INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Entrepreneurship			Field of study	Business Sciences		
Master in	Product and Process Innovation - Chemical and Biological Technologies			School	School of Technology and Management		
Academic Year	2023/2024	Year of study	1	Level	2-1	ECTS credits	10.0
Type	Semestral	Semester	1	Code	5057-682-1101-00-23		

Workload (hours)	270	Contact hours	T -	TP -	PL -	TC -	S -	E -	OT -	O 75

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Ana Isabel Pinheiro Nunes Pereira, Sílvia Freitas Moreira Nobre, Vera Alexandra Ferro Lebres

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. To apply methods towards the development of innovative processes and products related to new materials, environment, bioengineering, food, energy, etc. ;
2. To identify and assess the existing technologies;
3. To get acquainted with the procedures and regulations for the certification of new processes and products;
4. To know how to work in co-innovation environments as well as multidisciplinary and multicultural contexts;
5. To recognize opportunity niches in competitive and emergent markets;
6. To know research methodologies, and data analysis and treatment.

Prerequisites

Before the course unit the learner is expected to be able to:
No specific pre-requirements.

Course contents

Tools for Innovation Support. Innovation in technology-based companies. Research methodologies, data analysis and treatment. Case studies in the area of chemical and biological technology (e. g. new materials, environment, bioengineering, food, energy, etc).

Course contents (extended version)

1. Tools for Innovation Support:
   - Innovation classification and typologies (product, process, organization and marketing);
   - Concept of innovative company;
   - Circular economy; sustainability; life-cycle analysis;
   - Innovation through analogy (incremental innovation), disruptive innovation;
   - Innovation in specific issues related to chemical and biological technology.
2. Innovation in technology-based companies:
   - Strategies for market placement of innovative processes/products/services;
   - R&D strategies and agendas towards the development of new processes, products and business models;
   - Tools for projects creation and execution using criteria and timelines defined by industrial agents.
3. Research methodologies, Data analysis and treatment:
   - Criteria for a market oriented research;
   - Research project design and planning;
   - Concepts on analysis procedures and data treatment.
4. Case studies in the area of chemical and biological technology.

Recommended reading

1. Pires, A. (1999). Inovação e Desenvolvimento de Novos Produtos. Sílabo. Oliveira, C. A. (2010). Inovação da Tecnologia, do Produto e do Processo. Prime.
2. Van Wulfen, G. (2011). Creating Innovative Products and Services: The FORTH Innovation Method (1st Ed). Gower Publishing.
3. Bytheway, C. , Fast Creativity & Innovation: Rapidly Improving Processes, Product Development, and Solving Complex Problems, J Ross Publishing, 2007.
4. Trott , P. , Innovation Management and New Product Development (6th edition), Pearson Education Limited, 2016.
5. Rotini, F. ; Borgianni, Y. ; Cascini, G. , Re-Engineering of Products and Processes: How to Achieve Global Success in the Changing Marketplace, Springer London Ltd, 2012.

Teaching and learning methods

Cooperative work among students, with research-oriented on the subjects under study. "Practice-based learning" strategies will be adopted, particularly by carrying out the intellectual property, market and R&D strategies needed for the implementation of new products and processes in the area of ICE technologies. Visits to the IPB research centres will be promoted.

Assessment methods

- Continuous assessment. - (Regular, Student Worker) (Final, Supplementary, Special)
   - Practical Work - 30% (Practical assignments within the contents of the curricular unit.)
   - Projects - 30% (Preparation and submission of project proposals.)
   - Development Topics - 40% (Teamwork sessions with discussion of topics on the development and management of companies.)

Language of instruction

1. English
2. Portuguese

Electronic validation

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15-10-2023	16-10-2023	31-10-2023