



**DIGITAL
FABLAB**

ERASMUS+ DIGITAL FABLAB
FOOTWEAR VIRTUAL LEARNING BY DOING
(REF: 2020-1-PT01-KA226-VET-094924)

JUNE 2023 - NEWSLETTER - ISSUE 3

GET READY TO ENTER THE DIGITAL SHOE FABLAB!



During the past months, the project consortium has focused on developing the learning units that will serve, teachers and students to make the best use of the virtual FabLab.

Indeed, Digital FabLabs represent an innovative virtual platform represent with shared workshops where students can access equipment and technologies to design and create footwear products, components or accessories. Thanks to the use of Augmented Reality (AR), they represent an attractive digital tool for the development of practical skills on footwear manufacturing. Built on the “learning-by-doing” methodology, they rely on simulations and experiential learning, allowing students to apply knowledge acquired in classrooms to real-world situations, and therefore develop the capacity and autonomy of training entities.

The Digital Shoe FabLab, includes eleven training units divided into two or three lessons. All lessons are using AR elements, which allow to virtually replicate, the real environment and facilities of a Shoe FabLab dedicated to footwear manufacturing and prototyping. The Shoe Fab Lab and its training content have been developed in English, but also in the partners languages namely, Italian, Polish, Portuguese, Romanian and Spanish.

This newsletter introduces you to the training units developed by the partners in order for you to get an overview of the topics that can be learned on the Digital Shoe FabLab.



Co-funded by the
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TESTING MATERIALS, COMPONENTS AND FOOTWEAR

Institute of Leather Industry (IPS), Poland

This unit focuses on how materials, components and footwear are tested. You will discover what kind of machines operates in such a laboratory and which tools are the most used. You will also learn how to use these machines for any tests of materials and finished shoes. Step by step, you will see the stages of each research and what results you can expect. In this unit you will learn about machines such as: flexometer bally, abrasion tester Martindale 2000, apparatus for testing water vapor permeability, Instron or spectrophotometer. This will help you increase your practical skills in this regard.

BASICS OF DEVELOPING FOOTWEAR COLLECTIONS

Politecnico Calzaturiero, Italy

Shoe designers use trends, materials and manufacturing knowledge to design, conceptualise and develop new footwear. In this learning unit, you will learn how to enter this world, develop the design of the footwear product and go through the styling process. You will discover what a designer's office looks like, and what are the most used tools in this art, including the most innovative ones. You will learn how to develop shoe design concepts, do market research, and analyse trends and forecasts. You will have the opportunity to approach the styling and design of footwear collections, how to create a mood/concept board, colour palettes, materials, drawings and sketches, and be able to see what activities these professionals carry out to create a footwear collection.

FOOTWEAR PATTERN MAKING WITH 2D/3D CAD SYSTEMS

CTCR, Spain and Politecnico Calzaturiero

Immerse yourself in the exciting world of pattern making and discover the coolest tools used in this awesome art. In this module, you'll learn to master the technique of sizing and cutting the different parts that make up a shoe. From the top section to the pieces that shape the structure of the footwear, you'll gain the skills needed to create precise and detailed patterns.

Explore the roots of this craft, which started with the classic combo of paper and pen, and see how it has evolved into a high-tech digital and virtual experience. As you dive into the world of shoe design, you'll understand just how important each cut is and how it influences the style and functionality of the shoes.

Plus, with augmented reality, you can dive into the various CAD systems available in the market and see how they bring your designs to life. You'll learn to make the most of these tools to ensure accuracy and quality in every step of your design process.

Don't miss out on this chance to gain knowledge and skills that will make you stand out in the footwear industry. Join us in this exciting module and unleash your creativity to make extraordinary shoes where each cut becomes an expression of your unique style and craftsmanship.



3D CAD AND RAPID PROTOTYPING OF FOOTWEAR COMPONENTS (INSOLE, SOLE, HEELS)

