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TECHNISCHE  
UNIVERSITÄT  
DRESDEN



LEADING IN FIBRE  
& TEXTILE TECHNOLOGY  
The Research Institute  
of University of Excellence

KNOWLEDGE ALLIANCE



ICT IN TEXTILE AND CLOTHING  
HIGHER EDUCATION AND BUSINESS

# Apparel Design and Production

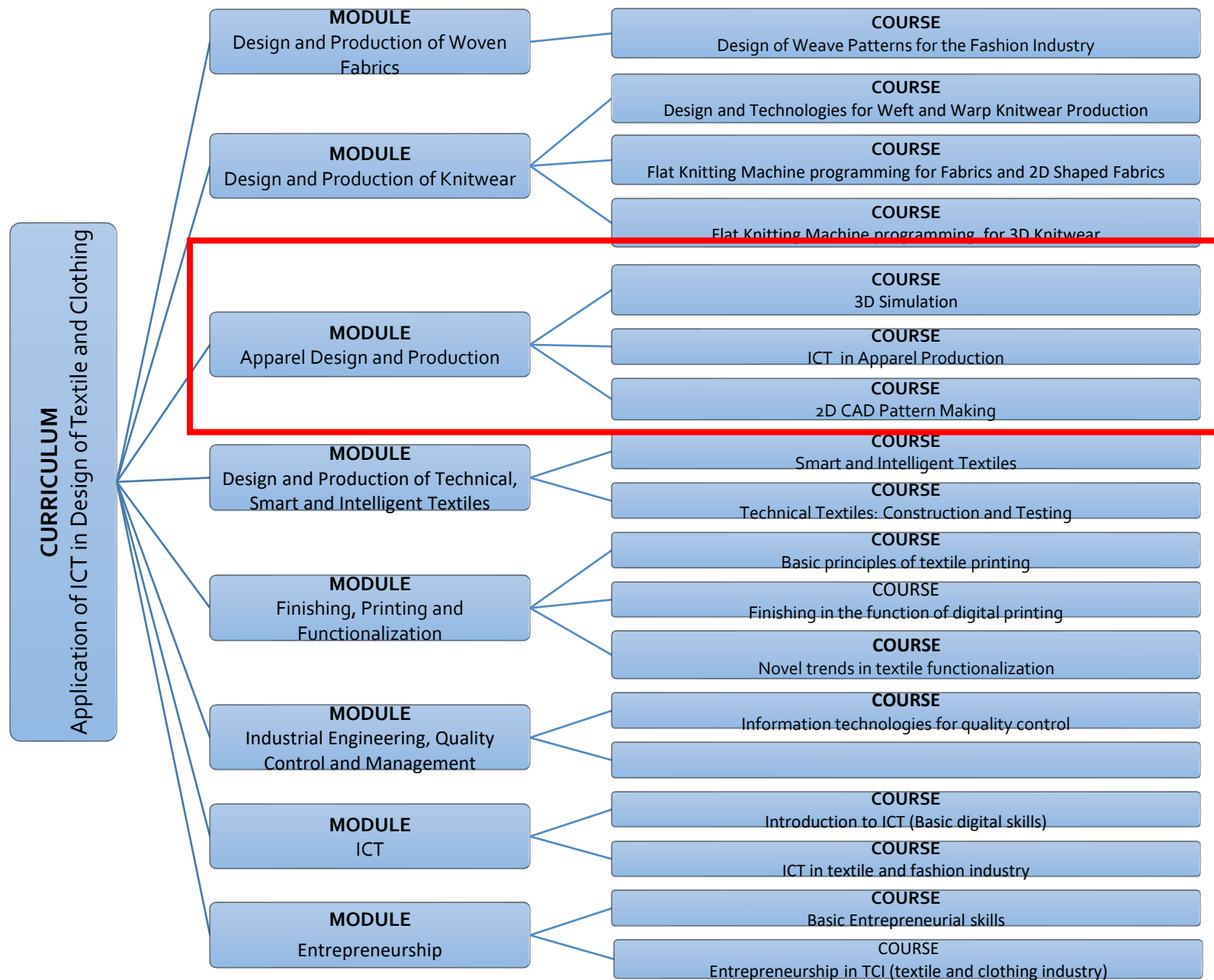
## Apparel Production

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Institute of Textile Machinery and High Performance Material Technology  
TU Dresden, Germany

ICT IN TEXTILE AND CLOTHING HIGHER EDUCATION AND BUSINESS (ICT - TEX)

ICT-TEX project Nr. 612248-EPP-1-2019-1-BG-EPPKA2-KA,  
funded by the Erasmus + Programme of the European Union



# MODULE – APPAREL DESIGN AND PRODUCTION

## Course: ICT in Apparel Production

**Duration:** 30 hours

### Course objectives

The garment industry invariably goes through short fashion cycles. To survive in the market, regular innovations in colour, style, design, fabric, finish and fit are needed. Automated machinery and IT solutions are keys in such a scenario. Automations for cutting, sewing, buttonholes, CAD/CAM for pattern making, etc., have brought down the cost of production considerably. Garment companies now focus on technology to be productive and cost-effective at the same time, which means skilled and constantly updated workforce. The course is focused on the analysis of the interconnections between innovative technologies and standard production process in order to equip learners with relevant skills and knowledge.

### Topics

- Sewing machines
- Automation in apparel production
- Spreading/cutting
- Material management and work planning
- Finishing
- Welding technologies
- Production systems

### Learning outcomes

Knowledge	Skills	Responsibilities/autonomy
<ul style="list-style-type: none"> <li>- To know different type of sewing machine, including the automatic ones, being aware of their components and specific functionalities</li> <li>- To appraise automation practices in apparel production, their peculiarities and applications</li> <li>- To apprehend different type of cutting and welding technologies</li> <li>- To understand material management and work planning principles</li> <li>- To understand the features of different apparel production systems, digitalization and machine networking systems</li> </ul>	<ul style="list-style-type: none"> <li>- To operate different kind of sewing machines, being able to fix the different problems that may occur during the operations</li> <li>- To set the sewing machine in accordance with the apparel production type</li> <li>- To apply cutting and joining methods and technologies</li> <li>- To use CAD software for pattern making</li> <li>- To set inventory control systems for material flows management</li> <li>- To use digital tools for maintenance purposes</li> <li>- To apply different finishing processes being able to proceed to their digitalisation</li> </ul>	<ul style="list-style-type: none"> <li>- To set an effective work-planning defining a sewing floor for smooth production management</li> <li>- To select the production system more suitable for the production type, using digitalization to increase the efficiency</li> </ul>

# Apparel Production

## Course division

- **Pre-Production**
- **Joining Technologies**
- **Post-Production**
- **Interactions with teachers through Discussion forums**
- **Interactive Quiz sections**
- **Wiki Interactions**

platform.ict-tex.eu

ICT-TEX Project platform Hassan Saeed

this file is the video end for partners to use in their video content

### Apparel production

- Participants
- Badges
- Competencies
- Grades
- General
- Pre-Production
- Joining technologies
- Finishing
- Materials for Teacher

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Dashboard

Site home

Calendar

Private files

Content bank

My courses

ICT-TEX Documents

Moodle workshop

### Apparel production

- ICT II
- 2D-CAD-PM
- 3D CAD


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### Pre-Production

- Spreading
- Cutting
- Self Assessment Quiz
- Discussion Forum

---

### Joining technologies



- Stitches and Seams
- Sewing
- Welding
- Automation in Apparel Production
- Apparel Production Systems
- Self Assessment Quiz
- Discussion Forum

