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**KNOWLEDGE ALLIANCE**

ICT IN TEXTILE AND CLOTHING HIGHER EDUCATION AND BUSINESS

**Syllabus: Apparel Design and Production**

 **Course Draft: 3D simulation**

 **Total:** *30 hours*

1. **Aims and Outcomes:**

The TCI sector has become a very fast-paced industrial sector due to its quick style changes that need to be adapted accordingly. The conventional path of product development requires a long path till the product is ready for mass production. Agility is required for the current textile and clothing supply chain. This course aims to develop an innovative and multidisciplinary approach to teaching and learning. The identified deficiencies from the GAP analysis conducted by project partners will be addressed by devising course content available for target groups of the project. It has been identified that 3D Simulation in Apparel Design and Production has not been effectively used in European TCI. This course aims to use the tools and methods, which are available for learners and improve their understanding regarding this course. The designed course will also increase the training capacity of the teaching staff of partner universities.

1. **Course Outline:**

**Introduction of 3D simulation (2 hours)**

* History of 3D Simulation in Clothing
* Importance (from concept to construction, Time saving, product visualization)
* Pros/Contras of 3D Simulation

**3D virtual model (10 hours)**

* Different type of Avatar (static, Kinematic)
* Different types of scanning principles (Laser, fringe, etc.)
* Data generation with scanning, cloud points, triangulation, surface generation of the 3D human model, development of spline surfaces
* Discussion on critical scan areas, correction of scans (manually and automatic)
* Avatar generation
* Parametric model for Scaling up/down
* Size System development

**Virtual Fit Simulation in CLO3D (18 hours)**

* Fit simulation on close-fitted/loose fitted garment
* Using software own available avatar/Import of individual avatar
* Customization of avatar (pose, color, etc.)
* 2D Construction in Clo3D / import a 2D pattern
* Use of different Sewing tools, positioning of patterns
* Material Characterization **(**Tensile strength, bending strength, shear strength, twisting strength, Drapability, Isotropy, anisotropy, Stress-strain curve)
* Application of trims (zippers, buttons, etc.)
* Fit evaluation
* Grading
* Rendering (photorealistic images for marketing etc.)
* Animation (Kinematic)
1. **Course readings:**

The course content will be made available on the Moodle platform and video content will be generated for more understanding. The learners are eligible to use the trial version of the 3D Simulation software being used for the learning purposes in this course. The related theoretical knowledge in form of presentations will be provided. The effort will be made to provide a freely accessible related course material to learners.