

29842 - Simulation of Dynamic Systems

Syllabus Information

Academic year: 2023/24

Subject: 29842 - Simulation of Dynamic Systems

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

326 - Escuela Universitaria Politécnica de Teruel

Degree: 440 - Bachelor's Degree in Electronic and Automatic Engineering

444 - Bachelor's Degree in Electronic and Automatic Engineering

ECTS: 6.0

Year: 4

Semester: 440-First semester o Second semester

107-First semester o Second semester

444-First semester

Subject type: Optional

Module:

1. General information

Due to its versatility and reduced economic cost, computer modeling and simulation is currently the main tool to assist in the design of complex systems, in particular automated technical systems, as well as for the better understanding of existing systems, training and analysis tasks.

In any project, analysis and verification through simulation allow for a safer, faster and more efficient development, as well as a better selection and comparison of alternatives before moving on to implementation of prototypes or the real system and testing.

Due to its cross-cutting nature, its potential contribution, directly or indirectly, in favor of any of the SDGs is evident, particularly the following: 3, 7, 8, 9, 11 y 12.

2. Learning results

- Know how to model and simulate dynamic technical systems to analyze their performance and design/test their automatic control.

3. Syllabus

- General concepts on modeling and simulation of dynamic systems.
- Simulation of continuous and hybrid systems. With special emphasis on automatic technical systems. (Using OpenModelica)
- Simulation of discrete event systems. With special emphasis on industrial systems: automated production, logistics and transportation. (Using JaamSim.)

4. Academic activities

- Lectures (30 horas).
- Practical classes (30 hours).
- Personal study and work (90 hours).

At EUPT, the degree is offered in two different modalities: on-site and blended learning. For the presential modality all of the above applies. Students who choose the blended learning modality will have at their disposal from the beginning of the material and bibliographic references that will allow them to follow the course in an autonomous way. The teacher will make the adaptations in the practical sessions and will enable the means (tutorials) to address any doubts that may arise to the students of the blended mode.

5. Assessment system

The learning process in this subject is developed by carrying out, ideally in pairs, or exceptionally individually, a series of tasks set throughout the term, including a complete case study, all of which are carried out by applying the theoretical concepts studied throughout the course, and trying to adapt to the specific interests of each couple, or person. Such tasks can be performed, to a large extent, in classroom work sessions, during which it is possible to continuously assess preparation and performance, the quality of the results obtained, and the demonstrated understanding of concepts and methods, to be taken into account, if applicable, in the final grade.

However, the final grade, in global evaluation format, is obtained in its entirety after the oral exam on the set of tasks performed, which will be reported in writing until the date of each official exam call.