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### Finishing

- Pressing
- Garment Wet Processing
- Discussion Forum
- Self Assessment Quiz

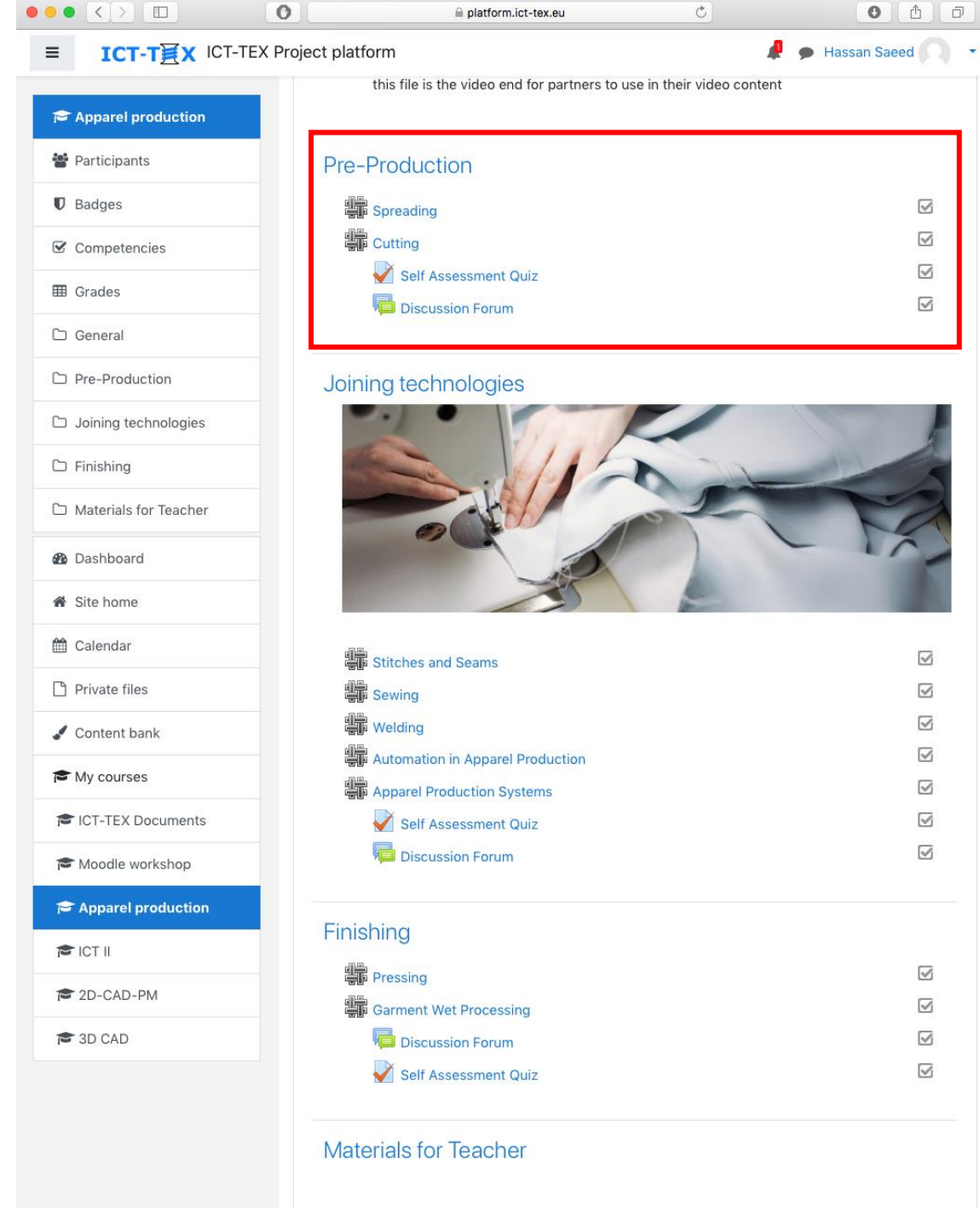
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### Materials for Teacher

# Apparel Production

## Pre-Production

- **Spreading**
- **Cutting**
- **ICT in Processes -> latest ICT practices in respective fields**
- **Interactions with teachers through Discussion forums**
- **Interactive Quiz sections**
- **Wiki Interactions**



The screenshot displays the ICT-TEX Project platform interface. The top navigation bar includes the logo and the text "ICT-TEX Project platform". A user profile for "Hassan Saeed" is visible in the top right corner. The main content area is divided into several sections:

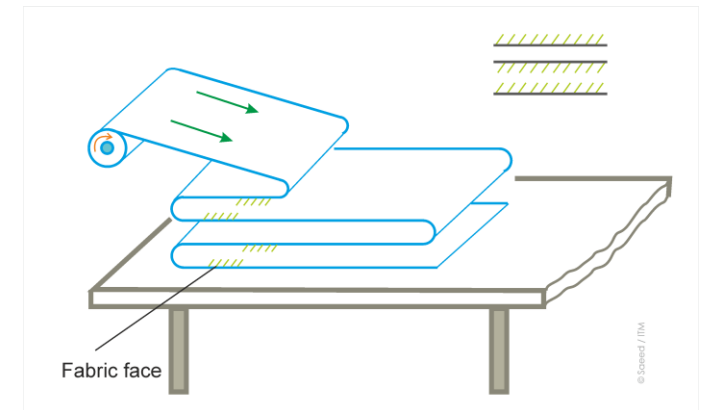
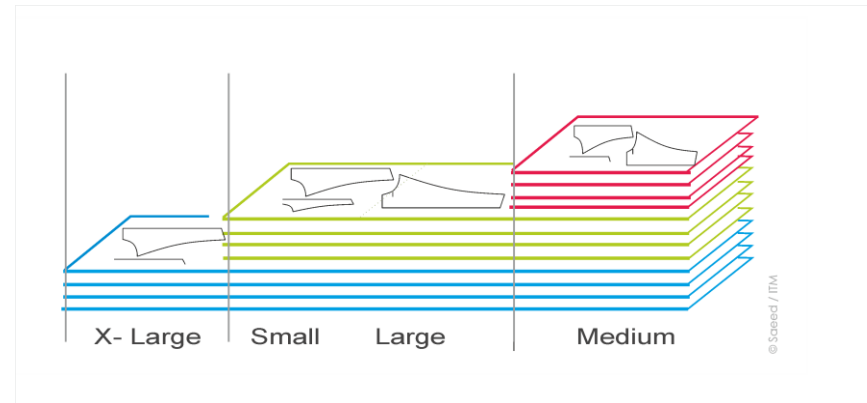
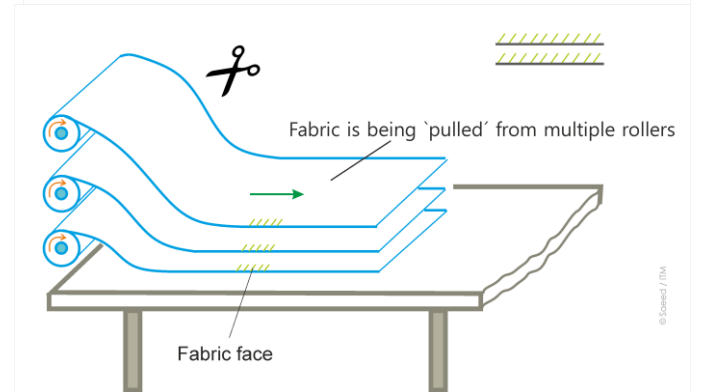
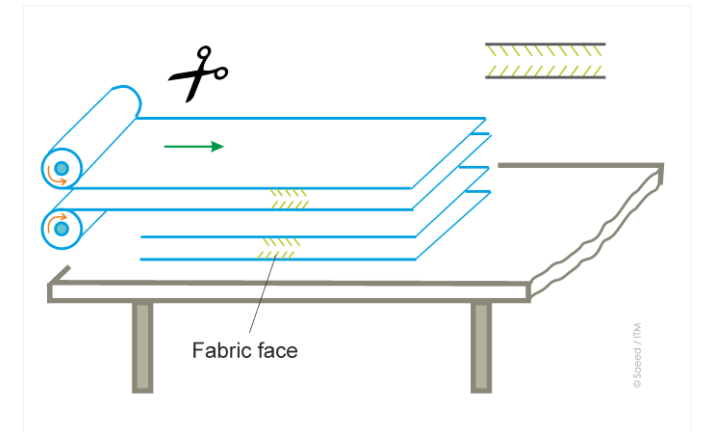
- Pre-Production** (highlighted with a red border):
  - Spreading
  - Cutting
  - Self Assessment Quiz
  - Discussion Forum
- Joining technologies**:
  - Stitches and Seams
  - Sewing
  - Welding
  - Automation in Apparel Production
  - Apparel Production Systems
  - Self Assessment Quiz
  - Discussion Forum
- Finishing**:
  - Pressing
  - Garment Wet Processing
  - Discussion Forum
  - Self Assessment Quiz
- Materials for Teacher**

A sidebar on the left contains a navigation menu with the following items: Apparel production (selected), Participants, Badges, Competencies, Grades, General, Pre-Production, Joining technologies, Finishing, Materials for Teacher, Dashboard, Site home, Calendar, Private files, Content bank, My courses, ICT-TEX Documents, Moodle workshop, Apparel production (selected), ICT II, 2D-CAD-PM, and 3D CAD.

