GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN TEXTILE MANUFACTURING TECHNOLOGY

TEACHING SCHEME (w. e. f. 10th Jan,' 11)

SEMESTER- VI (Re-Revised on 15-3-11)

Sr. No.	SUB. CODE	SUBJECT	TEACHING SCHEME (HOURS)			CREDITS
			THEORY	TUTORIAL	PRACTICAL	
1	362901	Advance Knitting Technology	3	0	3	5
2	362902	Man made Fibre Technology	3	0	3	5
3	362903	Technical Textile	3	0	3	5
4	362904	Computer Aided Applications & Design in Textile	0	1	6	6
5	362905	Project	0	0	6	5
		TOTAL	**9**	**1**	**21**	**26**

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN TEXTILE MANUFACTURING TECHNOLOGY

SEMESTER- VI

Subject Code : 362901

Subject Name : ADVANCE KNITTING TECHNOLOGY

Sr. No.	Subject Content	Hrs.
1	**1.0 Introduction of knitting** Objects, necessity, terms, types of knitting 1.1 Weft knitting 1.1.1 Principle of weft knitting 1.1.2. Loop formation by latch needle 1.1.3 Various weft knitted structures 1.2 Warp knitting 1.2.1 Principle of warp knitting 1.2.2 Loop formation by bearded needle 1.2.3 Warp knitted structures	2
2	**2.0 FORMATION OF VARIOUS WEFT-KNIT SLITCHES.** (a) Knit (b) Tuck (c) Miss or Float	2
3	**3.0 CAM SYSTEM FOR WEFT-KNITTING MACHINE.**	3
4	**4.0 DESIGNING, FEATURES AND PROPERTIES OF WEFT-KNITTED STRUCTURES.** (a) Plain (b) Rib (c) Interlock (d) Purl (e) Single pique (f) Double pique (g) Ponto-de-roma (h) Milano Rib	3
5	**5.0 ORNAMENTATION OF WEFT-KNITTED STRUCTURES.** (a) Single jersey structures - Horizontal stripes - Twists - Fancy yarns (b) Double jersey structures	3
6	**6.0 DERIVETIVES OF WEFT-KNITTED STRUCTURES.** (a) Single jersey - Knit & Float	4

	- Knit & Luck - Knit , Float & Tuck (b) Double jersey (i) Rib structures - Half cardigan - Full cardigan (ii) Inter lock structures	
7	**7.0 JACQUARD DOUBLE JERSEY STRUCTURES.** (i) Gabardine (ii) Poplin	3
8	**8.0 NEEDLE SELECTION FOR WEFT-KNIT DESIGN.** (a) Non-Jacquard (b) Jacquard - Pattern wheel - Pattern drum - Programmed tape (c) Use of computer in designing & patterning	3
9	**9.0 QUALITY OF WEFT-KNIT FABRICS** (a) Control of yarn tension (b) Control of fabric quality (c) Weft Knitted Fabric defects, causes & remedies. (d) Tests for weft-knit quality (e) Knitting calculations for weft-knits - Machine gauge & yarn number - Prod. in square meters & G.S.M	3
10	**10.0 CHARACTERISTICS OF TRICOT & RASCHEL WARP KNITTING MACHINES.** (a) The Needle-Bar Mechanism (d) The Guide-Bar Swinging motion (e) The Guide-Bar Shogging Mechanism (f) Warp let-off Mechanism (g) Fabric take-up & Batching mechanism (h) Patterning mechanism for warp knit design	4
11	**11.0 WARP KNITTED STRUCTURES & THEIR REPRESENTATIONS.** (a) Full Tricot (b) Locknit (c) Reverse Locknit (d) Satin (e) Loop raised (f) Queen's cord (g) Atlas & pillar	3

