

**M. Sc.**  
**DEPARTMENT OF HOME SCIENCE**  
**M.SC. FABRIC AND APPAREL SCIENCE**

**SEMESTER SYSTEM**  
**CURRICULUM**

**DEPARTMENT OF HOME SCIENCE**  
**(UNIVERSITY OF DELHI)**

**DECEMBER 2009**

## SEMESTER -I

PAPER NO.	TITLE	CREDITS			
			Max Marks	Period/ Week	Duration of Exam (Hrs)
	<b>THEORY</b>				
1101	STATISTICS & COMPUTER APPLICATIONS	4	100	4	3
1142	ADVANCED FABRIC SCIENCE	4	100	4	3
1143	APPAREL PRODUCTION	4	100	4	3
1144	HISTORIC TEXTILES & COSTUMES	4	100	4	3
	<b>PRACTICAL</b>				
1145	PATTERN MAKING AND CONSTRUCTION-I	4	100	9	6 Hours on 2 Days
	<b>TOTAL</b>	20	500		

TOTAL MARKS: 500

## SEMESTER -II

### WORLD TEXTILES: TECHNIQUE AND MAKER PIECES

PAPER NO.	TITLE	CREDITS			
			Max Marks	Period/ Week	Duration of Exam(Hrs)
	<b>THEORY</b>				
1241	RESEARCH METHODS AND SEMINAR	4	100		3
1242	TEXTILE FINISHING & EVALUATION	4	100	4	3
1243	WORLD TEXTILES: TECHNIQUES AND MASTER PIECES	4	100	4	3
	<b>PRACTICAL</b>				
1244	PATTERN MAKING AND CONSTRUCTION- II	4	100	8	6 Hours on 1 Days
1245	TEXTILE FINISHING & EVALUATION	4	100	9	6 Hours on 1 Days
	<b>TOTAL</b>	<b>20</b>	<b>500</b>		

TOTAL MARKS: 500

## SEMESTER -III

### DYEING & PRINTING: AND COLOR MANAGEMENT

PAPER NO.	TITLE	CREDITS			
			Max Marks	Period/ Week	Duration of Exam(Hrs)
	<b>THEORY</b>				
1341	DYEING, PRINTING AND COLOUR MEASUREMENT	4	100	4	3
1342	FASHION WORLD	4	100	4	3
	<b>PRACTICAL</b>				

1343	DYEING, PRINTING AND COLOUR MEASUREMENT	4	100	9	6 Hours on 1 Days
1344	FASHION ILLUSTRATION	4	100	8	
1345 (a)	INTERNSHIP	2	50	2	
1345 (b)	DISSERTATION	2	-	2	
	TOTAL	20	450		

TOTAL MARKS: 450

## SEMESTER -IV

### QUALITY ASSURANCE IN TEXTILE AND APPAREL

PAPER NO.	TITLE	CREDITS			
			Max Marks	Period/ Week	Duration of Exam (Hrs)
	<b>THEORY</b>				
1441	QUALITY ASSURANCE IN TEXTILES AND APPAREL	4	100	4	3
1442	ELECTIVES (Any two of the following): a) Textile Conservation and Documentation b) Extension Programme Designs c) Textiles for Home and Hospitality d) Fashion Merchandise Retail	4 each	800 100 100 100 100	4 4 4 4 4	3 3 3 3 3
	<b>PRACTICAL</b>				
1443	Textile Design Development and CAD	4	100	9	6 Hours on 2 Days

1444	DISSERTATION	4	150	4	
	TOTAL	20	550		

**Grand Total: 2000**

**NOTE:**

- **Pass Percentages:** Minimum marks required to pass the examination is 40% in each course, in theory and practical separately. However, the candidate must secure an overall aggregate of 50%.
- The marks obtained in the House Examination of M.Sc.(I) will be taken into account for the final allotment of the specialization/ elective subjects of M.Sc.(II). The concerned Institute will have the discretion to offer one or more elective subjects in a particular academic session (subject to the availability of logistic support).
- As per the University directive 25% of the maximum marks of each theory course will be assigned for internal assessment.
- The Practical Examinations shall be conducted over 2 days, 6 hours each day. 40 % of the marks for the practical examination shall be reserved for fieldwork and/or laboratory records of the candidates and will be awarded by the teacher responsible for the course.
- Seminar, placement reports and projects of individual papers will be evaluated by a panel of teachers internally and the marks will be sent to the University through the Head of the Department.
- The Dissertation work in III and IV Semester will be marked at the end of IV Semester for 150.
- Each Theory paper will have 1 period Tutorial per week.

