SHOE 5.0

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Work Package 2 -

2.3 Definition of dedicated/customized training plans according to training needs

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Content

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Introduction

The EU footwear industry, blending tradition and innovation, is globally recognised for its high-quality, uniquely designed products. Key drivers of change identified by previous projects include Regulations, Environmental change, Economics, Globalisation, Technological change, Demographics, Values, and a new consumer. The Shoe 5.0 project targets specific needs like Digital, Environmental, and Climate Change Competencies, Sustainability Competencies, Market Analysis Competencies, and Technological change, aiming to address future training needs.

Shoe 5.0 focuses on developing relevant training content to enhance competencies, facilitating the integration of Industry 5.0 concepts in the footwear industry. The project aims to empower workers, managers, and SME leaders with knowledge to implement new technologies, processes, and systems for optimal company performance, advancing sustainability and efficiency.

Recognising diverse knowledge levels among users, the project design generic yet tailored educational content. The immediate focus is on WP2 - Industry 5.0 and Needed Key Competences, analysing the current state of Industry 5.0 integration in the Footwear sector across Portugal, Spain, Italy, Belgium, and Romania. The goal is to provide customised training plans through an online tool, addressing specific user needs to successfully implement Shoe 5.0.

In this WP, the goal is to analyse the current integration of Industry 5.0 in the Footwear sector, study of the current and future footwear workforce and match the footwear professional profiles in Portugal, Spain, Italy, Belgium and Romania. This was done with desk research but also included a Questionnaire and a Focus Group to discuss the initial findings of the desk research.

The literature review, questionnaire, and focus groups accomplished within Task 2.1 highlight that i5.0 represents a new step and new opportunities for the footwear sector. It needs to be supported on training, skilling and re-skilling of existing workers and management people, and will make the industry more attractive to the new generations. Manufacturing will keep evolving in the concept of 5.0, with energy efficiency and lean concepts in mind. Automation and robotics will play a key role in this next step, but it will be with a human touch. At the same time, health and wellbeing, ergonomics and digital anthropology are one of the main concerns of this new industry phase. Artificial intelligence will support design, prototyping, logistics, communication and almost every aspect of the industry, and needs to be based on data. Data needs to be gathered and analysed to better influence decision taking and innovation. Innovation will be based on multiple inputs in a truly cooperative work, leading to a greater degree of efficiency in product development and creativity work.

These findings helped to identify the following topics of interest for the footwear sector in the context of Industry 5.0:

- Management of Human Resources for Industry 5.0
- Programming using Block Language
- Big Data in Footwear Industry 5.0
- Networking & Coworking
- Product Traceability & Supply Chain for Industry 5.0

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- Artificial Intelligence (AI) in Footwear Industry 5.0
- Manufacturing i5.0
- Co-innovation 5.0
- Corporate Social Responsibility for Footwear Industry 5.0
- Ergonomics and Digital Anthropology
- Bio-Inspired Materials and Technologies
- Wellbeing in Industry 5.0
- Circular Design, Smart Materials and Innovative Processes in Footwear Industry 5.0
- Management for Technological Changes

Ultra and Mass Customisation. Considering the topics highlighted and correlated with the 5 key profiles for the future industry workforce related to Industry 5.0, customised training plans have been defined in this document, resulting in 15 Units of Competence.

The training plans will help workers and company managers to understand the need to be constantly updated regarding new and emerging technologies as well as the needed skills that will help foster the uptake of new concepts in the working environment. This activity is fundamental to clearly understanding I5.0 needed Key Competences and how to re-set the workers profiles in a new and necessary profile.

The training plans will be used in the “training needs scanning tool” supporting continued diagnosis of training needs from users that will be able to make a self-assessment of their knowledge and skills related to I5.0.

For a better understanding of the correlation between the 15 Units of Competence and the 5 key profiles identified in Task 2.2 as important for Industry 5.0, the matrix below has been designed. The GREEN colour indicates Units of Competence that are highly relevant to a profile, YELLOW highlights optional units, and GREY highlights units that are not relevant for certain profiles.

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	List of ULOs	Developer partner	Profiles				
			Footwear technical manager	*Footwear manufacturing operator*	*Footwear designer / pattern maker*	*Maintenance technician*	*I5.0 Footwear Architect*
1	*Management of Human Resources for Industry 5.0*	*EDIT VALUE*					
2	*Programming using Block Language*	*CTCR*					
3	*Big Data in Footwear Industry 5.0*	*POLICALZ*					
4	*Networking & Coworking*	*EDIT VALUE*					
5	*Product Traceability & Supply Chain for Industry 5.0*	*CTCR*					
6	*Artificial Intelligence (AI) in Footwear Industry 5.0*	*POLICALZ*					
7	*Manufacturing i5.0*	*CTCP*					
8	*Co-innovation 5.0*	*CTCP*					
9	*Corporate Social Responsibility for Footwear Industry 5.0*	*TUIASI*					
10	*Ergonomics and Digital Anthropology*	*TUIASI*					
11	*Bio-Inspired Materials and Technologies*	*TUIASI*					
12	*Wellbeing in Industry 5.0*	*EDIT VALUE*					
13	*Circular Design, Smart Materials and Innovative Processes in Footwear Industry 5.0*	*POLICALZ*					
14	*Management for Technological Changes*	*CTCR*					
15	*Ultra and Mass Customisation*	*CTCP*					

Legend:
Very relevant
Optional
Not relevant

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Units of Competence

Each Unit of Competence encompasses a comprehensive set of information, including a description of the unit, keywords, learning objectives, qualification level (EQF/NQF) or pre-requirements, learning outcomes in terms of knowledge and skills, the pedagogical methodology for delivering the learning content, a detailed syllabus outlining the structure of the unit with individual lessons, assessment methods, and a list of the training materials to be employed. This multifaceted approach ensures a thorough and well-rounded understanding of each competency unit, facilitating effective teaching and assessment processes.

UNIT of COMPETENCE No.1 **TITLE: Management of Human Resources for Industry 5.0** Developer partner: Edit Value	
Description:	Society 5.0 is essentially marked by the positioning of human beings at the centre of innovation and technological transformation. The implementation of Industry 5.0 and its premises brings with it numerous challenges, particularly in the area of people management. Managing increasingly diverse workforces, which now include robots and cobots, dispersed teams and candidates in an increasingly volatile job market, requires more and more practices and processes that enable efficient management of work teams. This unit aims to provide participants with knowledge of the new guidelines for managing people and teams and how to strengthen the organizational culture and environment. It is important to align people with the values and culture of the organization, so that they are more prone to change and the volatility that companies are subject to in the external environment. For this reason, the unit also focuses on developing the most relevant transversal skills in the job market and how to enhance them: communication, problem-solving, emotional intelligence, among others.
Keywords:	Human Resources Management, Industry 5.0 Human Resources Management, Communication, Emotional Intelligence, Problem Solving, Digital Skills Management, Leadership
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the principles of Industry 5.0 and its impact on people management; • Learn how to deal with specific people management challenges in Industry 5.0; • Explore how technology can improve human resource management; • Develop effective communication skills with different interlocutors;

