

BHARATHIAR UNIVERSITY COIMBATORE – 641 046
M.Sc. TEXTILES AND APPAREL DESIGN
UNIVERSITY DEPARTMENT
With effect from 2012-2013
Scheme of Examination

Study Components	Course Title	Ins. hrs / week	Exam			Credit	
			Dur. Hrs.	CIA	Uni. exam		Total
Semester I							
	PAPER- I Research Methodology and Statistics	5	3	25	75	100	4
	PAPER- II Technical Textiles	5	3	25	75	100	4
	PAPER - III Apparel Production Technology	5	3	25	75	100	4
	PRACTICAL -I Sketching and Illustration	4	4	40	60	100	4
	PRACTICAL -II Draping	4	4	40	60	100	4
	ELECTIVE –I Entrepreneurship Development	5	3	25	75	100	4
	Supportive I Offered by other Departments	2	3	12	38	50	2
Semester II							
	PAPER-V Medical Textiles - I	5	3	25	75	100	4
	PAPER-VI Apparel Merchandising	5	3	25	75	100	4
	PAPER-VII Textiles for Protection	5	3	25	75	100	4
	PAPER-VIII Textile Testing	5	3	25	75	100	4
	PRACTICAL -III Textile Testing- Practical	4	4	40	60	100	4
	ELECTIVE –II CAD in Fashion Designing - Practical	4	4	40	60	100	4
	Supportive II Offered by other Departments	2	3	12	38	50	2
Semester III							
	PAPER- IX Medical Textiles-II	4	3	25	75	100	4
	PAPER-X Advanced Wet processing	4	3	25	75	100	4
	PAPER-XI Apparel Quality Standards and Implementation	4	3	25	75	100	4
	PRACTICAL -IV Advanced garment construction	4	4	40	60	100	4
	PRACTICAL -V Portfolio Presentation	4	4	40	60	100	4
	ELECTIVE -III Retailing	4	3	25	75	100	4
	Supportive III Offered by other Departments	2	3	12	38	50	2
Semester IV							
	ELECTIVE -IV CAD in Textile Designing	5	4	25	75	100	4
	Project work & Viva voce (160 +40)					200	8
Total						2250	90

SEMESTER –I
PAPER -I
RESEARCH METHODOLOGY AND STATISTICS

UNIT -I

Meaning of Research -Types of Research - Significance of Research - Research Process. Defining, the Research Problem - Sources, Identification, Selection and Statement, Review of related literature.

UNIT-II

Research Design - Meaning, Different research designs, Basic Principles of experimental designs. Developing a Research Plan. Sampling: Census and sample survey, Steps in sampling design, criteria for selecting a sampling. Procedure, characteristics of a good sample design, different types of sample designs.

UNIT - III

Methods of Data collection - observation, Questionnaire, Interview Data processing and analysis, - Collection, classification, tabulation, Graphical, Representation and data analysis.

UNIT-IV

Meaning and scope of statistics Role of statistics in research, measures of central tendency and dispersion, Co-relation, Co-efficient of Co-relation and its Interpretation, rank Co-relation, regression equation and predictions.

UNIT- V

Elements of testing of a statistical hypothesis, formulation of the problem. Definition of type -I and type-II errors, Levels of significance large sample test for proportions. Difference in proportions for means and difference in means. Application of students test for small samples for single mean, difference in means- test for equality of variance. Non - parametric test, Application of Chi-square test, ANOVA test.

REFERENCE:

1. Introduction to Research in Education, Ar y, Hort Reinhart (1982)
2. Research in Education, Best J N, Prentice Hall, Delhi (1979)
3. An Introduction to Statistical Methods, S P Gupta, Vikas Publishing House, New Delhi.
4. Research Methodology, C R Kothari, Published by K K Gupta for New Age International (P) Ltd, New Delhi
5. Statistics, Voll &2, G A Zeaf Textile Institute Manchesteor

SEMESTER I - PAPER II TECHNICAL TEXTILES

UNIT I

Introduction, definition and scope of technical textiles, Application of technical textiles

UNIT II

Finishing of Technical textiles - Introduction, finishing process, Mechanical finish

