Academic Year/course: 2022/23

62229 - ICT innovation management

Syllabus Information

Academic Year: 2022/23
Subject: 62229 - ICT innovation management
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 534 - Master's Degree in Informatics Engineering
ECTS: 6.0
Year: 1
Semester: Second semester
Subject Type: Compulsory
Module:

1. General information

1.1. Aims of the course

The subject and its expected results respond to the following approaches and objectives:
With a strong applied character, after successfully completing the course, each student should have achieved the following objectives:

- Know and understand the process, agents and structure of the production of scientific and technical knowledge.
- You will learn about different systems of public funding of R&D&I (National, European Union...).
- Know and understand the legal framework of industrial protection and intellectual property.
- You will be able to identify opportunities and draw up the corresponding business plans.
- It will be able to draw up a plan for the exploitation of results.
- It will be able to lead the development of competitive innovation and research proposals.
- It may coordinate and execute R&D&I projects, including their technical and administrative justification.
- It will be able to efficiently carry out technology watch tasks.
- It will be in a position to make public presentations of proposals and the results of research and innovation activities.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment), in such a way that the acquisition of the learning results of the course provides training and competence to contribute to a certain extent to its achievement. Specifically, they are aligned with the following objectives:

- Goal 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture?s contribution to sustainable development
- Goal 5.1 End all forms of discrimination against all women and girls everywhere
- Goal 5.5 Ensure women?s full and effective participation and equal opportunities for leadership at all levels of decisionmaking in political, economic and public life
- Goal 5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women
- Goal 8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services
- Goal 9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry?s share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

1.2. Context and importance of this course in the degree

The world of ICTs is in a continuous process of technological and conceptual evolution. Entities that fail to keep up with the times, betting on technological innovation strategies, are left out of the market and must face a very uncertain future. The adequate preparation of those who complete this master's degree in aspects related to innovation management provides them with skills that can contribute valuable elements to their professional life.

1.3. Recommendations to take this course

There are no special requirements or recommendations for taking the course.

2. Learning goals

2.1. Competences

Upon passing the course, the student will be more competent to....

To acquire the following basic and general skills:

CG-02 - Capacity for the management of works and installations of computer systems, complying with current regulations and ensuring the quality of service.

CG-03 - Ability to lead, plan and supervise multidisciplinary teams.

CG-05 - Capacity for the elaboration, strategic planning, direction, coordination and technical and economic management of projects in all fields of Computer Engineering following quality and environmental criteria.

CG-06 - Capacity for general management, technical management and management of research, development and innovation projects in companies and technology centres in the field of Computer Engineering.

CG-07 - Ability to start up, manage and manage the manufacturing processes of computer equipment, guaranteeing the safety of people and goods, the final quality of products and their approval.

CG-08 - Ability to apply acquired knowledge and to solve problems in new or unfamiliar environments within broader, multi-disciplinary contexts, being able to integrate this knowledge

CG-09 - Ability to understand and apply the ethical responsibility, legislation and professional ethics of the profession of Computer Engineer.

CG-10 - Ability to apply the principles of economics and human resources management and projects, as well as information technology legislation, regulation and standardization.

CG-11 - Ability to acquire advanced and demonstrated knowledge in a context of scientific and technological or highly specialized research, a detailed and informed understanding of the theoretical and practical aspects and methodology of work in one or more fields of study.

CG-12 - Ability to apply and integrate their knowledge, understanding of knowledge, scientific rationale and problem-solving skills in new and vaguely defined environments, including multidisciplinary contexts for both researchers and highly specialized professionals.

CG-13 - Ability to evaluate and select the appropriate scientific theory and precise methodology in their fields of study to make judgements based on incomplete or limited information, including, where necessary and relevant, a reflection on social or ethical responsibility linked to the proposed solution in each case.

CG-14 - Ability to predict and control the evolution of complex situations through the development of new and innovative work methodologies adapted to the specific scientific/research, technological or professional field, in general multidisciplinary, in which its activity is developed.

CG-15 - Ability to transmit clearly and unambiguously to a specialised or non-specialised public results from scientific and technological research or the most advanced field of innovation, as well as the most relevant foundations on which they are based.

CG-16 - Ability to develop sufficient autonomy to participate in research projects and scientific or technological collaborations within their thematic area, in interdisciplinary contexts and, where appropriate, with a high component of knowledge transfer.

CG-17 - Ability to take responsibility for one's own professional development and specialization in one or more fields of study.

CB6 - Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context

CB7 - That students know how to apply the knowledge acquired and their ability to solve problems in new or little-known environments within broader (or multidisciplinary) contexts related to their area of study.