	• Understand the dimensions and competences of emotional management in the workplace; • Identify problems and understand how to solve them; • Increasing "emotional literacy"; • Improving leadership skills in a paradigm shift context.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • Principles of Industry 5.0 and their impact on people management; • Human Resources Manager Skills within the Industry 5.0 framework; • Communication and Empathy as the foundations of all relationships; • Identification, understanding and management of Emotions of Self and Others; • Identification and Definition of Problem-Solving Strategies; • Leadership strategies adapted to Industry 5.0. **Skills:** • Team management; • Communicate effectively with different interlocutors; • Manage emotions; • Solving problems; • Manage the change from manual to virtual work environments; • Manage different skills and expertise; • Conflict resolution and employee relations competencies; • Positive leadership.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 1.1 - People Management in the Age of Innovation • Managing change in a "VUCA" world • Diversity, inclusion and equality • Employee value proposition • Talent engagement and retention

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	Lesson 1.2 – Communication and Empathy • Communication and Relationships • The power of empathy Lesson 1.3 - Emotional Intelligence • Emotional literacy • Emotion management Lesson 1.4 – Problem Solving • The problem-solving process • Analysing the problem • Selecting a solution Lesson 1.5 – Leadership in Industry 5.0 • Team management and leadership; • Leadership styles adapted to the people; • Leadership by example
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Complete Sentences
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 2

TITLE: Programming using Block Language

Developer partner: CTCR

Description:	Block-based programming has become a disruptive tool in various industrial sectors, and the footwear sector is no exception. The top four reasons why this methodology is excellent for the footwear industry: • **Ease of learning and use**: block-based programming is very intuitive and easy to learn, making it an accessible tool for designers, manufacturers, and operators of footwear machinery with no prior programming experience. This allows more industry professionals to take advantage of automation and process optimization without requiring advanced technical skills. • **Custom design and rapid prototyping**: With blocks, footwear designers can create visual algorithms that generate custom patterns and designs efficiently. This streamlines the prototyping process and allows for greater flexibility in creating unique products tailored to customer demands. In addition, changes and adjustments can be made quickly without the need to reprogram complex lines of code. • **Optimization of production processes**: Automation is essential in footwear manufacturing, where every step of the process can be critical to the quality of the final product. Block-based programming allows machines and robots to be precisely controlled to cut, sew, glue and assemble components, thus optimizing efficiency and reducing production errors. This translates into higher production speed and reduced costs, transversely we make our plant operators able to undertake the small maintenance tasks of such complex equipment. • **Bridge between Industry 4.0 and 5.0**: The footwear industry where the Industry 4.0 revolution has produced a number of success stories and where automation and networking are crucial. Block-based programming facilitates the integration of sensors and intelligent control systems, enabling real-time monitoring of production and data collection to improve quality and efficiency throughout the supply chain. These more visual systems articulate a much more pleasurable and operator-centric user experience rather than machine-centric being one of the pillars of i5.0.

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Keywords:	Block-based Programming, Ease of Learning and Use, Automation, Flexibility, Process Optimization, Machine and Robot Control, Cost Reduction, Industry 4.0, Industry 5.0, Sensors, Quality, Data Collection
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Programming Fundamentals: Understand the basic concepts of programming, such as variables, loops, and conditionals; • Programming Platforms: Familiarize oneself with various block-based programming platforms, such as Scratch, Blockly, or Snap; • Code Blocks: Learn how to use code blocks and comprehend how they are assembled to create programs; • Motion Control: Master the control of motors and sensors to achieve precise movements in footwear production machinery; • Robot Programming: Grasp the techniques for programming robots and automated machines for specific tasks in footwear manufacturing; • Sensor Integration: Understand how to integrate sensors into the production process to enhance quality and efficiency; • Code Debugging: Acquire skills in identifying and rectifying errors in programming code to prevent issues in production; • Process Optimization: Utilize programming to optimize manufacturing processes and reduce production times; • Continuous Learning: Stay up-to-date with the latest trends and advancements in block-based programming to implement innovative solutions in footwear production.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • Control Structures: Understanding control structures like loops and conditionals to control the flow of a program; • Variables and Data Types: Knowing how to use variables to store information and how to handle different data types; • Events and Object Manipulation: Learning to respond to events and manipulate objects within the programming environment; • Sequential Programming: Understanding how to create sequences of actions to achieve specific outcomes; • Code Debugging: Knowing how to identify and correct errors in code to ensure proper functionality; • Hardware Interaction: Understanding how to program sensors, actuators, and other physical devices when applying programming in the real world;

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	• Basic Algorithmic Concepts: Familiarization with algorithmic concepts, such as efficiency and recursion, which are applicable in block-based programming and beyond. **Skills:** • Logical Thinking: Block-based programming fosters the ability to think logically and solve problems in a structured manner; • Creativity: It allows for the creation of interactive projects and games, nurturing creativity in designing and programming visual and functional elements; • Problem Solving: Develops skills to identify, analyse, and solve problems through algorithm creation and code debugging; • Computational Skills: Provides a foundational understanding of how computers work and how to interact with them through programming; • Collaboration: Encourages collaboration on programming projects, as many platforms enable joint creation and code sharing; • Mathematical Skills: Can enhance mathematical skills by addressing concepts such as coordinates, variables, and mathematical operations in programming; • Communication: Facilitates the communication of ideas through the creation of visual projects and interactive storytelling; • Algorithmic Thinking: Develops the ability to break down problems into smaller steps and create efficient algorithms to solve them.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 2.1- Introduction • The SNAP programming language • The user interface • Movements of the sprite on the stage Lesson 2.2- Exercises

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	• The appearance menu • The variables menu and the sound menu • Operators and decisions Lesson 2.3- Saving and Opening Projects Lesson 2.4- Block Programming in the Footwear Industry: Practical Example and Applications
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Puzzle
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 3 **TITLE: Big Data in Footwear Industry 5.0** Developer partner: POLICALZ	
Description:	In general, big data analytics describes the process of detecting trends and correlations among big amounts of raw data, to make data-informed decisions. Today, data can be gathered thanks to modern technology from different sources; once they have been grouped and stored, they can be clean and analysed, having different uses in many industrial sectors. When applied to the Footwear industry, Big Data can serve numerous purposes: from detecting trends in consumers' preferences, to raise companies' awareness in specific themes, such as sustainability and resilience. Indeed, big data analysis can provide footwear companies with useful considerations regarding the environmental impact of their production processes and of the material used, machines' quality and maintenance and supply chain management.
Keywords:	Big Data, Industry 5.0, Footwear Industry, Environment, Sustainability, Resilience, Technology, Design
EQF/NQF level: (***pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the principles and significance of Big Data analytics within the context of Industry 5.0 and the footwear industry; • Analyse the implications of using Big Data analytics in the footwear sector; • Implement the use of Big Data analytics in footwear design and business practices; • Evaluate the role of Big Data analytics in raising the awareness in terms of sustainability of productions processes; • Develop strategies for Big Data analytics into decision-making processes;
Learning Outcomes: (***Knowledge and Skills)***	**Knowledge:** • Big Data analytics basis and application in Industry 5.0 within the footwear sector; • Big Data analytics used in assessing sustainability impact of footwear manufacturing processes; • Big Data analytics used in assessing trends in footwear design and consumers' preferences; • Big Data analytics as driver of materials' selection in footwear manufacturing processes. **Skills:**