UNIT III

Heat and flame protection, water proof fabrics, Geo-textiles

UNIT IV

Medical textiles, Textiles-for survival

UNIT V

Smart textiles and intelligent textiles

REFERENCES:

Hand book of Technical textiles - A R Morrocks and S C Anand, Wood head publishing ltd, England 2000

SEMESTER-I PAPER-III APPAREL PRODUCTION TECHNOLOGY

Unit –I

The nature and scope of apparel manufacturing - types of apparel manufacture fundamentals of apparel production. Basic types of apparel production process – major function of apparel manufacturing - engineering functions, management functions,- apparel trade association.

Unit-II

Apparel production analysis- quality spreading tools and equipment for spreading, cutting equipment and quality cutting. Computerized cutting. Marker quality and geometric principle for calculating optimum marking design, principles of stitch, seam and their analysis, seam quality, computerized sewing, pressing and moulding.

Unit-III

Packaging and ware housing: Type of packing and packing materials, quality specification, merchandise packing and shipping packing. Intra transport, ware housing, computerized storage systems

Unit –IV

Production control: Production analysis, distribution of documents and records, types of control forms. Production control charts, reports, production grid principle for assigning partial production, line operators, Organization and personnel - Type of organization,

functions, personal classifications, personnel orientation, job evaluation, wages incentives, nature of incentives.

Unit –V

Apparel productivity- Apparel productivity in India and Western world, global comparison of Western world – Apparel productivity manufactures and characteristics of low, medium and high productivity manufactures and factors associated with productivity actions towards higher productivity.

REFERENCE BOOKS:

1. Apparel manufacturing, Hand book by Jacob-Solinger,j Bobbin Blonnem – Media Corporation - Columbia
2. Managing productivity in the apparel industry by Rajesh Bheda of CBP Publisher and distributors.
3. The Tech. of clothing manufacture by Harold and Lafam of Blackwell Sceince Publishers
4. The management systems by Pranak. K. R. - Guest publications
5. Seams productions and analysis by Radh D Clock

SEMESTER -I

PRACTICAL –I SKETCHING AND ILLUSTRATIONS

Prepare the following Illustrations

1. Different Types of Lines in a Garment: Illustrate the line effects in the same silhouette - any 5 types
2. Creating Checked effects. in a garment - one colour and more than one colour
3. Creating Printed effects in a garment - one colour arid more than one colour
4. Sketching designs for the following
 - I. military garments
 - II. medical garments
 - III. sports garments
 - IV. space and satellite garments

SEMESTER -I

PRACTICAL -II

DRAPING

Prepare the following samples using the Draping Method

1. Basic waist - Front and Back
2. Dart Manipulation
3. Pleats, Darts, Tucks and Gathers
4. Neckline variations
5. Armhole variations
6. Waistline variations
7. Skirts- any- two
8. Flared skirt
9. Gore skirt
10. Pleated skirt
11. Hip yoke skirt

12. Collars - any two
13. Mandarin Collar
14. Band Collar
15. Convertible collar
16. Peter pan collar
17. Shawl collar cut in one piece with front waist
18. Sleeves - any two
19. Basic sleeve
20. Dolman sleeve
21. Raglon sleeve
22. Kimono sleeve
23. Create the following garment
24. military garments
25. medical garments
26. sports garments
27. space and satellite garments

REFERENCES:

1. Dress Design - Draping and Flat Pattern, Hill House M S, Houghton Mifflin Co, London, USA
2. The Theory of Fashion Design, Brockman, Magritha, John Wiley Sons, New York.
3. Design through Draping, Sheldon, Martha, Burgers Publishing company, Minneapolis, USA.
4. Modern Pattern Design, Popin, Harriet, Funk and Wagnalls, New York and London

SEMESTER-I ELECTIVES-I ENTREPRENEURSHIP DEVELOPMENT

UNIT-I

Definition of entrepreneur - Functions - Types. Concept of women entrepreneur - Functions and problems. Recent trends and development in women entrepreneurship.