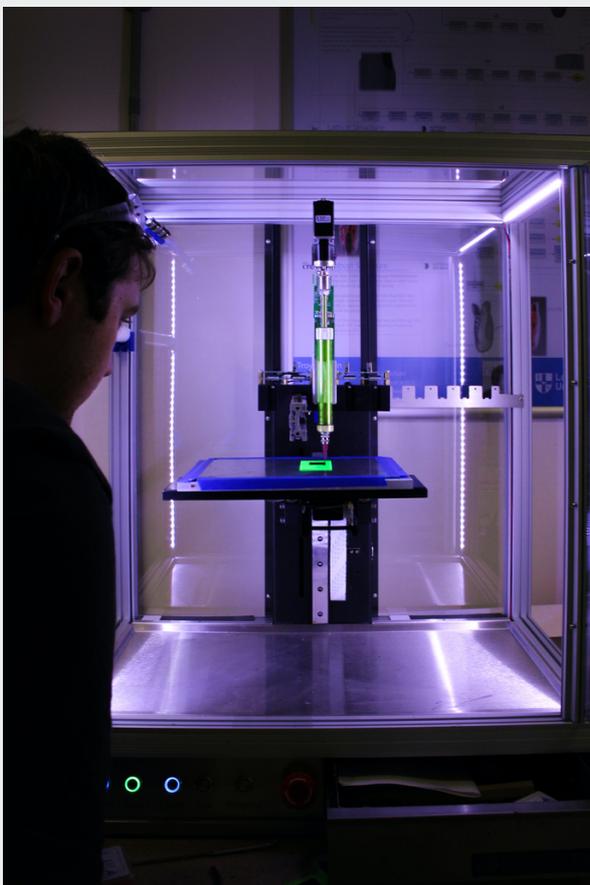
CTCR, Spain

In this unit you will be introduced to 3D printing and its application in footwear. We will show you different 3D printing techniques and you will be able to see machines prepared for each of these techniques, and learn how to prepare your 3D designs to be printed. We will also teach you how to avoid the most common mistakes and tricks so that your pieces have the most professional finish look. Thanks to augmented reality, you will discover what a 3D printer is working, which of its parts are the most important and how to take care of them so that it you can print a large number of parts and it lasts longer. Finally, you will learn how to safely use them and make your own miniature printed heel.

MANUFACTURING TECHNOLOGIES AND MACHINERY IN CUTTING DEPARTMENT

CTCP, Portugal

In this unit you will learn the cutting operations, different types of cutting processes, equipment and tools, including the automated cutting machines. You will discover how to operate nesting on different types of materials, to set and adjust the work parameters of the specific machines from cutting department and to perform cutting operations in different materials. Finally, you will learn how to perform quality control in cutting.



MANUFACTURING TECHNOLOGIES AND MACHINERY IN STITCHING DEPARTMENT

Georghe Asachi Technical University of Iasi (TUIASI), Romania

In this unit you will learn the pre-stitching operations, the stitching process and, different types of sewing machines. You will discover that the different parts of footwear products support various processes. In the case of flexible parts, the most common are the skiving and folding, but can also be encountered as splitting, lacing, painting, and burning. You will learn that by selecting the needle type (with different shapes of the needle blade), you can change the aspect of the stitch in correlation with the thread characteristics. Finally, you will learn how the quality control is done in the stitching department.



Photo credit/Source: TUIASI

MANUFACTURING TECHNOLOGIES AND MACHINERY IN LASTING DEPARTMENT

TUIASI and Politecnico Calzaturiero

In this unit you will learn about the pre-lasting operations, the lasting process, and the equipment used in this department. You will discover that there are a series of pre-lasting operations: applying the toe puff, applying the stiffener, back-part pre-moulding, dressing the insoles, preparation of the lasts, conditioning the uppers, applying the insole on the last, and forepart pre-moulding. You will find out about the different construction systems of the footwear models - specific characteristics and processes. Finally, you will learn how to perform the quality control in the lasting department.

MANUFACTURING TECHNOLOGIES AND MACHINERY IN ASSEMBLY AND FINISHING DEPARTMENT

TUIASI and CTCP

In this unit you will learn that the footwear assembly is one of the final stages of footwear manufacturing (only followed by finishing and packing). You will discover how the shoe bottoms are fixed to the lasted uppers. During the assembly process, the shoes are still on the last (from Pre-lasting and Lasting) to give them their final shape and inner dimensions and therefore, provide optimum fit. You will learn the operational sequence in footwear assembly. You will also find out how finishing is done with the aim of improving the visual appearance of the product and making it more attractive, both visually and to the touch. Finally, you will learn how the quality control is done in the assembly and finishing department.



FOOTWEAR PRODUCTION PROCESSES

Politecnico Calzaturiero

Preceded by the phases of design, preparation and series development of the model, the actual production process begins in the cutting department, develops through various departments and arrives at the finishing. Communication is important, it is essential in the production progress phase and between the different production departments. In this learning unit, you will be introduced to the world of technical data related to the footwear production process. You will approach and learn about the detailed analysis of the different production processes of a shoe, in particular cutting, stitching, assembly and finishing, as well as a focus on the preparation of the technical documentation necessary to define each process. You will also learn how to plan and develop the technical datasheets of a given model and, moreover, to organise the quality controls to be carried out during the footwear production process.



BUSINESS AND ENTREPRENEURSHIP

CTCP



In this learning unit, you will be introduced to the concepts related with basic management in micro and small companies, how to prepare a business plan and how to define the better workplace organisation. You will also learn how to design a lay-out and the processes flow for a micro or small company.

IF YOU ARE INTERESTED IN LEARNING MORE ABOUT THE PROJECT, WE INVITE YOU TO KEEP FOLLOWING OUR ACTIVITY ON THE PROJECT WEBSITE AND SOCIAL MEDIA. DO NOT HESITATE TO CONTACT THE CONSORTIUM FOR ANY INFORMATION!

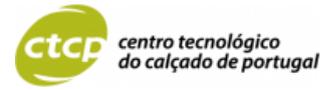


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PROJECT PARTNERS



HeartHands
SOLUTIONS
HANDS ON KNOWLEDGE

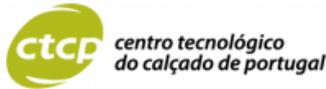


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ERASMUS+ Digital FabLab

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