

**AFFILIATED INSTITUTIONS****ANNA UNIVERSITY, CHENNAI****CURRICULUM & SYLLABI – 2010****B.SC. APPAREL AND FASHION TECHNOLOGY****Semester I**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>THEORY</b>				
YEN 003	English I	4	0	0	4
YCH 001	Chemistry	4	0	0	4
YAF 911	Fundamentals of programming	3	0	0	3
YAF 912	Fibre science and yarn manufacturing	3	0	0	3
YAF 913	Fashion design I	3	0	0	3
	<b>PRACTICAL</b>				
YAF 915	Chemistry Laboratory	0	0	3	2
YAF 916	Fundamentals of programming Lab	0	0	3	2
YAF 917	Fashion Illustration Laboratory	0	0	3	2
	<b>Total</b>	<b>17</b>	<b>0</b>	<b>9</b>	<b>23</b>

**Semester II**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>THEORY</b>				
YEN 004	English II	4	0	0	4
YAF 921	Information Technology	3	0	0	3
YAF 922	Technology of Fabric Manufacturing	3	0	0	3
YAF 923	Fabric structure and design	3	0	0	3
YAF 924	Fashion design II	3	0	0	3
	<b>PRACTICAL</b>				
YAF 926	Business processing Laboratory	0	0	3	2
YAF 927	Fabric Structure and Design Laboratory	0	0	3	2
YAF 928	Fashion Designing laboratory	0	0	3	2
	<b>Total</b>	<b>16</b>	<b>0</b>	<b>9</b>	<b>22</b>

### SEMESTER III

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>THEORY</b>					
<b>YMA 014</b>	Probability and statistics	3	1	0	4
YAF 931	Textile Chemical processing	3	0	0	3
YAF 932	Pattern Engineering - I	3	0	0	3
YAF 933	Apparel Machinery and equipment	3	0	0	3
YAF 934	Surface embellishments	3	0	0	3
<b>PRACTICAL</b>					
YAF 936	Textile Chemical processing Lab	0	0	3	2
YAF 937	Pattern Engineering Lab	0	0	3	2
YAF 938	Apparel and basic sewing Lab	0	0	3	2
<b>Total</b>		<b>15</b>	<b>1</b>	<b>9</b>	<b>22</b>

### Semester IV

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>THEORY</b>					
YAF 941	Apparel Merchandising and Marketing	3	0	0	3
YAF 942	Garment Construction	3	0	0	3
YAF 943	Pattern Engineering – II	3	0	0	3
YAF 944	Apparel Quality Assurance and Testing	3	0	0	3
YAF 945	Home Furnishing	3	0	0	3
<b>PRACTICAL</b>					
YAF 947	Garment Construction - I	0	0	3	2
YAF 948	Apparel CAD Laboratory	0	0	3	2
YAF 949	Apparel design and portfolio Lab	0	0	3	2
<b>Total</b>		<b>15</b>	<b>0</b>	<b>9</b>	<b>21</b>

### Semester V

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>THEORY</b>					
YAF 951	Textile and Garment Finishing	3	0	0	3
YAF 952	Work study(Industrial Engineering)	3	0	0	3
YAF 953	Apparel Costing and Export Documentation	3	0	0	3
YAF 954	Functional Apparels	3	0	0	3
YAF 955	Elective I	3	0	0	3
<b>PRACTICAL</b>					
YAF 957	Garment Construction - II	0	0	3	2
YAF 958	Apparel Testing Lab	0	0	3	2
YAF 959	Virtual Garment Laboratory	0	0	3	2
<b>Total</b>		<b>15</b>	<b>0</b>	<b>9</b>	<b>21</b>

### Semester VI

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>THEORY</b>					
YAF 961	Fashion Retail Management	3	0	0	3
YAF 962	Production Planning and Control	3	0	0	3
YAF 963	Elective II	3	0	0	3
<b>PRACTICAL</b>					
YAF 964	Project Work	0	0	12	6
<b>Total</b>		<b>9</b>	<b>0</b>	<b>12</b>	<b>15</b>

### ELECTIVES I

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
YAF 001	Fabric Sourcing and Sampling	3	0	0	3
YAF 002	Fashion Forecasting	3	0	0	3
YAF 003	Clothing comfort and care	3	0	0	3
YAF 004	History of costumes	3	0	0	3

### ELECTIVES II

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
YAF 005	Fashion Marketing Visual	3	0	0	3
YAF 006	Merchandising Fashion	3	0	0	3
YAF 007	Entrepreneurship	3	0	0	3
YAF 008	Clothing Science and Apparel Product Engineering	3	0	0	3

**UNIT I GRAMMER 12**

Nouns, Pronouns, Adverbs, Adjectives, Comparative Adjectives, Prepositions, Gerunds, Modal Verbs, Relative pronouns, Clauses and Phrases, Voice, Sentence patterns, simple present tense, Present Continuous Tens, Simple Past and Past Continuous tenses, Formation of Questions, Present Participate, Past – Principle – Punctuation.

**UNIT II VOCABULARY 12**

Synonyms, Antonyms, super ordinates, hyponyms, compound nouns, prepositional Phrases, Prefixes and suffixes, use of reference words, sequential expressions, Discourse Makers, Idioms and Phrases.

**UNIT III WRITING 12**

Paragraph writing, Coherence and Cohesion, Use of Headings, Letter Writing (Personal Letters, Official Letters, Letters to the Editor), Essay Writing, Note-Making, Use of Symbols and Icons, Abbreviations, Non-Verbal Devices, (Flowcharts, Fishbone Diagrams, Tables), Units of Measurements.

**UNIT IV RHETORICAL FUNCTIONS 12**

Definition, Description, Process Description, Comparison, Classification, Stating problems and proposing solutions, Making Lists, Narrating Events, Asking Questions and Answering.

**UNIT V COMMUNICATION AND ORAL PRESENTATION 12**

Introduction: Communication, Definition, process, elements of communication, types of communication, verbal, non verbal, barriers to communication and correctness Vs communication. Oral Presentation: Preparing a Speech, delivery techniques, using the visual aids, handling a hostile audience, over coming errors in public speaking and presenting the successful seminar.

**TOTAL : 60 PERIODS****TEXT BOOK**

1. V.Chellammal, Learning to Communicate, Kamakhya Publications, Coimbatore,2002.

**REFERENCES**

1. Lakshminarayanan, K.R. English for Technical Communication, Vol. 1 & 2, Chennai: Scitech Publications (India) Pvt. Ltd., 2002.
2. Farhathullah, T.M. English Practice Book for Technical Communication, Chennai, RBA Publication, 2002.
3. Balasubramanian, M & G Anbalagan, English for Engineering Students, Kumbakonam R.M.S. Anuradha Agencies Reprint 2001.

**UNIT I** **12**

Environmental pollution – causes of pollution – water pollution – domestic, industrial and agricultural wastes – assessment of pollution – D.O.B.O.D., and C.O.D. Treatment – primary and secondary – sludge disposal – air pollution – environmental impact – acid rain, green house effect and global warming – ozone depletion. Smog – control measures, soil, noise pollution.

**UNIT II** **12**

Industrial inorganic compounds – zeolites: types – application – ion exchange – adsorbent – separation process catalyst. Pigments: titanium dioxide – lithophone – zinc oxide – iron oxide – ultramarine bleaching agents: reducing bleaching agents – sulphur dioxide – sodium hydrosulphite – oxidizing bleaching agents – calcium hypo chlorite – hydrogen peroxide – chlorine dioxide. Lubricants: Silicon oil – lithium grease – graphite – molybdenum sulphide.

**UNIT III** **12**

Polymeric materials – polytetrafluoroethylene – polyimides (nylon 6, nylon 66 & Kevlar) polyesters, polyethylene, polyacrylonitrile, polypropylene – monomers – functionality – degree of polymerization.

**UNIT IV** **12**

Cellulose – Structure of Starch and Cellulose – Derivatives of Cellulose – Carboxy Methyl Cellulose and Gun Cotton – Structural Aspects of Cellulose

**UNIT V** **12**

Dyes and Dyeing – Colour and construction – Synthesis of some important azo dyes – synthesis of triphenylmethane dyes – Phthalein dyes – Introduction to Natural and reactive dyes.

**TOTAL : 60 PERIODS****TEXT BOOKS**

1. P.C. Jain and Monica Jain, "Engineering Chemistry", Dhanpat Raj Publishing Company, New Delhi, 2002.
2. S.S.Dara, "A Text Book of Engineering Chemistry", S.Chand and Company, Ltd., New Delhi (2008)
3. O.P. Agarwal, "Synthetic Organic Chemistry", Goel Publishing House, Meerut, 2006
3. K.S. Tiwari, N.K. Vishnoi and S.N. Vishnoi, "A Text Book of Organic Chemistry", Vikas Publishing House, New Delhi, 1998

**REFERENCES**

1. Ashutoshkar, "Medical Organic Chemistry", New Age International Pvt., Ltd., Chennai, 1993.
2. Mrs. S.Lakshmi, "Pharmaceutical Chemistry", Sultan Chand and Sons, New Delhi, First Edition 1995
3. B.K.Sharma and H.Kanur, "Environmental Chemistry", Krishna Prakasham Media Pvt., Ltd., India, 2002.
4. A.K. De, "Environmental Chemistry", New Age International Ltd., New Delhi, 2002.

**UNIT I****9**

characteristics of a computer – working of a computer – stored Programme concept – representation of characters – integer and fractions - hexadecimal representation.

**UNIT II****9**

Input – output units – keyboard – mouse track – Ball – light pen optical character reader – visual display unit – printers – dot matrix – line injet printers – laser printer plotters.

