Curriculum
Digital Skills for Industry 4.0

PROFESIONAL PROFILE: Middle Manager

The middle managers of industrial SMEs interested in developing digital transformation processes in their businesses should learn the concepts of 4.0 as well as familiarize with related processes and technologies.

TRAINING

LEARNIING MODULES	Asignación horaria
Introduction to Industry 4.0	6h
Technologies for Product Design & Manufacture: CNC	3h
Cloud Based Computing	8h
Digital Factory	4h
Introduction to e-commerce	5h
e-Leadership	3h
Big Data	8h
Industrial Security	2h

Duration: 39 hours

1) Introduction to Industry 4.0

DESCRIPTION:
This module introduces the history and concepts of the 4th Industrial Transformation.

LEARNING OUTCOMES:

-KNOWLEDGE:
Be knowledgeable of how industry has evolved from the 1st to the 4th Industrial Revolution.

-SKILLS:
Be able to recognise the most significant advancements of each era and how they affected each subsequent revolution, understand the latest reforms of Industry 4.0 and how they can be integrated in the Industry

-RESPONSABILITIES & AUTONOMY:
Have a working knowledge of the most important technological advancements brought about by the 4th Industrial Revolution and know how to integrate them in their sector without supervision and guidance.
-COMPETENCES:

Management & Personal: Management and organizational competences

2) Technologies for Product Design & Manufacture: CNC

DESCRIPTION:
This module provides information of the different types of CNC machines, and how these can be utilised to produce components.

LEARNING OUTCOMES:

-KNOWLEDGE:
Be knowledgeable of the workflows from design to manufacture.

-SKILLS:
Be able to differentiate between the different types of CNC technologies. And outline how CNC technologies are used within Industry 4.0 applications.

-RESPONSABILITIES & AUTONOMY:
Discern between diverse types of CNC, know how to use them and know about common CNC applications within Industry 4.0.

-COMPETENCES:

Digital: Digital Models, automation, cloud, production and software.

3) Cloud Based Computing

DESCRIPTION:
This module gives an introduction to the traditional deployment model, server virtualization, history of cloud computing and definition of cloud computing. It provides information relating to cloud computing features, deployment models, service models, etc. It also presents some advantages and disadvantages related to the use of cloud computing for SMEs.
Units:
Definition of Cloud Computing: Key concepts
Cloud Models
Advantages of cloud computing for SMEs

LEARNING OUTCOMES:

-KNOWLEDGE:
Be knowledgeable of the key concepts about cloud computing.
Be able to describe the different cloud models.
Be knowledgeable of the advantages of the use of cloud computing for SMEs.

-SKILLS:
Be aware of the fundamentals of cloud computing and related definitions.
Be aware of the most important cloud computing modules and services and their features.
Know the pros & cons of cloud based services, and examples from real cases.

-RESPONSABILITIES & AUTONOMY:
Identify cloud computing services and differences between cloud computing and other solutions.
Choose which cloud solutions are more suitable for his/her needs.
Choose when cloud based solutions are more suitable for his/her needs.

-COMPETENCES:

Digital: Digital Models, IoT, automation, Big Data, cloud, production, software and security.
Management & Personal: Communication, management, teamwork and organizational competences.

4) Digital Factory

DESCRIPTION:
This module is a review of the different tools that make up the digital factory throughout the factory life cycle. The module provides information relating to the possible implementation means of a smart factory.
Units:
Digital Factory Tools
Implementing the Smart Factory

LEARNING OUTCOMES:

-KNOWLEDGE:
Be knowledgeable of the different digital factory tools available on the market. Understand the importance of the smart factory and how this can combine with other elements of a digital enterprise.

-SKILLS:
Be capable of listing a number of digital factory tools and how these are related to the different phases of the factory life cycle. Capable of identifying different elements within a digital enterprise and distinguishing between an Industry 4.0 and traditional enterprise set up.