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	• Understanding the process of gathering and working with Big Data; • Formulating Big Data-driven decisions in the footwear sector; • Integrating data-driven trends into footwear design; • Devise strategies to integrate data-driven information into business decision-making.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 3.1- Introduction to Big Data Analytics for Footwear Industry 5.0 • Key concepts and principles of Big Data analytics • Benefits and drivers of adopting Big Data analytics in footwear manufacturing • Challenges and opportunities in implementing Big Data analytics in footwear Industry 5.0 Lesson 3.2- Data-driven Awareness in Consumers' Preferences • Understanding consumer's preferences through Big Data analytics • Making data-informed decision in designing footwear products • Using Big Data information in choosing design and materials in footwear production Lesson 3.3- Big Data Analytics in Footwear Industry 5.0 and Sustainability • Big Data and sustainability • Principles of sustainability in Industry 5.0 • Enhancing the sustainability of manufacturing processes in footwear sector through Big Data analysis Lesson 3.4- Big Data Analytics in Footwear Industry 5.0 and Production Optimisation • Big data analytics to analyse machine data • Improving company's performances and production

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	• Using Big Data analytics in products' quality checks Lesson 3.5- Big Data Analytics and Supply Chain Management • Big Data analytics applied in tool optimisation • Use of Big Data in understanding the most profitable systems of distribution of products
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Decision Making
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 4 **TITLE: Networking & Coworking** Developer partner: Edit Value	
Description:	With the implementation of Industry 5.0 in industries, new working realities emerge. Networking and coworking are gaining new impetus in what are an increasingly virtual and collaborative reality. The aim of this unit is to raise awareness of these new terms, provide information on their main advantages and provide methods, strategies and tools for their implementation. For a clearer and more practical view of implementing these assumptions, this course also includes an analysis of best practices in companies and how they have been carried out.
Keywords:	Networking, Coworking, Inbound Networking, Outbound Networking, Relationship, Meeting, Human-Robot Coworking
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Master the coworking and networking concepts; • Identify and understand coworking and networking strategies in the context of Industry 5.0; • Understand the power of relationships; • Identify the best meetings practices in the context of Industry 5.0 and reproduce them.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • Networking concept; • Coworking concept; • Networking and Coworking Strategies; • Positive professional relationships; • Efficient meeting methods. **Skills:** • Enhancing the company brand among internal and external stakeholders; • Coworking spaces between humans and robots; • Working in an organized way to manage personal and team plans; • Developing effective meeting skills.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them;

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	• Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 4.1– The Importance of Relationships • Organizational culture • Organizational environment indicators Lesson 4.2- Introduction to Networking • Network and networking: meaning and purpose • Inbound networking and outbound networking • Networking Strategies: the benefits of a network contacts • Contact networks: work environment, universities, schools, social networks Lesson 4.3– Explore the Coworking • Coworking spaces: importance of rules • Coworking best practices • Human-Robot coworking Lesson 4.4– Meeting Management • Meetings as a communication tool • Types of meeting • Key stages of a meeting • Meeting phases: preparation, conduct and evaluation
Assessment methods ***(test quizzes, exercises and/or project works)***	• AR challenge- quiz
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 5 **TITLE: Product Traceability & Supply Chain for Industry 5.0** Developer partner: CTCR	
Description:	Product traceability and supply chain management play a crucial role in the Industry 5.0, particularly in the footwear sector and its impact on the recycling of raw materials. In this sector, RFID (Radio-Frequency Identification) technology has emerged as an essential tool for tracking every step of the shoe production and distribution process. This not only increases efficiency but also has a profound effect on sustainability. The implementation of RFID in the footwear industry allows for precise tracking of the raw materials used in shoe manufacturing, from their origin to the finished product. This complete supply chain visibility is invaluable for ensuring the provenance of recyclable materials and the authenticity of products. Additionally, it helps reduce waste by enabling more effective management of surplus and unused materials. In Industry 5.0, product traceability and supply chain management, backed by RFID technology, drive circularity in footwear production. The ability to accurately trace and recycle shoe components such as soles, leather, and textiles significantly contributes to waste reduction and the conservation of natural resources. Furthermore, the detailed information obtained through RFID allows companies to make informed decisions on how to enhance sustainability throughout the footwear value chain. In summary, the combination of product traceability, supply chain management, and RFID technology is transforming the footwear industry, encouraging a more eco-friendly and circular approach to the use of raw materials and sustainable shoe production. This not only benefits companies and consumers but also has a positive impact on the environment by reducing carbon footprint and resource waste.
Keywords:	Product Traceability, Supply Chain Management, Recycling of Raw Materials, RFID Technology, Sustainability, Circular Production
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Supply Chain Optimization: Improve the operational efficiency of the footwear supply chain, reducing costs and delivery times; • Sustainability Enhancement: Contribute to environmental sustainability by efficiently identifying and recycling raw materials; • Waste Reduction: Minimize waste of resources and materials in footwear production; • Regulatory Compliance: Ensure compliance with environmental regulations and standards in the footwear industry;

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	• Enhanced Transparency: Achieve greater transparency in the supply chain, which can enhance customer trust; • Technical Skills Development: Strengthen the technical skills required to implement traceability systems and supply chain management; • Technological Innovation: Stay updated on the latest technologies and trends in the footwear industry and their application in the supply chain; • Contribution to Corporate Social Responsibility (CSR): Support the company's CSR initiatives by implementing sustainable practices in the footwear supply chain.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • RFID Technology: Understand how RFID technology works and how it is used to track products and raw materials in the supply chain; • Traceability Systems: Familiarize yourself with the various traceability systems and tools available, including tracking software and RFID sensors; • Supply Chain Management: Gain in-depth knowledge of supply chain management concepts and practices, from the procurement of raw materials to the distribution of finished products; • Environmental Sustainability: Grasp the principles of environmental sustainability and how they apply to the footwear industry, including responsible management of raw materials and waste; • Environmental Regulations: Stay informed about environmental regulations and standards that affect the footwear industry and ensure compliance with them; • Data Analysis: Develop skills in data analysis to interpret information collected through traceability systems and make informed decisions; • Technological Innovation: Stay up to date with the latest technological trends in the footwear industry, particularly regarding the implementation of Industry 5.0 technologies. **Skills:** • Product Traceability: Learn how to implement tracking and tracing systems for products, using technologies such as RFID, to ensure transparency in the supply chain; • Supply Chain Management: Develop skills to optimize supply chain management, from the acquisition of raw materials to the delivery of the final product;