**UNIT III****9**

Computer language and operating system – need for programming language – assembly language – higher level language – need for an operating system – batch processing – flow charts and programming techniques.

**UNIT IV****9**

Introduction to latest operating systems – word processing – data entry using MS word 7.0 – working with tables – inserting pictures in documents – learning identification, etc.,

**UNIT V****9**

Working with coral draw 6.0 – construction picture using given tools – creating – parts of pictures coloring – painting – working with brush – photo shop 4.0 power amplifiers: classification – class A/B single ended and pushball configuration – power dissipation and output power – conversion efficiency – complementary pair operation – E-commerce.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Alexis Leon and Mathews Leon, “Fundamental of information technology”, Leon Pres, 1999.
2. Kernighan B.W and Ritchie D.M., “C Programming Language (ANSI C)”, Prentice Hall of India Pvt. Ltd., New Delhi, 1998.
3. Herbert Schildt, “C – The Complete Reference”, Tata reference, Tata McGraw Hill Pvt.Ltd., 2004.

**REFERENCES**

1. Dennis P Curtin, “Information Technology”, Tata McGraw Hill Pvt. Ltd., New Delhi 2006.
2. James A. Senn, “Information Technology in Business”, Prentice Hall of India Pvt., Ltd., 1998.
3. Les Hanock and Morris Krieger, “The C Primer”, Tata McGraw Hill Pvt., Ltd., 1991.
4. Steve Hotzner and Peter Norton, “C Programming”, Prentice Hall of India Pvt., Ltd., 1991.

**UNIT I****9**

Definitions and classification of textile fibers: cotton, silk, wool, jute man made cellulosic fibers, viscose rayon, viscose staple fiber, synthetic fibers: polyester nylon, acrylic, polypropylene – important physical and chemical properties.

**UNIT II****9**

Identification of textile fibers, feeling text, burning test, microscope test, staining test, chemical test, density test.

**UNIT III****9**

Basics – ginning – objectives of ginning – types of ginning – mixing – need for mixing – bleeding. Objectives and process sequence - Blow room, carding, Drawing, Combing, Simplex, Ring frame. Yarn numbering systems. Objectives and Process Sequence – Compact spinning, Rotor Spinning, Air jet spinning, Friction spinning. Comparison of yarn properties produced in the above processes. Synthetic filament production methods. Wrap spinning technique. Introduction to textured yarns and fancy yarns.

**UNIT IV****9**

Post Spinning Process Sequence of process- Doubling: Ring doubling , Two- For-One Twister. Cone winding, Reeling. Single Yarn And Ply yarn characteristics.

**UNIT V****9**

Yarn Quality Requirements: Yarn quality requirements for weaving and knitting. Yarn faults, package faults: Causes & remedies.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Physical properties of textile fibres – IV Edition- JWS Hearle and WE Mortan 2008.
2. Klien V.G., “The Technology of Short-staple Spinning”, Textile Institute, Manchester, 1998.

**REFERENCES**

1. “Handbook of Textile Fibres” – J. Gordon hook, 2001.
2. Carl A. Lawrence “Fundamentals of Spun yarn technology”, University of Leeds, England 2003.



**UNIT I****9**

**Introduction to Fashion:** Definition, Terminologies, fashion life cycle, environments of fashion, theories of fashion adoption.

**Introduction to design:** Definition concept of design, motif and pattern, types: fabric design – natural, stylized geometric, historic and abstract; garment design – structural, decorative and functional.

**UNIT II****9**

**Fashion Research and Analysis:** fashion forecasting – techniques, trend, color, fabrics, silhouettes, texture, design and seasons, presentation of forecast, Fashion services and Resources.

**UNIT III****9**

**Elements of Design:** Types of elements – space, line, shape, form, color and texture.

**Space and line:** Space – Definition, perception, aspects of line, physical effects, psychological effects, reinforcing and contouring effects, introducing lines in clothing. **Shape and form:** Definition, attributes, shape and form in dress, visual effects in dress.

**UNIT IV****9**

**Light and Colour:** Psychological effects and physical effects of light rays; colour – concept – internal colour, external colour, theories, dimension, colour schemes, colour in dress.

**UNIT V****9**

**Texture and Pattern:** Definition and concept, determination of texture, aspects of texture and use in dress. Surface and light reaction, clothing and personal textures, psychological effects of texture in dress; Pattern – aspects of pattern, introducing pattern to fabric, visual effects, pattern in clothing.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Marian L Davis, "Visual design and Dress", Third edition, Prentice Hall, New Jersey, 1996.
2. Suzzane G Marshall, Hazel O Jackson "Individuality in clothing and Personal Appearance", Prentice Hall, New Jersey, 2004.

**REFERENCES**

1. Anderson B and Anderson C, "Costume Design", HarCort Brace second edition. 1996.
2. Caroline Tatham and Julian Seaman, "Fashion designing and drawing course", Thames and Hudson Publishers, 2003.
3. Harold Carr, "Fashion design and product development" John Wiley and Sons Inc., NewYork, 1992.

**LIST OF EXPERIMENTS**

1. Determination of total hardness by EDTA method.
2. Determination of alkalinity in water sample.
3. Determination of chloride in water sample.
4. Determination of DO in water sample (Winkler's method).
5. Estimation of Zinc by EDTA method.
6. Estimation of Copper by EDTA method.
7. Estimation of percentage purity of an oxidizing agent.
8. Estimation of percentage purity of a reducing agent.
9. Conductometric Titration (Simple acid-base).
10. Estimation of Ferric ions by Spectrophotometry.

**TOTAL : 45 PERIODS**

**LIST OF EXPERIMENTS**

1. Simple word processing – learning to use different size and types of fonts – line spacing – tables – inserting pictures – editing – cut & paste.
2. spread sheet processing – formulas for row – column operations – charts – inserting pictures – different fonts – worksheets – row header and column headers.
3. Photoshop practical.
4. Corel draw – garment designing, styling, alteration, colouring, erasing, painting, etc.
5. Web fundamentals – E-mail, browsers usage – internet search.

**TOTAL : 45 PERIODS**

**LIST OF EXPERIMENTS**

1. Types and techniques of illustration.
2. Working with 3-D shapes.
3. Basic anatomy – proportions – Children, Men, and Women.
4. Creating various poses.
5. Drawing face and hair styles.
6. Drawing arms and legs.
7. Drawing Design details – types of Silhouette, necklines, Collars, sleeves and cuffs.
8. Drawing blouses, skirts, pants and coats.
9. Drawing Accessories.

**TOTAL : 45 PERIODS**

**UNIT I GRAMMAR****12**

Infinitives, if clauses, future tense, use of pronouns and prepositions, Direct and Indirect speeches, simple past and simple past perfect tense, Word formation, prefixes and suffixes.

**UNIT II VOCABULARY****12**

Technical words, reporting verbs, idioms and hrases.

**UNIT III WRITING****12**

Writing reports and Memos, Paragraph writing, Coherence and Cohesion, Summary writing, Rearranging jumbled – Up sentences, Letter writing (Personal Letters, Official Letters), writing Job applications, Bio – Data, writing biographies – use of titles, Non – Verbal Devices (Bar Chart, Tables and Pie Chart)

**UNIT IV RHETORICAL FUNCTIONS****12**

Description, Staining purposes and uses, giving instruction, making recommendations, Bringing out causal relations, writing checklists.

**UNIT V FORMAL TECHNICAL REPORT AND BUSINESS CORRESPONDENCE****12**

Formal Technical Report: Gathering data, literature search, questionnaire and interview and creating a formal technical report. Business Correspondence: Business letters, structural elements, styles of presentation, letters of inquiry, claim and adjustment letters, letter of application for a job and calling for tenders and quotations.

**TOTAL : 60 PERIODS****TEXT BOOK**

1. Chellammal V, Learning to communicate, Coimbatore: Kamkhya Publications, 2002

**REFERENCES**

1. Lakshminarayanan, K.R English for Technical Communication Vol. 1 & 2  
Chennai: SciTech Publications (India) Pvt. Ltd., 2002.
2. Farhathullah, T.M. English Practice Book for Technical Communication, Chennai,  
RBA Publications, 2002.
3. Balasubramanian, M & G. Anbalagan. English for Engineering Students RMS  
Anuradha Agencies Kumbakonam 2001.

**UNIT I** **9**

Computer Systems – Introduction to Computers – Classification of Computer Systems – Anatomy of a Digital computer – Computer Architecture – Computer software – Operating Systems – Programming Languages.

**UNIT II** **9**

Telecommunication – Introduction – Computer networks – Communication systems – Distribution systems

**UNIT III** **9**

Introduction to Internet – History of Internet – The World Wide Web. Internet browsers – Internet Explore, Netscape Navigator. Internet tools – E-mail, advantages and disadvantages of E-Mail. Search engines and benefits. Introduction to E-Commerce.

**UNIT IV** **9**

Multimedia and Virtual Reality – Introduction to Multimedia – Multimedia tools – Introduction to Virtual Reality

**UNIT V** **9**

HTML- Forms, frames, tables webpage Design. Virus- type of virus, How to virus spread, Removing virus.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Alexis leon and Mathews Leon, "Fundamentals of Information Technology", Leon Press., 2000.
2. Kernighan B W and Ritchie DM, "C Programming Language (ANSI C)"; Prentice Hall of India Pvt Ltd., 2005.