	(h) Sharkskin (i) Tulle (j) Morquisette (k) Voile	
12	**12.0 CHAIN-LINK PREPARATION & NOTATION** (a) Chain-link notation & Preparation for above warp knitted Structures using pattern wheel chain links. (b) Use of electronic jacquard	3
13	**13.0 KNITTING YARN AND IT'S PREPARATION.** (a) Type of yarns used for warp knitting & weft knitting (c) Yarn preparation for warp knitting	3
14	14.0 Production calculation for knitting machine 3.1 Calculate production of weft knitting machine from given data. 3.2 Production of circular weft knitting machine	3
	Total	**42**

NOTE:-

Following are the minimum experiences required, but the college can do more experiences if possible

Laboratory Experiences:

1.Study of Knitting elements
2.Principle of warp knitting and weft knitting
3.Knitting cycle in Weft Knitting
(by Latch needle)
4.Study of Weft knitted structure
(1) Plain
(2) Rib
(3) Interlock (4) Purl
5. Study of Weft knitted structures
(a)Single Pique (b) Double Pique (c) Ponto-de-Roma
6. Knitting cycle in Warp knitting (by Bearded needle)
7. Construction of Warp knitted Structures (single tricot, full tricot, locknit, satin, shark Skin ,Loop raised, Queen's cord
8. Obtain features of tricot warp knitting machine.
9. Obtain features of Rachel warp knitting machine
10. Set the various mechanisms/ motions of warp knitting machine.
a. Needle bar mechanism
d. Guide bar swinging motion

e. Guide bar shogging mechanism
f. Warp let off motion
g. Fabric take up and batching mechanism
h. Patterning mechanism

11. Design the notations and prepare the chain link for the production of different warp Knitted structures.
12. Obtain features of warp preparation for warp knitting.

Reference Books:

1. Knitting Technology	Devid J. Spencer
2. Knitting Technology	Prof. D.B.Ajgaonkar
3. Warp knitting Palling	- Iyer, C.Mallel, B. & SCHACH., W.
4. Circular knitting Technology, process, Structures, yarn quality	
5. Warp knit fabric construction from slitch formation to stitch construction	Wilkens, C
6. Flat knitting ; the New Generation	Raz. S.

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN TEXTILE MANUFACTURING TECHNOLOGY

SEMESTER- VI

Subject Code : 362902

Subject Name: MAN MADE FIBRE TECHNOLOGY

Sr. No.	Subject Content	Hrs.
1	**1.0 POLYMERISATION.** 1.1 Monomer 1.2 Polymer 1.3 Degree of Polymerization 1.4 Types of Polymers 1.5 Criteria for fibre forming	5
2	**2.0 RECENT DEVELOPMENTS IN MODERN SPINNING SYSTEM.** 2.1 Single/ Double Extruder 2.2 Brief study of melt spinning equipment 2.3 General speed spinning 2.4 FDY spinning process (Fully drawn yarn) 2.5 H4 Spinning process 2.6 Study of factors affecting Dry & wet spinning 2.7 Types of Wet spinning 2.8 Dry jet Wet spinning 2.9 Tube spinning 2.10 Comparison of Dry, Wet & Melt spinning	12
3	**3.0 MANUFACTURING PROCESS OF FIBRES GIVEN BELOW.** 3.1 Polyester 3.2 Nylon 6 & Nylon 6.6. 3.3 Aramid Fibers 3.4 Poly propylene General Idea of HSHM fibres 3.5 Brief Idea of following HSHM fibres. 3.6 Steel - Boron 3.7 Carbon - Silicon Carbide 3.8 Polyethylene 3.9 Micro fibres	10

4	**4.0 SPIN FINISH.** 4.1 Method of Spin finish 4.2 Factors affecting spin finish 4.3 Problems during use of spin finish	6
5	**5.0 SPECIALITY IN MAN MADE FIBRES.** 5.1 Hydrophilic Polyester 5.2 Hollow Polyester 5.3 Low pilling Polyester 5.4 Flame Retardant Polyester 5.5 Silky Polyester 5.6 Modified nylon fibre 5.7 Cataionic Dyable polyester fiber	6
6	**6.0 Tow to Top conversion.** 6.1 Principle of operation & objectives 6.2 Study of different methods 6.2.1 Cutting method	3
	Total	**42**

NOTE:-

Following are the minimum experiences required, but the college can do more experiences if possible

