GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: ADVANCED GARMENT TECHNOLOGY
(COURSE CODE: 3362907)

Diploma Program in which this course is offered	Semester in which offered
Textile Manufacturing Technology	Sixth

1.   RATIONALE

Readymade garment market is growing by leaps and bounds due to rising income in urban and rural areas in country. Besides domestic market, international market is also growing. But Indian readymade garment market needs to catch the international readymade garment market. This is possible only when Indian products are equal in quality but less in price as compared to garments manufactured by competitor countries. As far as question of capital requirement is concerned, it is possible to operate garment making industry at micro, small and medium or large level, and hence this industry provides opportunities for self employment since diploma pass outs can start their micro/small business depending upon availability of capital. This course is therefore been designed to provide necessary knowledge and skills in garment making technologies. So that students can also get self/wage employment in this sector.

2.   COMPETENCY

The course content should be taught and implemented with the aim to develop required skills so that students are able to acquire the following competency required by the industry:

- **Use advanced garment technologies to manufacture garments of good quality**.

3.   COURSE OUTCOMES (COs)

The theory should be taught and practical should be carried out in such a manner that students are able to acquire required learning outcomes in cognitive, psychomotor and affective domain to demonstrate following course outcomes:
  i.   Apply anthropometry for pattern making
 ii.   Use computerized grading, spreading, marking and cutting.
iii.   Design garments using CAD software.
 iv.   Maintain parameters related to sewing quality.
  v.   Stitch garments using different types of automatic sewing machines.
 vi.   Analyse the quality of garment based on various stages of inspection.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	
3	0	2	5	70	30	20	30	**150**

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Student Activity; **P** –Practical; **C** – Credit;;   **ESE** -End Semester Examination; **PA** - Progressive Assessment.

5.   COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (In the Cognitive Domain)	Topics and Sub-topics
Unit – I Fashion Design Anthropometry	1a. Describe the sources of national and international fashion. 1b. Differentiate between structural design and decorative design	1.1 Terms related to fashion industry boutique collection 1.2 Sources of fashion: national and international fashion brands 1.3 Structural design and decorative design. 1.4 Principles of fashion design.
	1c. Describe the application of anthropometry for pattern making. 1d. Identify various test conducted before selection of garments.	1.5 Anthropometry and its application of anthropometry for pattern making 1.6 Various test conducted before selection of garments. 1.7 Fabric inspection systems: 4 point and 10 point system.
Unit– II Computerized Grading, Marker Planning and Cutting Room Equipment	2a. Explain Computerized grading and marker planning. 2b. Distinguish between an Automatic and Interactive marker 2c. Describe the features of different types of cutters. 2d. Describe the functions of a steam table and boiler	2.1 Computerised grading and marker planning. 2.2 Automatic marker making. 2.3 Interactive marker making. 2.4 Automatic spreading machine. 2.5 Cutters: Laser Cutter, Ultrasonic Cutter, Water jet Cutter Automatic Cutter – single ply and multiply 2.6 Steam press with steam table and boiler 2.7 Types of bugs, Non-Return Valve, steam trapper, cladding, steam line
Unit–III CAD Software Tools	3a. Operate Design System Tool. 3b. Identify parameters of CAD software tools 3c. Grade the pattern and develop marker plan.	3.1 Design System Tool 3.2 Principles of X and Y Vectors. 3.3 Points and Lines: Measuring and changing line lengths, moving lines, 3.4 Cutting and drafting lines, rotating lines, Mirroring lines, Moving internal lines. 3.5 Darts; Add darts, Manipulate darts, designer darts. 3.6 Facings: Fold out facings. 3.7 Drills, notches and seams 3.8 Grading tools. 3.9 Marker Making: Marking system tools
Unit– IV Sewing Quality	4a. Determine parameters related to sewing quality.	4.1 Seams and seam finishes: Fullness and its types – Gathers/Pleats, Shirring, Smocking; Plackets and fasteners; Hem finishes; Lining/ interlining; Facing/interfacings; 4.2 Decorative Detail: Frills, flounces,

Unit	Major Learning Outcomes (In the Cognitive Domain)	Topics and Sub-topics
		peplums; Trimmings; Belts and bows.
Unit– V Types of Sewing Machines	5a. Differentiate the Machine Speed and Rate of Feed. 5b. Distinguish between the different types of Sewing Needles. 5c. Distinguish between the different types of automatic sewing machines	5.1 Machine Speed and Rate of Feed. 5.2 Stitch Size Regulation. Sewing needles: types, Single Needle Lock Stitch Machine with Control Panel, Double Needle Lock Stitch Machine, Multi-Needle Chain Stitch Machine with Puller and Elastic Tension Adjustment 5.3 Automatic Sewing Machines: Over Lock Machine (4 thread and 5 thread), Blind Stitch Machine, Three needle Flat Lock Machine, Double Needle, Feed off the Arm Machine,
	5d. Distinguish between the different types of computerised machines 5e. Distinguish between the automated robotic sewing machine and material handling system	5.4 Computerized Machines: Embroidery Machine, Bar Take Machine, Button Hole Machine, Eyelet Machine, Button Attaching Machine 5.5 Automated robotic sewing machine. 5.6 Automated Material handling systems- AGVs: types design features, guidance and control systems. 5.7 Automated storage and retrieval system (ASRS)-components, design features and applications. Different Advance Machines.
Unit– VI Role of Garment Analysis Merchandiser in Garment Industry	6a. Distinguish between intrinsic and extrinsic parameters of garment. 6b. Describe the various stages of garment inspection process.	6.1 Intrinsic and extrinsic parameters of garment. 6.2 Apparel professional: garment analysis, Methods and process of garment analysis 6.3 Inspection of raw materials –Sewing threads, construction and swability, Trims inspection- zippers waist band, buttons, Interlining 6.4 Inspection in process - spreading, cutting, sewing quality parameter and types of defects occurring, assembly defects. 6.5 Final inspection: finishing defects, no inspection, 100% inspection, spot checking, and arbitrary sampling.
	6c. Describe role and responsibilities of Merchandiser in garment industry	6.6 Merchandising: type of Merchandiser, responsibilities of merchandisers, Modern retailing by Merchandiser