**REFERENCES**

1. Dennis P curtin, "Information Technology", Tata McGraw Hill Pvt Ltd., 1999.
2. James A Senn, "Information Technology in Business", Prentice Hall of India Pvt. Ltd., 1995.
3. R. Krishnamoorthy, Computer programming & Application. J J Publication

**UNIT I****9**

Purpose and Types of cone and pirn winding machines. Yarn Faults and Yarn Clearers, Objective and working of warping machines – beam warping machine, sectional warping machines. Objective and working of sizing machines - Types and selection of ingredients for sizing

**UNIT II****9**

Looms – Primary moderns of a Loom – Handloom, Power loom – Automatic Looms. Jacquard Looms, Ravier, Projectile, Shuttle less looms, Air jet, Water jet Looms – Salient Features.

**UNIT III****9**

Properties of Woven and Knitted fabrics. Terms and definitions used in Knitting, Comparison of warp and weft knitting. Classification of warp and weft knitting machines. Knitting needles: Spring - beard – Latch – Compound needles. Types of Weft Knitting – Circular – Flat Knitting. Classification of Weft Knit structure – Technical terms and symbolic representation of Weft Knit structure – Characteristics of Plain, Rib, Interlock, Purl Knit structures

**UNIT IV****9**

Warp knitting fundamentals, Basic Warp knitted structures, Closed lap and Open lap stitches. Classification of Warp Knitting Machines – Knitting elements of Raschel and Tricot knitting machine, Points of difference between Raschel and Tricot knitting machine. Representation of Warp – Knit structure. Jacquard Knitting Machine.

**UNIT V****9**

Basics of Non woven: Process sequence in manufacturing of non woven - types of non woven. Manufacturing of non woven fabrics: Mechanical bonded, Chemical bonded, Thermal bonded, Spun bonded, Melt bonded, Application of non woven fabrics.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Ajgaonkar D.B Talukdar M.K. and Wedekar, Sizing : Material Methods and Machineries, Mahajan Publications Ahmedabad, 1999.
2. Lord P.R And Mohammed M.H. Weaving – Conversion of Yarn to Fabric, Merrow Publication, 2005.
3. Sriramulu P.K. Ajgaonkar D.B & Talukdar M.K. Weaving Machiens: Mechanisms, Management, Mahajan Publishers, Ahmedabad, 1998.
4. Lunerschloss.J and Albrecht. W, Non – Woven Bonded Fabrics, Ellis Horwood Ltd, 1992.

**REFERENCES**

1. Marks P & Robinson A.T.C Principles of weaving, The Textile Institute Manchester, 2000.
2. Ormerrod, Modern preparation and weaving, Butterworths & Co., Ltd., 2004.
3. Adanur S., Handbook of Weaving, Technomic Publishing Co., Inc. 2001

**UNIT I****9**

Elements of Weave Design – Construction of Elements – Weaves – Plain Twill – Pointed – Twill – Matt – Satin – Sateen Crepe Weaves.

**UNIT II****9**

Rib – Warp Rib – Weft Rib – Ordinary and Brighton Honey Comb – Huck – a – Back – Bedford Cords – Welt Piquet – Loose Back and Fast Back Welt Piquet – Mock Leno – Distorted Mock Leno – Spot figuring – Arrangement of figuring of Dobby and jacquard.

**UNIT III****9**

Colour Theory – Light and pigment theory - modification of colour – colour combination – application of colour – colour and weave effect – extra warp and extra weft figuring.

**UNIT IV****9**

Backed fabrics – Warp or waft back reversible and non – reversible – warp pile – Terry weaves – Terry Stripe – Terry Check – weft pile – plain back – twill back – Velveteen – Pile Length – Density and Fastness of Pile.

**UNIT V****9**

Basic weft knitted structures – Single Jersey – Double Jersey – Rib – Purl – Interlock – Tuck Stitch – Float Stitch – Loop Knit– Stripe Designs.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. E. A. Posselt, "From fiber to fabric", Sampson, Low, 1905.
2. Z. Grosicki, "Watson's Textile Design and Color", Universal Publishing Corp., Bombay, 1998.
3. Z. Grosicki, "Advanced Watson's Textile Design", New Nes – Butterworth, 2004.

**REFERENCES**

1. Bellie J. Collier and Phyllis G. Tortora, "Understanding Textiles", Perntice Hall, Inc. 2001.
2. W.S. Murphy, "Handbook of Weaving", Ablishek Publications, 2000.



**UNIT I ORIGIN OF FASHION 9**

fashion language – philosophy of design – street fashion – study of leading fashion designers – fresh, Italian, American, Indian & English.

**UNIT II PRINCIPLES OF DESIGN: 9**

Harmony, balance, proportion, Emphasis and Rhythm – Definition and concept, effects, introducing principles of design on apparels.

**UNIT III FIGURE ANALYSIS 9**

: Analysis of the proportions of various figures- Stout figure, Slim figure, slender, narrow shoulder, broad shoulders, round shoulder, large bust, flat bust, large hips, large abdomen, short waist, long waist, sway back, large neck, short neck, large face, small face, square or broad face, round face.

**UNIT IV DESIGN AND DEVELOPMENT 9**

: Designer boards- Mood board, fabric board, colour board, accessory board, Fashion Illustration – head theories illustration techniques – Strokes, hatching, shading; colouring techniques – Media for colouring, Portfolio presentation – communication.

**UNIT V FASHION SHOWS AND WINDOWS DISPLAY: 9**

Fashion Show – advantages, elements, and role – players and types Window display - types of window, materials and type of displays.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Marian L Davis, "Visual Design and Dress", Third edition, Prentice Hall, New Jersey, 1996.
2. Suzanne G Marshall and Hazel O Jackson, "Individuality in Clothing and Personal Appearance" Prentice Hall, New Jersey, 2004.

**REFERENCES**

1. Anderson B and Anderson C, "Costume Design", Harcourt Brace second edition., 1999.
2. Caroline Tatham and Julian Seaman, "Fashion designing and drawing course", Thames and Hudson Publishers, 2003.
3. Harold Carr, "Fashion Design and Product Development" John Wiley and sons Inc. New York, 1992.

**LIST OF EXPERIMENTS**

1. Study features of a commercial RDBMS package Ms-Access.
2. Laboratory exercises should include creating tables, writing queries to retrieve information from the tables.
3. Study all the controls of Visual Basic (front end) to retrieve data from Ms-Access (Back end).
4. Some sample applications, which may be programmed, are given below.
  - i. Accounting package for a shop.
  - ii. Personal Accounts Insurance, loans, mortgage payments, etc.
  - iii. Class marks Management.
  - iv. History of Cricket scores.
  - v. Hostel Accounting
  - vi. Video tape Library
  - vii. Traveling Reservation system.

All the packages should also be designed to give data report.

**TOTAL : 45 PERIODS**

**LIST OF EXPERIMENTS**

1. Fabric analysis – EPI, PPI, GSM, Crimp, Draft and Peg Plan
2. Analysis of Woven Designs – Plain, Twill, Satin, Huck – a – Back, Honey Comb.
3. Dobby and Jacquard designs
4. Extra warp and weft figuring
5. Double cloth and terry towels
6. Study of circular knitted fabrics – Plain, Terry, Rib and Interlock.

**TOTAL : 45 PERIODS****LIST OF EXPERIMENTS**

1. Colouring Techniques.
2. Development of mood board, colour board and designs for the following apparels:  
**Pre requisites** – Mood board and colour board should be developed by the students based on their themes as preparatory work.

**Designing Children Apparel**

- a) Casual wear
- b) Summer wear
- c) Winter wear
- d) School uniform

**Designing Ladies Apparel**

- a) Summer wear
- b) Winter wear
- c) Bridal wear
- d) Party wear
- e) Maternity wear

**Designing Men's Apparel**

- a) Formal wear
- b) Casual wear
- c) Winter wear
- d) Party wear
- e) Bridegroom wear.

TOTAL : 45 PERIODS

YMA 014

PROBABILITY AND STATISTICS

L T P C  
4 0 0 4**UNIT I****12****Introduction To Statistics**

Types of statistics- Importance of statistics in business-Describing and displaying data using Frequency Tables, Frequency distributions, diagrammatic and graphic presentations

**UNIT II****12**

**Probability and distributions:** Basic concepts – Conditional Probability – Addition and multiplication laws of probability – Bayes' theorem – Random variables – Characteristics and applications of Binomial, Poisson and Normal distributions – Simple problems.

**Unit III****12**

**Measures of central tendency and dispersion:** Measures of central tendency-Mean, median , mode, quartiles, deciles , percentiles. Measures of dispersion- Range, quartile deviation, Mean deviation, standard deviation, coefficient of variation. Estimation & Confidence Intervals-Types of estimates-Point estimates and confidence intervals for a mean and proportion

**Unit IV****12**

**Testing of Hypothesis I:** Procedure for testing of hypothesis-Hypothesis testing for large sample and small samples (using z-test, 't' test)- F-test.

**Testing of Hypothesis II:** Non-parametric tests: chi-square tests Sign test, Mann Whitney U Test, Kruskal-Wallis Test, Spearman's Rank correlation Test

**Unit V**

**12**

**Correlation & Regression:** Concepts of correlation-Types of correlation-Karl Pearson's coefficient of correlation. Simple Regression-Regression Coefficients- Method of least squares.

**TOTAL :60 PERIODS**

**TEXT BOOKS**

- 1 .Veerarajan T, " Probability , Statistics and Random Processes " ,Tata McGraw–Hill Publishing Company Limited, New Delhi , 2006.
2. Johnson. R. A., "Miller & Freund's Probability and Statistics for Engineers", Sixth Edition,Pearson Education, Delhi, 2000.

