



Universitat de Lleida

DEGREE CURRICULUM
**INDUSTRIAL ECONOMICS AND
INNOVATION**

Coordination: VINTRO SANCHEZ, CARLA

Academic year 2019-20

Subject's general information

Subject name	INDUSTRIAL ECONOMICS AND INNOVATION			
Code	102409			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's degree in Industrial Organization and Logistics Engineering	3	COMPULSORY	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA	TEORIA	
	Number of credits	3	3	
	Number of groups	1	1	
Coordination	VINTRO SANCHEZ, CARLA			
Department	BUSINESS ADMINISTRATION			
Teaching load distribution between lectures and independent student work	Classroom hours: 60 hours Autonomous work: 90 hours			
Important information on data processing	Consult this link for more information.			
Language	Catalan / Spanish			
Distribution of credits	Theoretical: 3 ECTS Room practices: 3 ECTS			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
VINTRO SANCHEZ, CARLA	carla.vintro@udl.cat	6	

Subject's extra information

Subject that is studied in the 2nd semester of the 3rd year of the Degree in Industrial and Logistics Organization. It corresponds to the Subject "Economy" within the Module "Specific Technology Training: Industrial and Logistics Organization".

Subject that requires continuous work throughout the semester in order to achieve the stated goals. Critical thinking and abstract reasoning abilities are required.

It is recommended to frequently visit the Virtual Campus space associated with the subject as all the corresponding information is announced.

Learning objectives

The aim of this subject is to introduce students to the field of study of Industrial Economics and Innovation. Innovation plays a fundamental role in business competitiveness, in the economic development and economic growth, and in the sustainability and ethics of business. Increasingly, companies demand a profile of innovation manager that has a multidisciplinary vision, and an ability to develop new ideas and put them successfully at the service of stakeholders through the commercialization of goods and services in the market.

Learning outcomes:

- Know how production technology and costs determine the industrial structure.
- Be aware of the market power of industrial companies and their influence on strategic decisions.
- Understand the importance of innovation within the business strategy, and its relation to competitiveness and socio-economic development.
- Learn conceptual and analytical tools to understand the complexity and nature of the innovation process.
- Integrate ethical and sustainable commitment in the innovation process.
- Learn creativity tools that can be used in the process of generating innovative ideas.

Competences

B03: 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.

CG4: To solve problems with initiative, make decisions, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of Industrial Organization Engineering.

CG9: To organize and plan in the field of the company, and other institutions and organizations.

CE19: To have applied knowledge of basics and principles of quality management and technological innovation.

CE27: To have applied knowledge of basics and principles of market research.

Subject contents

Topic 1: Introduction to the economy of innovation

- Technology and cost
- Macroeconomic aggregates
- Market structures, market power and innovation
- Types of innovation
- Geography of innovation
 - National innovation systems
 - Sectoral patterns of innovation
 - Clusters
 - Industrial districts
 - Innovative regions and cities
 - Innovation and globalization

Topic 2: Innovation and technology transfer

- Technological development. National and worldwide
- Technological diagnosis of the company
- Globalization and impact on technology transfer
- Business innovation support structures

Topic 3: Creativity and innovation

- Individual creativity and team creativity
- Stimulus and barriers to creativity
- Creativity and innovation tools
- Tools for evaluating team creativity
- Visual thinking, storymaking and "thinking with your hands"

Topic 4: Design thinking and sustainability

- Innovation and sustainability
- Design thinking in sustainable development
- Design thinking and the Ottom Scharmer's Theory U model
- Design of sustainable models. Canvas B model

Topic 5: Strategic direction of innovation

- Innovation as a strategy
- Strategic analysis of the innovation environment
- Strategic technology plan
- Innovation protection: patents and brands
- Technological prospective
- Innovation patterns:
 - S curve
 - Diffusion of innovation models
 - Dominant design

Topic 6: Social innovation

- Social innovation
- Identification of opportunities for social innovation. Tools and models for social innovation:
 - Stakeholders map
 - Social Business model canvas
 - Responsible innovation grid
- The social entrepreneur
- Innovations in the BOP (Base of the Pyramid)
- Digital social innovation

- Strategies and best practices
- Visual thinking in social innovation

Topic 7: Open innovation. Innovation and cooperation

- Open innovation vs. traditional innovation
- STI models (Science, Technology and Innovation) and DUI (Doing, Using and Interacting)
- Techniques to implement open innovation:
 - Crowdsourcing
 - Outsourcing
 - Coworking
 - User innovation
 - Market place
- Cooperation with customers and users
 - Lead users. Pioneers of innovation
 - Managing innovation through lead users
 - Best practices
- Cooperation with suppliers
 - Collaborative design
 - Best practices
- Cooperation with competitors
 - Research associations

Methodology

The course will be taught with a combination of master lessons and practical activities that will involve lectures and article analyses and case study analyses.

The usual format of the sessions will consist of a first part of explanation of the main concepts, and then a practical classroom-guided activity that will allow students to internalize and consolidate the concepts discussed in the session.

Most activities will be developed in work teams, and in some sessions group dynamics will be made. If possible, external visits and / or seminars will also be performed.

Integrating project:

The project coordinator will monitor the tasks to be submitted, as outlined in the timeline provided at the beginning of the course.