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	• Sustainability and Recycling: Acquire knowledge of sustainable practices in the footwear industry, including the identification and recycling of raw materials; • Industry 5.0 Technology: Familiarize yourself with Industry 5.0 technologies, such as the Internet of Things (IoT) and artificial intelligence, and their application in the supply chain; • Waste Management: Learn how to effectively manage waste and surplus materials in footwear production, thereby reducing environmental impact; • Informed Decision-Making: Develop the ability to make informed decisions based on data and supply chain analysis to enhance efficiency and sustainability.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 5.1- Introduction to Traceability and Sustainability in the Footwear Industry Lesson 5.2- Traceability Technologies in the Footwear Industry Lesson 5.3- Sustainable Supply Chain Management Lesson 5.4- Sustainability Practices in Footwear Production Lesson 5.5- Informed Decision-Making and the Future of the Footwear Industry
Assessment methods ***(test quizzes, exercises and/or project works)***	• AR challenge- Quiz
Training materials:	• PPT presentations • Explanatory video • Infographic

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	• AR contents

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UNIT of COMPETENCE No. 6 **TITLE: Artificial Intelligence (AI) in Footwear Industry 5.0** Developer partner: POLICALZ	
Description:	The use of Artificial Intelligence (AI) as applied in industrial processes has started to revolutionise the way footwear products are designed and manufactured, raising the levels of efficiency and innovation of the whole sector. Artificial Intelligence can result incredibly useful in numerous aspects of footwear production: in understating costumers' preferences, designing innovative and high-performance products, training and technology.
Keywords:	Footwear Manufacturing, Design, Technology Integration, Artificial Intelligence, Efficiency, Training, Production, Innovation
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the principles Artificial Intelligence (AI); • Understanding the main fields of application of AI in Footwear Industry 5.0; • Apply AI in footwear design; • Integrate AI with already existing training programmes for enhancing innovation and readiness; • Introducing AI in manufacturing production and business processes.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • Artificial Intelligence (AI) principles and basic applications; • How Artificial Intelligence can and will impact Footwear Industry 5.0; • How Artificial Intelligence (AI) will revolutionise footwear design in Industry 5.0; • The use of Artificial Intelligence (AI) in manufacturing processes and footwear production; • The use of Artificial Intelligence (AI) in designing business models. **Skills:** • Understanding benefits and challenges of applying Artificial Intelligence (AI) to Footwear Industry 5.0; • Applying Artificial Intelligence in footwear design and prototyping; • Integrating Artificial Intelligence in footwear manufacturing technologies and machines;

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	• Integrating Artificial Intelligence in business models and analysis of consumers' preferences; • Introducing new AI tools in footwear production, i.e. 3D printing.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 6.1- Introduction to Artificial Intelligence • Artificial Intelligence (AI) basis and principles. • Fields of application of AI in footwear sector. • Benefits and challenges in applying AI to the footwear sector. Lesson 6.2- Artificial Intelligence in Footwear Design and Prototyping • Use of AI in creating personalised and unique footwear models • Use of AI in prototyping footwear models • Use of AI in analysing consumer's preferences and footwear trends. Lesson 6.3- Artificial Intelligence Application in Footwear Production Processes • Merging traditional tools and machines with AI • Using AI for improving production processes • Introduction AI tools in production processes: the use of 3D models and AR/VR Lesson 6.4- Application of Artificial Intelligence in Business Models • Implementing Artificial Intelligence use for forecasting and reducing the environmental impact of footwear production • Using Artificial Intelligence in forecasting costumers' demand

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	• Use Artificial Intelligence (AI) in footwear modelling, material selection, recycling and re-using prediction
Assessment methods ***(test quizzes, exercises and/or project works)***	• AR challenge- Correspondence
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 7 **TITLE: Manufacturing i5.0** Developer partner: CTCP	
Description:	Industry 5.0, building on the foundations of industry 4.0, brings new challenges and opportunities to manufacturing. The footwear industry, as historical traditional manufacturing industry, can benefit greatly with a new approach and new tools. The footwear industry is also facing several challenges, such as the need to reduce costs, improve sustainability, and meet the demands of consumers for personalized products. Manufacturing 5.0 can help the footwear industry address these challenges. Manufacturing 5.0, here related to how things are made and the shop floor, comprehends the digitalization, industrial internet of things, automation and robotics, lean robotics, and energy efficiency. The manufacturing for Industry 5.0 is deeply supported in the digitalization, allowing for a deep integration of the internet of things, lean manufacturing automated and robotized processes, particularly collaborative. Energy efficiency is determinant for sustainability and economical purposes. This unit focuses on the technologies enabling manufacturing 5.0 in the shop floor for the footwear industry. It shows the advantages of using advanced technologies for manufacturing, including collaborative robots, the concepts of lean robotics, supported in digitalization in the world of connected devices. It will enable users to understand and apply these concepts embracing the industry 5.0 principals.
Keywords:	Manufacturing, Energy Efficiency, Lean Robotics, Collaborative Robotics, Digitalization, Internet of Things
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the key concepts of manufacturing 5.0; • Explain the benefits of using advanced technologies in manufacturing; • Apply advanced technologies to improve the efficiency, sustainability, and flexibility of manufacturing processes; • Understand how working effectively with robots and other automated systems com benefit the industry; • Apply the concepts of energy efficiency to manufacturing; • Develop skills needed to lead the transition to manufacturing 5.0.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • Understand the history and evolution of manufacturing; • Understand the key technologies of manufacturing 5.0; • Recognize the benefits of using advanced technologies in manufacturing;

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	• Comprehend the challenges of implementing manufacturing 5.0. **Skills:** • Be able to apply advanced technologies to improve the efficiency, sustainability, and flexibility of manufacturing processes; • Be able to work effectively with robots and other automated systems; • Be able to develop and implement manufacturing 5.0 solutions.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 7.1- Introduction to Manufacturing 5.0 • History of manufacturing • The key technologies of manufacturing 5.0 • The benefits of using advanced technologies in manufacturing • The challenges of implementing manufacturing 5.0 Lesson 7.2- Digitalisation and Internet of Things in Manufacturing • What is digitalisation and IOT? • The benefits of digitalisation in manufacturing • How to implement digitalisation and IoT in manufacturing Lesson 7.3- Energy Efficiency in Manufacturing • What is energy efficiency? • The benefits of energy efficiency in manufacturing • How to improve energy efficiency in manufacturing Lesson 7.4- Lean Robotics and Collaborative Robotics • What are lean robots? • The benefits of lean robot • How to implement lean robotics

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	• What are collaborative robots • The benefits and challenges of collaborative robotics • How to implement collaborative robots in manufacturing
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Correspondence
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 8