CB8 - That students are able to integrate knowledge and face the complexity of making judgements based on incomplete or limited information, including reflections on the social and ethical responsibilities linked to the application of their knowledge and judgements.

CB9 - Students are able to communicate their conclusions and the ultimate knowledge and reasons behind them to specialized and non-specialized audiences in a clear and unambiguous manner

CB10 - Students possess the learning skills that will enable them to continue studying in a way that will be largely self-directed or autonomous.

To acquire the following specific skills:

DG-01 - Capacity for the integration of technologies, applications, services and systems specific to Computer Engineering, in general terms, and in broader and more multidisciplinary contexts.

DG-03 - Capacity for the management of research, development and innovation projects in companies and technology

centres, guaranteeing the safety of people and goods, the final quality of products and their approval.

2.2. Learning goals

In order to pass this course, the student must demonstrate the following results...

1. To be able to develop and manage an innovation or research project independently.
2. To understand the process, agents and structure of the production of scientific and technical knowledge.
3. To know the system of public funding of R&D&I in the European Union, at all administrative levels. As well as other research funding schemes.
4. To know and understand the legal framework of industrial protection and intellectual property. And be able to apply the different modalities of software licensing and data usage.
5. To be competent to draw up the corresponding business plans. Identifying Weaknesses and Strengths Threats and Opportunities (SWOT analysis).
6. To develop a plan for the exploitation of results.
7. To apply techniques to lead the development of competitive research proposals.
8. To execute R&D&I projects, including their technical and administrative justification.
9. To understand and be able to perform technology watch work.
10. To have the ability to communicate proposals publicly and present their results.

2.3. Importance of learning goals

Success in applying for and obtaining technological projects and the competitive advantages they provide depends on good management, which is necessarily linked to a commitment to innovation. In this course the theoretical and practical bases of successful business in information technologies are acquired, from the theoretical and practical knowledge in innovation management.

3. Assessment (1st and 2nd call)

3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student must demonstrate that he/she has achieved the expected learning outcomes through the following assessment activities

- **Preparation of short reports** or essays on one or more subjects related to the subject arising from a classroom activity. [30%]Learning outcomes: 1, 2, 3, 4, 5, 6, 8 and 9
- **Project**. A group project in which the knowledge and skills acquired in the course can be put into practice. [50%]. Learning outcomes: 1, 2, 3, 4, 5, 6, 7, 8, and 9
- **Presentation of the Project proposal**. Exhibition in the classroom of the project proposal developed. [20%]. Learning outcomes: 7 and 10

A student who does not opt for the assessment procedure described above, does not pass these tests during the teaching period or who would like to improve his or her grade will be entitled to take an overall test which will be scheduled within the exam period corresponding to the first or second call.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as

- Lectures.
- The teacher explanations will be complemented by lectures and seminars of experts from the university or related companies.
- Real examples and case-based learning and independent work of students will be promoted.
- Practice sessions.
- Individual and group tutorials.
- Preparation of a project. It will consist of a group project whose specific goal is the development of a R&D&i project's proposal that could be submitted to a public call. Students will organize themselves in small groups and will plan their tasks and how to use the degree contents. Finally, they must show their interpersonal communication

and teamwork skills. Teachers supervise the proper development of each project, marking milestones and checking their progress.

4.2. Learning tasks

The course (150 hours) includes the following learning tasks:
- Classroom activities (50 hours). Seminars, problem solving, laboratory, visits, etc.
- Autonomous work and study and Practice and research assignments (90 hours).
- Tutorials (5 hours).
- Assessment (5 hours).

4.3. Syllabus

The course will address the following topics:

Topic 1. General notions and theoretical concepts
- Basic concepts on research, development and innovation. The role of innovation in enterprises and public administrations. The inclusion of diversity and gender.
- Models for technological innovation. (1) Structure of innovative ecosystems (universities, research centers, companies, science parks, technology centers, business incubators, interface structures, etc); (2) Innovation indicators, (3) Culture technological innovation, (4) Open innovation, (5) Modes to promote innovation in collective contexts.
- IT product lines.

Topic 2. Administrative structure of R&D. Funding Methods
- Models for managing R&D&i projects. Public-private partnerships.
- Administrative levels linked to public funding of R&D&i. Development in detail of the structure and programs of the Spanish national system and the European funding system of R&D&i.

Topic 3. Methodology for innovation and practical skills
- Development of competitive research proposals: models, structures and patterns, life cycle, best practices.
- Execution of R&D&i projects: project development, administrative and technical justification.
- Protection of R&D in the field of ICT: utility models protection, limitations.
- Examples of successful innovation in ICT companies.
- Defense proposals and presentation of results.

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class.