# DETAILED COURSES

## SEMSTER 1

### ADVANCED FABRIC SCIENCE

<b>Paper No.</b>	<b>:</b>	<b>1142</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

#### OBJECTIVES

1. To understand the morphology of textile fibers and their relationship to physical properties
2. To become familiar with the types of yarns, their properties and usage
3. To understand various types of fabrics and their applications
4. To enhance awareness of innovations in fabrics for specific end uses

#### CONTENTS

#### PERIODS

##### UNIT I: Fiber structure and properties

10

- Molecular structure of textile fibers
- Morphology of fibers, crystalline and amorphous regions.
- Inter and intra-molecular forces in polymers.
- Structure investigation through X-ray diffraction, FTIR, NMR
- Fiber properties
- Physical properties of fibers and their effect on fabric performance- tensile properties, frictional properties, moisture absorption properties, thermal properties, optical properties, electrical properties
- Innovation in fibers – Micro fibers, hollow fibers, nano fibers

##### UNIT II: Spinning

12

- Processing of natural fibers- cotton, wool, jute, silk, and linen
- Processing of man made fibers
- Conventional spinning methods- ring spinning, rotor spinning
- Innovations in spinning techniques and yarns
- Textured yarns- properties and usages
- Yarn properties and their relation to fabric properties- yarn numbering systems, twist, crimp, hairiness, evenness.
- Strength, Elongation, Friction (yarn to yarn, Yarn to metal)

##### UNIT III: Fabric Construction

17

- Weaving
- Weaving cycle- relationship of the primary and secondary motions to each other and to other auxiliary motions
- Yarn requirements and preparation for weaving

- Types of looms
- Design interpretation and representation- draft and peg plan
- Properties of woven fabrics and their usage
- Knitting
- Classification of knits- warp and weft.
- Types of knitting machines
  - Principle, machine elements and working principles, design setting elements, methodology of setting of flat-bed and circular-bed machines
  - Special knitting machines
- Yarn preparation and requirement for knitting.
- Knitted fabric properties and evaluation- gauge, stitch length, GSM, dimensional stability, stretch properties, spirality
- Designing knitted fabrics
- Techniques for knitwear production- fully-cut, fully-fashioned and integral.
  
- Non-wovens and other manufacturing processes
- Production of non-woven
- Types of non-wovens
  - Application in various sectors- apparel and industrial
  - Properties and evaluation of non-wovens
- Nets and Laces
- Carpets

#### **UNIT IV: Special textiles - properties and use**

**6**

- Technical textiles
  - Industrial textiles
  - Medical textiles
  - Geo textiles
  - Sports
- Smart/ intelligent textiles
  - Phase change materials
  - Thermochromic / photochromic textiles
  - Electronic textiles
- Fabric composites

#### **RECOMMENDED READINGS**

- Adanur, S. (2000) Wellington Sears Handbook of Industrial Textiles, *Technomic Publishing Co. Ltd.*
- Ajgoankar, D. B. (1982) *Knitting Technology*, Mumbai, Universal Publishing Corp.
- Aswani, K. T. (1978) *Weaving Mechanisms*, Ahmedabad, Mahajan Book Distributors.
- Brackenbury Terry (2005) *Knitting Clothing Technology*, Blackwell Science Publishers
- Cook, J. G. (1993) *Hand Book of Textile Fibres, Man-made fibres*, England, Merrow Publishing Co. Ltd.
- Gociki, Z. J. (1977) *Watson's Textiles Design and Colour*, London, Newness Butterworths
- Horrock & Anand (2000) *Handbook of Technical Textiles*, Woodhead Publishers

- Lord Peter P (2003) Handbook of Yarn Production, Textile Institute
- Spencer, David J, (2005) *Knitting Technology: A Comprehensive Handbook an Practical Guide, 4<sup>th</sup> ed.* Woodhead, Cambridge.

