



Universitat de Lleida

# DEGREE CURRICULUM **INDUSTRIAL ORGANIZATION I**

Coordination: ALDAZ IBAÑEZ, NATALIA

Academic year 2020-21

## Subject's general information

Subject name	INDUSTRIAL ORGANIZATION I			
Code	14530			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Master's Degree in Industrial Engineering	1	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	ALDAZ IBAÑEZ, NATALIA			
Department	BUSINESS ADMINISTRATION			
Teaching load distribution between lectures and independent student work	30 hours in-person lectures 30 hours online classes 90 hours independent student work			
Important information on data processing	Consult <a href="#">this link</a> for more information.			
Language	Spanish. Teaching resources: English.			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ALDAZ IBÁÑEZ, NATALIA	natalia.aldaz@udl.cat	6	

## Subject's extra information

The subject is a part of the management module and is given during the 1st term of Master's Degree in Industrial Engineering. To follow this subject properly some previous knowledge on business management is recommended. Focusing on manufacturing firms, decision making models are developed in fields like production, markets and competitors and innovation strategy.

## Learning objectives

To provide the students with the knowledge and the techniques involved in Industrial Organization, in the manufacturing firm context.

The achievement of this general aim implies the next objectives:

- To determine the market power of manufacturing firms and to know its influence on the firm decisions.
- To know how the production technology and the costs can determine the industrial structure.
- To analyse firm interaction strategy models.
- To know advanced concepts about technological area of firms.
- To analyse innovation models in the firm strategy context.
- To apply and solve decision models in technology and innovation sphere, such as benchmarking.

## Competences

### Basic competences

- CB4 To be able to communicate conclusions –and knowledge and reasons that support them– to either specialized or not specialised publics in a clear way and without ambiguities.

### General competences

- CG3 Capacity to convey information, ideas, problems and solutions both to a specialised and no specialised public.
- CG10 To make strategic planning and apply it to construction, production and quality systems and to environmental management.
- CG11 To manage both technically and economically projects, installations, plants, companies and technological centres.

### Specific competences

- CE13 Knowledge on methods and techniques of transportation and industrial maintenance services.
- CE20 Knowledge of information systems for management, industrial organisation, production and logistical systems and management of quality systems.
- CE23 Capacity for research development and technological innovation management.
- CE24 Execution, presentation and defence, once all the credits of the syllabus are obtained, an original work carried out individually in front of a university court, consisting of an integral project of Industrial Engineering of professional nature in which the competences are synthesized.

## Subject contents

### Lesson 1. Aggregated Production

- 1.1 Economic Agents.
- 1.2 Productive Sectors. Manufacturing.
- 1.3 Estimation of aggregated production.
- 1.4 Sectorial Interrelation. Input-output Tables.

### Lesson 2. Technology and cost

- 2.1 Technology and cost functions.
- 2.2 Sunk costs and entry. Economies of scale.
- 2.3 Multi-product production. Economies of Scope.
- 2.4 Other industrial structure determinants different to the costs.

### Lesson 3. Market Structure and Market Power

- 3.1 Market structure.
- 3.2. Perfect competition.
- 3.3 Monopoly.
- 3.4 Market definition. Concentration measures.

### Lesson 4. Strategic interaction of firms

- 4.1 Strategic interaction. Game theory.
- 4.2 Dominated strategies and dominant strategy. Nash equilibrium.
- 4.3 Static Games and Cournot Competition
- 4.4 Dynamic Games and First and Second Movers. Stackelberg.

### Lesson 5. Other strategy models of the companies

- 5.1 Market power and its evolution in time.
- 5.2 No-competitive Strategies.
- 5.3. Predatory Behaviour.
- 5.4 Deterrence to the entry Model.

### Lesson 6. Innovation

- 6.1 Taxonomy of Innovations.
- 6.2 Product life-cycle.
- 6.3 Innovations and cost advantage.
- 6.4 Innovation and Market Structure.

### Lesson 7. Innovation, transfer of technology and *spillovers*

- 7.1 Protection of innovators. Patents.
- 7.2 Transfer of technology.
- 7.3 Technology Foresight.
- 7.4 R&D Spillovers and Cooperative R&D.

