CARDEMY PROFESSIONAL PROFILE			
EQF LEVEL: 3, 4 and 5	**EUROPEAN MATRIX**		
NAME OF THE LEARNING OUTCOME	Understanding of connected industry model.		
DEFINITION OF THE LEARNING OUTCOME	This learning outcome will provide an overview of industrial development until today, and its physical and logic structure, based on the implementation of ICT.		
U1 – History of industrial technology			
KNOWLEDGE	**SKILLS**	**COMPETENCE**	
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to	
Development of industrial technology	Identify different steps of technological development in history.	Elaborate a temporal pattern of technological steps.	
Development of digital technology	Determine main steps in digital development.	Elaborate a temporal pattern of digital development (machines, technologies, people involved in the development of digital technology).	
Convergence of technologies	Link scientific innovation with technological development applied to production from a digital perspective. Link all technologies related to production plants.	Elaborate individual sheets with descriptive elements and functional links with production chain, original technology, main people and organizations historically involved and a general historic reference.	
U2 – Structuring elements of a digital production system			
KNOWLEDGE	**SKILLS**	**COMPETENCE**	
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:	

Industrial plant as system, physical and logic elements. Software of plant management.	Indentify all systems, their interaction, different layers which impact productive results and their management systems in an industrial plant of automotive. Identify main physical networks in the company, their characteristics, information or service providing indicators, sensors and security elements, protection, laboratory risks and quality. Identify different applications of company management. Establish differences between ERP, MRP, MES systems.	Elaborate graphic of digital technologies impacting or will impact in the future an automotive production plant. Describe a facility 4.0 from a perspective of systems, networks, technologies and operator interactions.
Know all Industry 4.0 technologies.	Identify all Industry 4.0 technologies: - Smart devices - I/O devices - Sensors - Cobots - Drones	Identify elements in the production chain related to digital technology. Identify information which can be provided by each elements of the I4.0 production chain.

CARDEMY PROFESSIONAL PROFILE			
EQF LEVEL: 3, 4 and 5	**EUROPEAN MATRIX**		
NAME OF THE LEARNING OUTCOME	Database management: collect and use data in an industrial context.		
DEFINITION OF THE LEARNING OUTCOME	This learning outcome will provide knowledge in new technologies in order to collect a large amount of data, analyze them and to understand security issues related to this kind of technologies. This first learning outcome will be divided in 4 units. - U1 – Internet of things (tablets, smartphones, personal data capture systems, digital sensors, RFID products control, internet connected machines, …) - U2 – Cloud computing (data production storage) - U3 – Big data (predictive maintenance, 6 sigma, quality, …) - U4 – Cyber security		
U1 – Internet of things			
KNOWLEDGE	**SKILLS**	**COMPETENCE**	
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to	
Use of new technologies (smartphones, tablets, PC in equipments) and their main applications in a professional context.	Use tablets and smartphones and their connection to other equipments regardless of the operating system. To collect and save data in order to make a further analysis.	Collect data using smartphones and tablet. Use an integrated camera. Save, share collected data and use them for decisions.	
Digital sensors for production control.	Identify digital electronic elements allowing to control all aspects of productive process. Know practical applications of sensors	Understand importance of these technologies in the inventory management process ,quality monitoring, use of equipments etc. Understand involved risks, control and emergency	

	(temperature, pressure, gas and liquid composition), production control by photocell, motion sensors, volumeters, laser, …). Identify feasibility of control technologies by RFID and other techniques. Contribute to the management (inventory, utilization, …) and to the quality monitoring.	procedures, technologies maintenance.
Advantages of internet connected equipments.	Be familiar with internet connected equipments. What kind of information can be gathered and how to use them.	Use internet connected equipments. Use provided information in order to monitor the production process and to make decisions.
U2 – Cloud computing		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:
Cloud computing technology and process.	Identify differences between storing cloud and cloud computing and its application on a productive process through cloud manufacturing. Identify different types of cloud manufacturing. Use cloud computing technology for industrial processes.	List cloud manufacturing models and its main elements. Work with cloud computing data in order to use them for specific jobs

U3 – Big Data		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:
Big Data analysis and their use for management.	Follow on their basis production processes and to react. Define an upgrading process which can arise from the use of big data in his/her workstation.	Detect abnormal data and an irregularity and detect the cause of an abnormal data. Correct the problem or to inform the concerned person. Identify data which are susceptible to be managed under big data model.
U4 – Cyber Security		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:
Cyber security principles and issues. Understand importance of cyber security.	Identify protection elements which can affect his/her work, and have a clear overview of legislation to be complied. Apply solutions that can be used to ensure the security rules.	Protect production security by following internal procedures and rules.