# Apparel Production

## Pre-Production

- **Inline with CAD System**
- **Discussion on marker utilization**
- **Various Spreading methods**
- **Visibly improved digital images**



Spreading types

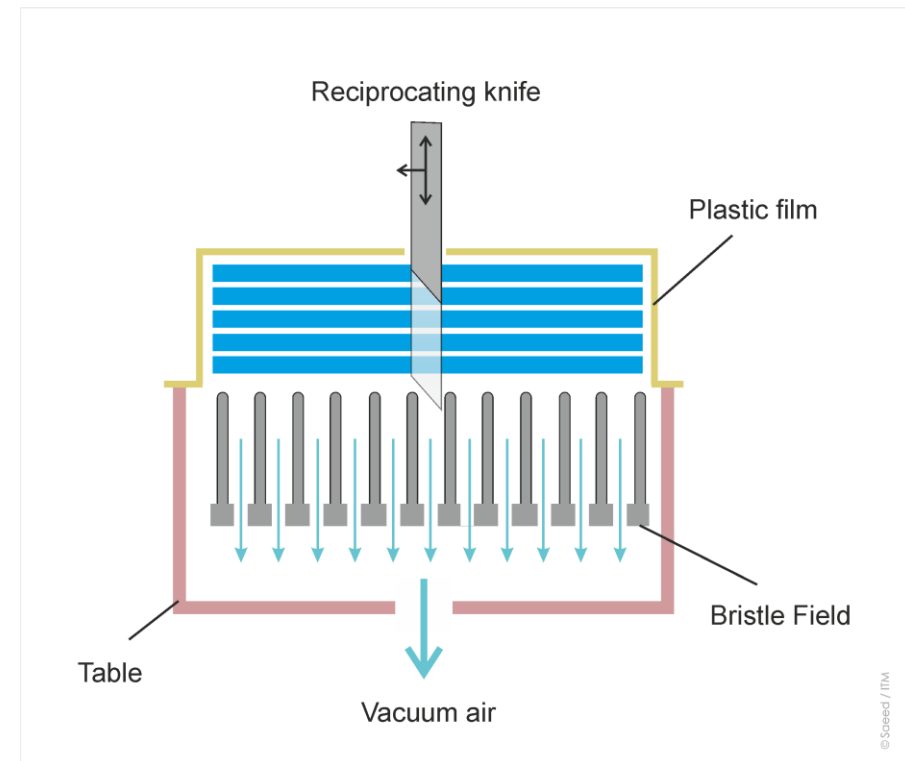
# Apparel Production

## Course division

- Improved process graphical illustrations
- Use of GIFs for process explanations from company videos



Laser Cutting



Principle of CNC straight knife cutting

# Apparel Production

## Joining Technologies

- Stitches and Seams
- Sewing
- Welding
- Automation in Apparel Production
- Apparel Production Systems
- ICT in Processes -> latest ICT practices in respective fields
- Interactions with teachers through Discussion forums
- Interactive Quiz sections
- Wiki Interactions

platform.ict-tex.eu

ICT-TEX Project platform Hassan Saeed

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Apparel production

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ICT-TEX Documents

Moodle workshop


Apparel production

- ICT II
- 2D-CAD-PM
- 3D CAD

Pre-Production

- Spreading
- Cutting
- Self Assessment Quiz
- Discussion Forum

Joining technologies



- Stitches and Seams
- Sewing
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- Automation in Apparel Production
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Finishing

