

GUIA PENDENT D'APROVACIÓ

General description

Name of the course: **Safety Automation Projects for Industry 4.0**

Department: ESAIL - Automatic Control (707)

ECTS: **3 ECTS**

Degree: MUESAEI,

Level:

Language: English

Code: **205095**

Type: **Elective**

Lecturers

Main teacher: Rita Maria Planas Dangla

Others: Jan Pascual

General learning objectives of the course

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



Competencies

Specific competencies	<ul style="list-style-type: none"> To acquire knowledge about Industry 4.0 and safety concepts and standards To acquire knowledge about industrial safety. To design safety automation To acquire knowledge about the different safety devices and the security levels they provide.
Generic competencies	

Credits: total hours of student work

		Dedication	
		Hours	%
Directed learning	Large Group (G)	27	36%
Autonomous learning		48	64%

Modules

Module 1:	Dedication: hours	Large group: <u>27</u> hours Autonomous learning: <u>48</u> hours
Description	<p>Introduction to Industry 4.0</p> <p>Introduction to Industrial Safety</p> <p>Safety Automation:</p> <ul style="list-style-type: none"> - 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. 	
Related activities (*)	<p>To develop the complete practical solution about safety automation and safety robotics for the given challenge.</p> <p>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.</p> <p>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.</p>	

Grading system (assessment)

Laboratory test (individually):



20% Project results (in group):

50%

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

Teaching methodology

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

References

Basic	PILZ User Manuals, PILZ Programming Guides, PASCAL (PILZ)
Complementary	