TITLE: Co-Innovation 5.0

Developer partner: CTCP

Description:	Historically, the footwear industry, have been considered traditional industries. Within this new, disruptive, dynamic and complex world, SMEs only could guarantee the survival of their businesses with innovation processes. A change of mentality, thus, needs to be put on place in SMEs, where competition is replaced by collaboration in order to help companies grow and thrive in a global ecosystem of opportunities. Concepts such as co-innovation could make it easier for companies from different sectors to decide to combine their knowledge and experience to generate new value through products, services and processes. Co-innovation is not simply working for each other, but creating an innovative solution strategically aligned with the competitive goals of all parties involved. It involves sharing both risks and rewards. By bringing in fresh perspectives and skills from different external partners and collaborators, companies are better equipped to anticipate and meet many different customers' needs faster and globally. Businesses from traditional manufacturing sectors can benefit from partnering with others in multiple ways, from widening networks and expertise to reaching new sources of talent, techniques, systems and funding, ultimately growing productivity, accelerated growth and expanded global reach. It is time to show the transformation of traditional sectors toward the assumption of the i5.0 and the ability of their SMEs to seize the moment to rebuild the economic and social model on the basis of innovation, cooperation and resilience. Before reach a plain stage of co-innovative, companies can experiment other intermediate stages such as open innovation, co-creation and coopetition. The adoption of open innovation practices implies that external ideas can be integrated into internal activities and thus expand operations, just as ideas arising internally, with potential application in external contexts, can be effectively shared with business partners or other organizations. Co-creation is a powerful mechanism that can be used to generate innovation as it combines the knowledge of multiple employees and facilitates the transfer of tacit knowledge. This is because co-creation initiatives contribute to the bringing together of participants as well as their active involvement in the innovation process by integrating them from the beginning into this process of shared construction. Coopetition is the ability of companies to simultaneously pursue cooperation and competition between organizations. Co-innovation is the process that allows the

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	participation of the company's different stakeholders from customers to suppliers. This Unit of Competences aims to integrate several forms of innovation based on cooperation and foster co-innovation strategies in SMEs of traditional sectors, namely footwear, textile, word and furniture/upholstery, logistics, chemistry, etc., thus facilitating the digital and green transformation of companies and businesses toward de objectives of i5.0.
Keywords:	Co-innovation, Open Innovation, Cooperation, Coopetition, Co-creation Showcase, Share Solutions
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the different conceptual definitions round co-innovation: open innovation, co-creation, coopetition, and co-innovation; • Understand the interest and benefits of the co-innovation; • Give examples of different practices in different sectors; • Identify and use open-source resources; • Identify collaboration challenges between companies, sectors, industries; • Learn about collaborative tools and techniques and know how to apply it to the different objectives.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • Conceptual and practical definition around co-innovation: open innovation, co-creation, coopetition, co-innovation; • Open-source resources; • Potential collaboration challenges between companies, sectors, industries; • Collaboration tools and techniques. **Skills:** • To be able to distinguish concepts round co-innovation: open innovation, co-creation, coopetition, and co-innovation; • To be able to use open-source resources; • Top be able to identify collaboration challenges between companies, sectors, industries, and common needs in the spirit of i5.0 objectives and share solutions; • To be able to use collaborative tools and techniques and know how to apply it to the different objectives, making correspond the most appropriate tool to each case; • To be able to design and organize a project implementation framework to apply co-innovation methodologies in i5.0, using appropriate tools.
Methodology:	• Lectures – theoretical exposition of the content;

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	• Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 8.1- Paving the Way for Co-Innovation • Open innovation, co-creation, coopetition as stages of co-innovation • The interest and benefits of the co-innovation • Different practices Lesson 8.2- Open-Source Resources Lesson 8.3- Identify Collaboration Challenges between Companies, Sectors, Industries – how to cooperate and share solutions Lesson 8.4- Apply Collaboration Tools and Techniques
Assessment methods ***(test quizzes, exercises and/or project works)***	• AR challenge- Correspondence
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 9 **TITLE: Corporate Social Responsibility for Footwear Industry 5.0** Developer partner: TUIASI	
Description:	Corporate Social Responsibility (CSR) in the footwear industry refers to the ethical and sustainable practices that footwear companies adopt to ensure they have a positive impact on society, the environment, and various stakeholders. It involves taking responsibility beyond purely economic goals and striving for a balance between profit-making and contributing to social and environmental well-being. This unit focuses on integrating Corporate Social Responsibility (CSR) principles within the context of Industry 5.0 (i5.0) specifically tailored for the footwear industry. It explores the concepts of openness, transparency, and ethics in the context of business operations, supply chains, and stakeholder engagement. The unit equips learners with the knowledge and skills necessary to align modern manufacturing processes with ethical and sustainable practices, fostering responsible innovation and value creation.
Keywords:	Corporate Social Responsibility, Industry 5.0, Footwear Industry, Openness, Transparency, Ethics, Sustainability, Supply Chain, Stakeholder Engagement, Responsible Innovation
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the principles and significance of CSR within the context of Industry 5.0 and the footwear industry; • Analyse the ethical implications of Industry 5.0 technologies in the footwear sector; • Implement transparency measures in supply chains and business practices; • Evaluate the role of openness and collaboration in driving responsible innovation; • Develop strategies for integrating ethical considerations into decision-making processes.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • CSR principles and their application in Industry 5.0 within the footwear sector; • Ethical challenges and opportunities posed by advanced technologies in footwear manufacturing; • Transparency frameworks, reporting standards, and their relevance; • Openness and collaboration as drivers of innovation and sustainable practices.

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	Skills: • Assess and address ethical dilemmas arising from i5.0 technologies in the footwear industry; • Implement transparency measures; • Foster collaborative relationships with stakeholders for responsible innovation; • Devise strategies to integrate ethics and sustainability into business decision-making.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 9.1- Introduction to CSR for Footwear Industry 5.0 • Key concepts and principles of CSR • Benefits and drivers of adopting CSR in footwear manufacturing • Challenges and opportunities in implementing CSR in footwear Industry 5.0 Lesson 9.2- Ethical Considerations in Footwear Industry 5.0 • Fair labour practices and worker rights in Industry 5.0 • Environmental ethics and sustainability in footwear production • Cultural sensitivity and diversity • Ethical consumerism and its Impact on footwear Industry 5.0 Lesson 9.3- Transparency Considerations in Footwear Industry 5.0 • Supply chain transparency • Digital transparency and data privacy • Stakeholder engagement and communication Lesson 9.4- Openness, Collaboration, and Responsible Innovation • Collaborative initiatives and partnerships for responsible innovation • Sustainability and social impact