UNIT-II

Project identification- Classification. Project formulation- Feasibility analysis and report. Selection. Project appraisal - Concept, Methods - cash flows, Pay back period, ARR. Methods of minimizing risk.

UNIT-III

Steps for starting a small scale enterprise - Steps to be taken. Preparation of Project report - Guidelines. Procedure and formalities for registration. Selection of types of organization - Sole proprietorship. Partnership. Joint stock company. Factors influencing the choice of organization.

UNIT-IV

Institutional finance to entrepreneurs - Commercial Banks . Other financial Institutions - IDBI, IFCI, ICICI, IRBI, LIC, UTI, SIDC, SIDBI, EXIM Bank.

UNIT-V

Institutional support to entrepreneurs - Need for support - NSIC, SIDO, SSIDC, SISI, SFC, DIC, TCO, TIIC, Kadi and Village Industries Commission, Industrial Estates. Introduction to TQM & ISO . WTO and its role in textile industry.

REFERENCES:

1. Entrepreneurship development - C.B. Gupta & N.P. Srinivasan
2. Entrepreneurship development - S. Khanka
3. Projects -Planning,Analysis,Selection,Implementation & Review - Prasanna Chandra

SEMESTER –II PAPER– V MEDICAL TEXTILES I

UNIT- 1 BIOMATERIALS UTILISED IN MEDICAL TEXTILES

Biomaterials utilized in medical textiles: an overview - Textile fibres and their classification - Natural carbohydrate polymers - Modified carbohydrate polymers - Natural and modified proteins - Commercial applications and products using carbohydrate polymers. Reformulated collagen fibres - Novel Chitosan-alginate fibres for advanced wound dressings

UNIT-II HEALTHCARE HYGIENE PRODUCTS

Healthcare and hygiene products: an overview ,Market prospects - Current issues - Healthcare and hygiene products – Super absorbent fibres - Antimicrobial fibres - Disposable products - Operating room garments Application of nonwovens in healthcare and hygiene sector

UNIT-III INFECTION CONTROL AND BARRIER MATERIALS

Infection control and barrier materials Durable and rechargeable biocidal textiles Novel approach to breathable nonwoven hygienic products

UNIT-IV BANDAGING AND PRESSURE GARMENTS

Bandaging and pressure garments: an overview- Introduction- Compression therapy for venous leg ulcers treatment - A comparison of elastic and non-elastic compression bandages for venous leg ulcer treatment Assessment of fabrics worn on the upper limbs Bandaging techniques using short-stretch compression bandages.

UNIT-V WOUNDCARE MATERIALS

Woundcare materials: an overview The use of textiles in burns – from injury to recovery Support surfaces - Initial management - Bandages - Splinting - Skin substitutes Skin grafts and donor sites - Dressings - Pressure garments - Silicone gels

REFERENCE

Hand book of Technical textiles - A R Morrocks and S C Anand, Wood head publishing ltd
England 2000

SEMESTER II
Paper -VI APPAREL MERCHANDISING

UNIT I

Merchandising: Introduction, Meaning- Apparel Merchandising – Concepts of „Six Rights – Organisation structure of an apparel industry – Classification of Exporters - Rating or Grading of export houses – Classification of buyers – Export merchandising and retail merchandising – Company profile and its contents

UNIT II

Process flow in apparel industry – Buyer sourcing & communication – Enquiry – Order confirmation – order review and its importance – Planning & programming: Master planning, Scheduling or route card – Factors for route card - programming for yarn, knitting, dyeing, stitching, sampling, accessories – Samples: Meaning & importance – Types of samples – expedition of samples

UNIT III

Inspection and its types – Testing – Check points before cutting - Pilot run or trial run and its importance – Approvals - Types of approvals – Shipping marks – Final inspection procedures – Self, Second and Third party inspection - Effective expedition procedures – Order sheet and its contents – Packing list and its contents – Document formats: order sheet, packing list, invoice, inspection and testing reports etc., - Assortment and its types

UNIT IV

Types of merchandiser - Functions of a merchandiser – Essential requisites of a good merchandiser – Vendor sourcing, evaluation and development – Global sourcing – Vendor nomination by buyers – Reasons for vendor nomination – Documents recording and maintenance – Claims and reasons for claims - Factory audits – Buyer s code of conducts