**REFERENCES**

1. Richard I.Levin and David S.Rubin Statistics for Management Prentice Hall of India Pvt. Ltd,1997
2. Hooda P.R Statistics for Business and Economics 3rd Edition Tata McGraw Hill 2007
2. Shenoy G.V. Pant Madan Statistical Methods in Business and Social Sciences Macmillan India Ltd 2006.
4. Doane P.David Seward E.Lori Applied Statistics in Business and Economics Tata McGraw Hill 2007

YAF 931

**TEXTILE CHEMICAL PROCESSING**

L T P C

3 0 0 3

**UNIT I**

9

Basic operations in chemical processing. Sequence of operations for grey preparation of cotton textiles. Singing – Singing machines. Desizing & its methods. Scouring – batch and continuous methods.

**UNIT II**

9

Bleaching of cotton with sodium hypochlorite, calcium hypochlorite and Hydrogen peroxide. J Box bleaching. Mercerization – Chain and Chainless mercerization machines.

**UNIT III**

9

Classification of Dyes. Dyeing cotton fabrics with Direct, Reactive and Vat dyes. Dyeing of polyester with disperse dye. Dyeing of Acrylic with basic dyes. Dyeing of wool, silk and nylon with acid dyes.

**UNIT IV**

9

Dyeing machines: Jigger, Padding mangle and Winch dyeing machines. Beam dyeing machine, Jet dyeing machine. Garment dyeing machines.

**UNIT V**

9

Comparison of dyeing & printing. Batik style of printing. Direct, resist & Discharge style of printing. Printing paste ingredients, Working principle of Table screen printing, Flatbed screen printing, Roller printing, Rotary screen printing machines. Garment printing machine.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Leslie W C Miles, "Textile Printing", Society of Dyers and Colourists Latest Edition., 1994.
2. Dr.V.A.Shenai, "Chemistry of Dyes and Principle of Dyeing", Sevak Publications, 2000.

**REFERENCES**

1. Z. Grosicki, "Watson's Textile Design and Colour (Fabric Structure & Design)", Universal Publishing Corporation, Bombay, VII edition 2004.
2. Dr.V.A.Shenai and Dr.N.M.Saraf, "Technology of Textile Finishing", Sevak Publications, 1995.
3. Dr.V.A.Shenai and Dr.N.M.Saraf. "Chemistry of Organic Textile Chemicals", Sevak Publications, 1995.

**UNIT I**

**Introduction to Pattern Making:** Pattern – Definition, types – working pattern , production pattern and commercial pattern, importance, details – name, cut no, grain, on fold, notch, seam and ease allowance; Pattern making – tools, terminologies – basic blocks, dart, trueing, bending, marker planning and grading, techniques – Drafting, draping and flat pattern.

**UNIT II**

9

**Body Measurements and Model Form:** Proportion and disproportion of human figure, body measurements – importance, sequence of taking body measurements– vertical, horizontal and circumference measurements, recording and standardization; sizing and size charts.

**UNIT III**

9

**Drafting:** Principles, advantages and disadvantages. **Method of Drafting:** Bodice- Princess line, Empire line and tent. Pant – Culottes, trouser, slack, jean; Skirt – flared, gored, pegged and circular; sleeve – set-in-sleeves with bodice styles, sleeveless style; collar flat, roll, standing, shirt; Yoke – Simple, with fullness, supporting fullness, releasing fullness and partial.

**UNIT IV**

9

**Draping:** Advantages and disadvantages, transferring measurements to the dress stand, preparation of dummy- padding, taping. Preparation of muslin for draping.

**UNIT V**

9

**Method of Draping:** Bodice front and back, sleeve – plain and puff, Collar – Peter pan, band. Necklines – square, V-shape, Cowl. Yokes – Simple yoke, Skirt – Pleated skirt.

**Specification Sheet:** Definition, Contents, technical and creative design, Interpretation and development of spec sheet sheet for various garments.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Helen Joseph and Armstrong, "Pattern Making for Fashion designing", Fourth edition, Prentice Hall, Newyork, 2004.
2. Glock R E and Kunz G I, "Apparel Manufacturing: sewn product analysis", Prentice Hall, second edition, 2005.
3. Joseph-Armstrong and Helen, "Draping for Apparel Design", New York, Fairchild Publications, 2000.

**REFERENCES**

1. Debbie Ann Gioello and Beverly Berke, "Fashion Production Terms", Fairchild Publications, New York, 2002.
2. Connie Amaden Crawford, "The Art of Fashion Draping:", Fairchild Publications, New York, 2005.
3. Patty Brown and Janett Rice, "Ready To Wear Apparel Analysis", Prentice Hall, 1998.

YAF 933

**APPAREL MACHINERY AND EQUIPMENT**

L T P C

3 0 0 3

9

**UNIT I SPREADING**

Machinery and equipment – Manual, Semi, Fully automatic Computerized marker making– Feature of a Marker, Lay planning, Duplicating, Fabric Consumption, Marker efficiency, Plotters – Flat bed plotter, drum plotter.

**UNIT II CUTTING MACHINES**

9

Requirements – Machinery and Equipments. Mechanism of Straight knife, Round knife, Band knife cutting machine. Principles of Notches and Drills, Thread markers, Die Cutting, Laser cutting, Plasma cutting and Water jet cutting. Computerized cutting: computerized bulk cutting – computer controlled cloth spreaders, Cloth heads.

**UNIT III SEWING PRODUCTION EQUIPMENT**

9

Needles: Types, size, selection and their application. Sewing machine – Parts, functions and Bed types, Classification – SNLS, DNLS, Chain lock, Over lock, Flat lock, Button fixing, Button Holing – Working principle, Mechanism – care and maintenance.

**UNIT IV FEED MECHANISMS AND SEWING MACHINE ATTACHMENTS**

9

Feed mechanism – types, machine speed and rate of speed, stitch size regulation; sewing machine attachments – types, guides, folders, pressure foot.

**UNIT V FUSING AND FINISHING EQUIPMENT**

9

Fusing – Principles, fusing machines and its working principles; Pressing – Principles and classification of Pressing. Garment folding – types Packaging – types, materials, method and equipments, Selection of Packaging design.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Solinger Jacob, "Apparel Manufacturing Analysis", Columbia Boblin Media, 1998.
2. Harold Carr and Barbara Lathon, "The Technology of Clothing Manufacture", Blackwell Sciences, 2004.

**REFERENCES**

1. Technical Advisory Committee of AAMA, "A new look at Apparel Mechanization".
2. Lasing R M and Webster J, "Stitches and Seams", The Textile Institute, 1998.
3. Alison Beazley and Terry Bond, "Computer Aided Pattern Design and Product Development", Blackwell Publishing, UK, 2004.



YAF 934

## SURFACE EMBELLISHMENTS

L T P C  
3 0 0 3

## UNIT I

9

**Introduction to Embellishment Techniques:** Definition need and types.

**Hand Embroidery:** Basic principles of hand embroidery, selection of needle, thread, fabric and frames, methods of transferring the design, different hand embroidery stitches – linear, filling, pattern, textural and threaded stitches. Traditional embroideries of India.

## UNIT II

9

**Machine Embroidery:** Basis principles of machine embroidery, types of machine embroidery stitches and special attachments for machine embroidery. Latest developments in embroidery machines.

## UNIT III

9

**Trimmings And Decoration:** Appliqué, patch work, quilting, bias tubing, pompous, fringes, tassels, sequins, beadwork, mirror work, ribbon work, smocking, crochet, macramé and tatting – definition, types, methods of attaching and application on fabrics and garments.

## UNIT IV

9

**Fasteners and Fastenings:** Button and button hole, Fabric loops, hook & eye, frogs, eyelets and cords, press buttons, Velcro, buckles and zippers – definition, types, methods of attaching and application on fabrics and garments.

## UNIT V

9

**Fabric Printing and Dyeing:** Tie & dye, batik, stencil, block and flock printing – definition, types, techniques and methods of application on fabrics and garments.

**Fabric Painting:** Definition, types and techniques of application on fabrics and garments.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Jay Diamond and Ellen Diamond, "Fashion Apparel, Accessories and Home Furnishings", Pearson publishers, 2007.
2. Embroidere's Guild of Nsw, "Creative art of embroidery" J.B. Fairfax Press, 1996.

**REFERENCES**

1. Gail Lather, "Inspirational Ideals for Embroidery on Cloths and Accessories", Search Press Ltd., 1999.
2. Shelia Paine, "Embroidery Textiles", Thames and Hudson Ltd., 1990.
3. Shailaja D Naik, "Traditional Embroideries of India", APH Publishing Corporation, New Delhi, 1996.

**LIST OF EXPERIMENTS**

1. Desizing of cotton using Enzymes
2. Scouring of cotton material
3. Bleaching of cotton using Sodium Hypo chlorite.
4. Bleaching of cotton using hydrogen peroxide
5. Dyeing with Reactive Dyes
6. Dyeing with Direct Dyes
7. Dyeing of Polyester with Disperse using carrier.
8. Dyeing of Knitted Fabrics using winch machine.
9. Determination of washing fastness of dyed & printed materials.
10. Determination of rubbing fastness of dyed & printed materials.
11. Determination of light fastness of dyed & printed materials.
12. Determination of Shrinkage for woven and fabrics / garments.
13. Direct style printing on cotton with reactive dyes.
14. Discharge style printing on cotton with reactive dyes.
15. Resist style printing on cotton with reactive dyes.
16. Finish the cotton material with DMDHEU.
17. Finish the cotton material with Silicon.

**TOTAL : 45 PERIODS**

**LIST OF EXPERIMENTS:**

1. T-Shirt.
2. Skirt blouse
3. Salwar & Kammez.
4. Chudidhar.
5. Full arm shirt.
6. Pleated trouser.

**Draping:**

1. Basic Bodice (front and back)
2. Basic Sleeve.
3. Basic Skirt A-line.

**TOTAL : 45 PERIODS**

**List of Experiments for Apparel Machinery:**

1. Study of Single and double Needle Lock Stitch Machine.
2. Study of over Lock Machine.
3. Study of Flat Lock Machine.
4. Study of Button and Button Holing Machine.