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	• Open innovation models and cross-sector collaboration in footwear industry 5.0 • Intellectual property considerations Lesson 9.5- Integration of CSR in Organisational Practices • CSR associated framework • 9 steps associated with the implementation and development of CSR
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Decision Making
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 10 **TITLE: Ergonomics and Digital Anthropology** Developer partner: TUIASI	
Description:	This unit explores the dynamic intersection of ergonomic principles and digital anthropology within the context of Industry 5.0 (i5.0) in footwear production. This unit equips learners with the knowledge and practical insights to optimize workplace design, foster human-centred digital environments, and promote occupational health and safety in the footwear manufacturing industry. By examining how ergonomic considerations and digital practices intersect, learners gain a holistic understanding of creating a work culture that prioritizes well-being and efficiency.
Keywords:	Ergonomics, Digital Anthropology, Footwear Manufacturing, Workplace Design, Occupational Health and Safety, Human-Centred Environments, Ergonomic Evaluation, Digital Practices, Safety Policies, Technology Integration
EQF/NQF level: (*pre requirements)*	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the principles of ergonomics and their relevance in the footwear manufacturing context; • Identify ergonomic factors that impact footwear production and evaluate their effects on worker well-being; • Apply digital anthropology concepts to analyse work-related digital interactions in footwear manufacturing; • Integrate digital tools and technologies with ergonomic practices to create human-centred work environments; • Implement comprehensive ergonomic and digital anthropology policies to foster a culture of occupational health and safety in footwear manufacturing.
Learning Outcomes: (*Knowledge and Skills)*	**Knowledge:** • Ergonomic principles and their applicability in footwear manufacturing; • How digital anthropology can enhance safety and efficiency in the footwear production process; • The effects of digital practices on occupational health and safety within the industry; • Ergonomic factors and solutions in footwear manufacturing; • Awareness of the potential of digital tools to enhance ergonomic practices and improve worker well-being;

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	• Policy implementation to establish a culture of occupational health and safety. **Skills:** • Evaluate ergonomic factors in the manufacturing context and propose effective workplace design modifications; • Analyse work-related digital interactions and identify opportunities for enhancing worker safety and well-being; • Integrate digital technologies with ergonomic practices to create optimal work environments; • Develop and implement ergonomic and digital anthropology policies; • Foster a culture of safety, well-being, and efficiency within footwear manufacturing through comprehensive ergonomic and digital practices.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 10.1- Introduction to Ergonomics and Workplace Design • Ergonomics principles and their relevance • Ergonomic factors impacting footwear production • Ergonomic evaluation techniques in the manufacturing context Lesson 10.2- Digital Anthropology and Work-Related Digital Interactions • Digital anthropology applied to footwear manufacturing • Digital practices and their effects on occupational health • Digital anthropology insights for enhanced safety Lesson 10.3- Technology Integration and Human-Centred Work Environments

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	• Merging digital tools with ergonomic practices in footwear manufacturing • Creating human-centred digital workspaces for footwear production • Enhancing safety and productivity through ergonomic technology Lesson 10.4- Culture of Occupational Health and Safety in Footwear Manufacturing • Implementing comprehensive ergonomics and digital anthropology policies • Training and educating footwear industry professionals on ergonomic best practices • Fostering a sustainable approach to safety and well-being in footwear production
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Decision Making
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No.11 **TITLE: Bio-Inspired Materials and Technologies** Developer partner: TUIASI	
Description:	This unit offers an in-depth exploration of the integration of bio-inspired materials and technology within the footwear industry. Learners will explore the principles, benefits, and applications of biomimetic design, bio-based materials, and advanced manufacturing techniques in footwear production. The unit emphasizes sustainable and innovative approaches to footwear design and manufacturing, drawing inspiration from nature's ingenious solutions. Moreover, this unit presents the potential of various bio-inspired concepts for footwear, such as self-healing or self-repairing properties, lightweight compositions, recyclability, material generation from waste, integration of living materials, embedded sensor technologies and biosensors, adaptive/responsive ergonomics, surface properties, as well as materials with intrinsic traceability. The unit showcases the integration of living materials, sensor technologies, and adaptive ergonomics, infusing footwear with dynamic functionalities. As technology advances, the unit concludes with an exploration of advanced manufacturing techniques, such as 3D printing and additive manufacturing, amplifying the intersection of nature and innovation in footwear production.
Keywords:	Bio-Inspired Materials, Biomimetic Design, Bio-Based Materials, 3D Printing, Additive Manufacturing, Digital Fabrication
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Define and explain the concepts of bio-inspired materials, biomimetic design, and their relevance to the footwear industry; • Identify the benefits of incorporating bio-inspired materials in footwear, including sustainability, performance, and innovation; • Analyse current trends and applications of bio-inspired materials in the footwear industry; • Explore the principles of biomimicry and its role in deriving design inspiration from nature; • Examine various biomimetic strategies used in designing footwear components and structures; • Evaluate the potential of self-healing, lightweight, recyclable, and waste-derived materials in footwear manufacturing; • Understand the integration of living materials, embedded sensor technologies, and adaptive ergonomics in footwear design;

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	• Describe the concept of bio-based materials and their application in footwear production; • Apply biomimetic design principles to create innovative footwear components, such as heels, soles, and uppers; • Discuss advanced manufacturing techniques, including 3D printing and additive manufacturing, in the context of bio-inspired footwear production.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • The definitions, benefits, and current trends of bio-inspired materials in the footwear industry; • Biomimetic design principles and strategies derived from nature's biodiversity; • Various bio-inspired materials' properties, including self-healing, lightweight, recyclability, and waste utilization; • Integration of living materials, sensor technologies, and adaptive ergonomics in footwear; • Bio-based materials and their application in different footwear components; • Advanced manufacturing techniques, such as 3D printing and additive manufacturing, for bio-inspired footwear production. **Skills:** • Analyse and critically evaluate the benefits and limitations of bio-inspired materials in footwear design and production; • Apply biomimetic design principles to create innovative footwear components, considering different structural and functional requirements; • Design and prototype bio-inspired footwear components using advanced manufacturing techniques like 3D printing; • Integrate sustainable and bio-based materials into footwear design, considering environmental and ethical considerations.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.

