

In short, the score will be calculated as follows:
NF = 20%*max(C1, C2) + 20%*C2 + 60%*NPMI

Only 40% of the grade can be re-evaluated, resulting from the 2 controls carried out during the course. Thus, the re-evaluation will consist of an examination on the topics worked on in the theory sessions and also on the individual knowledge of all the aspects developed in the team in the project. The grade obtained will replace the grade obtained in the 2 exams taken previously during the course, and it will compute with a weight of 40%, given that it replaces 2 exams that computed 40% of the final grade of the subject.

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