**List of Experiments for Sewing:**

1. Prepare samples for seams, darts, pleats & Gathers.
2. Preparing samples for plackets with Fasteners – continuous bound placket, 2 piece placket, tailors placket, & Zipper.
3. Preparing samples for Necklines – Bias facing, Bias Binding & Fitted facing.
4. Preparing samples for collars – Peter Pan collar, Full shirt collar, Shawl collar & Stand Collar.
5. Preparing samples for pockets – patch pocket, Set-in pockets & front hip pocket, Side seam pocket.
6. Preparing samples for Sleeves – Plain, Puff, Raglan, and Kimono, Bell, Circular & Cap Sleeve.

**TOTAL : 45 PERIODS**

**YAF 941      APPAREL MERCHANDISING AND MARKETING      L T P C  
3 0 0 3**

**UNIT I      9**  
**Marketing:** objectives and strategies. Types of markets - domestic and international - retail and wholesale market. Consumer behavior. Marketing research and marketing plan.

**UNIT II      9**  
**Merchandising:** definition and functions of merchandising division. Role and responsibilities of merchandiser. Merchandising plan. Communication with customers.

**UNIT III      9**  
**Product Planning:** Product development-Line planning, line development and line presentation. Product mix-factors affecting change in product mix.

**UNIT IV      9**  
**Sourcing:** Need for sourcing-role of sourcing decision in apparel companies. Material sourcing process. Domestic and international sourcing. Supply and demand chain analysis.

**UNIT V      9**  
**Time management:** Time management in merchandising. Production scheduling for a given order. Route card format. Fabric and accessories follow up-various process follow up. Practical check points.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Moore Evelyn. C, "Path for Merchandising – a step – by – step approach", Thames and Hudson Ltd., 2001.
2. Vijay Barotia, "Marketing Management", Mangal Deep Publication, 2001.

**REFERENCES**

1. J.Jarnow and K.G.Dickerson, "Inside the Fashion Business", Prentice Hall, 1997.
2. M. Gorgen Wolfe "The world of FM", edition I, Good heart – Wilox Publisher. 2002,

YAF 942

**GARMENT CONSTRUCTION**

**L T P C**  
**3 0 0 3**

**UNIT I**

**9**

**Stitches and Seams:** Stitches – definition, classification of stitch classes, characteristics and application; standards for good stitches; Seams – definition, types of seams and seam finishes, its construction, characteristics and application on various garments.

**UNIT II**

**9**

**Fullness:** Definition; Methods of introducing fullness in garments – darts, pleats, tucks, gathers, flares, flounces and smocking – its construction principle and application on various parts of a garment.

**UNIT III**

**9**

**Collars:** Collars – definition, factors to be considered in designing, classification, construction and its application/suitability to various styles of garment.

**Sleeves and cuffs:** Classification of sleeves, construction and suitability on various styles of garment; Cuff: definition, types, construction; Hem finishes.

**UNIT IV**

**9**

**Pockets:** Factors to be considered in selection of pocket design; application of pocket in various garments; Types of pockets – its construction and suitability on various garments.

**Plackets:**

Plackets – Definition, standards of good placket, types, construction and application.

**UNIT V**

**9**

**Yokes and Neckline Finishes:** Yokes – Definition, importance, selection of yoke design, types, construction and application; Neckline Finishes: facing and binding – definition, types, method of attaching and suitability with respect to various parts of a garment.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Laing R M and Webster J, “Stitches and Seams”, The textile Institute, 1998.
2. Patty Brown, Janett Rice, “Ready To Wear Apparel Analysis”, Prentice Hall, 2000.

**REFERENCES**

1. Partick Taylor J and Marti Shoben M, Grading fro the Fashion Industry”, Stanley Thomas (Publishers) Ltd., 1990.
2. Glock R E and Kunz G I, “Apparel Manufacturing: Sewn product analysis”, Prentice Hall, second edition, 1995.
3. Connie Amaden Crawford, “A Guide to fashion Sewing”, Fairchild Publications, New York, 1998.

- UNIT I** **9**  
**Flat Pattern Techniques:** Dart manipulation methods – pivot method, slash and spread method – moving, dividing, combining darts into seam lines and measurement method – dividing darts in seam line.
- UNIT II** **9**  
**Pattern Alterations:** Importance of altering patterns, principles of pattern alterations, pattern alterations in various garments, alteration of patterns for irregular figures.
- UNIT III** **9**  
**Pattern Grading:** Principles of pattern grading, types – dart grading: Two dimensional and three dimensional, track grading and advantages, method of grading for various garments.
- UNIT IV** **9**  
**Marker Planning:** pattern layout: types – open, lengthwise, crosswise, double layout, combination layout, Principles, Laying various patterns on different types of fabrics, Marker planning: Planning, drawing and reproduction of the marker – its requirements, efficiency, methods of marker planning.
- UNIT V** **9**  
**Spreading and Cutting:** Spreading: Factors to be considered in knitted and woven fabrics, lay formation, requirements, methods, type of fabric packages; Cutting: Objectives, fabric preparation, methods.

**TOTAL : 45 PERIODS**

### TEXT BOOKS

1. Helen Joseph, Armstrong, “Pattern making for fashion designing” , fourth edition, Prentice Hall, New York, 2004.
2. Patrick Taylor.T, Marti Shoben.M., “Grading for the fashion industry” , Stanley Thomas (Publishers) Ltd., 1995.

### REFERENCES

1. Debbie Ann Gloello and Beverly Broke, “ Fashion Production Terms”, Fairchild Publications, New York, 2002.
2. Patty Brown, Janett Rice, “Ready to wear apparel analysis”, Prentice Hall, 1998.





YAF 945

HOME FURNISHING

L T P C

3 0 0 3

9

**UNIT I**

**Introduction to Textile Furnishing:** Introduction of Textile Furnishing: Definition – Different Type of Furnishing Materials – Woven and non-woven – Factors affecting selection of home furnishings.

**Floor Coverings:** Floor coverings: Hard Floor Coverings, Resilient Floor Coverings, Soft Floor Coverings-Carpets, Rugs and matting. Care and maintenance.

**UNIT II**

9

**Window Dressing:** Window Dressing: Different types of Doors and Windows. Draperies – Choice of Fabrics – Calculating the amount of Material Needed. Curtains – Types of Curtains, Method of Finishing Draperies – Tucks and Pleats. Uses of Drapery Rods, Hooks, Rings and Pins.

**UNIT III**

9

**Living Room Furnishing:** Living room furnishing: Sofa Covers – Wall Hangers – Cushion and Cushion Covers – Upholsteries – Bolster and Bolster Covers.

**UNIT IV**

9

**Bed Linen:** Bed linen: Definition – Different Types of Bed Linen – Bed Sheets and Bed Spreads. Blankets and Blanket Covers – Comforters and Comforter Covers – Mattress, Mattress Covers and Mattress Pads – Pillows and Pillow Covers – Care and maintenance.

**UNIT V**

9

**Kitchens and Table Linens:** Kitchen linen: Definitions, types of towels – purpose and care. Covers for kitchen appliances. Cleaning materials – wipes and mops – care and maintenance. Table linen: Definition – types-table cloth, place mats, runners, napkins – use and care.

**TOTAL : 45 PERIODS****TEXT BOOK**

1. "Becoming an Interior designer", Christine M. Piotrowski, 2008.
2. Wendy Baker, "Curtain and fabric selector", Collins and Brown, London, 2000.

**REFERENCES**

1. Durga Dulekar "Household Textiles and Laundry Work", Atma Ram & Sons, New Delhi, 2003.
2. "Handbook of Textile Fibres" – J. Gordon hook, 2001.
3. Kartin Cargil, "Soft Furnishing", Reed consumers books Ltd., 1994

**LIST OF EXPERIMENTS**

**Kid's Wear:**

1. Step by step construction of Jabla.
2. Step by step construction of A – Line Frock.
3. Step by step construction of Romper.

**Women's Wear:**

1. Step by step construction of 6 Panel Petticoat.
2. Step by step construction of Middy & Middy top.
3. Step by step construction of Salwar & Kameez.
4. Step by step construction of Chudidhar.
5. Step by step construction of Nighty.
6. Step by step construction of Saree blouse.

**TOTAL : 45 PERIODS**

**LIST OF EXPERIMENTS**

1. Developing the patterns and grading the following garments using the specification sheet;
  - a) Men's T-Shirt.
  - b) Men's Shirt.
  - c) Trouser
  - d) Pyjama set
  - e) Skirt
  - f) Ladies blouse
  - g) Salwar Kameez
2. Developing the marker plan for the above graded patterns.
3. Digitizing the flat pattern.
4. Plotting the marker plan.

**TOTAL : 45 PERIODS**

**R : 2010**

**YAF 949      APPAREL DESIGN AND PORTFOLIO LAB**

**L T P C  
0 0 3 2**

**LIST OF EXPERIMENTS**

1. Formation of themes.
2. Creation of mood boards.
3. Designing garments for male, female and children.
4. Development of portfolios.
5. Developing patterns using drafting and draping techniques.
6. Construction of the garments.
7. Presentation of garments and portfolio.