- Pressing
- Garment Wet Processing
- Discussion Forum
- Self Assessment Quiz

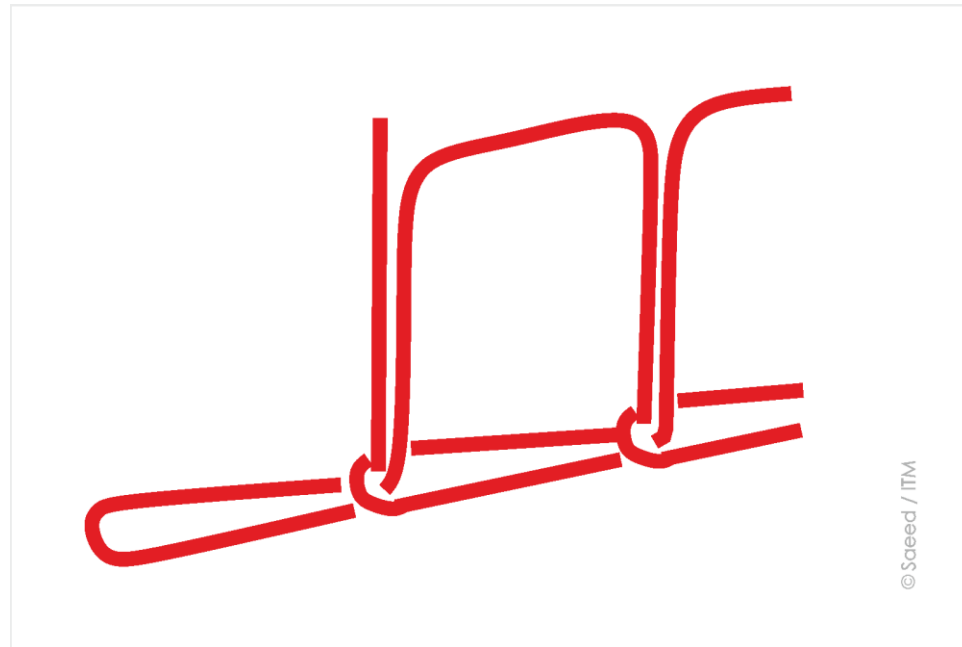
Materials for Teacher



# Apparel Production

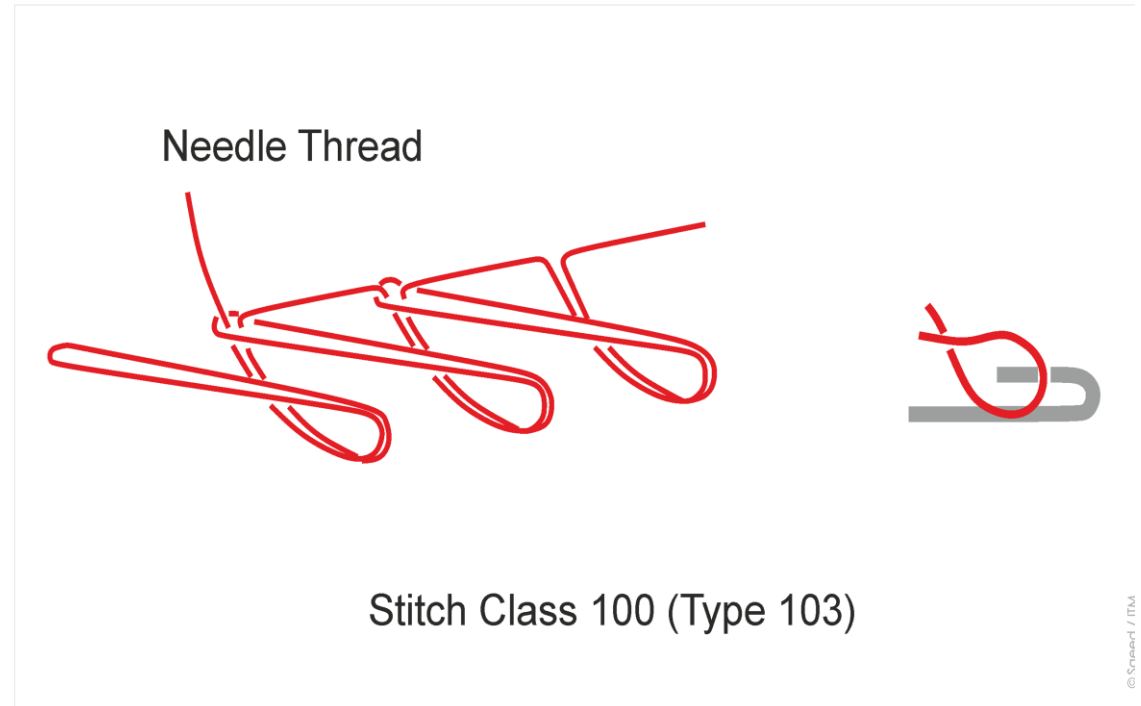
## Joining Technologies

- New colorful graphical illustrations
- Interactive material for process explanations



Stitching principles

© Saeed / ITM



Stitch Class 100 (Type 103)

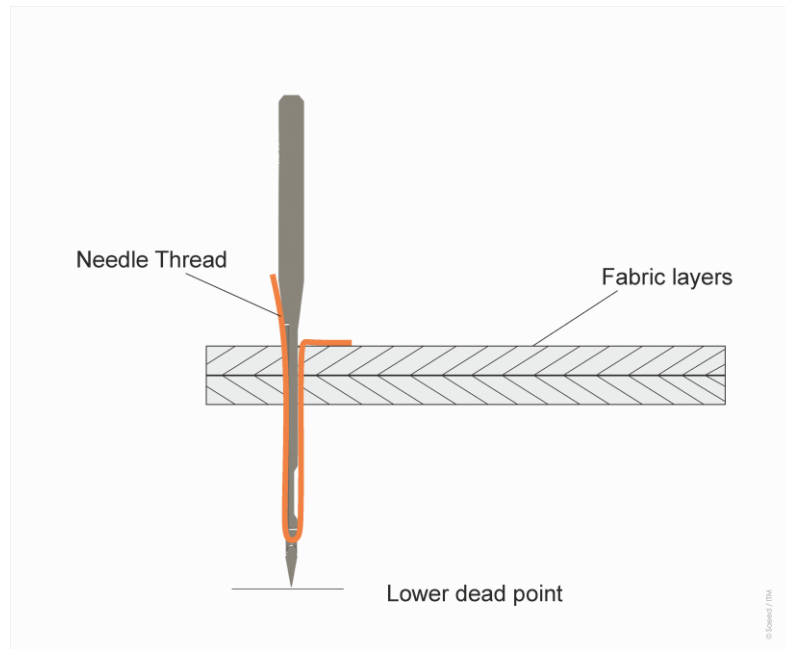
Stitch Classes

© Saeed / ITM

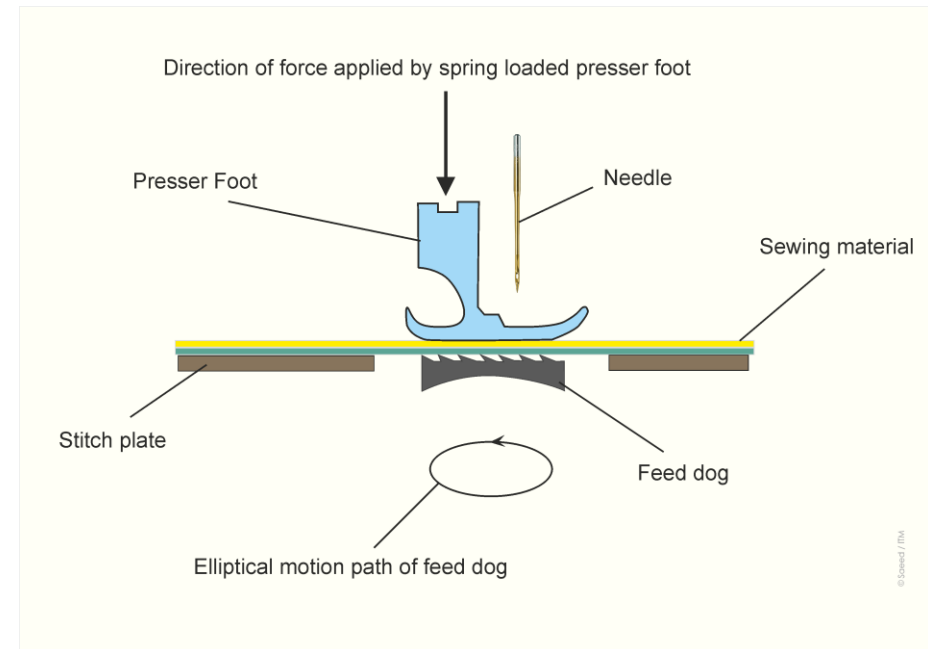
# Apparel Production

## Joining Technologies

- Images combined with explanation will improve understanding of sewing processes
- Series of images were created for process explanations



Loop formation

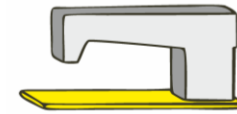


Stitch forming cycle

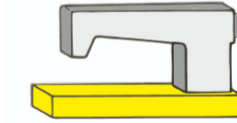
# Apparel Production

## Joining Technologies

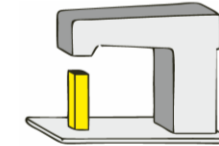
- **New colorful graphical illustrations**
- **Contrast color schemes help identify the learners to what to observe at first place.**
- **Copyright issues**