### Lesson 8. Benchmarking and technological innovation.

- 8.1 Benchmarking: Definition, types and stages.
- 8.2 Benchmarking and technological innovation.
- 8.3 DEA (Data Envelopment Analysis) theoretical framework.
- 8.4 DEA Samples with R software.

## Methodology

The contents of the subject are distributed into theoretical and participatory lectures and practice sessions. These activities could be given in-person (2 hours per week) or online from the UdL e-learning platform (2 hours per week). Participatory lectures, the theoretical aspects of the lesson are presented by the lecturer, who invites student participation. Practice session, the students have to solve different questions/problems working individually or in group. These activities can be evaluated.

## Development plan

Week	Methodology	Lessson	In- person Hours	Online Hours	Independent student work Hours	Lecturer
W.1	Lecture	L 1. Aggregated production		2	6	Natalia Aldaz
	Lecture	L 1. Aggregated production	2			
W. 2	Lecture	L 2. Technology and cost		2	6	
	Exercises	L1	2			
W. 3	Lecture	L2. Technology and cost		2	6	
	Practice	Group exercise Assessment (P1)	2			
W. 4	Exercises	L2	2		6	Natalia Aldaz
	Lecture	L3. Market Structure		2		
W. 5	Exercises	L3		2	6	
	Practice	Group exercise Assessment (P2)	2			
W. 6	Lecture	L4. Strategic interaction of firms	2		6	
	Exercises	L4		2		
W. 7	Lecture	L4. Strategic interaction of firms	2		6	Natalia Aldaz
	Exercises	L4		2		
W. 8	Lecture	L4. Strategic interaction of firms	2		6	
	Practice	Group exercise Assessment (P3)		2		
W. 9	Assessment Midterm exam	L1-L4	2		6	
W. 10	Lecture	L5. Other firm interaction models	2		6	
	Exercises	L5		2		
W. 11	Lecture	L6. Innovation	2		6	
	Exercises	L6		2		
	Lecture	L 7. Innovation, transfer of technology and <i>spillovers</i>		2		

W. 12	Lecture	L 7. Innovation, transfer of technology and <i>spillovers</i>	2		6	Natalia Aldaz
W. 13	Practice	Group exercise Assessment (P4)	2		6	
	Lecture	L8. <i>Benchmarking</i> and innovation		2		
W. 14	Lecture	L8. <i>Benchmarking</i> and innovation		2	6	
	Exercises	L8	2			
W.15	Exercises	L8		2	6	
	Practice	Group exercise Assessment (P5)	2			
W. 16-19	Assessment Final exam	L1-L8	2			
	Assessment make-up exam	L1-L8	2			

## Evaluation

Objectives	Assessment activity	%	Date	
Lessons 1-4	PA 1	35	Week 9	Compulsory/individual
Lessons 1-8	PA 2 written exam	45	Weeks 16 -17	Compulsory/individual
Lessons 1-8	Exercises deliveries P1-P2-P3 -P4- P5	20	During the term	Compulsory/Group or individual
	Make up exam	80	Week 19	

### Notes about exams and exercises:

- During 9th and 16th/17th weeks, the assessment activities (A1 and A2; in-person) are done. Each one has 35 per cent and 45 per cent respectively of the final mark.
- During 19th week there is a make up assessment (in-person). This activity is a written exam about the contents of the course and it is 80 per cent of the final mark.
- The mark of the class exercises is 20 per cent of the total mark. This mark is the average of all the exercises proposed during the course.
- To be considered the exercises mark, it is compulsory to have been graded 4 or more in A1 and A2.
- If it is necessary it might be used the video-call and tests tools of the e-learning platform.

## Bibliography

### Basic Bibliography

- Lynne PEPALL, D. RICHARDS, G. NORMAN. Organización industrial: teorías y prácticas contemporáneas.

3ª edición. Ed. Thomsom. 2006.

- A. HIDALGO, G. LEÓN I J. PAVÓN. La Gestión de la Innovación y la Tecnología en las Organizaciones. Pirámide. 2008.

#### **Additional Bibliography**

- M. SHILLING. Dirección Estratégica de la Innovación Tecnológica, McGrawHill. 2008.