-RESPONSABILITIES & AUTONOMY:
Argue the need for an integrated data model/digital twin which unifies the different digital factory tools.
Discuss the difference between a traditional and digital enterprise and how a transformation process may be undertaken to transform the business.

-COMPETENCES:

Digital: Digital Models, Big Data, cloud.
Management & Personal: Communication and management.

5) Introduction to e-commerce

DESCRIPTION:
This module provides essential knowledge about e-commerce. It provides the keys around the management of an online store, digital marketing, purchase processes or customer service. In addition, it provides tools to address industrial strategies of e-commerce and digital marketing.

LEARNING OUTCOMES:

-KNOWLEDGE:
Be familiar with the tools for creating and managing an online store. Understand the keys of ecommerce and digital marketing. And acquire the basic knowledge to implement strategies of e-businesses.

-SKILLS:
Demonstrate capacity to identify e-commerce processes. Apply e-commerce strategies inside the company and carry out and supervise e-commerce developments.

-RESPONSABILITIES & AUTONOMY:
Design e-commerce strategies and projects and identify company requirements and challenges of implementation.

-COMPETENCES:

Digital: Digital Models, IoT, Automation, cloud and software.
Management & Personal: Communication, management and organizational competences.

6) e-Leadership

DESCRIPTION:
The e-leadership acquires a key importance in the processes of transformation towards the industry 4.0 and incorporation of the new digital technologies. The digital environments require new tools for the successful management of businesses and their innovation. This section will focus on e-leadership skills and competences.

LEARNING OUTCOMES:

-KNOWLEDGE:
Be knowledgeable of leader characteristics and functions in 4.0 environments. Understand how to develop e-leadership models

-SKILLS:
Be able to recognize main transformation processes affecting leadership and new organization models.

-RESPONSABILITIES & AUTONOMY:
Create internal conditions for collaborative environments and recognize skills and competences to lead 4.0 organizations.

-COMPETENCES:

Management & Personal: Communication, management, teamwork, problem solving, risk and organizational competences.

7) Big Data

DESCRIPTION:
Big Data is one of the main drivers for the advance and development of Industry 4.0 technologies. Thus, it is important to showcase the advantage Big Data gives to companies which are eager to get onboard Industry 4.0. This module is meant to provide an introduction to Big Data and some technologies related to it. In addition, it will help the participant out in discovering what Big Data really is, how does it work and how it can benefit a business.

LEARNING OUTCOMES:

-KNOWLEDGE:
Be knowledgeable of the basics of Big Data, advantages and challenges presented by Big Data.
Know about the processes related to Big Data management: what are the basics steps when developing a Big Data Strategy, what to look for in a Big Data Solution…
Know what to expect from Big Data in the future strategy.

-SKILLS:
Be able to draft a basic big data strategy.
Be able to make a more informed decision regarding what Bid Data solution is better suitable for their company.

-RESPONSABILITIES & AUTONOMY:
Recognise the need of using Big Data in the company, should they need it.

-COMPETENCES:

Digital: Digital Models, IoT, Big Data, cloud and software.
Management & Personal: Management, teamwork, problem solving and risks.

8) Industrial Security

DESCRIPTION:
Provides an introduction to the concepts of industrial networking and security

LEARNING OUTCOMES:

-KNOWLEDGE:
Understand the basics of cybersecurity. Be knowledgeable of how security issues affect the Digital Factory. Be knowledgeable of the different type of network setups and their implementation. And understand the different ways in which cybersecurity can be implemented within the digital enterprise.

-SKILLS:

Be able to list a number of cybersecurity risks, and be able to define the concept of security zones within a digital enterprise.

-RESPONSABILITIES & AUTONOMY:
Can argue that 100% cybersecurity is not possible to achieve and a system will always be vulnerable to cyber-attacks.
Understanding what precautions and approaches may be employed to minimize the risk to an industrial control system.

-COMPETENCES:

Digital: Digital Models, IoT, automation, cloud and security.
Management & Personal: Organizational competences.