## REFERENCES

- Arora, J. K. (2002) *Modern Weaving Technology*, Delhi, Abhishek Publication.
- Eric, Oxtoby (1975) *Spun Yarn Technology*, Butterworth Publication.
- Grayson, M. (1984) *Encyclopedia of Textile Fibers and Non-Woven Fabrics*, Wiley Interscience Publications.
- Ingold, T. S. and Miller, (1982) *Geo Textiles Handbook*, London, Thomas Telford.
- Nisbet, H (1978) *Grammar of Textile Designs*, Bombay, Taraporewala Sons and Co.
- Quia, L, (2004), *Nanotechnology in Textiles: Recent Developments and Future Prospects*, AATCC Review, Vol. 4, No. 5, May.
- Robinson and Mark (1965) *Woven Cloth Construction*, Butterworths and Co. Ltd.London
- Sengupta, R. (1984) *Weaving Calculations*, Bombay, Taraporewala Sons and Co.
- Singh, R. B. (1992) *Modern Weaving*, Ahmedabad, Mahajan Book Distributo

## APPAREL PRODUCTION

<b>Paper No.</b>	<b>:</b>	<b>1143</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

## OBJECTIVES

1. To familiarize students with the functioning of the garment industry.
2. To understand various processes and technical parameters of garment production.
3. To enhance awareness of sewn product, machinery and equipment.

## CONTENTS

## PERIODS

<b>UNIT I- Garment Industry</b>	<b>10</b>
<ul style="list-style-type: none"> <li>• Overview of the garment industry</li> <li>• Main sectors of the garment industry</li> <li>• Standards and specifications :parts, types and preparation of specification sheet</li> <li>• Assembling a garment in the industry:4 P's- parts, panels, pieces and products</li> <li>• Production capacity</li> </ul>	
<b>UNIT II: Pre-production</b>	<b>12</b>
<ul style="list-style-type: none"> <li>• Markers- planning, production, efficiency, methods of making</li> <li>• Spreading of fabric- requirements, methods, nature of fabric packages</li> </ul>	



- Cutting – objectives, methods
- Preparation before cutting-Fusing, ticketing and bundling- purposes and types
- Fusing- advantages, requirements, processes, equipment, methods and quality control
- Alternative methods of joining material: welding and moulding technology

### **UNIT III: Production**

**16**

#### **A) Sewing**

- Stitch types- suitability and usage
- Seam types- suitability and usage
- Feed systems
- Feed dogs
- Types of sewing Needles
- Types of sewing Threads

#### **B) Machinery and Equipment**

- Types of sewing machines-Basic lock stitch, chain stitch and over lock machines- (Parts, function and Sewing Defects)
- Other machines- blind stitch, bar tack, button sewing and buttonholing

#### **C) Sewing machine work Aids**

- Machine beds
- Machine tables
- Work chairs
- Bundle clamps
- Stackers
- Various machine attachments

### **UNIT IV: - Post production**

**10**

- **Garment finishing**- stain removal, cleaning, dry cleaning, pressing
- **Warehousing** - handling equipment, storage equipment, packaging equipment, transportation issues

### **RECOMMENDED READINGS**

- Apple J.M (1977) Plant Layout & Material Handling, New York, Ronald NY
- Bheda, R. (2003) Managing Productivity in Apparel Industry, New Delhi, CBS Publishers
- Brown, Patty and Rice Janett (1998) Ready to Wear Apparel Analysis (2nd Edition), Prentice Hall
- Carr H. &, Latham, B. (1984) The Technology of Clothing Manufacture, Blockwell Scientific Publication
- Chuter, A.J. (1995) Introduction to Production Managewment, Blockwell Scientific Publication
- Cooklin. G. (2000) Introduction to Clothing Manufacture, Blockwell Scientific Publication