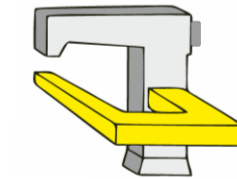
Flat bed machine



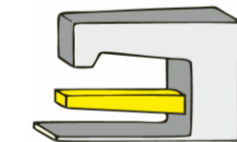
Raised bed machine



Post bed machine



Feed of the arm machine



Cylinder bed machine



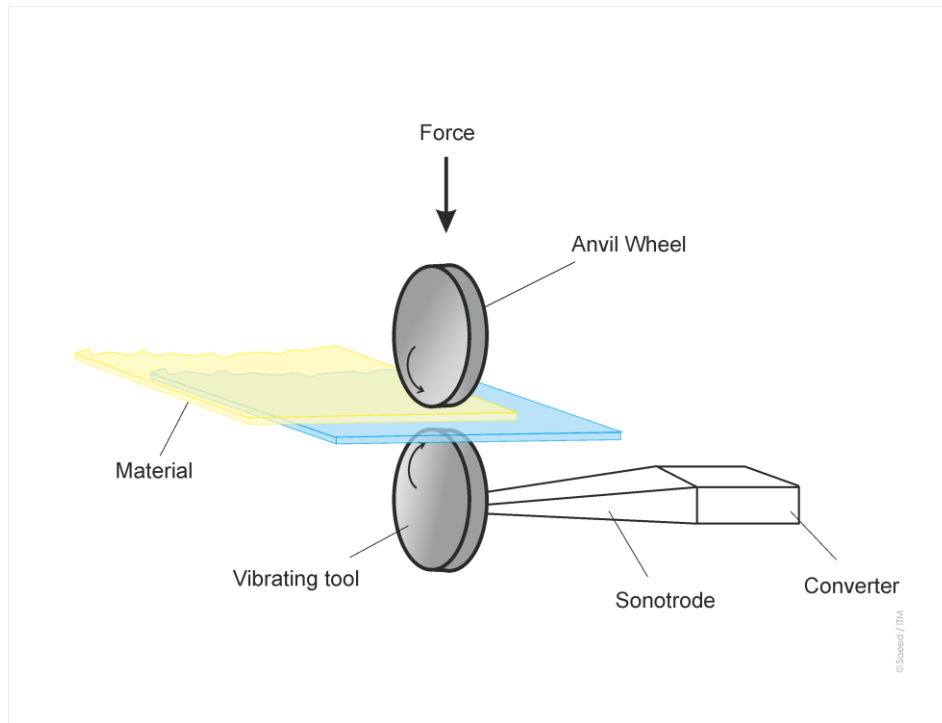
Side bed machine

Sewing Machine forms

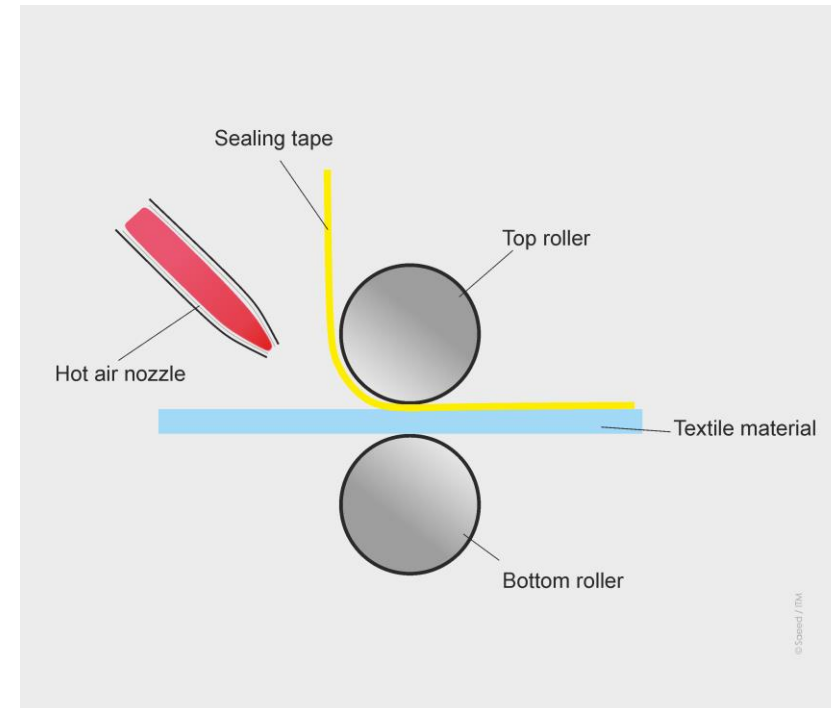
# Apparel Production

## Joining Technologies

- New colorful graphical illustrations for welding technologies
- Interactive material for process explanations



Ultrasonic Welding

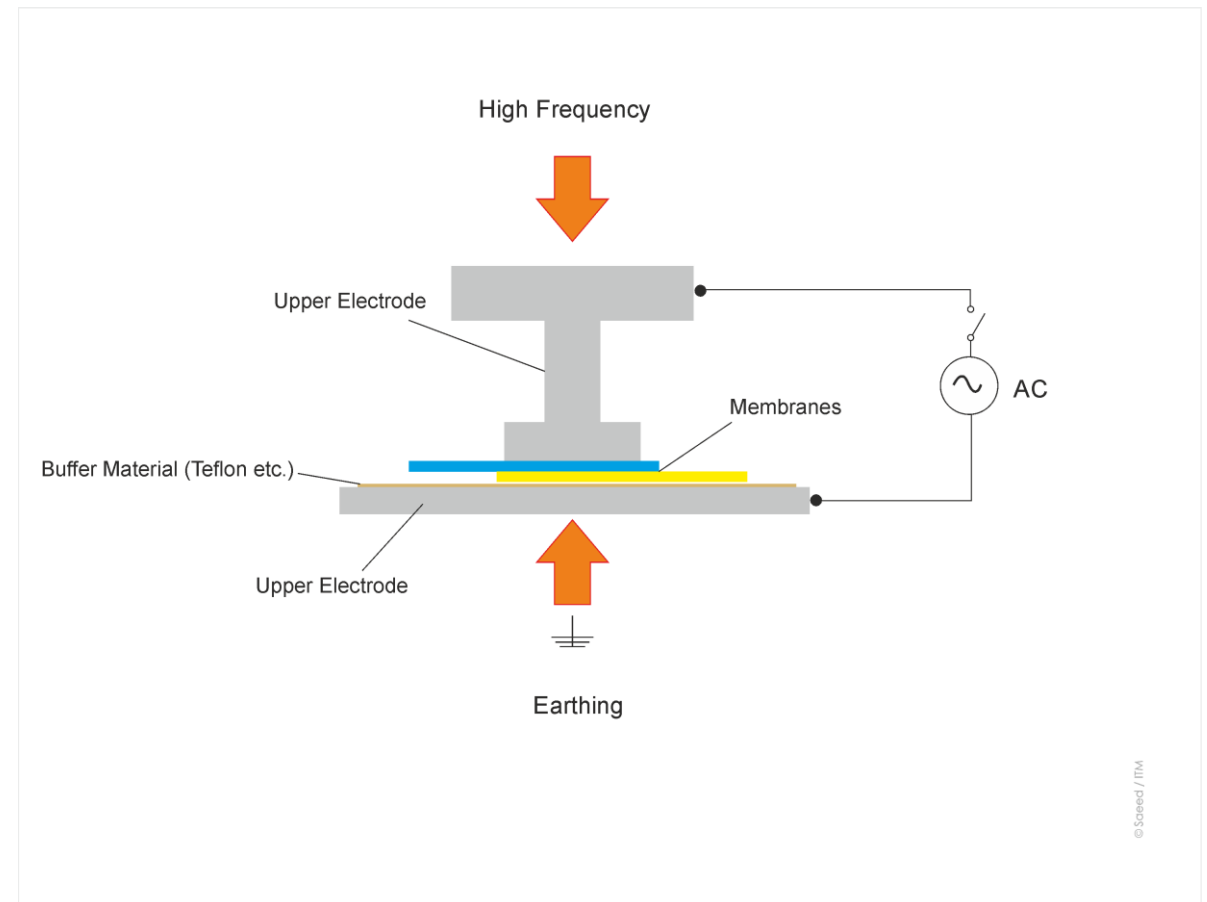
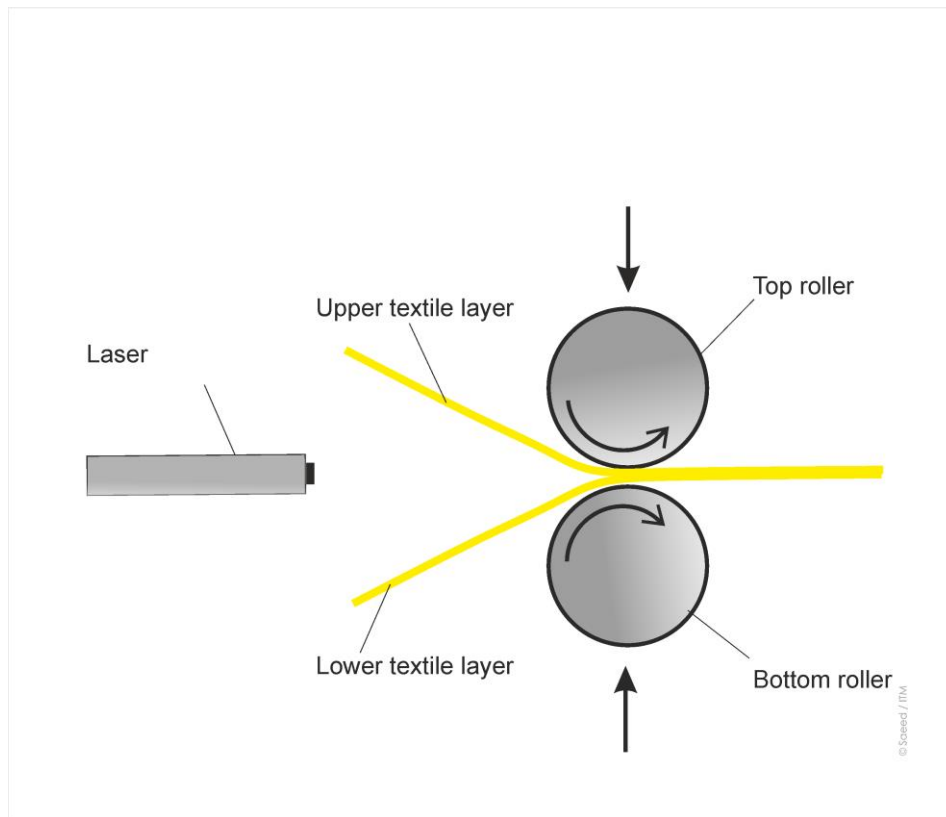


