Universidad Zaragoza

Academic Year/course: 2021/22

69163 - Research and Innovation Tools and Activities

Syllabus Information

Academic Year: 2021/22
Subject: 69163 - Research and Innovation Tools and Activities
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 615 - Master's in Robotics, Graphics and Computer Vision/ Robótica, Gráficos y Visión por Computador
ECTS: 3.0
Year: 1
Semester: Second semester
Subject Type: Optional
Module:

1. General information

1.1. Aims of the course

The objective of the course is to understand the operation of research at an international level, applied to robotics, graphics and computer vision, and to be able to understand both the scientific context of a contribution and the process from the idea to its subsequent publication and presentation.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDG, of the 2030 Agenda (https://www.un.org/sustainabledevelopment/es/) and certain specific goals, in such a way that the acquisition of the Learning outcomes of the subject provides training and competence to the student to contribute to a certain extent to their achievement:

- Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
    - Target 8.2 Achieve higher levels of economic productivity through diversification, technological modernization and innovation, including by focusing on high value-added and labor-intensive sectors
    - Target 8.3 Promote development-oriented policies that support productive activities, the creation of decent jobs, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro, small and medium-sized enterprises, including through access to financial services.
    - Target 8.6 By 2030, significantly reduce the proportion of young people who are not employed and do not study or receive training
- Goal 9: Industry, innovation and infrastructure
    - Target 9.5 Increase scientific research and improve the technological capacity of industrial sectors in all countries, particularly developing countries, including by fostering innovation and significantly increasing, by 2030, the number of people working in research and development per million inhabitants and the spending of the public and private sectors in research and development

1.2. Context and importance of this course in the degree

Robotics, graphic computing and computer vision are leading fields in which scientific research is a key piece. The ability to understand the process by which scientific contributions are developed is essential so that the student can interpret scientific contributions, develop as a potential researcher and be able to communicate the results of their work.

1.3. Recommendations to take this course

It is recommended to have a habit of reading scientific publications on a regular basis.

2. Learning goals

2.1. Competences

The student will acquire the following basic and general competences:

- CB6 ? To 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 acquired knowledge and ability to solve problems in new or little-known settings within broader (or multidisciplinary) contexts related to their area of ??study.
- CB8 - That students are able to integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.
- CB9 - That students know how to communicate their conclusions and the latest knowledge and reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.
- CB10 - That students possess the learning skills that allow them to continue studying in a way that will have to be largely self-directed or autonomous.
- CG05 - Ability to transmit in English, orally and in writing, in a clear and unambiguous way, to a specialized audience or not, 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.
- CG06 ? To have developed sufficient autonomy to participate in research projects and scientific or technological collaborations within their subject area, in interdisciplinary contexts and, where appropriate, with a high component of knowledge transfer.
- CG07 - Ability to take responsibility for your own professional development and specialization in one or more fields of study.
- CG08 ? To possess the aptitudes, skills and method necessary to carry out multidisciplinary research and / or development work in the fields of Robotics,Graphics and / or Computer Vision.
- CG10 - Ability to understand, relate to the state of the art and critically evaluate scientific publications in the fields of Robotics, Graphics and / or Computer Vision.
- CG11 - Ability to manage and use bibliography, documentation, databases, software and hardware specific to the fields of Robotics, Graphics and / or Computer Vision.
- CG12 - Ability to work in a multidisciplinary group and in a multilingual environment.

The student will acquire the following specific skills:

- CE09 - Ability to autonomously carry out a work of initiation to research and / or development in the field of Robotics, Graphics, or Computer Vision, in which the skills acquired in the degree are synthesized and integrated.

2.2. Learning goals

The student must be able to:

- Understand and evaluate the main contents of research articles on robotics, vision and / or computer graphics and related topics.
- Organize and structure technical documents on research or innovation topics in the field of robotics, vision and / or computer graphics and related topics.
- Understand the operation of scientific dissemination events.
- Present technical research or innovation content in different fields.

2.3. Importance of learning goals

It is essential to be able to communicate the results of innovations or research carried out to different types of audiences. For this, it is key to understand the process by which scientific contributions are developed, both to better interpret existing scientific contributions and to self-develop as a potential researcher and excel at communicating results.

3. Assessment (1st and 2nd call)

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

E02 [50%] - Directed work. Different written reports will be considered, including writing an article or technical report and reviewing an article or technical report. The scientific quality, clarity and potential reproducibility of the content will be valued. The reviews will assess the writing and the capacity for constructive criticism.

E03 [50%] - Presentations and oral debates. The presentation of the corresponding article or report will be valued, taking into account the clarity, conciseness and preparation of the presentation.

To pass the course, it will be necessary to pass the E02 type test with at least a grade of 5 out of 10 points (N2), and the E03 type (during the sessions or through the delivery of reports) with a grade of at least 5 out of 10 points (N3).

In case of passing both tests, the final grade will be calculated according to the following formula: 0.5 * N2 + 0.5 * N3. If neither N2 nor N3 reaches 5, the final grade will be the highest. In case of not passing N2 or N3, the grade will be that of the failed test.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology is geared towards achieving the learning outcomes and skills described above. The teaching-learning process will focus on the organization and participation in a small conference (designed, coordinated and supervised by the teachers) by all the students, in which each of them will act as author of an article (including its presentation) and reviewer of one or more articles, following the entire scientific process of a conference. The development of the conference activity will be preceded by introductory master classes that explain fundamental parts of the research process, scientific publication and dissemination.

More details regarding the development of the subject will be specified on the first day of class.

4.2. Learning tasks

The course consists of 3 ECTS credits that correspond to an estimated student dedication of 75 hours distributed as follows:

- Master class: 10h
- Problem-solving and cases: 6h
- Carrying out practical application or research work: 35 h
- Personalized tutor-student sessions: 15h
- Study: 5h
- Assessment tests: 4h

4.3. Syllabus

The course will consist of the realization of a congress by the students, with the following blocks:

1. Introduction: key parts of the research process, scientific publication, dissemination and financing.
2. Writing
3. Reviewing
4. Presentation and dissemination

4.4. Course planning and calendar

The calendar of the subject will be defined by the center in the academic calendar of the corresponding course.

The detailed calendar of activities will be available in Moodle, and will be presented on the first day of class.