

Guia docent

205095 - 205095 - Projectes d'Automatització de Seguretat per a la Indústria 4.0

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Unitat responsable: Escola Superior d'Enginyeries Industrial, Aeroespacial i Audiovisual de Terrassa
Unitat que imparteix: 707 - ESII - Departament d'Enginyeria de Sistemes, Automàtica i Informàtica Industrial.

Titulació: MÀSTER UNIVERSITARI EN ENGINYERIA DE SISTEMES AUTOMÀTICS I ELECTRÒNICA INDUSTRIAL (Pla 2012). (Assignatura optativa).
MÀSTER UNIVERSITARI EN ENGINYERIA INDUSTRIAL (Pla 2013). (Assignatura optativa).
MÀSTER UNIVERSITARI EN ENGINYERIA AERONÀUTICA (Pla 2014). (Assignatura optativa).
MÀSTER UNIVERSITARI EN ENGINYERIA ESPACIAL I AERONÀUTICA (Pla 2016). (Assignatura optativa).

Curs: 2024 **Crèdits ECTS:** 3.0 **Idiomes:** Anglès

PROFESSORAT

Professorat responsable: Rita Maria Planas Danglà

Altres: Jan Pascual

METODOLOGIES DOCENTS

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

OBJECTIUS D'APRENTATGE DE L'ASSIGNATURA

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

HORES TOTS DE DEDICACIÓ DE L'ESTUDIANTAT

Tipus	Hores	Percentatge
Hores aprenentatge autònom	48,0	64.00
Hores grup petit	27,0	36.00

Dedicació total: 75 h

CONTINGUTS

Module 1:

Descripció:

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.

Activitats vinculades:

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.

Dedicació: 75h

Grup gran/Teoria: 27h

Aprenentatge autònom: 48h

SISTEMA DE QUALIFICACIÓ

Laboratory test (individually):

20% Project results (in group): 50%

Report delivery and oral presentation of the adopted solution to solve the challenge: 30%

BIBLIOGRAFIA

Bàsica:

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