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Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 11.1- Introduction to Bio-Inspired Materials & Technology in Footwear Industry • Definitions • Benefits of bio-inspired materials in footwear • Current trends and applications of bio-inspired materials in the footwear industry Lesson 11.2- Biomimetic Design • Biomimetics and biomimicry • Learning from biodiversity- how does nature inspire us? • Novel materials, devices, and applications inspired by biological structures and strategies Lesson 11.3- Bio-Inspired Materials for Footwear • Self-healing or self-repairing • Lightweight • Recyclable • Material generation from waste • Integration of living materials. Engineered Living Materials (ELMs) • Embedded sensor technologies and biosensors • Adaptive/responsive ergonomics and surface properties • Materials with intrinsic traceability Lesson 11.4- Bio-Based Materials and Bio-Inspired Structures for Footwear Components • Bio-based materials for footwear • Bioinspired structures for heels and soles • Bioinspired designs for uppers Lesson 5- Biomimetic Advanced Technologies in Footwear Manufacturing • 3D Printing of bioinspired structures • Biomimetic additive manufacturing in orthopaedic footwear applications • Digital fabrication
Assessment methods ***(test quizzes, exercises and/or project works)***	• AR challenge- Memory Card
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No.12 **TITLE: Wellbeing in Industry 5.0** Developer partner: Edit Value	
Description:	The human-centred approach imposed by the implementation of Industry 5.0 has given back to society and organisations concerns about the wellbeing of workers. With machines and robots taking on heavier tasks, and with the consequent increase in the physical safety of employees, other dimensions of wellbeing are emerging as a concern for managers. The growing understanding of the concept of wellbeing as a more holistic approach that encompasses more than the physical safety of workers, but also psychological and emotional wellbeing, requires a greater commitment from human resource managers and directors to provide a healthier environment in the three aspects mentioned above. This unit aims to explain the concept of wellbeing in the workplace, covering the 3 dimensions inherent to it, physical, emotional and psychological wellbeing, as well as exploring some of the nuances associated with each and how to boost wellbeing in the workplace for more motivation, happiness and greater productivity.
Keywords:	Wellbeing, Physical Wellbeing, Psychological Wellbeing, Emotional Wellbeing, Personal Protective Equipment, Occupational Disease, Happiness at Work
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the concept and dimensions of wellbeing at work; • Identify and implement measures to promote wellbeing at work in the context of Industry 5.0; • Promote safe and inclusive workplaces; • Master personal protective equipment; • Identify occupational diseases, understand which ones apply to the footwear sector and know to act in their prevention; • Understand the PERMA model and how to implement it in order to increase happiness at work; • Understand the concept of emotional wellbeing and how to promote it as managers and human resources managers.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • Wellbeing concept; • Safe and inclusive work environment;

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	• Personal Protective Equipment; • Occupational Disease; • Psychological wellbeing concept; • PERMA Model; • Emotional wellbeing concept. **Skills:** • Promotion and dissemination of wellbeing at work in its three dimensions: physical wellbeing, psychological wellbeing and emotional wellbeing.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 12.1– Wellbeing at Work • Wellbeing at work - evolution and concept • Promoting wellbeing at work in the context of Industry 5.0 Lesson 12.2– Physical Wellbeing • Safe and inclusive work environment • Workplace adaptation to workers • Personal Protective Equipment (PPE) • Occupational disease Lesson 12.3– Psychological Wellbeing • Psychological wellbeing concept • PERMA Model and happiness Lesson 12.4– Emotional Wellbeing • Emotional wellbeing concept
Assessment methods ***(test quizzes, exercises and/or project works)***	AR challenge- Correspondence
Training materials:	• PPT presentations

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	• Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 13 **TITLE: Circular Design, Smart Materials and Innovative Processes in Footwear Industry 5.0** Developer partner: POLICALZ	
Description:	This units sparks from the recognition of the large environmental impact of the footwear industry. Currently, many consumers but, above all, consumers' present an important lack of knowledge and capabilities about how to properly manage shoes' disposal, recycling and re-use. Improving sustainable circular design will affect not only footwear production, but also the overall impact of the industry on the environment by enhancing sustainability and innovation. The introduction of Smart Material in footwear production will be a milestone in reducing the sector's impact on the environment, but it will also impact products' performances, durability, and design. Smart Materials, together with Innovative Processes will boost the overall growth of the footwear industry by opening new opportunities for businesses, education, training, and economic development.
Keywords:	Circular Design, Smart Materials, Innovation, Environment, Technology, Sustainability, Circular Economy, Education, Design, Industry, Footwear Sector.
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understanding the environmental impact of footwear production and its correlation to climate change; • Define and explain what Circular Design is and how it can impact footwear production; • Identify the benefits of raising the awareness of shoe disposal, their recycle and re-use; • Analyse current trends and applications of Smart Materials in the footwear industry; • Explore the possible benefits and future application of Smart Material in footwear design and production; • Explore the possible outcomes Innovative Processes application to footwear industry: 3D printing and AR/VR.
Learning Outcomes: ***(Knowledge and Skills)***	**Knowledge:** • The environmental impact of footwear industry and the life cycle of footwear products; • The definitions, benefits, and challenges of Circular Design in footwear production; • Benefits and challenges of introduction Smart Material in footwear production;

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	• Possible use of Innovative Processes in footwear industry; • Use of 3D and 2D models in footwear design, prototyping and production; • Use of Augmented Reality (AR) and Virtual Reality (VR) in footwear design and prototyping. **Skills:** • Analyse and critically evaluate the environmental impact of footwear industry; • Analyse and critically evaluate the benefits and limitations of Circular Design in footwear design and production; • Analyse and critically evaluate the benefits and limitations of Smart Materials in footwear design and production; • Design and prototype more sustainable footwear components using advanced manufacturing techniques like 3D printing; • Design and prototype more sustainable footwear components using innovative processes like AR/VR.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 13.1- The Environmental Impact of the Footwear Industry • What is the footwear industry's environmental impact • Which are the current trends in footwear production in terms of sustainability • Lack of consumers' knowledge in terms disposal, recycling and re-use of footwear products Lesson 13.2- Circular Design • What is Circular Design • Application of circular design to the footwear industry: benefits and challenges • Incorporating circular design in production processes and business models Lesson 13.3- Introducing Smart Materials in Footwear Production • What are smart materials

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	• Benefits and challenges of introducing smart materials in footwear production • Smart materials' impact in products' performances • Smart materials' impact in products' durability, recycle and re-use Lesson 13.4- Introduction of Innovative Processes in the Footwear Sector • What are innovative processes • How innovative processes can boost growth and lower the environmental impact of the footwear sector • Introduction 3D printing in footwear prototyping • Introduction AR/VR in footwear prototyping
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Quiz
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 14

TITLE: Management for Technological Changes

Developer partner: CTCR

Description:	In a constantly evolving business world, effective management of technological changes has become a critical priority for the sustainable success of companies in the footwear sector. This training unit is specifically designed to equip leaders and managers in the footwear industry with the skills to adapt and embrace the latest technologies in the era of Industry 5.0. Industry 5.0 represents a revolution in manufacturing, driven by the interconnection of cyber-physical systems, artificial intelligence, and automation, and is essential for maintaining competitiveness in the global market. During this training, participants will explore key strategies for identifying the opportunities and challenges that Industry 5.0 presents in the footwear sector. They will learn to assess the specific technological needs of their organizations and develop skills to lead successful digital transformation projects. From adopting intelligent production systems to implementing IoT (Internet of Things) solutions in the supply chain and optimizing the customer experience, this training unit will provide the necessary tools for making informed and strategic decisions. Participants will also delve into case studies and best practices from leading companies in the footwear industry that have successfully embraced Industry 5.0. Through concrete examples, they will understand how these companies have transformed their operations and business strategies to stay at the forefront of technological innovation and how they can apply these lessons in their own organizations. Additionally, the importance of change management, the formation of cross-functional teams, and the creation of a culture of innovation within the company will be emphasized. By the end of this training unit, participants will be prepared to effectively lead the management of technological changes in their footwear companies, driving the adoption of advanced technologies to enhance quality, efficiency, and competitiveness. They will be equipped with the skills necessary to navigate the exciting landscape of Industry 5.0 and guide their organizations toward a technologically advanced and sustainable future. This training is essential for any professional seeking to stay relevant and thrive in a constantly changing business world.
Keywords:	Technological Changes, Industry 5.0, Footwear Sector, Manufacturing Revolution, Intelligent Production Systems, Informed Decisions, Culture of Innovation, Sustainable Future, Change Management
EQF/NQF level: ***(pre requirements)***	5 or 6, according to the requirements of national catalogues of qualifications