6. SUGGESTED SPECIFICATION TABLE WITH HOURS and MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	R Level	U Level	A Level	Total
I	Fashion Design Anthropometry	06	2	4	2	08
II	Computerized Grading, Marker Planning and Cutting Room Equipment	05	2	6	2	10
III	CAD Software Tools	05	2	4	4	10
IV	Sewing Quality	04	2	4	2	08
V	Types of Sewing Machines	12	4	8	6	18
VI	Role of Garment Analysis Merchandiser In Garment Industry	10	2	10	4	16
	Total	42	14	36	20	**70**

Legends: R = Remember**, U** = Understand**, A**= Apply and above Level (Bloom's revised taxonomy)
Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table

7.   SUGGESTED EXERCISES/PRACTICAL

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills (**outcomes in psychomotor and affective domain**) so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

Note: Here only outcomes mainly in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of Course Outcomes related to affective domain. Thus over all development of Programme Outcomes (as given in a common list at the beginning of curriculum document for this programme) would be assured.

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

S. No.	Unit No.	Practical Experiment/Exercise (Outcomes' in Psychomotor Domain)	Approx. Hours Required
1	I	Prepare a Flow chart of Garment manufacturing Process	02
2	II	Obtain different characteristics of fabric	04
3	II	Prepare chart for different Standard of Different country.	04
4	III	Prepare Grading of Fabric for Garment Production.	02
5	IV	Prepare marker planning for a given garment.	04
6	IV	Demonstrate automatic spreading process	04
7	IV	Draw sketches of different Automatic cutting m/c.	04
8	V	Demonstrate folding and packing of garment	04

9	V	Demonstrate sewing operation	02
9	V	Demonstrate operation of double needle lock stitch machine	02
10	V	Demonstrate operation of blind stich machine	02
11	V	Demonstrate use of CAM in garment technology	04
13	VI	Prepare Flow chart of Merchandising activity	04
Total			42
Note: Perform any of the practical exercises from above list for total of minimum 28 hours depending upon the availability of resources so that skills matching with the most of the outcomes of every unit are included.			

8.   SUGGESTED STUDENT ACTIVITIES
  i. Literature survey of Advanced Garment technology.
  ii. Visit to Garment industry and preparing report with sketches.
  iii. Prepare marker planning.
  iv. Prepare course topic based seminar and mini internet based assignment.
  v. Prepare journals based on practical performed in laboratory.

9.   SPECIAL INSTRUCTIONAL STRATEGIES (if any)
  i. Educational video and CDs.
  ii. Prepare models
  iii. Arrange Expert lectures by textile engineers
  iv. Arrange visit to nearby textile industry, which is using the latest technology

10.   SUGGESTED LEARNING RESOURCES

A)   Books

Sr.No.	Author	Title of Book	Publisher
1	Carrand Lathan	Garment Technology clothes	Black well publisher, England
2	Mehta and Bharadwaj	Managing Quality in Apparel Industry	New Age Publisher, Delhi
3	Kilgus R.	Clothing Technology from fibre to fashion	
4	Mehta P.V.	An introduction to quality control for the apparel industry	

B)   Major Equipment/ Instrument with Broad Specifications
  i. Textile Laboratory – circular weft knitting machine,
  ii. Tricot and Raschel warp knitting machine,
  iii. Cutting machine,
  iv. Sewing machine,
  v. Rich CAD software,
  vi. wonder weave softwere.

C)   Software/Learning Websites
  i. www.textileassociationindia.org
  ii. www.cottonyarnmarket.net/OASMTP/textile_technology.htm
  iii. http://www.sitra.org /

   iv.   www.itamma.org /
    v.   http://www..textilefashionstudy.com /
   vi.   http://textilelearner.blogspot.in
  vii.   www.textileschool.com
 viii.   www.fibre2fashion.com /
   ix.   www.garmento.org/process and skills
    x.   http://www.slideshare.net/DelwinArikatt/seams-used- in- garments
   xi.   http://www.scribd.com/doc/44827468/Different-Types- of- Stitches

11.   COURSE CURRICULUM DEVELOPMENT COMMITTEE
Faculty Members from Polytechnics

- **Prof. V. N. Soni**, HOD Textile Manufacturing , R.C T I, Ahmedabad
- **Prof. R. T. Patel**, Lecturer in Textile Manufacturing, R.C T I, Ahmedabad
- **Prof. Ms. S. S. Parmar**, Lecturer in Textile Manufacturing, R.C T I, Ahmedabad
- **Prof. (Mr) S M Zala** Lecturer in Textile Manufacturing, Sir BPTI, Bhavnagar.
- **Prof (Smt.) P.M. Parmar**, Lecturer in Textile Manufacturing, R.C.T I, Ahmadabad

Faculty Member from NITTTR Bhopal

- **Dr. C. K. Chugh**, Professor, Department of Mechanical Engineering
- **Dr. Joshua Earnest**, Professor Department of Electrical and Electronics Engineering