# 28836 - Advanced Automation and Control Engineering

**Información del Plan Docente**

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| **Academic Year** | 2016/17 |
| **Academic center** | 175 - Escuela Universitaria Politécnica de La Almunia |
| **Degree** | 424 - Bachelor's Degree in Mechatronic Engineering |
| **ECTS** | 6.0 |
| **Course** | 4 |
| **Period** | Second semester |
| **Subject Type** | Optional |
| **Module** | --- |

## 1.Basic info

## 1.1.Recommendations to take this course

## 1.2.Activities and key dates for the course

## 2.Initiation

## 2.1.Learning outcomes that define the subject

## 2.2.Introduction

## 3.Context and competences

## 3.1.Goals

## 3.2.Context and meaning of the subject in the degree

## 3.3.Competences

## 3.4.Importance of learning outcomes

## 4.Evaluation

## 5.Activities and resources

## 5.1.General methodological presentation

**The learning process designed for this subject is based on the following:**

Strong interaction between the teacher/student. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The current subject (the teacher should put THE NAME OF THE SUBJECT here) is conceived as a stand-alone combination of contents, yet organized into three fundamental and complementary forms, which are: the theoretical concepts of each teaching unit, the solving of problems or resolution of questions and laboratory work, at the same time supported by other activities

## 5.2.Learning activities

The programme offered to the students to help them adquier their target result is made up of the following activities:

It involves the active participation of the student, in susch a way that for archiving the learning target, not talling away from those already setout, the following activities will be developed:

Face-to-face generic activities

- Theory classes: The teoretical concepts of the subjets are explained and illustrative examples are developed as support to the theory wen neccesary.
- Practical classes: Problems and practical cases are carried out as complementary to the studied theorical concepts.
- Laboratory workshop: groups of students will carry out these activies guided / tutored by the teacher.

The subjets has 6 ECTS credits, which represents 150h of students work in the subjets during the semestes, in order words, 10 hours per week during 15 weeks of class.

The level of experimentation considered for the subjets is considered high.

Talling into account the overall schendule of the subjet, the activities of the students (in this subjets) are distributed as follows:

- 25 hours of lecture / theory clases (theoretical demostration and solving type problems)
- 25 hours of laboratory workshop (2 hours session)
- 10 hours of assessment test (writen and practical)
- 90 hours of personal study.

## 5.3.Program

Contents of the subjets requiered to archieve the target result.

The guidelines followed to elaborate the contents were as follows:

- The contents proposed in the check memory are respeted
- a syllabus whose chapters generaly match the tittle of the specified program was developed.

Theorical content:

1.- Industrial communications

- Physical rules
- Flow control techniques
- networks topology

2.- AS-i Industrial communication networks

3.- PROFIBUS Industrial communication networks

4.- PROFINET Industrial communication networks

5.- Introduction to supervision.

6.- SCADA.

- Monitoring and data acquision devices.

Practical Contents

1.- Profibus DP Network

- PLC (S7-300) as master and ET200 as slave.

2.- WinccFlexible

- Introduction
o Types of operator panels
o Creating a proyect
o Establish connectios or communication parameters

3.- Variables

- Creation of variables. Data and addresing types.

4.- Images.

6.- listing management

7.- Recipes.

8.- transfer setting.

## 5.4.Planning and scheduling

The schedule of the lectures as welles the carrying out of the practices will be established by the centre at the beginning of each corse (This timetable / schedule will be published on the website of the centre).

Other activities (Handing of practices, assessment test etc) are planned according to number of groups and communicate to students in advance at the begining of course.

## 5.5.Bibliography and recomended resources

- Kuo C. Benjamín.. Sistemas de control automático/Benjamin C. Kuo. - 7ª edición Pearson Educación, 1996
- Guerrero, Vicente. Comunicaciones industriales / Vicente Guerrero, Luis Martínez, Ramón L. Yuste. - 1ª ed Barcelona : Marcombo, cop. 2010
- Ogata, Katsuhiko. Ingeniería de control moderna / Katsuhiko Ogata ; traducción Sebastián Dormido Canto, Raquel Dormido Canto ; revisión técnica Sebastián Dormido Bencomo ; revisión técnica para Latinoamérica Amadeo Mariani ... [et al.] . - 5ª ed. Madrid : Pearson Educación, D.L. 2010

Materiales

- Presentaciones PPTX Digital/ Moodle
- Manuales técnicos Digital / Moodle
- Herramientas Software Pc's Laboratorio