Hotair welding

# Apparel Production

## Joining Technologies

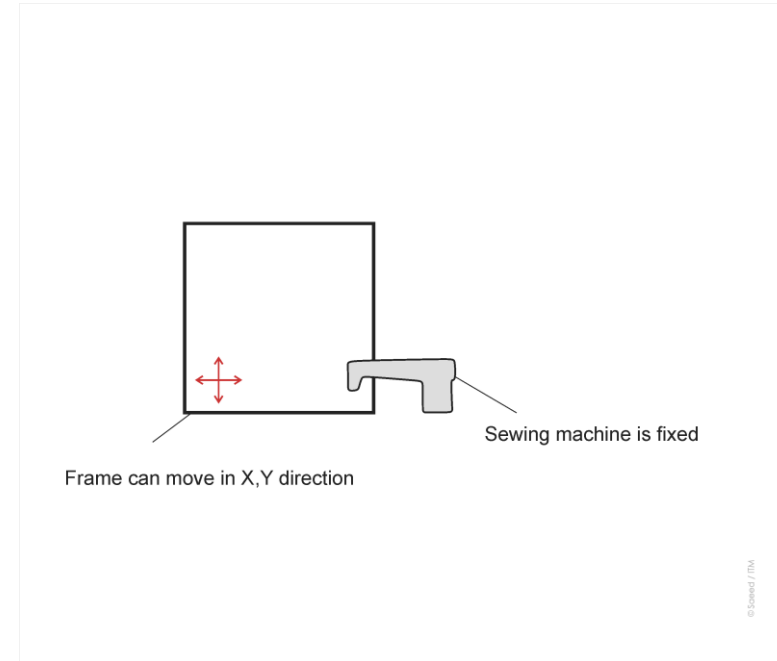
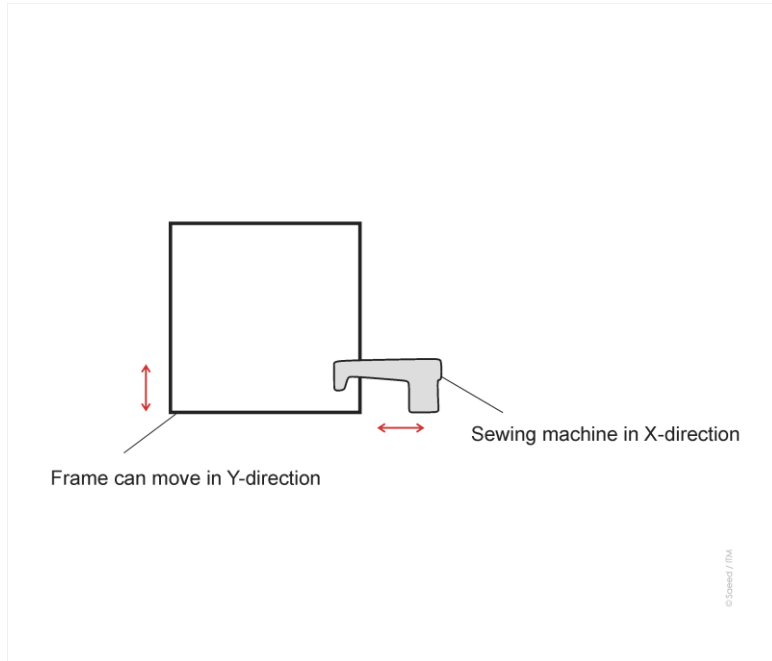
- New colorful graphical illustrations
- Interactive material for process explanations



# 3D CAD Simulation

## Joining Technologies

- New colorful graphical illustrations for automation
- Interactive material for process explanations

