This course is based on the practical development of a “hands-on” application on Safety Robotics and Automation under
Industry 4.0 specifications. The applications to be developed, will be proposed as real challenges from a leading company in the industrial security sector, and will be supervised by lecturers.

Depending on proposed challenges, applications will be developed by pairs or by groups and in both cases, teachers will assess and supervise each student’s teamwork in order to help them in the project development and to solve possible doubts.

- 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 safety robotics.

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group: 30h</th>
<th>40.00%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
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<tr>
<td></td>
<td>Hours small group: 0h</td>
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<td>Guided activities: 0h</td>
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<td>Self study: 45h</td>
<td>60.00%</td>
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</tbody>
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### Content

#### MODULE 1

**Description:**
- Introduction to Industry 4.0
- Introduction to Industrial Safety

- Safety Automation:
  - Safety Design (ISO 13849-1/ EN 62061)
  - Risk Assessment
  - Security components

- Safety Robotics:
  - Safety Design
  - Safe human-robot collaboration (COBOTS)
  - Security components

**Related activities:**
To develop the complete solution about safety automation and safety robotics for the given challenge. 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.
Qualification system

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

Bibliography

Others resources:
Varied product manuals from the PILZ house