



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

**LLP-LdV-ToI/2013-RO-024**

**3D Footwear Computer Aided Design**

# **Handbook**

**Module III**

**3D CAD - APPLICATIONS TO ORTHOPAEDIC  
FOOTWEAR**

## Course introduction and teaching methodology

With this course you will learn how to use the footwear design software “Icad3D+”, which will help you design and create virtual footwear models, from the preparation of the digital last to the virtual rendering of the finished model.

This is a blended learning course that involves digital and physical teaching resources.

The core of the course is intended for face-to-face training and implies two basic requirements: CAD software / class with computers with the Icad3d+ software installed, and Internet connection to access the Online Learning Platform, where the training material is hosted.

The course is structured in Modules, so it can be customised by the trainees according to their training needs. It is split into four Modules, which in turn are subdivided into Units and Lessons. Please refer to the tables of contents of each Module.

This course has been conceived to be taught using the computer as a teaching means. The contents are expressed in text and image format, but there is no audio associated to them.

Knowledge transfer is based on slide presentations that provide step-by-step explanations (using text and static images) on how to use each of the software functions. To improve the knowledge of the theoretical-practical concepts, the slides are complemented by illustrative videos that show moving images of the theoretical content presented in the slides, in a fast, continuous and purely practical way. Each lesson has a multiple-choice test to assess the trainee’s learning.

## Recommendations for effective learning

- Access the lessons available from the Online Learning Platform (slide presentations), read the texts carefully and see the images on them.
- After reading each lesson, watch the associated videos to improve your understanding of the theoretical-practical concepts. The videos do not contain explanations; they are just a dynamic-visual complement to the learning contents presented on the slides.
- Access the assessment test when you think you have learnt the concepts.
- Practice the knowledge learnt using the Icad3D+ software whenever possible, to promote the development of the skills and competences pursued in this course.
- Make questions to your tutor/trainer to clarify possible doubts that may arise during the learning process.

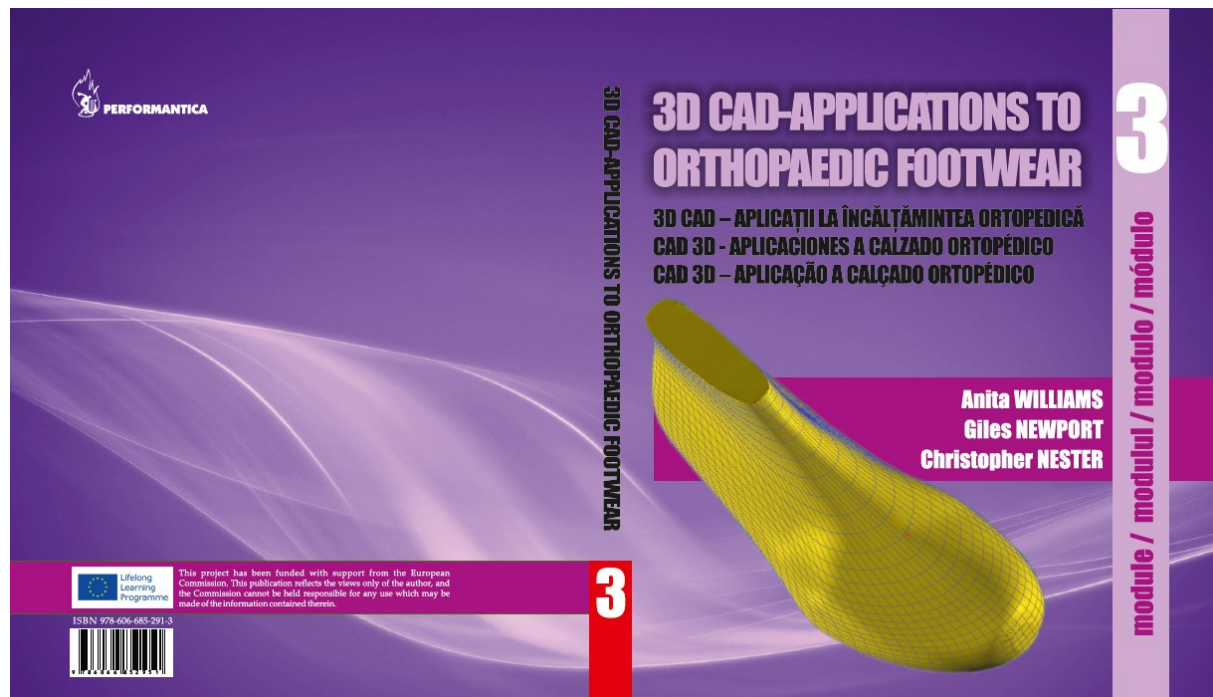
## Description of Module III

This module explores how to select lasts and to design footwear for specific foot pathologies. The main objectives of this module are:

- to apply knowledge of 3D CAD technology powered by Icad3D+ software in order to select orthopaedic lasts appropriate for the specific foot pathology;
- to practice the 3D modelling process to a range of different footwear styles, therapeutic features and modifications which are compatible with the specific foot pathology and users expectations;
- to develop the skills and competences to produce virtual models of women's and men's orthopaedic footwear designs.

