Hello colleagues,

I am pleased to present you the course on **2D CAD pattern making** of clothing. The course is the first part of the syllabus **Apparel Design and Production**.
The course duration is **30 hours** and contains **12 lessons**.

The program contains topics referring computer aided development of basic constructions and various styles of ladies' and men's garment. The topics are illustrated with many examples. The course is available on the Moodle e-learning platform:

https://platform.ict-tex.eu

The interactivity of the course is realized with the help of the "wiki" resource, animations, videos with audio instructions. After each topic there is a **Quiz** to test the knowledge of the trainees with a feedback.

There are developed **three types** different **study materials**:

✓ Materials for Trainees (**Students**);

✓ Materials for Trainees (**Staff**) - extra training materials, which are drawings of details at a scale of 1:1 directly for import into CAD system, Helpful Tips and Tricks for AccuMark Users, CAD Video Tutorials in You Tube;

✓ Materials for Trainers (**University Teachers/ Researchers**) - extra training materials, which are algorithmic sequential steps and used functions in pictures, quiz correct answers, links with useful You Tube videos, scientific research articles.

The participants gain experience to use the functions of a specialized graphic system for clothing and to develop algorithms for design of the pieces. Students who successfully complete this course acquire the necessary professional and practical knowledge for the use of **CAD systems for two-dimensional design**.

The Introduction gives general information about specialized graphic systems in the fashion industry. The advantages of the clothing CAD systems are considered. Basic knowledge of data types, functions and dialog mode of operation is given. The menus and functions are reviewed (1 hour).

Successively in the topics are considered the functions for creating and modifying geometric objects - points, lines, details. The measurement functions are explained.

Lesson 2 gives an algorithm for pattern making of basic apparel construction with example of Ladies' dress with one-piece sleeve. The method of Technical University of Sofia for calculation and drawing of clothing is used. Preliminary calculations of structural dimensions are given in the file Calculation EN.xls. The construction process is divided into parts depending on which segment is designed: grid of the construction, neckline, shoulder area, front shoulder dart, armhole curve, waist darts and side seam, sleeve. When verifying the construction, notches for assembly of the pieces are set. Six videos with audio instructions are recorded for the lesson (4 hours).

Lesson 3 deals with manipulation of the pieces. The functions trace, rotate, flip, split, combine, mirror, realign grain line are clarified. Using these functions are developed a yoke at the waist line for trousers, a waist shaped belt and a yoke in the shoulder area of men's shirt. The design of the yokes is supported by videos.
A two-piece jacket has been transformed into a jacket with front, back and common side part (3 hours).

Lesson 4 refers to darts manipulations: basic transformations, rotation, division and combination of darts. The transformations are presented with a technical sketch and animation. The transformations of darts are explained in detail constructing various princess seams: in the shoulder line and in the armhole curve for top apparel parts. Videos are available for princess seams modeling. *Let's watch a video.* (2 hours).

Lesson 5 considers symmetry and asymmetry in the construction of clothing with example styles of ladies' blouses and dresses. Ladies' blouse with overlapping in the

front piece and ladies' blouse with four pieces in the front are developed. The presented dress is asymmetrical with decorative darts in the front piece (3 hours).

Lesson 6 explains the functions for design of gathered elements with example styles of ladies' skirts and patterns of sleeves with gathered contours. Ladies' skirt with gathered elements and three pieces in the front part and ladies' skirt with gathered elements and a triangular yoke in the front part are developed. At the sleeves attention is paid to puff sleeve with gathered sleeve cup and gathered hem, puff sleeve with gathered hem, leg o' mutton sleeve and bishop sleeve with a cuff (3 hours).

Lesson 7 deals with algorithms for pattern making of collars and lapels for top apparel parts. Collars, developed in a separate drawing are constructed on the example of classic collar with a band. Collars developed in a joint drawing between the front and the back pieces are constructed on the example of collar in fantasy style. Collars developed in a joint drawing with the front piece are constructed on the example of notch lapel for men's jacket. Variable values for the modeling of the construction of lapel collars according to the specifics of the style are reviewed (2 hours).

In the **Lesson 8** are mentioned algorithms for pattern making of typical types of sleeves for top apparel parts. Construction of a long kimono sleeve with armpit gusset is presented. Raglan sleeve pattern making is explained. Preliminary preparation of the front and back pieces are made. Development of the raglan form over the basic construction and revision and adjustment of the sleeve construction are considered. *You can watch the raglan animations here* (4 hours).

Lesson 9 gives knowledge about computer grading of details. Grading on the principle of grouping the details is made. The functions edit delta, copy grade rule, flip grade rule are clarified with example of skirt and grading of top apparel part. The grading of sleeve and collar is presented according to the grading of armhole and neckline. Grading of notches of the sleeve is reviewed. The grade measure functions are explained (2 hours).

Lesson 10 considers pattern making of auxiliary pieces for pockets according to the technology for sewing the unit. Inseam pockets are explained: two types of French pockets- with two separate bags and with one piece bag. Examined welt pocket is single welt pocket with a flap for back part of trousers (2 hours).

Lesson 11 deals with the development of production patterns. The functions add seam, create notches, shaping of technological corners (regular, turn back, squared, match squared) are clarified. Pattern making of auxiliary details: facings and fusing pieces is tracked. The construction of the ladies' skirt lining and men's jacket lining is considered in detail (2 hours).

Lesson 12 refers to pattern making of knitwear clothing. Basic construction for bottom part for men's wear is developed. Algorithms for pattern making of three styles of men's underwear are given. On the basis of women's clothing made of elastic materials are developed two styles of ladies' swimwear (2 hours).

✓ Self-assessment **Quiz** for each lesson with a feedback.

To each topic of the course is prepared a Quiz. Each test consists of three questions. Each question has four answers, only one of which is correct. *Let's make an attempt.* The test starts. When the test is solved correctly, on your screen appears a message saying that you have successfully solved the test and you can go to the next lesson. If there are one or more wrong answers, it will say, that the test was failed and you should return to the current lesson. You have the possibility to check the correct answers, as well.

Used free software to develop the digital study materials of the course: OBS Studio, OpenShot Video Editor, MS movie maker, SSuiteGIF Animator.