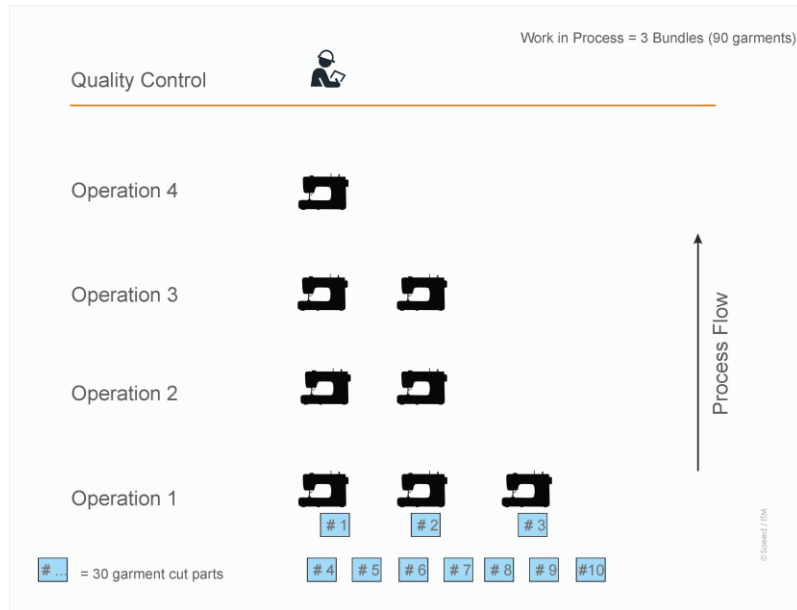


Automation in Sewing

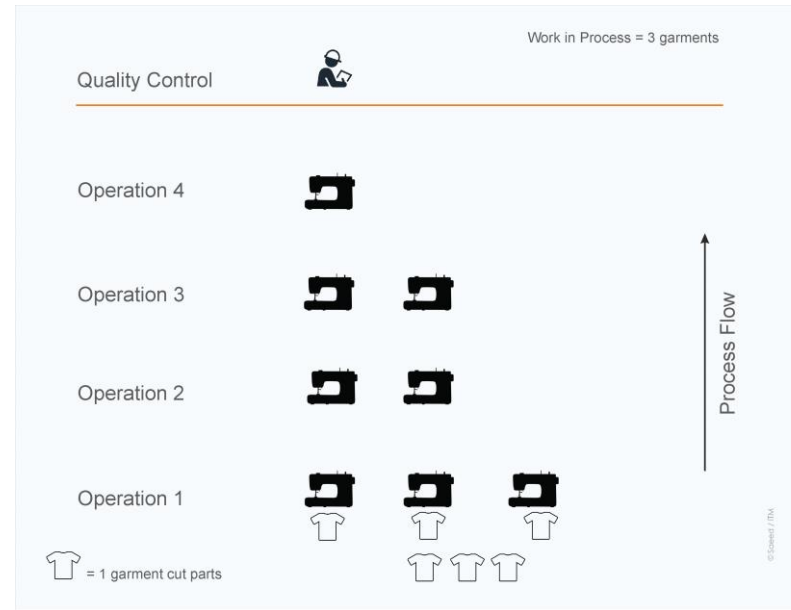
# Apparel Production

## Joining Technologies

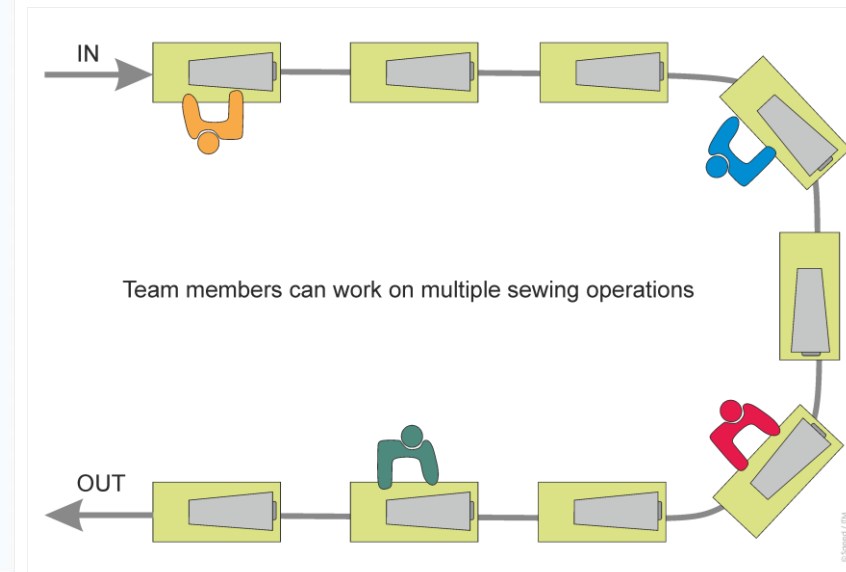
- New colorful graphical illustrations for apparel production systems
- Interactive material for process explanations



Progressive Bundle System



Unit production system

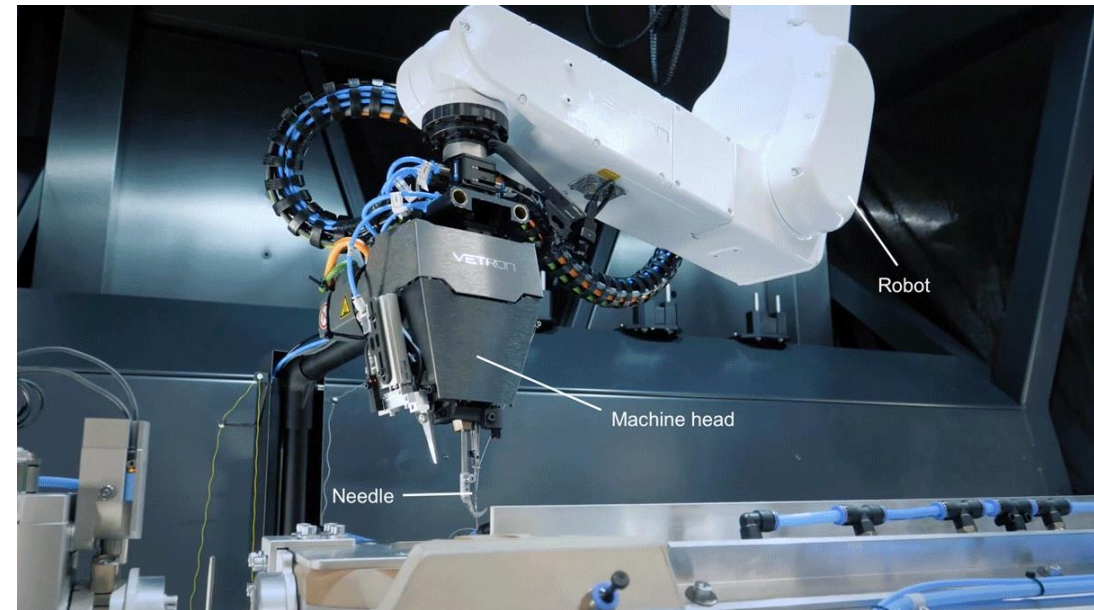


Modular Production System

# Apparel Production

## Joining Technologies

- Images from company videos are also used
- The videos as well as .gifs are used where needed
- Extra information was added in images for better process explanations



Robotics in Sewing



# Apparel Production

## Post Production

- **Pressing**
- **Garment Wet Processing**
- **ICT in Processes -> latest ICT practices in respective fields**
- **Interactions with teachers through Discussion forums**
- **Interactive Quiz sections**
- **Wiki Interactions**

platform.ict-tex.eu

ICT-TEX Project platform Hassan Saeed

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### Apparel production

- Participants
- Badges
- Competencies
- Grades
- General
- Pre-Production
- Joining technologies
- Finishing
- Materials for Teacher

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- Dashboard
- Site home
- Calendar
- Private files
- Content bank
- My courses
- ICT-TEX Documents
- Moodle workshop


### Apparel production

- ICT II
- 2D-CAD-PM
- 3D CAD

### Pre-Production

- Spreading
- Cutting
- Self Assessment Quiz
- Discussion Forum

### Joining technologies



- Stitches and Seams
- Sewing
- Welding
- Automation in Apparel Production
- Apparel Production Systems
- Self Assessment Quiz
- Discussion Forum

### Finishing

- Pressing
- Garment Wet Processing
- Discussion Forum
- Self Assessment Quiz

### Materials for Teacher

# 3D CAD Simulation

## Interactions

- Discussion Forums
- Interactive Quiz sections
- Wiki Interactions

The screenshot displays the ICT-TEX Project platform interface. The browser address bar shows 'platform.ict-tex.eu'. The page title is 'ICT-TEX Project platform' and the user is logged in as 'Hassan Saeed'. A navigation menu on the left lists various categories, with 'Apparel production' selected. The main content area is divided into sections: 'Pre-Production', 'Joining technologies', 'Finishing', and 'Materials for Teacher'. Each section contains a list of items with checkboxes. Red boxes highlight the 'Self Assessment Quiz' and 'Discussion Forum' items in the 'Pre-Production', 'Joining technologies', and 'Finishing' sections. A note at the top right states 'this file is the video end for partners to use in their video content'. An image of hands sewing fabric is shown under the 'Joining technologies' section.

platform.ict-tex.eu

ICT-TEX Project platform

Hassan Saeed

this file is the video end for partners to use in their video content

Apparel production

Participants

Badges

Competencies

Grades

General

Pre-Production

Joining technologies

Finishing

Materials for Teacher

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ICT-TEX Documents

Moodle workshop

Apparel production

ICT II

2D-CAD-PM

3D CAD

Pre-Production

Spreading

Cutting

Self Assessment Quiz

Discussion Forum

Joining technologies

Stitches and Seams

Sewing

Welding

Automation in Apparel Production

Apparel Production Systems

Self Assessment Quiz

Discussion Forum

Finishing

Pressing

Garment Wet Processing

Discussion Forum

Self Assessment Quiz

Materials for Teacher

# Apparel Production

## Learner's Performance

- The Platform provides information regarding learners who are participating in course
- It notifies the teacher that their might be learners at risk, so that necessary steps should be taken proactively

The screenshot displays the ICT-TEX Project platform interface. The browser address bar shows the URL: <https://platform.ict-tex.eu/report/insights/insights.php?modelid=4&cc>. The page title is "Course: Apparel production". The breadcrumb trail is "Dashboard / My courses / Apparel production / Reports / Insights".

The left sidebar contains a navigation menu with the following items: Apparel production, Participants, Badges, Competencies, Grades, General, Pre-Production, Joining technologies, Finishing, Materials for Teacher, Dashboard, Site home, Calendar, Private files, Content bank, My courses, ICT-TEX Documents, Moodle workshop, and Apparel production (highlighted in blue).

The main content area shows the course title "Course: Apparel production" and a dropdown menu for "Select other insights...". Below this, a section titled "Students who have not accessed the course yet" states: "The following students are enrolled in a course which has started, but they have never accessed the course." Action buttons include "Send message", "Accept", "Not applicable", and "Incorrectly flagged".

A table lists the students with their names and icons for search and details. The student Veronica Sarbach is highlighted with a red circle around her details icon.