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Learning Objectives:	• Understand the importance of effective management of technological changes in the context of Industry 5.0 and its impact on the footwear sector; • Identify specific opportunities and challenges that Industry 5.0 presents in the footwear industry and assess an organization's technological needs; • Develop leadership skills to lead successful digital transformation projects, including the adoption of intelligent production systems and IoT solutions in the supply chain; • Acquire practical knowledge of how leading companies in the footwear sector have successfully implemented Industry 5.0 and apply those lessons to their own organizations; • Recognize the importance of change management and learn to build multidisciplinary teams to facilitate the adoption of advanced technologies in a footwear company; • Develop the ability to promote a culture of innovation within the company and lead the transition to a technologically advanced and sustainable future in an ever-evolving business environment.
Learning Outcomes: (***Knowledge and Skills***)	**Knowledge:** • Technology in the Footwear Industry: Gain knowledge about the latest technologies relevant to the manufacturing and marketing of footwear; • Industry 5.0: Deepen your understanding of the concept of Industry 5.0 and how it is revolutionizing manufacturing through the interconnection of cyber-physical systems, artificial intelligence, and automation; • Digital Transformation Project Management: Understand the principles of digital transformation project management and how to apply them in the context of Industry 5.0; • Technological Needs Assessment: Learn to identify and evaluate the specific technological needs of an organization in the footwear sector; • Supply Chain Optimization: Understand how IoT solutions can be used to optimize the supply chain in the footwear industry; • Best Business Practices: Familiarize yourself with best business practices adopted by leading companies in the footwear sector that have successfully embraced Industry 5.0; • Global Market Competitiveness: Comprehend how the adoption of advanced technologies can enhance the quality, efficiency, and competitiveness of footwear companies in a constantly changing global market.

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	Skills: • Change Management: Develop skills to effectively lead and manage technological changes in an organization, recognizing their significance in an ever-evolving business environment; • Technological Assessment: Learn to assess an organization's specific technological needs and determine how new technologies can benefit it; • Digital Transformation Leadership: Develop leadership skills to successfully lead digital transformation projects, including the adoption of intelligent production systems and IoT solutions in the supply chain; • Strategic Analysis: Acquire the ability to strategically analyze the opportunities and challenges presented by Industry 5.0 in the footwear sector and make informed and strategic decisions; • Practical Application: Learn to apply lessons from case studies and best practices of leading companies in the footwear industry that have embraced Industry 5.0; • Culture of Innovation Development: Understand the importance of fostering a culture of innovation within the company and learn how to promote it, as well as forming multidisciplinary teams to drive innovation.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 14.1- Introduction to Industry 5.0 and Its Impact on Footwear Lesson 14.2- Assessment and Adoption of Technologies in the Footwear Sector Lesson 14.3- Leadership in Footwear Digital Transformation

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	Lesson 14.4- Best Practices and Innovation Culture in the Footwear Industry
Assessment methods *(test quizzes, exercises and/or project works)*	• AR challenge- Decision Making
Training materials:	• PPT presentations • Explanatory video • Infographic • AR contents

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UNIT of COMPETENCE No. 15 **TITLE: Ultra and Mass Customisation** Developer partner: CTCP	
Description:	Ultra-customisation is the ability to produce products that are tailored to the specific needs of individual customers. This can be connected with mass customization as the ability to produce goods or services in large quantities while still meeting the specific needs of individual customers. This is made possible using advanced technologies such as 3D printing and other customisation technologies, robotics, and artificial intelligence. Industry 5.0 which is characterized by the use of these advanced technologies to create more efficient, sustainable, and human-centric manufacturing processes. Mass customization is a key trend in Industry 5.0 because it allows manufacturers to meet the growing demand for personalized products while still maintaining the efficiency and cost-effectiveness of mass production. For the footwear industry it brings opportunities, such as meeting the growing demand for personalized products, helping manufacturers to differentiate their products from the competition and, at the same time, improving the fit and comfort of their products. This unit focuses on the technologies enabling mass and ultra-customisation for the footwear industry. It shows the advantages, challenges, and opportunities of the use of customisation in the industry. It will enable users to understand and apply these concepts embracing the Industry 5.0 objectives.
Keywords:	Mass-Customisation, Ultra-Customisation, Customer Satisfaction, Artificial Intelligence
EQF/NQF level: (*pre requirements)*	5 or 6, according to the requirements of national catalogues of qualifications
Learning Objectives:	• Understand the concept of product ultra-customisation; • Explain the benefits of product ultra-customisation for the footwear industry; • Identify the key technologies that are used in product ultra-customisation; • Apply product ultra-customisation techniques to the design and production of footwear products; • Be able to explore advanced technologies such as 3D printing, robotics, and artificial intelligence; • Develop the skills needed to lead the implementation of product ultra-customisation in the footwear industry.
Learning Outcomes: (*Knowledge and Skills)*	**Knowledge:** • Evolution of ultra-customization and mass-customization; • Key technologies of product ultra-customization;

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	• Understand the benefits and challenges of product ultra-customisation; **Skills:** • Be able to apply product ultra-customisation techniques to the design and production of footwear products; • Be able to explore the use of advanced technologies such as 3D printing, robotics, and artificial intelligence for ultra-customisation; • Be able to develop and implement product ultra-customisation solutions.
Methodology:	• Lectures – theoretical exposition of the content; • Explanatory videos – these videos, created with Artificial Intelligence, aim to present each unit and briefly cover the content addressed within them; • Infographics – Schematic visual representations of the unit's content; • Knowledge validation exercises– at the end of each unit, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.
Syllabus: ***(detailed structure of ULO on chapters/lessons)***	Lesson 15.1- Introduction to Product Mass and Ultra-Customisation • Product Mass-customisation • Product Ultra-customisation Lesson 15.2- Technologies for Ultra-Customisation • 3D printing • Aesthetics personalisation • Digital tools Lesson 15.3- Artificial Intelligence for Customisation • What is AI? • How can we use AI for customisation Lesson 15.4- Automation and Robotics for Customisation • How can automation and robotics be used for mass and ultra customisation
Assessment methods ***(test quizzes, exercises and/or project works)***	• AR challenge- Sliding Puzzle
Training materials:	• PPT presentations

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	• Explanatory video • Infographic • AR contents

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