



**INGA 3D - Creative transfer of competence in 3D footwear
CAD to VET professionals**

LLP-LdV-ToI/2013-RO-024

MODULE I : FOOTWEAR CAD BY ICAD3D+ SOFTWARE

Training Program

Prepared by INESCOP

MODULE I : FOOTWEAR CAD BY ICAD3D+ SOFTWARE

Total Teaching Hours – Lectures and Activities in class: 50 hours

Individual Study: 50 hours

ECVET : 4

- Objectives**
- To initiate learners in the operation of Icad3D+ (footwear-specific software).
 - To develop skills and competences for creating virtual prototypes on virtual lasts using Icad3D+.
 - To develop skills and competences for creating virtual models with accessories and components
 - To obtain accurate virtual models using the rendering software and to prepare technical sheets.

UNIT 1: Basics for Footwear CAD (7 Hrs)

Knowledge	Skills	Competences
<ul style="list-style-type: none"> • Understand the basic elements of 3D CAD workspace and operations with files • Know the basic operations with the last • Understand how the flattening tools work 	<ul style="list-style-type: none"> • To import digital files • To control the last in the workspace • To be able to obtain the mean forme and shell 	<ul style="list-style-type: none"> • To be aware about the main concepts powered by Icad3D+ software • To understand and to operate in the workspace • To flatten and to start the modelling process

Lesson 1.1. THE LAST IN THREE SURFACES

- Importing a digital last
- Basic concepts related to the workspace
- Definition of lines (bottom and top)
- Last positioning
- Calculating the ball
- Generating a mesh
- Checking and adjusting last halves

Lesson 1.2. FLATTENED LAST

- Averaging lines
- Obtaining the mean forme and the shell (cutting and checking)
- Adjustments for different shoe types

<ul style="list-style-type: none"> • Adapting the fit of the model (area application) • Exporting the shell 		
UNIT 2: Virtual Model (34 Hrs)		
Knowledge <ul style="list-style-type: none"> • Understand the fundamentals of creating a virtual model 	Skills <ul style="list-style-type: none"> • To be able to design the model on the digital last. • To be able to design pieces, ornaments and components. 	Competences <ul style="list-style-type: none"> • To develop a basic virtual model.
<p>Lesson 2.1. SHELL</p> <ul style="list-style-type: none"> • Designing lines and entities (shapes, 2D, texts...) on a digital last • Creating margins • Creating symmetries <p>Lesson 2.2. PIECES</p> <ul style="list-style-type: none"> • Creating virtual pieces • Operations with pieces (offset, thickness, edges...) • Creating interiors • Creating elements (perforations, grooves,...) • Applying and editing materials and textures • Creating stitches • Additional operations with pieces <ul style="list-style-type: none"> ○ Creating symmetrical pieces (3D symmetry / 2D symmetry) ○ Copying pieces from one model to another ○ Replacing the last model ○ Variable offset ○ Padding and engraving <p>Lesson 2.3. ACCESSORIES</p> <ul style="list-style-type: none"> • Managing libraries • Creating accessories (buckles, decorations,...) • Creating laces • Positioning and modifying accessories on the virtual model • Wizard for lace positioning and modification <p>Lesson 2.4. COMPONENTS</p> <ul style="list-style-type: none"> • Last positioning • Tools for the creation of basic curves for component creation • Creating surfaces • Importing and exporting components. • Outsole wizard 		

- Heel/wedge wizard
- Top-piece wizard
- Platform wizard
- Wizard for outsoles with heel flap/platform/wedge.
- Sole wizard
- Wizard for the creation of edges
- Creating pieces, elements, stitches, accessories... on surfaces
- Creating cut-outs on surfaces
- Extrusions on surfaces

Lesson 2.5. **MATERIALS AND TEXTURES**

- Materials library
- Creating materials from pictures
- Creating materials with render properties
- Editing textures based on flattened surfaces
- Editing textures based on curves

Lesson 2.6. **COMBINATIONS AND CONFIGURATOR**

- Combinations
- Configurator: creating groups and assigning materials

UNIT 3: Presenting virtual models- rendering and producing technical sheets (9 Hrs)

Knowledge

- Understand the rendering procedures for obtaining very accurate virtual models
- Know to prepare formats for various presentations

Skills

- To be able to follow the procedures for obtaining rendered models
- To be able to produce technical sheets

Competences

- To develop rendered virtual models.
- To produce technical sheets

Lesson 3.1. **RENDERING**

- Choosing the scene
- Instance positioning
- Setting up the camera parameters
- Setting up the parameters of the final image
- Final model rendering

Lesson 3.2. **TECHNICAL SHEETS**

- Creating the technical sheets of the models
- Formats for model display (JPG, animated 3D PDF, video...)