Laboratory Experiences:

1. Monomer, Polymer and Polymerisation
2. Flow chart of melt spinning
3. F.D.Y spinning Process
4. The H_2S process
5. Continuous process for manufacturing of polyester
6. Manufacturing process of Nylon 6,6
7. Continuous process for making Nylon 6
8. Manufacturing pf polypropylene
9. Process flow chart of Acrylic fibre
10. Process flow chart of Acrylic fibre
11. Method of spin finish
12. Man made fibre

Reference Books:

1. Synthetic fibres	A.A.Vaidya
2. Man Made fibres in India Dec.1985 476	Prasad G.
	A.A.Vaidya
3. Textile Asia (T) 1976 16	Nigam
4. Man made fibres	Moncrieff
5. Man made fibres	Shenai

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN TEXTILE MANUFACTURING TECHNOLOGY

SEMESTER- VI

Subject Code : 362903

Subject Name: TECHNICAL TEXTILE

Sr. No.	Subject Content	Hrs.
1	**1.0 INTRODUCTION TO TECHNICAL TEXTILES.** 1.1 Study of performance requirements, raw materials used, constructional 1.2 Specification and end uses of following fabrics. **(A) Industrial Textiles** - Tyre fabrics - Belt ducts, hose ducts and belt cards - Filter fabrics - Tarpaulines and protective covering - Bulletproof fabric - Fireproof fabric - Agriculture fabric - Shoe fabric **(B) House hold textiles** - Carpet and floor covering fabric - Upholstery fabrics - Blankets - Interior decorative fabric - Towels fabric	8
2	**2.0 NON-WOVEN FABRICS.** 2.1 Performance requirement. 2.2 Raw material selection. 2.3 Detail study of fleece formation. 2.4 Detail study of different methods of manufacturing of non-woven. 2.4.1 Adhesive bonding. 2.4.2 Stitch bonded. 2.4.3 Needle punched. 2.4.4. Spun bonded. 2.4.5 Wet laid. 2.4.6 Spun laced.	17

3	**3.0 NON APPAREL TEXTILES.** **3.1 Medical fabric** 3.1.1. Basic requirements for medical fabric. 3.1.2 Types of fibre/filaments used in manufacturing methods. 3.1.3 Different application of textiles in medical science. (a) Clothing (b) sutures (c) surgical dressing (d) spare parts for human body **3.2 Geo textiles** 3.2.1 Introduction 3.2.2 Fibres used in Geo textiles 3.2.3 Types of Geo textiles 3.2.4 Application **3.3 Parachute fabric** 3.3.1 Classification of parachute fabric 3.3.2 Requirements of parachute fabric 3.3.3 Manufacturing of parachute fabrics	17
	Total	**42**

NOTE:-

Following are the minimum experiences required, but the college can do more experiences if possible

Laboratory Experiences:

1. Important features of industrial textile and house hold textile
2. Production methods/salient features of industrial textile.
   - Tyre fabrics
   - Belt ducts, hose ducts and belt cards
   - Filter fabrics
   - Tarpaulines and protective covering
   - Bulletproof fabric
   - Fireproof fabric
   - Agriculture fabric
   - Shoe fabric
3. Obtain Salient features of adhesive bonding with production process,
4. Obtain Salient features of stitch bonding with production process,
5. Obtain Salient features of needle punched system with production process,
6. Obtain Salient features of spun bonded system with production process,
7. Obtain Salient features of wet laid system with production process,
8. Obtain Salient features of spun laced system with production process,
9. Salient features of medical fabric and surgical cotton.

