COURSE DATA

DATA SUBJECT

Code: 33189
Name: Economics and business management
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1111 - Grado en Biotecnología	Facultat de Ciències Biològiques	4	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
1111 - Grado en Biotecnología	Legal and business aspects of molecular biosciences	COMPULSORY

COORDINATION

SEMPERE MONERRIS JOSE JORGE

SUMMARY

This course aims to give students an understanding of the determinants of the firms' incentive to innovate, in particular for firms specialized in biotechnology. In view of that, it is important to analyze the strategic effects of potentially patentable innovations, either product or process ones. To achieve it, this course examines the public good nature of knowledge and its effect on innovation. Also how competition for innovation in technology-based industries such as biotechnology firms works and the effects of diffusion of innovations, either directly by the company that generates them or through licensing of patented innovations. Finally the study of R&D collaborative networks is also relevant in explaining innovation processes.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

COMPETENCES / LEARNING OUTCOMES

1102 -

Capacidad para transmitir ideas, problemas y soluciones empresariales a partir de la Biotecnología.

Conocer las bases del diseño empresarial su aplicación a las empresas biotecnológicas.

Desarrollo de habilidades para transferir la formación biotecnológica al mundo empresarial.

Saber aplicar los conocimientos en Biotecnología al mundo profesional.

Saber utilizar la lengua inglesa en la redacción de informes, patentes y comunicaciones.

1111 - Grado en Biotecnología

Actuar con autonomía en el aprendizaje, tomando decisiones fundamentadas en diferentes contextos, emitiendo juicios en base a la experimentación y el análisis y transfiriendo el conocimiento a nuevas situaciones

Apply and understand knowledge in biotechnology and use that knowledge in professional contexts.

Assimilate ethical and legal principles in scientific research in biotechnology.

Colaborar eficazmente en equipos de trabajo, asumiendo responsabilidades y funciones de liderazgo y contribuyendo a la mejora y desarrollo colectivo

Communicate ideas, problems and solutions within the field of biotechnology.

Conocer los elementos fundamentales de la comunicación y percepción pública de las innovaciones biotecnológicas y de los riesgos asociados a ellas

Conocer y comprender, desde el propio ámbito de la titulación, las desigualdades por razón de sexo y género en la sociedad; integrar las diferentes necesidades y preferencias por razón de sexo y de género en el diseño de soluciones y resolución de problemas

Contribuir en el diseño, desarrollo y ejecución de soluciones que den respuesta a demandas sociales, teniendo en cuenta como referente los Objetivos de Desarrollo Sostenible

Demostrar razonamiento crítico y autocrítico en el ámbito de la titulación, considerando aspectos tales como la ética profesional, los valores morales y las implicaciones sociales de las diferentes actividades realizadas

Design prospective market research for a biotechnological product.

Disseminate and engage in public debate on issues related to biotechnology and its applications.

Participate in multidisciplinary teams, engaging in teamwork and collaboration.

Poder realizar un estudio empírico y/o experimental para determinar las variables claves que determinan el

conocimiento de los agentes en el mercado

Propose creative and innovative solutions to complex situations or problems, typical of the area of ¿¿¿¿connection, to donate responses to the various professional and social needs

Saber comunicarse de manera efectiva, tanto de forma oral como escrita, adaptándose a las características de la situación y de la audiencia

Search for and retrieve information from major patent databases and prepare the documentation required for patent applications of biotechnological products.

Ser capaz de analizar y asimilar de manera crítica la información científica y de entender la dimensión histórica del conocimiento científico

Tener una visión integrada del proceso I+D+i desde el descubrimiento de nuevos conocimientos básicos hasta el desarrollo de aplicaciones concretas de dicho conocimiento y de la introducción en el mercado de nuevos productos biotecnológicos

Understand and apply the criteria for evaluating biotechnological risks.

Use English to write reports and to interpret information from protocols, manuals and databases.