All the subjects involved in the project will be registered jointly. In the circumstance that the students might have passed more than 50% of the subjects involved in the project, they will be allowed to write an equivalent project focused on the subject they are currently taking.

The time distribution of dedications will be:

Activity	Classroom activity		Homework activity		Total time
	Goals	Hours	Student work	Hours	Hours/ECTS
Master class	Explanation of concepts	30	Study: know, understand and synthesize knowledge	45	75

Problems and case studies	Case study analyses, article analyses, group dynamics, ...	20	Solve study cases	30	50
Integrating project	Development of the integrating project	8	Develop the integrating project	12	20
	Oral presentation of the integrating project	2	Prepare the oral presentation of the integrating project	3	5
Totals		60		90	150

Development plan

Week 1: Introduction to the economy of innovation

Introduction to the subject. Technology and cost. Macroeconomic aggregates. Market structures, market power and innovation. Types of innovation (classification). Activity: Initial challenge. Radical innovations. Activity: Case study.

Week 2: Introduction to the economy of innovation

Innovation in management: innovations in the bank sector. Case study. Technological innovations: innovations in industrial companies. Scamper methodology.

Week 3: Introduction to the economy of innovation (cont.)

Geography of innovation. National and regional systems. Technological development: National and worldwide. Globalization and impact on technology transfer. Business innovation support structures. Case study: Silicon Valley and the other cities of innovation.

Innovation and technology transfer

Technological Diagnosis of a company. Case study. Technological Audit.

Week 4: Innovation and technology transfer (cont.)

Technological Diagnosis of a company. Case study. Technological Audit.

Creativity and innovation

Individual creativity and team creativity. Activity: creativity test based on drawing. Steps of the creativity process. Stimulus and barriers to creativity. Creativity and innovation tools. Tools for generating ideas. Activity: Group dynamic "6-3-5 method"

Week 5: Creativity and innovation (cont.)

Tools to identify and analyze causes or potential changes and to plan solutions. Tools for evaluating team creativity. Activities. Group dynamics: circle of opportunities. Visual thinking, storymaking and "thinking with your hands". Activity: Group dynamics. Research activity.

Week 6: Design thinking and sustainability

Innovation and sustainability. Design thinking in sustainable development. Design thinking and the Ottom

Scharmer's Theory U model. Design of sustainable models. Activity: Group dynamic. Design thinking.

Week 7: Design thinking and sustainability (cont.)

Activity: Group dynamic. Design thinking.

Strategic management of innovation

Innovation as a strategy. Strategic analysis of the innovation environment. Technological strategic plan. Innovation protection. Patents and brands. Integrating project: Technological prospective

** 1 session: Integrating project*

Week 8: Course project

Integrating project. Exam study

** 1 session: Integrating project*

Week 9: Exam 1

Week 10: Strategic management of innovation (cont.)

Integrating project: Benchmarking of best practices. Integrating project: Innovation definition (Design thinking)

** 2 sessions: Integrating project*

Week 11: Strategic management of innovation (cont.)

Activities

Week 12: Social innovation

Social innovation. Concept. Identification of opportunities for social innovation. Tools and models for social innovation. Activity: visual thinking in social innovation

Week 13: Open innovation. Innovation and cooperation

Integrating Project: tripple layered business model canvas

Open innovation vs. traditional innovation. Techniques to implement open innovation. Crowdsourcing. Outsourcing. Coworking. User innovation. Market place. Cooperation with customers and users. Lead users. Pioneers of innovation. Managing innovation through lead users. Cooperation with suppliers. Collaborative design. Cooperation with competitors. Research associations. Research activity. Final activity course ("Picture cards").

** 1 session: Integrating project*

Week 14: Tutorings. Integrating Project

** 1 session: Integrating project*

Week 15: Tutorings. Oral presentations of the Integrating Project

Week 16: Exam 2

Evaluation

Exam 1: 30%

Exam 2: 30%

Portfolio: 25%

Integrating project: 15%

Portfolio is a form of evaluation that allows monitoring of the learning process and that allows continuous improvement throughout the process. It is a collection of all activities that demonstrate the knowledge and skills acquired. Portfolio activities will be held mostly in the classroom. You need to take care of spelling, syntax and presentation in general, always indicating the bibliography.

The integrative project is a group work that is done in coordination with several subjects of the course in order to deal with an engineering problem in a transversal way. In the case of the integrative project of 3rd year 2nd semester, the involved subjects are: Quantitative Methods for Logistics, Information and Distribution Systems, Industrial Economics and Innovation. You need to take care of spelling, syntax and presentation in general, always indicating the bibliography.

Note: in case the student does not develop the project or equivalent work, the mark of the subject will be of Not attended.

Bibliography

Fagerberg et al. (2005). **The Oxford Handbook of Innovation**. Oxford University Press.

Adaptations to the contents due to COVID-19

They are not modified

Adaptations to the methodology due to COVID-19

The contents of the course will be presented mainly through training capsule type videos. Complementary readings will also be provided and the e-mail, chat room and video conferencing tools will be used to ensure student interaction and to provide mentoring and / or follow-up sessions.

Adaptations to the development plan due to COVID-19

It is not modified

Adaptations to the evaluation due to COVID-19

Mid-term exams are replaced by individual assessment activities that demonstrate the knowledge and skills acquired.