- Glock and Kuntz. (1995) Apparel Manufacturing- Sewn Products Analysis
- Jacob Solinger. (1988) Apparel Manufacturing Handbook, Bobbin Media Corp.
- NITRA TABLETS, (2006) NITRA
- Sewing threads, (2006) NITRA

## **HISTORIC TEXTILES AND COSTUMES**

<b>Paper No.</b>	<b>:</b>	<b>1144</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/ week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

### **OBJECTIVES**

1. To study the textiles and costumes in the ancient world
2. To trace the development of western costume through the ages
3. To become familiar with the styles and special features in costume from ancient world till 19<sup>th</sup> century

## **CONTENTS**

## **PERIODS**

### **UNIT I: Importance of world textiles and costumes in historical perspectives 8**

- Sources of Information
  - Archeological Discoveries
  - Ancient literature, chronicles and archival records
  - Museums, art galleries, inventories of churches and palaces
- The origin of dress
- Relationship between textile production and its use in dress

### **UNIT II: Material and Costumes in Early Civilizations 15**

- Textile fibers-origin, processing and spread  
(Linen and other bast fibers, wool and hair fibers cotton and silk with respect to different civilizations and nations)
- Dyes and colorants
- Other materials-skin/hide
  - Metal fibers
  - Beads, mirrors, shells and coins
- Costumes in the ancient world (300 B.C.-300A.D.)
  - Mesopotamia, Egypt, Crete, Greece, Rome

### **UNIT III: The Middle Ages (300A.D.0-1500A.D.) 8**

- Byzantium, Coptic
- The Feudal ages ((900A.D.-1300 A.D.)

- The late middle ages (1300 a.D.-1500A.D.)

**UNIT IV: The Renaissance (15<sup>th</sup> -16<sup>th</sup> century) 5**

- Italy
- France
- England

**UNIT V: Costumes in 17<sup>th</sup> to 19<sup>th</sup> century 14**

- Baroque and Rococo periods (1600A.D.-1900A.D.)
  - France and England
- The French revolution and thereafter (1790 A.D.-1900 A.D.)
  - The Directoire and Empire period (1790 A.D.-1820A.D.)
  - The Romantic period (1820A.D.-1850 A.D.)
  - The Crinoline period (1850 A.D.-1869A.D.)
  - The Bustle period (1870 A.D.-1900A.D.)

**RECOMMENDED READINGS**

- Black, J.A and Garland M :( 1978) *A History of Fashion*, London, Orbis Publishing, Ltd.
- Blanche, P. :(1975) *History of Costume*, New York, Harper and Row
- Boucher.(1966) *A History of Costume in the West*, London, Thames and Hudson
- Bradley, C (1970) *History of World Costume*, London, Peter Owen Ltd
- Chenoune, F. (1993) *The History of men's fashion*, Paris, Flammarion (translated by Dussinberre D.)
- Cumming, Valerie (2004) *Understanding Fashion History*, London, Batsford
- Cunnington, P. (1970) *Costume*, Pennsylvania, Dufour Editions Inc.
- Laver, J. (1969) *A Concise History of Costume*, London, Thames and Hudson
- Lester, K. M. (1956) *Historic Costume*, Chas A Bennett Co. Inc. Illinois,
- Tortora, P. G. and Eubank K. (1995) *Survey OF Historic Costume*, New York , Fairchild

**PATTERN MAKING AND CONSTRUCTION-I**

<b>Paper No.</b>	<b>:</b>	<b>1145</b>	<b>PRACTICAL</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Practicals</b>	<b>:</b>	<b>3 practicals/week (9 periods/week)</b>	
<b>Practical Load</b>	<b>:</b>	<b>36 practicals/semester</b>	

**OBJECTIVES**

1. To develop skills in different techniques of pattern development and construction for upper garments

2. To understand the principles of grading standardized bodice and sleeve slopers to various sizes

## CONTENTS

## PRACTICALS

### UNIT I: Pattern development through draping

12

- Basic principles and techniques of draping- basic bodice and its variations- symmetrical and asymmetrical