UNIT V

Export associations – Apparel Export Promotion Council – Journals and magazines related to apparel and textiles –Trade shows and Fairs – Participation in trade shows – Advantages of trade shows and fairs - Apparel & Textile Trade shows and fairs in India –

REFERENCES:

1. Daragho' Reilly, Jullian J. Gibbs, Building Buyer Relationships.
- 2 Mc Millan Publishing Co., Inside the Fashion Business..
3. Strong Elian, Fashion Merchandising.
4. Apparel merchandising
5. Apparel Views, Jan 09, “ Apparel Merchandising – The concept of six rights”

SEMESTER-II
Paper- VII TEXTILES FOR PROTECTION

UNIT -1 MATERIALS AND DESIGN Overview of protective clothing Introduction, Market prospects, Classification, Materials and technologies, Future of personal protection .Standards

for protective textiles-Introduction, Requirements, International standards, Certification, Future trends, Sources of further information and advice.

UNIT –II

Fashion and function – factors affecting the design and use of protective clothing Introduction, Factors influencing the design development process, Clothing systems and, functionality, Reconciling fashion and function, Future trends Steps in the selection of protective clothing materials Recommended steps in the selection of textiles for protective clothing, Relevant standards, specifications or guidelines, Protection performance of materials, Biological protection performance, Flame and thermal protection performance, Mechanical protection performance, Selection of materials based on other major factors,

UNIT -III

Fibres and fabrics for protective textiles Introduction, More extensible fibres, Carbon fibres, Aramid and related fibres, High-modulus polyethylene, PBO and M5, Inorganic fibres, Resistant polymer fibres, Nano-fibres, Fibres to fabrics.

UNIT-IV

Technical textiles for protection Introduction, Technical textiles, Types of hazards, Mechanical hazards, Pressure hazards, Environmental and fire hazards, Chemical and biological hazards, Electrical and radiation hazards

UNIT -V

Intelligent textiles for protection Smart textiles, Applications of smart textiles for protective purposes, Sensor function, Data processing, Actuators, Energy, Communication, Thermal protection, Electric actuation, A story on impact protection.

REFERENCE:

1. Textiles for protection – Edited by Ricard A.Scott, Woodhead publishing Ltd., Cambridge, England

SEMESTER II PAPER VIII TEXTILE TESTING

UNIT I

Introduction to testing - terminology of testing - selection of samples for testing standard R H and temperature for testing - measurement of moisture regain conditioning oven – Shirley moisture meter

UNIT II

Fiber testing

1. Cotton fiber length - Baer Sorter
2. Fineness - Air flow principle instruments, Sheffield micronaire
3. Maturity - Caustic Soda swelling
4. Strength - Pressley bundle strength tester, Stelometer
5. Determination of trash and lint in cotton - Shirley trash analyzer

Unit III

Yarn Testing

1. Yarn numbering system - conversion of count from one system to another
2. Instruments for count determination - quadrant balance, Beesley balance
3. Yarn strength testing - Principles of CRT, CRL, CRE - Single strength tester, Lea strength tester
4. Yarn twist - Direction of twist, twist multipliers, Twist testers - tension type, A TIRA direct type tester
5. Yarn evenness - classification of variation, methods of measuring evenness – black board, ASTM Standards, Uster evenness tester, Uster Standards, Yarn faults, classifications, Classimat
6. Yarn hairiness and crimp testing

UNIT IV

Fabric testing

1. Fabric Particulars –length, width, crimp, weight, cover factor
2. Fabric Strength - fabric tensile strength tester, tearing strength tester, hydraulic bursting strength tester
3. Fabric Abrasion - resistance, handle, serviceability, assessment, Martindale abrasion tester
4. Fabric Pilling - I C I Pill box tester
5. Fabric drape -Measurement, Drape meter
6. Fabric Stiffness - Shirley stiffness tester
7. Fabric crease resistance and crease recovery measurements
8. Fabric permeability - Shirley air permeability tester, fabric water permeability tester, Bundersmann tester