Each trainee has to study the theoretical content of the lesson and then to perform practical activities with Icad3d+software, such as: to choose lasts for specific pathologies applying knowledge of these pathologies, to apply the knowledge of design requirements for specific foot pathologies, to modify a footwear collection, applying the orthopaedic modifications and combinations of modifications to sole and heels for the specific cases presented in theoretical lessons.

## Cover page



## Authorship and COPYRIGHT

### **Editura PERFORMANTICA**

Institutul Național de Inventică, Iași  
Iași, Campusul Universitar "Tudor Vladimirescu"  
Corp T24, Etaj 1, CP 2002, OP 10, Iasi  
Tel/fax: 0232-214763  
[www.inventica.org.ro](http://www.inventica.org.ro)

### **Descrierea CIP a Bibliotecii Naționale a României**

**Williams, Anita**

**3D CAD-APPLICATIONS TO ORTHOPAEDIC**

**FOOTWEAR / Anita Williams, Giles Newport,**

**Christopher Nester - Iași : Performantica, 2015**

ISBN: 978-606-685-291-3

ISBN Module 3: 978-606-685-295-1

1. Giles Newport,
2. Christopher Nester

### **Referenți științifici:**

Prof. univ. dr. Carmen Loghin  
Conf. univ. dr. Mariana Ursache

### **Consilier editorial:**

Prof. univ. dr. Traian D. Stănciulescu

### **Secretar editorial:**

Octav Păuneț

### **Machetare:**

Carmen Tiță

**EDITURĂ ACREDITATĂ DE CNCIS BUCUREȘTI, 1142/30.06.2003**

Copyright © 2015

Toate drepturile asupra acestei ediții sunt rezervate autorilor

## CONTENTS / CUPRINS CONTENIDO / CONTEÚDO

### UNIT 1

Lesson 1.1. The last features in relation to different foot pathologies	5
Lesson 1.2. Last designs in relation to specific pathologies	25

### UNIT 2

Lesson 2.1. Design Features and Components in Relation to the Overall Construction of the Footwear	34
Lesson 2.2. Orthopaedic Footwear Design for Specific Foot Pathologies. Practice	56

### UNIT 3

Lesson 3.1. Orthopaedic Modifications of Sole for Specific Foot Pathologies	64
Lesson 3.2. Orthopaedic Modifications of Heel for Specific Foot Pathologies	81

### CAPITOLUL 1

Lecția 1.1. Particularitățile calapodului în funcție de diferite patologii ale piciorului	5
Lecția 1.2. Proiectarea calapodului în funcție de tipul afecțiunii	25

### CAPITOLUL 2

Lecția 2.1. Particularități în proiectarea constructivă a încălțăminteii ortopedice	34
Lecția 2.2. Proiectarea încălțăminteii ortopedice pentru diverse afecțiuni. Aplicații practice	56

### CAPITOLUL 3

Lecția 3.1. Modificări ale tălpii de încălțăminte în funcție de patologia piciorului	64
Lecția 3.2. Modificările tocului de încălțăminte în funcție de patologia piciorului	81

<b>UNIDAD 1</b>	
Lección 1.1. Características de la horma con relación a las diferentes patologías del pie	5
Lección 1.2. Diseños de hormas con relación a patologías específicas	25
<b>UNIDAD 2</b>	
Lección 2.1. Características de diseño y componentes en relación con la construcción global del calzado	34
Lección 2.2. Diseño de calzado ortopédico para patologías específicas del pie. Práctica	56
<b>UNIDAD 3</b>	
Lección 3.1. Modificaciones ortopédicas de la suela para patologías del pie específicas	64
Lección 3.2. Modificaciones ortopédicas del tacón para patologías del pie específicas	81
<b>UNIDADE 1</b>	
Lição 1.1. Características da forma em relação a diferentes patologias do pé	5
Lição 1.2. Desenho de formas com relação a patologias específicas	25
<b>UNIDADE 2</b>	
Lição 2.1. Características de desenho e componentes relativos à construção global do calçado	34
Lição 2.2. Desenho de calçado ortopédico para patologias específicas do pé. Prática	56
<b>UNIDADE 3</b>	
Lição 3.1. Alterações ortopédicas da sola para patologias específicas do pé	64
Lição 3.2. Alterações ortopédicas do tacão para patologias específicas do pé	81