Universitat Autònoma de Barcelona

2023/2024

Engineering Technology, Innovation and Research

Code: 44728
ECTS Credits: 6

Degree	Type	Year	Semester
4318303 Reseach and Innovation in Computer Based Science and Engineering	OB	0	1

Contact

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Teaching groups languages

You can check it through this link. To consult the language you will need to enter the CODE of the subject.
Please note that this information is provisional until 30 November 2023.

Prerequisites

There are no prerequisites.

Objectives and Contextualisation

1. Introduce the fundamental concepts of research and innovation in the field of technology and engineering.

2. Explore the mechanisms of intellectual property protection and forms of technology transfer.

3. Analyse key aspects of entrepreneurship, including leadership, management, and team communication, as well as the creation of spin-offs and their sources of funding.

4. Present common methodologies and tools for the preparation, planning, and management of innovation and research projects in companies, technological centers, or scientific groups.

5. Introduce the principles of communication in the academic domain, both in scientific publication writing and oral communication.

Learning Outcomes

- CA01 (Competence) Graduates will be able to design innovation and research projects in companies and technology centres, including the creation of companies.
- KA01 (Knowledge) Graduates will be able to describe the procedures related to managing research and innovation projects in companies and technology centres in the field of engineering.
- KA02 (Knowledge) Graduates will be able to describe the tools used for technology transfer and innovation, as well as those use to create companies in the field of engineering.

- SA01 (Skill) Carry out innovation and development tasks in companies and technology centres, including the creation of companies.
- SA02 (Skill) Apply research results to obtain new products or processes by assessing their commercial and industrial viability, as well as managing the intellectual property of the research and development product and its commercial use.
- SA03 (Skill) Critically analyse the principles, values and procedures that govern the practice of the profession.
- SA04 (Skill) Prepare technical reports and scientific articles in the field of research and innovation in engineering.
- SA05 (Skill) Graduates will be able to give presentations on the field of engineering.

Content

1. Introduction to technological research and innovation
2. Protection of intellectual property
3. Technology transfer
4. Entrepreneurship and business management
5. Spin-offs and funding
6. Methodologies and tools for innovation and research project management
7. Scientific and academic communication

Throughout the course, students will be able to develop various activities to deepen some of these topics depending on their interests or knowledge.

Methodology

An active methodology will be followed that can be adapted to the type of students. According to the number of students, the type of methodology to be followed will be proposed at the beginning of the course.

It will be detailed in the first session at the beginning of the course.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Preparation of written assignments	25	1	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05, CA01
Study for final synthesis test	15	0.6	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05, CA01
Teacher-directed sessions	45	1.8	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05, CA01
Type: Supervised			
Presential activities	15	0.6	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05, CA01

Type: Autonomous			
Homework and class preparation	35	1.4	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05, CA01
Preparation of synthesis test	15	0.6	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05, CA01

Assessment

The evaluation includes theoretical and practical evaluation. This can be done through theoretical and practical activities such as exams or assignments that students can hand in and present in class.

Depending on the number of students, the evaluation system and activities can vary, which will be communicated at the beginning of the course. The given description here is orientative.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Assignments	70%	0	0	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05
Synthesis test	30%	0	0	CA01, KA01, KA02, SA01, SA02, SA03, SA04, SA05

Bibliography

1. Technology Transfer: From Invention to Innovation (2a edició) - H. Thomas and D. Isaksen
2. Intellectual Property Strategy (2a edició) - J. P. Buckley
3. The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail - C. M. Christensen
4. The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses - E. Ries
5. Project Management for Research and Development: Guiding Innovation for Positive R&D Outcomes - L. H. Kester
6. Academic Writing and Publishing: A Practical Handbook - J. Hartley
7. Presenting Your Research: Conferences, Symposiums, Poster Presentations, and Beyond - L. P. Heiberger and S. A. Vick
8. Entrepreneurship: Successfully Launching New Ventures - B. R. Barringer and R. D. Ireland

Will be extended at the beginning of the course.

Software

Wll be provided at the beginning of the course.