### UNIT II: Pattern development through flat pattern

12

- Principles of flat pattern making- dart manipulation, contouring, additional fullness
- Garment components –sleeves and cuffs, necklines, collars, plackets and yokes
- Developing industrial patterns with complete set of markings in fitted and semi fitted upper garments
- Preparation of muslin mock up for the pattern

### UNIT III: Grading standard size bodice blocks

4

- Bodice and sleeve slopers to various sizes

### UNIT IV: Construction of garment components

8

- Construction of upper garment components- necklines, collars, plackets, sleeve and cuffs, pockets and yokes

### RECOMMENDED READINGS

- Armstrong, Helen Joseph. (2000) *Pattern Making for Fashion Design, 4<sup>th</sup> ed.* Pearson
- Crawford Connie Amaden. (1989) *The Art of Fashion draping, 2<sup>nd</sup> ed.* New York, Education Ptc. Ltd. Fairchild Publications.
- Jaffe Hilde and Nuric Relic. (1993) *Draping for Fashion Design*, New Jersey, Fashion Institute of Technology.

## SEMSTER 2

### RESEARCH METHODS AND SEMINAR

Paper No. : 1241  
Maximum Marks : 100  
Credits : 4  
Teaching Periods : 4/week  
Teaching Load : 45-50 periods/semester

**THEORY**

### OBJECTIVES

- To understand the background of research methods and their application in the field of Fabric and Apparel Science

- To study various types of researches and prepare proposals
- To gain knowledge about the tools and techniques of research
- To study the application of statistical software in specific areas of Fabric and Apparel Science
- To gain the experience of conducting literature search from various sources independently and making an academic presentation using current technology.

## CONTENTS

## PERIODS

<b>UNIT I: Scope of research methods</b>	<b>2</b>
<ul style="list-style-type: none"> <li>• Scientific approach to research</li> <li>• Role of research methods in Home Science and Fabric and Apparel Science</li> <li>• Objectives of research</li> <li>• Qualitative and quantitative research</li> </ul>	
<b>UNIT II: Types of research</b>	<b>12</b>
<ul style="list-style-type: none"> <li>• Historical, survey, ex post facto, field study, intervention study, experimental, case study, social research, longitudinal and cross sectional studies etc.</li> <li>• Research design- basic principles, purpose, scheme and components</li> </ul>	
<b>UNIT III: Definition and identification of research problems</b>	<b>4</b>
<ul style="list-style-type: none"> <li>• Selection of area of research</li> <li>• Formulation of hypothesis and objectives</li> <li>• Types of variables, concepts and constructs</li> </ul>	
<b>UNIT IV: Sampling</b>	<b>4</b>
<ul style="list-style-type: none"> <li>• Population and sample</li> <li>• Probability sampling</li> <li>• Non- probability sampling</li> </ul>	
<ul style="list-style-type: none"> <li>• Tools and techniques of data collection</li> <li>• Informal and focused group discussion</li> <li>• Interview</li> <li>• Questionnaire</li> <li>• Observation</li> <li>• Scaling methods</li> <li>• Social mapping</li> <li>• Projective techniques</li> <li>• Reliability and validity of measuring tools</li> </ul>	<b>10</b>
<b>UNIT V: Data tabulation and analysis technique</b>	<b>4</b>
<ul style="list-style-type: none"> <li>• Statistical</li> <li>• Graphical</li> <li>• Content analysis</li> </ul>	
<b>UNIT VI: Scientific writing and communication</b>	<b>9</b>

- Critical appraisal of select research works
- Scientific writing of- articles in journals, research reports, dissertations, bibliography, appendices etc.
- Formulation of outlines- reasons, types-topic/conceptual/sentence/paragraph, tables and figures
- Writing of a research proposal

## **UNIT VII: Seminar**

The faculty of the department will approve the student's topics for the seminar. Only token guidance will be provided so that it remains primary each student's own piece of work. The selection of topics must be guided by current trends in theory, research and application of design and technology. The student will be expected to collect the material, analysis and organize the information and present a critical review of the topic before the faculty for evaluation. The presentations will be followed by discussions. The student also submits a written report of the seminar with references.