UNIT V

Colour Fastness in Textiles - Crocking test, perspiration test, sunlight, laundering, pressing and dry cleaning aspects, whiteness index, matching cabinets, computer matching

REFERENCE:

- Principles of textile Testing, Booth J E, Hoybooks, London (1970)
Technology of textile properties, Marjorie A Taylor, Forbes publications Ltd, London (1972)
Textile Testing, Angappan P and Gopalakrishnan R, SSM Institute of textile technology, Komara Palayam
Fiber Science, Mishra S P and Kesavan B K, SSM Institute of textile technology, KomaraPalayam
Objective evaluation of fabrics, Styios G, John Wiley & Sons USA

**SEMESTER II
PRACTICALS III
TEXTILE TESTING**

1. Determination of Tensile Strength of the given Fabric
2. Determination of Stiffness of the given Fabric
3. Determination of Abrasion Resistance of the given Fabric
4. Determination of Crease Recovery of the given Fabric
5. Determination of Drape of the given Fabric
6. Determination of Bursting Strength of the given Fabric
7. Determination of Color Fastness of the given Fabric by Crock meter
8. Determination of Color Fastness of the given Fabric by Perspirometer
9. Determination of Color Fastness of the given Fabric by Laundrometer
10. Determination of Shrinkage of the given Fabric

**SEMESTER - II
ELECTIVES- II CAD IN FASHION DESIGNING PRACTICALS**

1. Design a collection with a theme- Theme can be framed by the students - design for 5 collections- collection should have a minimum of 10 garments 2. The presentation of Portfolio in the computer - If done manually, the mood board, Fabric board has to be scanned and rendered into the computer -6 presentations

1. Military garments
2. Medical garments
3. Sports garments
4. Space and satellite garments

**SEMESTER-III
PAPER-IX MEDICAL TEXTILES-II**

UNIT-I

IMPLANTABLE DEVICES

Implantable devices: an overview

- Introduction
- Vascular Prosthesis
- Advantages of gelatine impregnated graft

UNIT-II

- Ligament prostheses
- Mesh grafts
- Resorbable polymers
- Resorbable spunlaid nonwovens
- Repair of articular cartilage defects using 3-dimensional tissue engineering textile Architectures

UNIT-III

Manufacture and in vitro bioactivity of sol-gel-derived silica fibre and P(L/D,L)LA composite - A spider silk supportive matrix used for cartilage regeneration Nonwoven scaffolds of improved design for the tissue engineering of the anterior cruciate ligament - New prophylaxis method of children s teeth caries

UNIT-IV

MEDICAL DEVICES

UNIT-V

INTELLIGENT TEXTILES FOR MEDICAL APPLICATIONS

- Intelligent textiles for medical applications: an overview
- Delivering cell therapy for chronic wounds
- Textile finishing for the production of new generation medical textiles
- The effect of ammonia and sulphur dioxide gas plasma treatments on polymer Surfaces

REFERENCE

Medical textiles and biomaterials for healthcare

Edited by S C Anand, M Miraftab, S Rajendran, University of Bolton and J F Kennedy, Chembiotech Ltd, UK

Woodhead Publishing Series in Textiles No. 48

SEMESTER-III

PAPER- X ADVANCED WET PROCESSING

UNIT-I

Modern approaches to Eco-friendly wet processing of woven and knitted textiles. Red listed textile chemicals, their sources and remedies. Pollution aspects of textile dyeing.

UNIT-II

Eco-friendly dyes and their method of dyeing. Methods of analysis of formaldehyde, Pentachloro Phenol (PCP) chlorine compounds and heavy metals in processed and finished fabrics. Eco-labeling and various Eco-standards.

UNIT-III

Modern developments in garment dyeing. Methods and machines. Low temperature dyeing of garments. Finishing of garments using different chemicals and auxiliaries.

UNIT-IV

Modern developments in finishing of natural and synthetic textiles. Finishing of textiles with various specialty chemicals.

UNIT-V

Modern developments in textile and garment printing, colour measurement and computer colour matching concepts. Latest development in natural dyes and their application on various fibres.