10. Salient features of parachute fabric
11. Salient features surgical cotton
12. Salient features of Geo textile.

Reference Books:

1. Specifying Technical Textiles:- The Textile Institute	Spire
2. Industrial applications of Textiles:-	Bajaj P. andSengupta A.G.
Textile for filtration and coated fabrics	
3. Industrial application of Textiles	Floyd G.L. andTaylor H.M.
4. Durability of Geo Textiles	Horrocks A.R.
5. Geo textile in Civil Engineering works:-	The Textile Association1985
6. Book of pepers:-National seminar on non woven and Geo textile	Institute of Engineers 1988, Baroda
7. Production and properties of non woven fabric	Newton A. & Ford J.E.
8. Non wovens	Gulrajani M. L. The Textile Institute
9. Needle punching	Purdy A. T. ISBN 0900739320
10. Manual of non wovens	Groma R. ISBN 0903772086
11. Development in non woven fabrics	Purdy A. T. ISBN 0900739622

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SEMESTER- VI

Subject Code : 362904

Subject Name: COMPUTER AIDED APPLICATIONS & DESIGN IN TEXTILE

Sr. No.	Subject Content	Hrs.
1	**1.0 MICROPROCESSOR APPLICATION IN SPINNING & WEAVING.** 1.1 Use of worksheet for production planning. 1.2 Linear programming for selection of mixing. 1.3 Loom monitoring . 1.4 Ring data system. 1.5 Use of information technology in spinning & weaving.	14
2	**2.0 COMPUTER AIDED WOVEN DESIGN.** 2.1 Introduction to software for textile woven design with window platform. 2.2 Study of Auto pattern, Random pattern, stumping, Auto dobhy/ Jecq. Design/fila fill, interactive-pitloom, extra warp etc.. 2.3 Generate simple different woven design. 2.4 Study of software, for jacquard design.(Jacquard Fabric design studio.) 2.5 Generate simple design.	14
3	**3.0 COMPUTER COLOR MATCHING.** 3.1 Use of computer for color matching.	14
	Total	**42**

NOTE:-

Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences:

1. Basics of fabric structure and woven fabric designing.
2. Manual designing of woven textiles
3. Dobby designing through cad

Reference Books:

1. Automation and the textile industry — Vassiliadis S.G. Urotex 1996
2. Automation in the Textile industry from fibre to opparel — Bergstressr G.A, Buchanan DR,Graydy P
3. CAD in clothing and Textile : A collection of expert views — Aldrich W. ISBN 0632038934
4. Computers in the Fashion Industry — Taylor P. ISBN 0434919160
5. Computers in the world of Textile — ISBN : 09007369x
6. On-line Quality control in spinning and weaving — Barella A. ISBN187081200x
7. Winning through Information Technology — The textile institute 1994
8. Reference manual for EXCEL Software
9. Reference manual for Text-style 2000 Software
10. Reference manual for JAC-ART 2000 Software

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SEMESTER- VI

Subject Code : 362901
Subject Name: PROJECT

NOTE:-
Following are the minimum experiences required, but the college can do more experiences if possible

Laboratory Experiences:

1. Production process of Carded yarn.
2. Production Process of Combed Yarn
3. Production Process of Hosiery Yarn
4. Production Process of Open End Yarn
5. Production Process of Polyester/ Viscose Yarn
6. Production Process of Polyester and worsted Yarn.
7. Production process of Shirt , sarees, Dhoti, Suting etc.
8. Production process of ladies Garments making
9. Production process of Non Woven Textile
10. Production Process of Industial Fabric. / Technical Textile
11. Production process Of Geo Textile.

NOTE :- Above list is tentative. New Project may be added according to need.

(A) Preparation of Model and / or Chart -- Individually or in a group, prepare subject related model and /or chart. This has to be proposed by student/s and has to be approved by teacher.

(B) Paper Presentation and Seminar --- Presentation and Group Discussion

a) 10 minutes individual seminar Presentation on given topic.

b) Group discussion on given topic.

(c) Assignment -- Solve given assignments

(d) Industrial Visit -- Visit at least 2 related industries

Reference Books :-

1. Specifying Technical Textiles:- The Textile Institute Spire

2. Industrial applications of Textiles:- Bajaj P. and Sengupta A.G.

Textile for filtration and coated fabrics

3. Industrial application of Textiles Floyd G.L. and Taylor H.M.

4. Durability of Geo Textiles Horrocks A.R.

5. Geo textile in Civil Engineering works:- The Textile Association1985

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