

Academic Year/course: 2022/23

28835 - Undergraduate Dissertation

Syllabus Information

Academic Year: 2022/23

Subject: 28835 - Undergraduate Dissertation

Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia

Degree: 424 - Bachelor's Degree in Mechatronic Engineering

ECTS: 12.0

Year: 4

Semester: Second semester

Subject Type: End of Grade Dissertation

Module:

1. General information

1.1. Aims of the course

In general, the TFG must train for the search, management, organization and interpretation of relevant data in its area of study, to make judgments that include a reflection on relevant issues of a social, scientific, technological or ethical nature, and to facilitate the development of critical, logical and creative thinking and judgment. With the completion of the TFG, the student takes one last step in their incorporation into the world of work or higher studies.

These approaches and objectives are aligned with the Sustainable Development Goals of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the results of Learning the subject provides training and competence to contribute to some extent to its achievement.

1.2. Context and importance of this course in the degree

The TFG is carried out during the last year of the degree and is an indispensable requirement to obtain the Graduate Degree in Mechatronic Engineering. With the completion of the TFG the student puts in value the knowledge acquired during the teaching phase of the degree, in addition to expressing in a practical way the competences and skills that have been obtained in previous courses.

1.3. Recommendations to take this course

The development of the Final Degree Project (TFG) uses knowledge and strategies from subjects related to the areas of ELECTRONICS, MECHANICS, CONTROL and COMPUTING, so it is recommended to have passed the maximum number of subjects of the degree and review the fulfillment of the requirements established in the regulations of Final Degree Projects of the University of Zaragoza, and of the Polytechnic University School of La Almunia (EUPLA).

2. Learning goals

2.1. Competences

GI01: Ability to write, sign and develop projects in the field of engineering in industrial electronics that have as their objective energy, electrical and electronic installations, industrial facilities and plants, manufacturing processes and automation.

GI02: Ability to manage the activities that are the object of the engineering projects described in the previous section.

GI03: Knowledge of basic and technological subjects, which enables them to learn new methods and theories, and equips them with the versatility to adapt to new situations.

GI04: Ability to solve problems with initiative, decision making, creativity, critical reasoning and to communicate and transmit knowledge, abilities and skills in the field of Industrial Engineering and in particular in the field of industrial electronics.

GI05: Knowledge for carrying out measurements, calculations, evaluations, appraisals, surveys, studies, reports, work plans and other similar works.

GI06: Ability to manage specifications, regulations and mandatory standards.

GI10: Ability to work in a multilingual and multidisciplinary environment.

GC01: Ability to integrate and apply mechanical, electronic and control knowledge in the design, development and maintenance of products, equipment or industrial facilities.

GC02: Interpret experimental data, contrast them with the theoretical ones and draw conclusions.

GC03: Ability for abstraction and logical reasoning.

GC05: Ability to evaluate alternatives.

GC06: Ability to adapt to the rapid evolution of technologies.

GC08: Ability to locate technical information, as well as its understanding and evaluation.

GC09: Positive attitude towards technological innovations.

GC10: Ability to write technical documentation and present it with the help of appropriate computer tools

GC11: Ability to communicate your reasoning and designs clearly to specialized and non-specialized audiences.

GC12: Knowledge of safety, certification, industrial property and environmental impacts.

GC13: Ability to assess the technical and economic feasibility of complex projects.

GC14: Ability to understand the operation and develop the maintenance of mechanical, electrical and electronic equipment and installations.

GC15: Ability to analyze and apply simplified models to technological equipment and applications that make it possible to forecast their behaviour.

GC16: Ability to configure, simulate, build and test prototypes of electronic and mechanical systems.

GC17: Ability to correctly interpret plans and technical documentation.

GC18: Demonstrate mastery of the set of knowledge and multidisciplinary skills acquired by carrying out individually or in groups, presenting and defending a project in the field of specific Mechatronics technologies, in which such knowledge and skills are synthesized and integrated.

ET01: Original exercise to be carried out individually and presented and defended before a university tribunal, consisting of a project in the field of specific Industrial Engineering technologies of a professional nature in which the skills acquired in the teaching are synthesized and integrated.

2.2. Learning goals

1. Understanding of concepts related to the areas of knowledge of the degree.
2. Develop, plan and manage technical projects.
3. Understand, order and transmit the information obtained from different sources.
4. Present coherently, orally and in writing the work done.
5. Motivation and self-learning ability.
6. Knowledge of current regulations.
7. Preparation and interpretation of plans and diagrams according to the regulations and appropriate symbols.

2.3. Importance of learning goals

This subject has a strong engineering character, that is, it offers training with application content and immediate development in the labour and professional market. Through the achievement of the relevant learning results, the necessary capacity is obtained to understand the development and operation of mechatronic systems, based on the development of all its facets, essential aspects for the Mechatronic Engineer.

3. Assessment (1st and 2nd call)

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

The evaluation activity will measure the acquisition of the subject's competences through the learning outcomes defined above.

The TFG will be evaluated based exclusively on the intrinsic quality of the work carried out, regardless of its execution modality, its duration, or the place of execution (university, company, etc.), adjusting to the regulations regarding end-of-degree work which is published on the EUPLA website <http://www.eupla.unizar.es/>

After the defence of the TFG, the court will meet to evaluate and decide the grade to assign to the student, based on the documentation provided, the novelty of the subject, the presentation and defence made.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The approach, methodology and assessment of this guide are intended to be the same for any teaching scenarios. They will be adapted to the social-health situation at any particular time, as well as to the instructions given by the authorities concerned.

The teaching methodology is based on a strong interaction teacher / student. This interaction becomes a reality by means of a distribution of task / responsibilities among students and teachers.

4.2. Learning tasks

1. **Classroom activities:** There is no teaching.
2. **Supervised autonomous activities:** These activities will be led by the Director of the Final Year Project and the writing of it will be under the supervision of the Director.
3. **Individual tutorials:** They can be face-to-face or virtual with each of the teachers of the different subjects.

4.3. Syllabus

Essential Contents of the subject for the achievement of learning outcomes.

When referring to the End of Grade Dissertation, we will make reference to the contents of all the subjects that have been studied throughout the student's training.

4.4. Course planning and calendar**Classroom session Scheduling and presentation of works**

It will be scheduled by the Project Director, with personalized nature, depending on the evolution of the work itself, always adapted to the dates of the calls that are set in each academic year.

The activities schedule will be published in <https://eupla.unizar.es/>

4.5. Bibliography and recommended resources

There is no bibliography for this subject.