**TOTAL : 45 PERIODS**

<b>YAF 951</b>	<b>TEXTILE &amp; GARMENT FINISHING</b>	<b>L T P C</b>
		<b>3 0 0 3</b>
<b>UNIT I</b>		<b>9</b>
Mechanical Finishing: Resin finishes-Formaldehyde and non formaldehyde, silicon finishes, zero – zero finishing – decatizing – Raising – Brushing.		
<b>UNIT II</b>		<b>9</b>
Denim Finishes: Enzyme wash, Stone wash, Acid wash, Bio polishing – Stain resisting finishes.		
<b>UNIT III</b>		<b>9</b>
Temporary & Permanent Finishes: Calendering, Shrinkage control of knitted goods - open width and tubular compact using Compactor. Drying and heat setting process. – Pressing – Permanent press		
<b>UNIT IV</b>		<b>9</b>
Value Addition Finishes: Wrinkle free finishes, antimicrobial finishes, UV protective finish. Peach wash.		
<b>UNIT V</b>		<b>9</b>
Special Finishes: Herbal finishes, Mosquito repellent finish, antibacterial finish, flame retardancy finish, waterproof, & repellency finish. Deodorant finish		
		<b>TOTAL : 45 PERIODS</b>

### **TEXT BOOKS**

1. Shenai V.A., "Technology of Textile Finishing", Shevak Publications, 1990.
2. Prayag R.S. "Technology of Finishing", Shree J. Printers, Pune, 1996.
3. Schindler W.D. and Hauser P.J. "Chemical Finishing of Textiles" Woodhead publishers, England, 2004

### **REFERENCES**

1. J.V.Rao, "Denim Washing", Northern India Textile Research Association, Ghaziabad, 2006.
2. NCUTE-"Environmental problems in chemical processing of textiles", IIT, New Delhi, 2000.
3. NCUTE – "Garment Finishing", IIT, New Delhi 2003.
4. NCUTE-"Knit and Garment Finishing", IIT, New Delhi 2004.

**UNIT I****9**

Productivity in Industry: Productivity of Materials, Machineries and Manpower. Total Time to a Job. Factors Tend to Reduce Productivity Work Content and Time. Reducing Work Content due to the Product, Due to the Process Method, Reducing Ineffective Time Due to Management - Due to the Worker.

**UNIT II****9**

Work Study: Definition, Work Study and Productivity: Basic Procedure of Work Study. Work Study and the Management. Work Study and the Supervisor, Work Study and the Worker, Study of Man, Working Condition and the Working Environment.

**UNIT III****9**

Method Study: Definition and Objects of Method Study. Basic Procedure, Selection of Work. Recording, Examining, Development of Method. Factory Layout and Movement of Workers and Material. String Diagram. Man Type Flow Process Chart, Multiple Activity Chart. Travel Chart. Principles of Motion Economy – Classification to Movements. Micromotion Study, Define, Install, Maintain Improved Method.

**UNIT IV****9**

Work Measurement: Definition, Purpose, Procedure, Uses. Time Study: Definition, Basic Time Study Equipment. Time Study Forms, Selecting the Job, Steps in making a Time Study. Breaking the Job into Elements: Sample Size, Timing Cad Element: Stop Watch Procedure. Time Study Rating, Calculation of Standard Time Setting, Time Standard for work with Machines.

**UNIT V****9**

Application of Work Study Technique in Cutting, Stitching and Packing in Garment Industry. Comparative Study of Different Securing Systems used in the Garment Production – Group System, Batch System – Industrial system.

**TOTAL : 45 PERIODS****TEXT BOOKS**

1. Johnson Maurice, "Introduction of Work Study", International Labour Office, Geneva,, 2001.
2. Khanna O.P "Work Study", Prentice Hall, 2000.

**REFERENCES**

1. Mary Mathews, "Practical Construction", Part-I.
2. Kanthilal Zla, "Apparel Industry in India", Prentice Hall., 1990.

**YAF 953      APPAREL COSTING AND EXPORT DOCUMENTATION      L T P C**  
**3 0 0 3**

**UNIT I** **9**  
Elements of cost: Material cost-labour cost-different types of expenses and depreciation - product cost-advertisement cost and selling cost. Pricing: Marginal and full cost pricing.

**UNIT II** **9**  
CMT cost: Factors determining the price of garments, material cost – cost of yarn, fabric production, fabric processing, designing and trims. Lot size. Cut, Make and trim cost (CMT)

**UNIT III** **9**  
Cost of labeling and packing-different types and its functions. Uses of brand and size label. Cost of storage and shipment. Cost calculation for Children’s wear, Men’s wear and Women’s garments using woven and knitted fabric.

**UNIT IV** **9**  
Documentation: Order confirmation. Principal and auxiliary documents. Pre-shipment and post shipment documentations. Documents for claiming export assistance. Terms of sale and payment.

**UNIT V** **9**  
Export incentives: duty drawback scheme. Cash compensatory support. Exchange control regulation. Export finance through banks-export credit guarantee corporation-export import bank. Market development assistance. Functions of export promotional bodies.

**TOTAL : 60 PERIODS**

**TEXT BOOKS**

1. Johnson Maurice, “E.Moore, “Apparel Product Development”, Om Book Service, 2001.
2. Jeannette Jarnow, Kitty G.Dickerson, “Inside the Fashion Business”, Prentice Hall, 2005.
3. Katherin McKelvy, “Fashion Source Book”, Om Book Service, 2001.

**REFERENCES**

1. “Production Costing”,Khanna Publication, Delhi., 2001.

YAF 954

**FUNCTIONAL APPARELS**

**L T P C**

**3 0 0 3**

**UNIT I**

**9**

**Introduction:** Functional design of textiles, Properties – structural, aesthetic, functional and their advantages, comfort and fit.

**UNIT II**

**9**

**Medical Wear:** Classification of medical textiles and their functions – textile materials used for implants and non – implants – Textiles for extracorporeal devices – Healthcare and Hygiene products.

**UNIT III**

**9**

**Protective Wear:** Materials used, requirements and functions of flame resistant protective clothing - chemical protective clothing – mechanical protective clothing – electrical protective clothing and radiation protection.

**UNIT IV**

**9**

**Sports Wear:** Clothing requirements, Developments of functional fibres, yarns and fabrics suitable for sportswear application and its properties. Footwear Clothing: Fabric requirements, finishing adaptability and evaluation methods.

**UNIT V**

**9**

**Smart and Intelligent Textiles:** Smart fibres : Nano fibres, Photo adaptive fibres, Chameleon fibres, Conductive fibres – properties and applications in textiles and apparels. Phase change materials: production and applications. Shape memory polymers and properties. Stimuli sensitive intelligent textiles, Smart textiles incorporating functional devices.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Horrocks A R and Anand S C, “Handbook of Technical Textile “, The Textile Institute, Woodhead Publications, 2000.
2. Adanur S, “Wellington Sears Handbook of Industrial Textile”, Technomic Publishing Co., Inc, 1995.

**REFERENCES**

1. Anand S “Medical Textiles”, Textile Institute, UK, 1996.
2. Sanjay Gupta, “Smart Textile – Their Production and Marketing Strategies”, Bhumica Printers, New Delhi, 2000
3. Tao X, : Smart Fibers, Fabric and Clothing”, Textile Institute, 2001



**LIST OF EXPERIMENTS**

1. Step by step Construction of Men's Slack Shirt.
2. Step by step Construction of Men's Full Sleeve Shirt.
3. Step by step Construction of Men's S.B. Vest.
4. Step by step Construction of Men's Pleated Trouser.
5. Step by step Construction of Men's Bell bottom Trouser.
6. Step by step Construction of Men's Nehru kurta.
7. Step by step Construction of Men's Kalidar kurta

**TOTAL : 45 PERIODS**

**LIST OF EXPERIMENTS**

1. Determination of fibre fineness
2. Determination of Single yarn and Lea strength of the Yarn.
3. Determination of Twist of the yarn.
4. Determination of fabric strength – tensile strength, tearing strength and bursting strength.
5. Determination of Fabric Stiffness.
6. Determination of Fabric crease recovery.
7. Determination of drape of the fabric.
8. Determination of Fabric thickness.
9. Determination of dimensional stability of the fabric.
10. Determination of Seam strength and seam slippage of the apparel.

**TOTAL : 45 PERIODS**

**YAF 959**

**VIRTUAL GARMENT LABORATORY**

**L T P C**

**0 0 3 2**

**LIST OF EXPERIMENTS**

1. Design a garment based on a theme for children women
2. Design a garment based on a theme for women.
3. Design a garment based on a theme for men.
4. Source a suitable fabric for the design.
5. Develop croqui based on the measurements.
6. Develop 2 D pattern for the design.

**TOTAL : 45 PERIODS**

**YAF 961**

**FASHION RETAIL MANAGEMENT**

**L T P C**

**3 0 0 3**

**UNIT I**

**9**

Fashion Retail management; Introduction, meaning, characteristics. Retail Industry in India. Role of retailing. Trends in Retailing. Emergency of organizations in Retailing. Retail location and layout plan. Carriers in retailing.

**UNIT II**

**9**

Introduction to market segment. Criteria for effective segmentation. Dimensions of segmentation. Customer profiles.

**UNIT III**

**9**

Retailing channels; products and merchandise management – structure, nature and channels. Criteria for selection of suppliers. Channels choice and product movement. Merchandising plans. Store management. Retail pricing; factors and pricing strategies.

**UNIT IV**

**9**

Relationship Marketing in retailing; management of relationship, evaluation of relationship marketing. Relationship and marketing strategies. Retail research and retail audits.

**UNIT V**

**9**

Visual merchandising; importance and scope. Introduction to store design; product displays. Retail promotion strategies and publicity.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Swapna Pradhan, "Retailing Management", 2<sup>nd</sup> edition TMHTOTAL :
2. James R. Ogden & Denise T.Ogden, "Integrated Retail Management" Biztantra, 2007.

**REFERENCES**

1. Rosemary Variey, Mohammed Rafiq- "Retailing Management". Macmillan., 2004.
2. Chetan Bajaj-"Retailing Management". Oxford publication, 2004.
3. Uniyal & Sinha-- "Retailing Management". Oxford Publication, 2007.

