



Digital Manufacturing

Objectives

This module aims at developing the following competences:

1. Apply digital technologies for product design and manufacturing.
2. Apply digital technologies for improving industrial performance.

Learning Outcomes

Upon the completion of this module, the trainees will be able to:

1. Show understanding of how to use digital technologies for design, simulation and analysis of production systems
2. Implement digital technologies for product design and manufacturing
3. Simulate specific production cell/ production line
4. Explain main characteristics of the additive manufacturing technologies for specific areas of applications and the advantages of the technologies in each of the domains
5. Build product specifications for additive manufacturing considering specific technologies and product functions
6. Design products for additive manufacturing

Prerequisite: Computer Aided Design, Manufacturing Processes (a plus)

Outline:

- **Digital Manufacturing – Digital Factory**
 - Introduction to Digital Manufacturing
 - Main areas of Digital Manufacturing
 - Advantages of Digital Manufacturing
 - Manufacturing simulation
 - Digital Twin
- **Additive Manufacturing (AM) as a key digital manufacturing technology**
 - Presentation of the facilities and resources
 - Introduction to Additive Manufacturing
 - Large scale manufacturers
 - Additive Manufacturing process flow
 - Additive Manufacturing technologies
 - Additive Manufacturing industries and applications
 - Design for Additive Manufacturing

**Learning Activities:**

- Short lectures
- Class discussion
- Group discussion
- Individual work
- Group work
- Oral presentation

Time Distribution and Study Load:

- Training: 15 hours
- Coaching: 30 hours
- Group project: 60 hours

Assessments:

- Class discussion and participation
- Presentations
- Group project

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