## **RECOMMENDED READINGS**

- Bernard, H.R. (2000) *Social Research Methods: Qualitative and Quantitative Approaches*, Thousand Oaks California, Sage Publications.
- Black, J. A. & Champion, D.J (1976) *Methods and Issues in Social Research*, New York, John Wiley and Sons.
- Blaxter, L. Hughes, C. and Tight, K. (1999) *How to Research*, New Delhi, Viva Books.
- Denscombe, M (1999) *The Good Research Guide for Small Scale Social Research Projects*, New Delhi, Viva Publications.
- Fowler, F.J. (1984/88) *Survey Research Methods: Applied Social Research Methods Series, Vol.1* Newbury Park, California, Sage Publications.
- Holstein, J.A. and Gubrium, J.F. (1995) *The Active Interview: Qualitative Research Methods, Vol. 37*, Thousand Oaks, California, Sage Publications.
- Yin, R. Y. (1984) *Case Study Research: Design and Methods: Applied Research Methods Series*, Newbury Park, California, Sage Publications.

## **REFERENCES**

- Agarwal, B.C. (1986) *Communication Research for Development-ISRO Experience*, New Delhi, Concept Publication House
- Bell, J. (1999) *Doing your Research Project: Guide for First Time Researchers in social Sciences*, New Delhi, Viva Books.
- Gunter, B. (2000) *Media Research Methods: Measuring Audiences Reactions and Impact*, London, Sage Publications.
- Neale, J. M. and Liebert, R. M. (1986) *Sciences and Behaviour: An Introduction to Methods of Researches*, New Delhi, Sage Publication.
- Phillips, N. and Hardy, C. (2002) *Discourse Analysis: Investing Processes of Social Construction. Quantitative Research Methods Series*, California, Sage Publication.
- Tuckett, D. (1988) *Thinking, Feeling and Being: Clinical Reflection on Fundamental Antimony of Human Beings and the World*, London, Routledge.

## TEXTILE FINISHING AND EVALUATION

<b>Paper No.</b>	<b>:</b>	<b>1242</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

### OBJECTIVES

1. To understand the inter-relation of fiber structure and its properties
2. To study the application and mechanism of textile finishes
3. To enhance awareness in future trends in textile finishing

### CONTENTS

	<b>PERIODS</b>
<b>UNIT I: Relationship of fiber structure to the chemical properties (Cotton, Linen, Silk, Wool, Polyester, Nylon, Modacrylic, Spandex)</b>	<b>5</b>
<ul style="list-style-type: none"><li>• Effect of acids, alkalis, oxidizing and reducing agents</li><li>• Sensitivity to micro-organisms and insects, effect of sun light and air</li></ul>	
<b>UNIT II: Application of finishes</b>	<b>4</b>
<ul style="list-style-type: none"><li>• Requirement for different substrates</li><li>• Methods of application- practices and suitability</li></ul>	
<b>UNIT III: Finishes - Preparatory processes</b>	<b>10</b>
<ul style="list-style-type: none"><li>• Cellulosics- desizing, scouring, bleaching, mercerization</li><li>• Protein- degumming, weighting, dewaxing, scouring, bleaching, carbonising, milling</li><li>• Man-mades- scouring, bleaching, heat setting</li></ul>	
<b>UNIT IV: Finishes - Handle and Appearance</b>	<b>7</b>
Chemistry, method of application and evaluation of	
<ul style="list-style-type: none"><li>• Softening and Stiffening finishes</li><li>• Optical brightening agents</li><li>• Peach finish</li><li>• Enzymatic finishes- bio-polishing, stone wash, sand wash etc.</li><li>• Special calendering</li></ul>	
<b>UNIT V: Finishes – Functional</b>	<b>14</b>
Chemistry, method of application and evaluation of	
<ul style="list-style-type: none"><li>• Water repellent finishes</li><li>• Soil and stain repellent finishes</li><li>• Setting finishes (cellulosics, wool and man-mades)</li><li>• Anti-crease/ durable press finishes</li><li>• Heat setting</li><li>• Anti-static finishes</li></ul>	

- Softeners
- Flame retardant finishes
- Anti microbial finishes
- Moth proofing
- UV protective finishes
- Coating and lamination