YAF 962

**PRODUCTION PLANNING AND CONTROL**

**L T P C**

**3 0 0 3**

**9**

**UNIT I**

**Introduction to production control:** Definition, Objectives, activities, intra-departmental co-ordination. **Strategy analysis:** Production position strategy, sizing and fit, material selection, component assembly, final assembly, finishing and presentation for different apparel.

**UNIT II**

**9**

**Production pre-planning:** Sampling, cut order planning, marker making, spreading techniques, cutting and bundling.

**UNIT III**

**9**

**Flow process chart and production system:** Flow process chart: Definition and development for various garments. **Production system:** Whole garment, department, progressive bundle, unit production and modular.

**UNIT IV**

**9**

**Production Planning:** Production planning: Production concepts, production capacity, managing plant capacity – routing, loading and scheduling techniques.

**UNIT V**

**9**

**Plant loading and Production control forms:** Plant loading: Line balancing techniques. Determination of machinery requirements for a new factory, calculation of labour requirements, planning for multi style production – preparation of planning board. **Production control forms:** Quality inspection formats.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Solinger Jacob, "Apparel Manufacturing Handbook-Analysis, principles and practice", Columbia Boblin Media Corp., 1998.
2. Glock R E and Kunz G I, "Apparel Manufacturing: Sewn Product Analysis", Prentice Hall, second edition, 2005.

**REFERENCES**

1. William K Hodson, "Maynard's Industrial Engineering Handbook", Forth Edition, Mc Graw-Hill, Inc., New York, 1992.
2. David J Tyler, "Materials Management in Clothing Production", Prentice Hall, New Jersey, 1991.
3. Harold Carr "Fashion design and Product development", John Wiley and Sons Inc., New York, 1991.
4. Patty Brown, Janett Rice, "Ready To Wear Apparel Analysis", Prentice Hall, 1998.

YAF 964

PROJECT WORK

L T P C  
0 0 1 2 6

The project will be of one semester duration. The students will be sent to different organizations involved in science communication activities as per interest and specialization of students, mostly located in the place of the study. They will have to carry out a research project related to the area of interest and submit a research project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce Examination.

YAF 001

FABRIC SOURCING AND SAMPLING

L T P C  
3 0 0 3

**UNIT I**

9

**Sample Construction:** Construction of sample - basic standard of professional sewing; relationship between pattern making and the ultimate quality of finished sample; analysis of component pieces and trimmings - planning a logical garment construction sequence - economic use of fabric yardage - maintaining grain lines - interfacing, lining

**UNIT II**

9

**Sampling:** Types of samples – pro – photo type – fit – pre-production – top – shipment – gold sealed – sales man samples etc., need and importance of the samples – quality requirements – sampling and lead time – sampling and costing – approvals

**UNIT III**

9

**Introduction to Sourcing:** Procurement and outsourcing in the fashion industry - benefits and risks of outsourcing - searching, evaluating, and maintaining sources of supply - make-buy decisions - single-multiple sourcing decisions -domestic-global sourcing decisions

**UNIT IV**

9

**Raw Material Sourcing:** Sourcing of fabrics / accessories – bought out components – markets – domestic and international markets - sourcing – definition – need for sourcing – method of sourcing – sourcing of accessories – linings – buttons – zippers – labels etc

**UNIT V**

9

**Sourcing Concept:** Manufacturing resource planning – supply chain management – demand chain analysis – Just in Time Technology – quality specifications – inventory control – purchase orders - inspection – follow up

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Maurice J. Johnson & Evelyn C. Moore, "Apparel Product Development", Prentice Hall Inc., 2001.
2. Gini Stephens, "Fashion from concept to consumer" – Prentice Hall, New Jersey, 2004.

**REFERENCES**

1. Glock Ruth E. and Kunz Grace I., "Apparel Manufacturing - Sewn Product Analysis", Blackwell Scientific Publications. 1996.
2. Jamow Jeannette, Dickerson Kitty G., "Inside the Fashion Business", Prentice Hall, 1997
3. A.J. Chuter., "Introduction to Clothing Production Management", Om Book Service, 2004

**UNIT I**

**Introduction:** The Evolution of fashion - history of couture - 20th century influences on fashion, 1900 – 1990's, highlights of famous fashion designers - segments of fashion industry - location of fashion markets - forecasting specialties - prediction of fashion-future of fashion.

**UNIT II****9**

**The Powerful Consumer:** Trendsetters and leaders - market segments, consumer research, socio-economic and psychological factors, buying motives, fashion and consumer research, quality movement in fashion industry

**UNIT III****9**

**Apparel: Women's Men's and Children's:** women's wear markets, history and growth, classifications, price points, size specialization - selling seasons - promoting women's wear - men's wear markets, classifications, size specialization - selling men's wear - children's wear classifications, size classifications, price lines - promoting children's wear - fashion accessories and intimate apparel

**UNIT IV****9**

**Forecasting for Designers and Manufacturers:** The fashion forecasting process - steps in developing a forecast - forecast reports - steps in textile development - fibre forecast report, fabric forecast report - steps in colour forecasting - colour forecast reports - - specialized forecasting and its reports.

**UNIT V****9**

**The Fashion Promotion:** Auxiliary fashion enterprises - fashion information and advisory services, news media, advertising and publicity agencies fashion retailing in the past, current trend, classifying the retailers, retailer locations, organizational structures, services offered, purchasing, developing a fashion image

**TOTAL : 45 PERIODS****TEXTBOOKS**

1. Michael K. Evans, "Practical Business Forecasting", Blackwell Publishing, UK, 2002.
2. Tracy Diane, "Colour Forecasting", Blackwell Publishing, UK, 2005.

**REFERENCES**

1. Dickerson, Kitty G, "Inside the Fashion Business" Pearson Education Asia publisher, 2004.
2. Stephens Gini, "Fashion: from Concepts to Consumer", Prentice-Hall of India, 2001.
3. Waddell Gavin, How Fashion Works: Couture, Ready-to-Wear and Mass Production, Om Books Services, 2005.
4. Goworek, Helen "Fashion Buying" Om book Services, 2000.



**UNIT I****9**

**Introduction to Comfort:** Definition, Sensory comfort, Human-clothing-environment system. Thermal comfort – Thermo-physiology of the human body, Thermoregulation of the human body, Thermal interaction between the body and clothing, Physics of thermal comfort, Heat and moisture transfer, Moisture exchange between fiber and air; Moisture behavior of fabrics made from various fibres.

**UNIT II****9**

**Body and Tactile Sensations:** Introduction, coolness and warmth to touch, dampness sensation, moisture buffering during exercise, environmental buffering. Tactile sensation – Fabric prickliness, itchiness, stiffness, softness, smoothness, roughness and scratchiness; Garment fit and pressure comfort.

**UNIT III****9**

**Comfort Perception and Preferences:** Influences of different factors on overall comfort perception; Calculation of subjective preference on clothing; Relationship between overall comfort perception and preference; Dimensions of sensory comfort perceptions; Individual sensations involved in the perception of sensory comfort.

**UNIT IV****9**

**Clothing Care:** Effect of Bleaches, Chemistry and classification of Bleaches, Application; Stiffening Agents – Purpose, Classification and its Application; Laundry Blues and Fluorescent Brightening Agents, types, mechanism and application. Stains – identification and classification, principles of stain removal.

**UNIT V****9**

**Laundering and Care Labeling:** Laundry reagents such as detergents and soaps – classification, detergents; Laundering equipment; Laundering procedures for various fibre materials; Dry Cleaning – definition, Operations and chemicals; Care Labels – Various systems of care labeling; Care instruction; Placement of labels on garments; Effect of clothing care on its comfort.

**TOTAL : 45 PERIODS****TEXTBOOKS**

1. Y. Li, The Science of Clothing Comfort, Textile Progress, Vol.31, Textile Institute, 2001.
2. Cheryl Mendelson, "Laundry: The Home Comforts Book of Caring for Clothes and Linen", Scribner, New York, 2005

## REFERENCES

1. Y.Li and A.S.W.Wong, Clothing Biosensory Engineering, Woodhead Publishing Ltd., England, 2006.
2. Denlkar, "Household Textiles and Laundry Work", Atma Ram & Sons, Delhi, 1993.
3. E.Smulders, "Laundry Detergents", Wiley-VCH, Weinheim, 2002.
4. J.V.Rao, "Care Labelling", Northern India Textile Research Association, Ghaziabad, 2006.
5. J.V.Rao, "Stains", Northern India Textile Research Association, Ghaziabad, 2006.
6. Noemia D'Souza, "Fabric Care", New Age International (P) Ltd., Publishers, New Delhi, 1990.

<b>UNIT I</b>	<b>9</b>
<b>History of costumes:</b> Origin of costume – origin of clothing, growth of dress out of painting, cutting and other methods. Need for clothing, factors influencing costume changes.	
<b>UNIT II</b>	<b>9</b>
<b>Costumes of India:</b> Traditional costume of different states of India. Accessories and ornaments used in India.	
<b>UNIT III</b>	<b>9</b>
<b>Costumes of other Asian countries:</b> Costumes of Pakistan, Srilanka, China, Mianmar, Thailand, Japan. Men's, Women's and kids garment – motifs and color combinations – styles – accessories and Jewellery.	
<b>UNIT IV</b>	<b>9</b>
<b>Costumes of Mediterranean:</b> Egypt, Greece, and Rome.	
<b>Costumes of Africa:</b> Traditional costumes in various parts of African continent.	
<b>UNIT V</b>	<b>9</b>
<b>French costumes:</b> French costumes during renaissance 1400-1600.	
<b>English Costumes:</b> English costume during middle Ages.	
<b>American Costumes:</b> American costumes from 18 <sup>th</sup> to 20 <sup>th</sup> Centuries.	
<b>TOTAL : 45 PERIODS</b>	

**TEXT BOOKS**

1. Katherine Morris Cestrer, "Historic Costumes", A resume of the characteristic types of costume from the most Remote times of the present day, Prentice Hall, 2000.
2. Vandana Bhenderi, "Costume, Textiles and Jewellery of India – Traditions in Rajasthan", Prakash Books, New Delhi, 2004.
3. Ghurey G S, "Indian Costume", Popular Prakashan, Bombay, 2004.

