

# Industry 4.0

The Major **Industry 4.0** aims to provide students with a set of advanced competences to understand and leverage the **connections between manufacturing, management and digital technologies.**

Students will have the opportunity to learn how to deal with the 4th industrial revolution in terms of technologies, markets, management and business models

Smart Manufacturing Lab (ING-IND/16 e 17)	10
Digital Manufacturing (ING-IND/17)	10
Industrial Automation and Robotics (ING-INF/04)	5
Manufacturing Systems Engineering I (ING-IND/16)	
Additive Manufacturing (ING-IND/16)	



# Smart Manufacturing Lab

## Expected Learning Outcomes

The aim of the course is to provide students with the opportunity to solve industrial I4.0 problems and innovation challenges in a real manufacturing environment. The students will learn how to set complex problems, study and design innovative solutions by combining multidisciplinary know-how and interacting with academic and industrial tutors. A strategic perspective will be always assumed to evaluate the impact of the proposed solutions.

After successfully completing the lab activities, students will achieve skills and core-competencies to:

- face real challenges in business and industrial settings dealing with I4.0
- define strategy for complex problem setting,
- Learn how to learn in fast-changing scenarios
- design innovative solutions using a scientific and engineering approach (Analysis, Learning, Reasoning, and Modelling capability)
- apply multidisciplinary background to problem solving
- improve team-working and communication skills
- develop new ideas and solutions in business and industrial scenarios evolving over time;
- Interact in a professional, responsible, effective and constructive way in a working environment, also motivating other group members.

## Professors

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## Learning Experience

The Lab activities will be focusing on real challenges provided by companies who are facing I4.0 challenges. Companies will be involved during all the Lab activities and will follow the project work.

The students will have the opportunity to take advantage of smart manufacturing methods and tools and experimental experience to solve real industrial problems through the “action-based learning” approach used in the “learning factory”.

After a preliminary assignment of the project work, the team will be constituted and assigned to an industrial and an academic tutors. Specific seminars will be carried out depending on the problem at hand.

Students will spend some of their time in the company to discuss their solutions with the industrial partners to evaluate alternative scenarios and select the most promising solution for the industrial problem at hand.

## Examples of involved companies

ABB, Alstom, BEAMIT, Bosch, Magneti Marelli