

## GENERAL INFORMATION

Course information	
Name	Smart Industry Applications I
Code	DOI-MIC-521
Degree	MIC
Year	1
Semester	Spring
ECTS credits	1,5 ECTS
Type	
Department	Department of Industrial Organization
Area	
Coordinator	Bernardo Villazán Gil

Lecturer	
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Area	
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## DETAILED INFORMATION

### Contextualization of the course

### Contribution to the professional profile of the master

The purpose of the course is to provide students with a comprehensive understanding of the Applications, levers and value drivers, in relevant industrial sectors.

By the end of the course, students will:

- Know the fundamentals of the Applications.
- Have a complete understanding of the dynamics in relevant industrial sectors.
- Learn from leading industrial companies the real experiences and use cases.

### Prerequisites

## CONTENTS

<b>Contents: Theory</b>
<b>Chapter 1: Introduction to Applications (2h)</b>
<ul style="list-style-type: none"><li>1. Definition</li><li>2. Applications “Know Why” and “Know Who”</li><li>3. Implications</li></ul>
<b>Case 1 “Aeronautical”</b>
<ul style="list-style-type: none"><li>1.1 Manufacturing</li><li>1.2 Quality</li></ul>
<b>Case 2 “Pharma and Cosmetics”</b>
<ul style="list-style-type: none"><li>2.1. Traceability</li><li>2.2 Security</li></ul>
<b>Case 3 “Future Applications”</b>
<ul style="list-style-type: none"><li>3.1 Blockchain</li><li>3.2 5G</li></ul>
<b>Contents: Master Classes</b>
<ul style="list-style-type: none"><li>MC1. LOEWE</li><li>MC2. Grupo SESE</li><li>MC3. ERICSSON</li><li>MC4. SEAT</li><li>MC5. MELIA Hotels</li></ul>

## COMPETENCES AND LEARNING OUTCOMES

Competences and Learning Outcomes
<b>Competences</b>
<b>General Competences</b>
<p>CG3. The capability of adapting to new theories, methods and changing engineering situations based on a sound technical training.</p> <p>CG4. The capability of solving problems with personal initiative, efficient decision making, critical reasoning and transmitting technical information in the engineering world.</p> <p>CG5. The capability of conducting measurements, calculations, assessments, studies, reports, planning, etc.</p> <p>CG10. The ability to work in a multilingual and multidisciplinary environment.</p>
<b>Basic Competences</b>
<b>Specific Competences</b>
<b>Learning outcomes</b>
<p>RA1. The student understands the basic principles behind Applications.</p> <p>RA2. The student has a basic and practical experience in researching about Applications.</p> <p>RA3. The student attends professional forums on Application in Industries</p> <p>RA4. The student participates in encounters with leading industrial companies.</p> <p>RA5. The student has practical experience in team working.</p> <p>RA6. The student has a practical experience in developing initiative, creativity and autonomy skills identify Smart Industry levers and industrial value drivers.</p>

## TEACHING METHODOLOGY

### General methodological aspects

Theory and practice will be combined along the course. The teacher will explain the basics of the subject and will go in depth in the more important issues with illustrative examples. The students will be grouped in pairs in order to put in practice the proposed methods and techniques in a collaborative way.

### In-class activities

1. **Lectures and problem-solving sessions:** The lecturer will introduce the fundamental concepts of each chapter, along with some practical recommendations, and will go through worked examples to support the explanation. Active participation will be encouraged by raising open questions to foster discussion and by proposing short application exercises to be solved in class either on paper or using a software package.

2. **Assessment Test**

### Off-class activities

1. **Personal study** of the course material and resolution of the proposed exercises

## ASSESSMENT AND GRADING CRITERIA

Assessment activities	Grading criteria	Share
Continuous evaluation	<ul style="list-style-type: none"><li>• Understanding of the theoretical concepts.</li><li>• Application of these concepts to problem-solving.</li></ul>	40%
Final exam	<ul style="list-style-type: none"><li>• Understanding of the theoretical concepts.</li><li>• Application of these concepts to problem-solving.</li></ul>	60%

## GRADING AND COURSE RULES

### Grading

#### Regular assessment

- **Theory** will account for 40%, of which:
  - Continuous evaluation: 10%
  - Final exam: 30%
- **Lab** will account for the remaining 60%

In order to pass the course, the mark of Theory must be greater or equal to 5 out of 10 points.

#### Retakes

There will be only a final exam which will be the 100% of the grade

#### Course rules

- Class attendance is mandatory according to Article 93 of the General Regulations (Reglamento General) of Comillas Pontifical University and Article 6 of the Academic Rules (Normas Académicas) of the ICAI School of Engineering. Not complying with this requirement may have the following consequences:
  - Students who fail to attend more than 15% of the lectures may be denied the right to take the final exam during the regular assessment period.
  - Regarding laboratory, absence to more than 15% of the sessions can result in losing the right to take the final exam of the regular assessment period and the retake. Missed sessions must be made up for credit.
- Students who commit an irregularity in any graded activity will receive a mark of zero in the activity and disciplinary procedure will follow (cf. Article 168 of the General Regulations (Reglamento General) of Comillas Pontifical University).

## WORK PLAN AND SCHEDULE

In- and out-of-class activities	Date/Periodicity	Deadline
<ul style="list-style-type: none"> <li>Continuous evaluation activities to review and self-study of the concepts covered in the lectures</li> </ul>	Periodically on demand.	-
<ul style="list-style-type: none"> <li>Final exam</li> </ul>	Last week	-
<ul style="list-style-type: none"> <li>Lectures</li> </ul>	Weekly	-
<ul style="list-style-type: none"> <li>Review and self-study of the concepts covered in the lectures</li> </ul>	Weekly	-

STUDENT WORK TIME SUMMARY			
IN-CLASS HOURS			
Lectures			
15			
OFF-CLASS HOURS			
Self-study			
30			
ECTS CREDITS:			1.5 (45 hours)

## BIBLIOGRAPHY

Basic
<ul style="list-style-type: none"> <li>Presentations prepared by the lecturer (available in Moodle).</li> </ul>
Complementary