**REFERENCES**

1. Jamila Brij Bhu shan, "The costume and Textiles of India", Prentice Hall, 2000.
2. Fillow J and Bernard N Thomas and Hunson, "Traditional Indian Textiles", Prentice Hall, 1993.
3. Hart a North Stitch V and A Museum, "Historical Fashion in detail the 17<sup>th</sup> and 18<sup>th</sup> Centuries", McMillan, 1998.

**YAF 005**

**FASHION MARKETING**

**L T P C**

**3 0 0 3**

**Unit I**

**9**

Definition of Fashion-Fashion marketing-Development of Fashion market-Size Structure-marketing requirement-Fashion Buyer-Consumer influence on market.

**Unit II**

**9**

Fashion, Fad, Style-Application-Society Fashion and individual fashion-their coordination-wardrobe.

**Unit III**

**9**

Applied illusions-Physical effects-overall height-overall weight-Covering body defects by design-Visual design in Dress in Australia-Brazil-Germany-India-Japan-Nigeria.

**Unit IV**

**9**

Fashion marketing Research-Purpose of research-research design & data sources- Sampling methods-data Collection-Forecasting Fashion-Market Segmentation-Fashion marketing mix.

**Unit V**

**9**

Fashion Products and its importance –Fashion Industry & new Product Development – Fashion Designers role in apparel market-Branded Products-personal labels-stores that seek the merchandise.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Mike Easey, "Fashion Marketing", Blackwell Science, 2000.
2. Maurice J.Johnson & Evelyn C.moore, "Apparel Product Development", Prentice Hall Inc., 2001.

**REFERENCES**

1. Elaine Stone,"Fashion Merchandising", Blackwell Science, 2000.

**Unit I** **9**

**Introduction:** Objectives, Visual merchandising and display, purpose of visual merchandising, store image, target customers, season's visual merchandise and windows.

**Elements and principles of design in visual:** merchandise: Introduction, objective, design elements- color, texture, line; Principles – balance, emphasis, proportion, rhythm, repetition.

**Unit II** **9**

**Display and display settings:** Types of display, one – item, line of goods, related merchandise, assortment, and promotion vs institutional; type of display settings – realistic, environmental, semi-realistic, fantasy, abstract.

**Unit III** **9**

**Store and window settings:** Exterior of the store, signs, marquees, outdoor lighting, banners, planters, awning; Window in store front – the angled front, the arcade front, the corner Display, closed back, open back, island, shadow boxes, elevated, deep, tail.

**Unit IV** **9**

**Merchandise display:** Introduction, objectives, planning a display, visual merchandiser in store promotion, scheduling the promotion.

**Mannequin:** Types of mannequins-realistic, semi realistic, abstract, semi abstract, headless; dressing up of mannequin.

**Unit V** **9**

**Attention drawing devices:** Attention drawing devices, color, lighting, line and composition, scale, contrast, repetition, humor, mirrors, nostalgia, option, surprise and shock, props.

**TOTAL : 45 PERIODS**

**TEXT BOOKS**

1. Gini Stephens, "Fashion from concept to consumer" – Prentice Hall, New Jersey, 2004.
2. Diamond, J, "Contemporary visual merchandising and environmental design", fourth edition, Prentice Hall, 2006.

**REFERENCES**

1. Martin M. Pegler, "Visual merchandising and display", fifth edition, Berg Publishers, UK, 2006.
2. Laine stone, Jean Samples, "Fashion Merchandising – An introduction", Mc Graw Hill Book Co, 2001.
3. Diamond, J, "Fashion Retailing – A Multi – Channel Approach" Second edition, Prentice Hall, New Jersey, 2000

**Unit I****9**

**Entrepreneurship and Intrapreneurship:** Definition of entrepreneurship and intrapreneurship, economic and non-economic influences on entrepreneurship; the current status of entrepreneurship in selected countries; entrepreneurship models – aspiring entrepreneurs, opportunistic entrepreneurs, collaborative affiliation, venture incubator. Profiling the entrepreneur/intrapreneur – traits, skills and activities analysis; innovation, risk and rewards to the entrepreneur; entrepreneurial stress and coping mechanisms.

**Unit II****9**

**Starting Small Business:** The entrepreneurial process and the start-up; entry value of small business; evaluation of start-up methods – buyout, franchise and starting from scratch. Growth and maturity of small business to medium and big companies; survival value and retreat value of small business; promising entrepreneurial opportunities – export markets and technology transfer; operating characteristics of small business in the growth and maturity stages.

**Unit III****9**

**Management of Small/Medium Business:** Organizational planning; consideration of legal, financial, operational and marketing aspects; human resources management for small/medium business; preparing a business plan. Study of key factors leading to success and failure of small/medium business; new venture opportunities in a global environment; managing growth and transition.

**Unit IV****9**

**Globalization of Fashion Business:** Internationalization of clothing business; licensing, franchising and sub-contraction; outward processing arrangement (OPA); multi-national corporations and foreign direct investment of textile and clothing joint ventures and wholly-owned setups; strategic alliances; evaluation of investing host countries; potential markets for fashion business.

**Unit V****9**

**Operation of International Enterprise:** Control mechanisms and problems of foreign subsidiaries; host government investment regulations; humanitarian policies and worker rights; financial management and exchange rate issues. Quick response requirements and supply chain management; changing buyers' behaviour and regional purchase practices; eco-regulations of importing countries; transshipment problems; the competitive edge of India and China as emerging powers in the global fashion market.

**TOTAL : 45 PERIODS****TEXTBOOKS**

1. Dollinger Marc, "Entrepreneurship: Strategies and Resources", Prentice Hall, 2003.
2. Kao W.Y. Raymond and Tan Wee Liang, "Entrepreneurship and Enterprise Development in Asia", Prentice Hall, 2001.

## REFERENCES

1. Hisrich D. Robert and Peters P. Michael, "Entrepreneurship", McGraw Hill, 2001.
2. Schoonhoven, Claudia Bird and Romanelli Elaine, "The Entrepreneurship Dynamic", Stanford University Press, 2001.
3. Sexton L. Donald and Landstrom Hans, "Handbook of Entrepreneurship", Blackwell, 2000.
4. Amit Raphael and Zott Christoph, "Value Creation in E-Business," Strategic Management Journal, Vol. 22, 493-520, 2001.
5. Tony Fu and Lai Yu, "Hong Kong's Entrepreneurship: Behaviours and Determinants," Entrepreneurship & Regional Development, 12(3), pp. 179-194, 2000.

**YAF 008 CLOTHING SCIENCE AND APPAREL PRODUCT ENGINEERING L T P C**  
**3 0 0 3**

**Unit I** **9**

**Introduction:** General functional description of clothing – Comfort: Definition, Factors involved in the study of clothing comfort – physical, physiological aspects of comfort.

**Unit II** **9**

**Thermal comfort:** Thermal comfort: Physics phenomena affecting thermal comfort; Heat transfer, Moisture vapour transfer, Air permeability and Flammability – Comparison of thermal comfort properties for different fabric structures. Relationship between garment fit and comfort.

**Unit III** **9**

**Fabric handle and Mechanical comfort:** Handle characteristics – Subjective and objective evaluation of fabric hand – Typical fabric properties measured in fabric objective measurement (FOM): Kawabatta (KES) system and Fabric Assurance by Simple Testing (FAST) system –influence of fibre type, yarn construction and finishing treatments on the low stress mechanical properties and hand value of fabric.

**Unit IV** **9**

**Fabric dimensional stability and serviceability:** Various fabric shrinkage mechanisms: Hygral expansion, Relaxation shrinkage, swelling and felting shrinkage. Crease resistance and recovery – Pilling, mechanism of pill formation – colour fastness.

**Unit V** **9**

**Development of apparels for specific end uses:** Materials used, design procedures and functional requirements for compression garments, surgical gowns and face masks – Clothing requirements and design principle for protective clothing: Cold weather, bullet proof, thermal and UV protective clothing – Materials used, clothing requirement and construction of different types of Sports clothing.

**TEXT BOOKS**

1. Y Li and A Stitch W Wong, "Clothing Biosensory Engineering", Wood head publishing Limited, Cambridge, England, 2006.
2. Li. Y, "The Science of Clothing Comfort", Textile Progress, Textile Institute, Manchester, 2001.
3. Saville B.P, "Physical Testing of Textiles", The textile Institute, Wood head publishing, Wood head Publishing Ltd, Cambridge, 2004.
4. Scott R A, "Textiles for protection", Wood head Publishing Limited, Cambridge, England, 2005.



## **REFERENCES**

1. Y Li and D X-Q Dai, "Biomechanical Engineering of Textiles and Clothing", Wood head publishing Limited, Cambridge, England, 2006.
2. J Fan, W Yu, "Hunter Clothing Appearance and Fit: Science and Technology", Wood head Publishing Limited, Cambridge, England, 2004.
3. Raheel M, Modern textile characterization Methods, Marcel Dekker Inc., 1996.

**TOTAL : 45 PERIODS**