DESCRIPTION OF CONTENTS

1. Introduction

- Basics.

- Economics foundations.

- Overview of the biotechnology industry.

2. Demand and Supply

-Demand.

-Supply.

-Marquet equilibrium.

-Elasticity.

3. Enterprise,strategy, costs and revenues

-Firm's objectives.

-Strategy.

-Total, average and marginal cost.

-Toral, average and marginal revenue.

4. Markets

-Perfect competition.

-Monopoly.

-Duopoly: Cournot (competition in quantities) and Bertrand (competition in prices).

5. Incentives to innovate.

- Schumpeter and the process of creative destruction.

- Market structure and innovation.

- Measures of R&D output.

- Arrow's model.

- Competition in R&D.

6. Patents

- Patent race equilibrium. Deterministic models. Stochastic models. Expected time of discovery. Optimal patent length.

-Relevance of biotechnology innovation compared with the total patented innovations.

7. Technology diffusion. Licensing.

- Introduction.

- Models of technology difusión.

- Optimal licensing contracts.

- Motives to grant a license.

- Effect of licenses in R&D competition.

8. Cooperation in R&D, Knowledge Networks and Technology Policy.

- Introduction.

- Cooperation in R&D: a theoretical model with externalities.

- Strategic subsidies to R&D in an international context.

- Network formation for the transmission of knowledge.

- Technology policy.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	4,00
Theory	32,00
Classroom practices	24,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	22,00
Independent study and work	22,00
Preparation of lessons	22,00
Preparation for assessment activities	24,00
Resolution of case studies	0,00

Total hours	**90,00**

TEACHING METHODOLOGY

This course is articulated around three points:

- Theoretical and problem set lectures where the professor will explain the most interesting concepts and the most complex instruments that will be used. Attendance is essential because it ensures the correct transmission of knowledge and guides the students for their personal work.

- Students are required to prepare a term paper (possibly in teams) where they translate a real problem faced by companies in the biotechnology industry. To prepare students to defend their projects in public the term paper will be presented to the class.

- Individual study, preparation of lessons and attendance to academic seminars is also required.

Important note: The final distribution of teaching and the relationship between face-to-face and non-face-to-face teaching activities may be modified throughout the course if health conditions require it. The teacher at any time will adopt the appropriate teaching measures to reduce health risks without undermining compliance with the current academic program.

EVALUATION

To pass the course requires, for each call, a total of at least half of the score in each of the following items. A written exam for a period not exceeding two hours, which corresponds to 70% of the final mark. The elaboration and public presentation of a term paper that supposes 20% of the final mark (this activity cannot be re-examined). The remaining 10% will be allocated taking into account the attendance to lectures and seminars and active participation. Important note: The final distribution of the weights may be modified throughout the course if the regionhealth conditions require a modification of the teaching. Oral evaluations may be made when required

REFERENCES

- Mankiw, N. (2012), Principios de Economía. Sexta edición Ed Cengage learning.

- Mankiw, N. (2021), Principles of Economics. Novena edición Ed South-Western College Publishing

- Samuelson y Nordhaus (2019), Economía con aplicaciones, 19 edición Ed. McGraw Hill.

- Scotchmer, S. (2004), Innovation and Incentives. The MIT Press.

También pueden consultarse los capítulos correspondientes a I+D en los manuales de economía industrial

al uso, por ejemplo,

Cabral, L. (2022), Introdución a la Organización Industrial. Ed. Antoni Bosch.

Church, J and R. Ware (2000), Industrial Organization, A Strategic Approach. McGraw-Hill.

Pepall, L., D. Richards and G. Norman (2006) Organización Industrial: Teorías Y Practicas Contemporáneas, Ed Cengage learning

Shy, O. (1995), Industrial Organization, Theory and Applications. The MIT Press.

Tirole, J. (1988), La Teoría de la Organización Industrial. Ariel.