Guía docente
205095 - 205095 - Proyectos de Automatización de Seguridad para la Industria 4.0

Última modificación: 19/04/2023

Unidad responsable: Escuela Superior de Ingenierías Industrial, Aeroespacial y Audiovisual de Terrassa
Unidad que imparte: 707 - ESAII - Departamento de Ingeniería de Sistemas, Automática e Informática Industrial.

Titulación: MÁSTER UNIVERSITARIO EN INGENIERÍA DE SISTEMAS AUTOMÁTICOS Y ELECTRÓNICA INDUSTRIAL (Plan 2012). (Asignatura optativa).
MÁSTER UNIVERSITARIO EN INGENIERÍA INDUSTRIAL (Plan 2013). (Asignatura optativa).
MÁSTER UNIVERSITARIO EN INGENIERÍA AERONÁUTICA (Plan 2014). (Asignatura optativa).
MÁSTER UNIVERSITARIO EN INGENIERÍA ESPACIAL Y AERONÁUTICA (Plan 2016). (Asignatura optativa).

Curso: 2023 **Créditos ECTS:** 3.0 **Idiomas:** Inglés

PROFESORADO

Profesorado responsable: Rita Maria Planas Danglà

Otros: Jan Pascual

METODOLOGÍAS DOCENTES

The course is divided into parts:
- Theoretical and work group sessions
- Laboratory sessions

Self-study (including proposed exercises and activities) will be also contemplated.
In the theory classes, teachers will introduce the theoretical basis of the concepts, methods and results and illustrate them with examples appropriate to facilitate their understanding. Students, working in groups will use the new concepts to specify its solution in order to solve the proposed challenge..
In the lab sessions, teachers guide students in applying theoretical concepts to solve problems, always using critical reasoning.
Students, independently, need to work on the materials provided by teachers in order to fix and assimilate the concepts.
The teachers provide the syllabus and monitoring of activities (by ATENEA

OBJETIVOS DE APRENDIZAJE DE LA ASIGNATURA

This course is based in the practical development of a “hands-on” application on Safety Automation under Industry 4.0 specifications. The applications to be developed, will be proposed as real challenges and will be supervised by lecturers.
Depending on proposed challenges, applications will be developed individually, by pairs or by groups and in all cases, teachers will assess and supervise each student’s teamwork in order to help them in the project development and to solve possible doubts

HORAS TOTALES DE DEDICACIÓN DEL ESTUDIANTADO

Tipo	Horas	Porcentaje
Horas aprendizaje autónomo	48,0	64.00
Horas grupo pequeño	27,0	36.00

Dedicación total: 75 h

CONTENIDOS

Module 1:

Descripción:
Introduction to Industry 4.0
Introduction to Industrial Safety
Safety Automation:
- Safety Design (ISO 13849-1/ EN 62061)
- Risk Assessment
- Security components
- How to design a safety system?
- Using a 'normal' PLC, a safety relay or a safety PLC
- Programming environments for safety automation devices.

Actividades vinculadas:
To develop the complete practical solution about safety automation and safety robotics for the given challenge.
Students must take different approaches to the proposed solution, comparing the use of non-specific safety components, safety relays and safety PLCs. They must carry out the practical implementation on a physical production station.
The developed work should cover all the steps to obtain a complete solution: Risk calculation, selection of components, physical installation of the different elements, secure controller programming, etc.

Dedicación: 75h
Grupo grande/Teoría: 27h
Aprendizaje autónomo: 48h

SISTEMA DE CALIFICACIÓN

Laboratory test (individually):
20% Project results (in group): 50%
Report delivery and oral presentation of the adopted solution to solve the challenge:: 30%

BIBLIOGRAFÍA

Básica:
- PILZ user manuals, PILZ programming guides, PASCAL (PILZ) [en línea]. [Consulta: 14/11/2022]. Disponible a: https://www.manualshelf.com/manual/pilz/pnoz-s1-c-24vdc-2-n-o/user-manual-english.html.