Description	Actions
<input type="checkbox"/> ICT TEX Administrator	
<input type="checkbox"/> Mihail Peltekov	
<input type="checkbox"/> Diana Germanova-Krasteva	
<input type="checkbox"/> Veronica Sarbach	
<input type="checkbox"/> David Gorgievski	
<input type="checkbox"/> Radostina Mihaleva	
<input type="checkbox"/> Silvana Laudoni	
<input type="checkbox"/> Elitsa Peltekova	

# Apparel Production

## Discussion Forums, Quiz, WIKI Interactions

- Each course section has its own discussion forum, interactive quizzes and wiki interactions


The screenshot displays the ICT-TEX Project platform interface. The browser address bar shows 'platform.ict-tex.eu'. The user 'Hassan Saeed' is logged in. The main navigation menu on the left includes: Apparel production (selected), Participants, Badges, Competencies, Grades, General, Pre-Production, Joining technologies, Finishing, Materials for Teacher, Dashboard, Site home, Calendar, Private files, Content bank, My courses, ICT-TEX Documents, Moodle workshop, Apparel production (selected), ICT II, 2D-CAD-PM, and 3D CAD.

The main content area shows the course structure for 'Apparel production'. It is divided into sections: Pre-Production, Joining technologies, Finishing, and Materials for Teacher. Each section contains a list of activities with checkboxes for completion. The 'Self Assessment Quiz' and 'Discussion Forum' items are highlighted with red boxes in the Pre-Production, Joining technologies, and Finishing sections.

**Pre-Production**

- Spreading
- Cutting
- Self Assessment Quiz
- Discussion Forum

**Joining technologies**



- Stitches and Seams
- Sewing
- Welding
- Automation in Apparel Production
- Apparel Production Systems
- Self Assessment Quiz
- Discussion Forum

**Finishing**

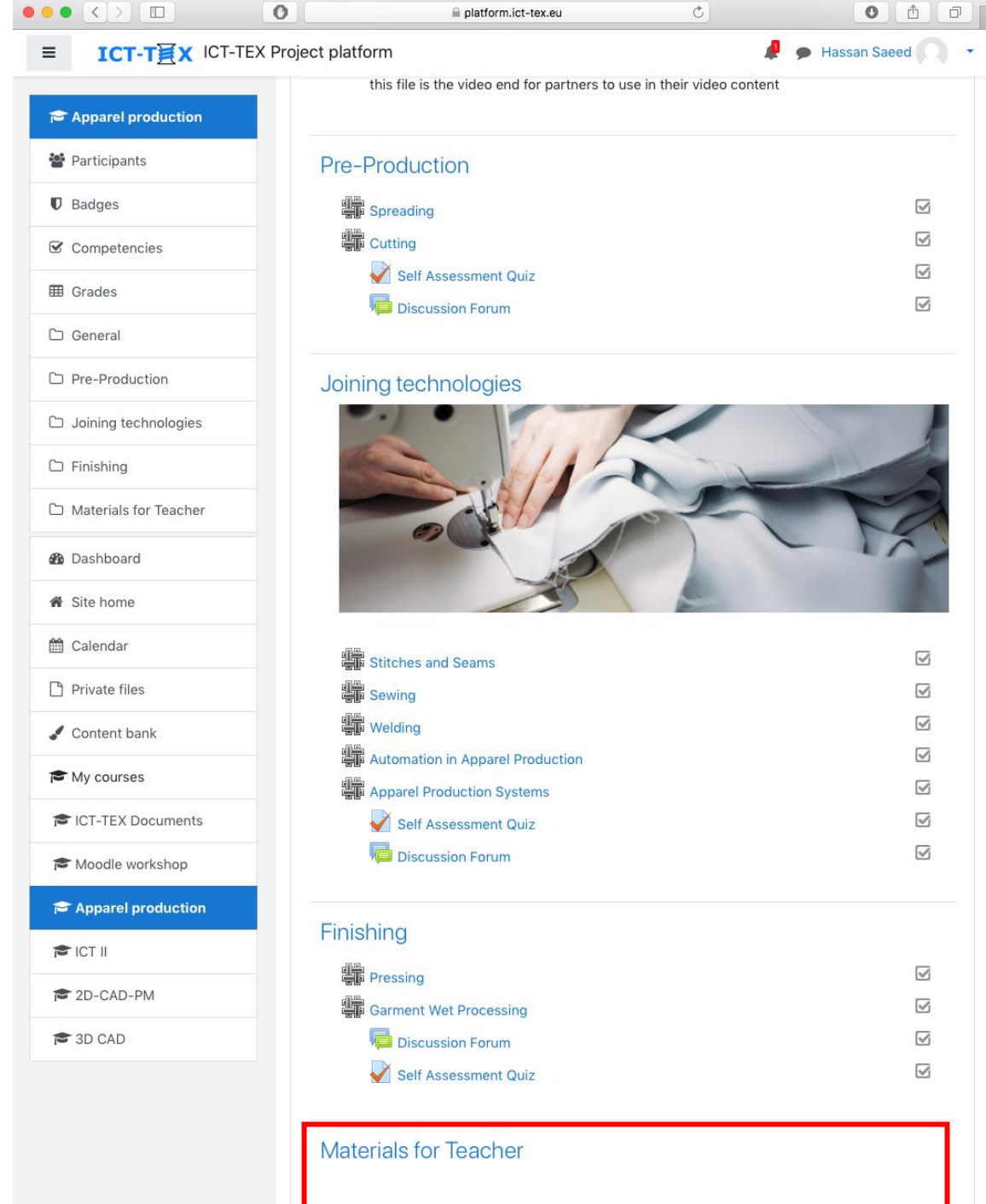
- Pressing
- Garment Wet Processing
- Discussion Forum
- Self Assessment Quiz

**Materials for Teacher**

# Apparel Production

## Material for Teachers

- Material is made available for teachers for each course sections which will help them to create better understanding of 3D CAD.
- This material is accessible only for teachers.
- The teaching material will be kept up-to-date



The screenshot displays the ICT-TEX Project platform interface. The top navigation bar includes the ICT-TEX logo, the text 'ICT-TEX Project platform', and a user profile for Hassan Saeed. A sidebar on the left lists various course sections, with 'Apparel production' highlighted in blue. The main content area shows a list of course sections, each with a grid icon and a checkmark, indicating they are available or completed. The sections are: Pre-Production (Spreading, Cutting, Self Assessment Quiz, Discussion Forum), Joining technologies (Stitches and Seams, Sewing, Welding, Automation in Apparel Production, Apparel Production Systems, Self Assessment Quiz, Discussion Forum), and Finishing (Pressing, Garment Wet Processing, Discussion Forum, Self Assessment Quiz). A red box highlights the 'Materials for Teacher' section at the bottom of the page.

platform.ict-tex.eu

ICT-TEX Project platform

Hassan Saeed

this file is the video end for partners to use in their video content

### Apparel production

- Participants
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### Apparel production

- ICT II
- 2D-CAD-PM
- 3D CAD

### Pre-Production

- Spreading
- Cutting
- Self Assessment Quiz
- Discussion Forum

### Joining technologies



- Stitches and Seams
- Sewing
- Welding
- Automation in Apparel Production
- Apparel Production Systems
- Self Assessment Quiz
- Discussion Forum

### Finishing

- Pressing
- Garment Wet Processing
- Discussion Forum
- Self Assessment Quiz

Materials for Teacher

# 3D CAD Simulation

## Summary

- Development of new graphical illustrations for the courses
- Use of explanatory videos with instructions
- Use of Interactive images
- Discussion Forum and WIKI Interactions
- Interactive quizzes
- Up-to-date teaching material for teachers
- Up-to-date information about learner's performance/engagement
- Though the courses are made available but to make best use of online Moodle Platform, it should be always updated new research is taking place and should be made available to it's learners.

# THANKS FOR YOUR ATTENTION

Contact:

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[yordan.kyosev@tu-dresden.de](mailto:yordan.kyosev@tu-dresden.de)