CARDEMY PROFESSIONAL PROFILE			
EQF LEVEL: 3, 4 and 5	**EUROPEAN MATRIX**		
NAME OF THE LEARNING OUTCOME	Emerging I4.0 technologies helping in the production process.		
DEFINITION OF THE LEARNING OUTCOME	This learning outcome aims to give an overview of emerging technologies which can help production process in the automotive sector. - U1 – Cobots - U2 – Augmented reality - U3 – Drones - U4 – Human/machine interaction by voice control (developer level)		
U1 – Cobots			
KNOWLEDGE	**SKILLS**	**COMPETENCE**	
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:	
Collaborative robots technology and their advantages. Potential of collaborative robots in an industrial process.	Make proposal for use of cobots in production process and program them.	Modify program and propose equipment evolution. Ensure assistance and support to the teams.	
Know their application in the production chain.	Know the human role (ability, knowledge, flexibility, decision, response to a crisis) and the robot role (repeatability, precision, endurance).	Know his/her responsibilities and scope of his/her tasks.	
Know the technical and ergonomic factors, security, norms.	Identify technical specifications referring to the scope, degree of freedom, … Identify elements of the norm COBOT ISO/TS 1566:2016 relative to his/her	Interpret the general pattern of cobot process in his/her workstation. Evaluate and identify solutions to risks issues related to cobots on his/her work. Identify elements complying with ISO norm.	

	work. Identify passive and active security elements of cobots he/she works with. Identify ergonomic relation of its interaction with cobots.	
Maintenance of collaborative robots.	Maintain collaborative robots.	Repair machines by restoring electronic, pneumatic, electrical, mechanic or hydraulic dispositive. Evaluate costs and delivery times of maintenance.
U2 – Augmented reality		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:
Augmented reality technology for maintenance, non-continued work, simulation and training.	Understand advantages of this kind of technologies in an industrial context. Use augmented reality equipments.	Use augmented reality to maintain, identify equipments or receive information. Propose improvements of his/her results by use of augmented reality.
U3 - Drones		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:
Drones technology	Understand advantages of this kind of technologies in an industrial context (maintenance of facilities, inventory control).	Know advantages of this kind of technology on his/her work.
U3 – Human/machine interaction by voice control (developer level)		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:

General pattern of digital network for manufacturing voice control.	Identify elements of a voice control network for the production: - Personal dispositives - Data network - Computing elements - Control software	Have a clear view of voice control network in his/her workstation.
Voice control / MES interactions.	Indentify links between the voice control software and production control system.	Know information sharing between voice control system and MES system (data, frequency, allocated resources, processes, production consequences).
Programming of the system and implementation.	Know how to implement voice control in his/her facility.	Implement and program voice control system.

CARDEMY PROFESSIONAL PROFILE

EQF LEVEL: 5	PARTNER: AUTOKLASTR	COUNTRY: Czech republic
NAME OF THE LEARNING OUTCOME	3D printing: understand 3D printer process and use of 3D printers in production processes.	
DEFINITION OF THE LEARNING OUTCOME	This learning outcome will provide knowledge in 3D printing technology. In particular product design, material knowledge, 3D printing machines and effectiveness will be studied. The learning outcome will be divided in 2 units. - U1 - 3D printing technology - U2 – Production monitoring	

U1 – 3D printing technology		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:
Have general knowledge about additive technology 3D printing technology and their application (design, material, equipments, effectiveness)	Use 3D technology in manufacturing fields	Apply knowledge about 3D technology in product design, materials, equipments, markets. Know when to use 3D technology.
Use of 3D printing technologies.	Use related computer-aided software.	Start up the machine and enter required parameters. Use a computer-assisted manufacturing (CAM)

U2 – Production monitoring		
KNOWLEDGE	**SKILLS**	**COMPETENCE**
He/She will acquire knowledge of:	He/She will be able to:	He/She will be able to:
Production following-up processes.	Monitor all steps of the production process and make decisions on a data basis.	Follow technical specifications. Use program numerical control machine, control mechanical running and give set-ups. Fill manufacturing monitoring reports. Identify manufacturing defects, dysfunctions and correct them.