REFERENCE BOOKS :

1. Textile colouration by C.L.BIRD.
2. Printing by Miles.
3. Chemical technology of Textile fibres - Troatman.
4. Dyeing and printing with natural dyes - M.L.Gulrajani.
5. Deepti Gupta - NCUTE Publication.
6. Eco-friendly Textile wet processing-coordinator - Dr. R.Ashokan-NCUTE Publication

SEMESTER –III

PAPER- XI APPAREL QUALITY STANDARDS AND IMPLEMENTATION

UNIT I

Introduction to quality standards, importance, benefits, levels and sources of quality, standards, British standards & ISO Standards for the Apparel Industry, ISO 9000 & 14000 standards, Total quality Management systems, Co Labeling &OKO Tex 100 standards.

UNIT II

Sensitizing dye stuffs, allergic dyes, carcinogenic amines, red-listed as per Eco specifications, Eco management of textile and apparel industry, Global Scenario, Eco mark &Environment friendly textiles.

Garment defects.- cutting defects, sewing def ects, assembly defects, pressing, finishing and packaging defects .

UNIT III

Eco specification & restrictions in apparels and textiles - dry cleaning using ozone. depleting chemicals, PH values, formaldehyde contents, heavy metal contents, Pesticides and herbicides, azo dye stuffs, Nickel,. Pentachlorol phenols, color fastness, brighteners, softening agents etc.,

UNIT IV

Starting a quality control program, implementation of quality systems in production line, product specifications and analysis using analytical tools. Quality management through Inspection, testing and sewing quality tools

UNIT V

Quality costs and customer returns; inspection procedures, AQL and quality control

REFERENCES:

1. Managing quality in apparel industry, Pradeep V Mehta, NIFT Publications
2. An Introduction to quality control for the apparel industry, Mehta P V, Marcel Dekker
3. Physical testing and quality control, Vo123, No. 1/2/3 textile Institute (1993)
4. Textile Testing, John Skinkle, Brooklyn Publication, New York .
5. Textile Testing, P. Angappan & Gopala Krishnan, JK. Publications

SEMESTER III
PRACTICAL IV ADVANCED GARMENT CONSTRUCTION

1. Design and construct any five garments for men and women
Method of Pattern Making - Draping or Drafting method

SEMESTER-III
PRACTICAL V - Portfolio Presentation

Portfolio Presentation - with theme Board, Mood Board, Flat Sketches, Fabric swatches for mens and womens - 5 different styles

SEMESTER -III
ELECTIVE -III RETAILING

Unit -I

Retail Merchandising- The Marketing Channel, Retail organization structures, retail merchandising , Retailing Formats- Department stores specialty stores ,har d – to – classify stores, Depth and breadth, discounting , Other Retailing Formats – non store retailers.

Unit -II

Retail Locations – Unplanned shopping districts, planned shopping centers, the mix of stores in a shopping center. Retail growth and expansion – Retail ownership. International Retailing, Retailing Advertising.

Unit -III

Brands and private labels- branded Merchandising ,Licensing, Private Labels, Private Labels as Brands. Merchandise Resourses – Manufacturers , Merchant Wholesale – Distributors. Trade Shows.

Unit -IV

The financial aspects of Merchandising – Measures of Productivity – productivity , turnover, Stock- to – sales Ratio , sales per Square foot, Space Management. Retail pricing- Markup. Markdowns , Residue merchandise, maintain Markup. Tactical price changes, Managing Markdowns , Promotional Pricing , Deceptive pricing, Resale price Maintenance.

Unit -V

Store Layout and Merchandise Presentation – Store Planning and Design , Visual Merchandising, Store Layout , Fixtures, merchandise Presentation , signs

References

Merchandise Buying and Management , John DonnellanFairchild Publiations , New York 1996
Fashion Retailing: A Multi-Channel Approach ,Ellen Diamond, Prentice Hall
2nd Edition ,2005

SEMESTER-IV
Elective -IV CAD IN TEXTILE DESIGNING – Practical

1. Computer Applications in Fabric Design,
2. Creating weave designs, creating jacquard designs
3. Design a collection with a theme- The presentation of Portfolio in the computer