**UNIT VI: Innovations in textile finishing**

**6**

- Ecological concerns and eco friendly processing of textiles
- Microencapsulation
- Special effect finishes
- Nanotechnology in field of textile finishing

**RECOMMENDED READINGS**

- Derek, Heywood (Ed) (2003) *Textile Finishing*, UK, Society of Dyers and Colorists
- Marsh, J.T. (1979) *An Introduction to Textile Finishing*, Bombay, B.I. Publications
- Rouette, H.K. (2001) *Encyclopedia of Textile Finishing, Volumes 1 to 3*, Berlin, Springer
- Schindler, W.D. and Hauser, P.J. (2004) *Chemical Finishing of Textiles*, The Textile Institute, England, Woodhead Publishing Ltd.
- Trotman, E. R. (1984) *Dyeing and Chemical Technology of Fibers*, Sixth Edition, England, Charles Griffin and Company Ltd.
- Vigo, Tyrone L. (1994) *Textile Processing and Properties, Preparation, Dyeing, Finishing and Performance*, Amsterdam, Elsevier Science B.V.

**WORLD TEXTILES: TECHNIQUES AND MASTERPIECES**

<b>Paper No.</b>	<b>:</b>	<b>1243</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

**OBJECTIVES**

1. To study the textile traditions of the world
2. To study the important textile arts in their historical perspective
3. To appraise the role of Indian textiles vis-à-vis developments in the world textiles
4. To create awareness and foster appreciation of textile masterpieces of the world

**CONTENTS**

**PERIODS**

**UNIT I: Development of tools and techniques of production with respect to different civilizations and nations**

**10**



- Felt and bark cloth
- Plaiting and basketry
- Spinning
- Weaving
- Tapestry and rug weaving
- Knitting
- Netting, knotting and crochet
- Embroidery
- Dyeing and Printing

**UNIT II: Design and ornamentation in textiles** **5**

- Symbolism and significance of designs incorporated
- Impact of nature and geographical location, mythology and religion, trade, invasions and conquests and political patronage

**UNIT III: Beginnings of the textile industry in ancient civilizations** **5**

- Mesopotamia
- Egypt
- Persia
- Greece
- Rome
- China
- India

**UNIT IV: Study of masterpieces of world textiles Part I: Structural Designs** **15**

(With respect to history, construction techniques, styles colors, motifs and centers of production)

- Brocades (China, India, Persia, Byzantium, Spain, Italy and France)
- Tapestries (Greece, Coptic, Europe, Peru)
- Carpets and Floor coverings (Middle and Far East)
- Shawls (India, England, France )
- Laces ( Europe )
- Linen damasks ( Ireland and Belgium )

**UNIT V: Study of masterpieces of world textiles Part I: Applied Designs** **15**

(With respect to history, construction techniques, styles colors, motifs and centers of production)

- Resist dyed fabrics ( India, Indonesia and Japan )
- Printed textiles ( India , France and England )
- Embroideries (China, Persia and England)
- Textiles of-
  1. Pre-Hispanic, Latin and South America
  2. Colonial North America

## RECOMMENDED READINGS

- (1973) *The Last Two Million Years*, London, Edited and Published- The Readers Digest Association Inc.
- Annemarie Seiler-Baldinger (1979) *Classification of Textile Techniques* Ahmedabad, India, Calico Museum of India
- (1980) *Encyclopaedia of Textiles*, Edition of American Fabrics Magazine, New Jersey, Prentice Hall,
- Gillow John and Sentance Bryan (1999) *World Textiles*, London, Thames and Hudson
- Ginsburg, Madeleine (Ed), (1993), *Illustrated History of Textiles*, London, Studio Edition.
- Harris, Jennifer (Ed), (1993) *Textiles - 5000 Years*, London, British Museum Press.
- Hecht, A. (1989) *Art of the Loom*, London, British Museum Publications.
- Lewis, E. (1953) *Romance of Textiles*, New York, The McMillan Company.
- Owen, Jones (1986) *Grammar of Ornament*, London, Omega Books.
- Wilson, Eva (2001) *8000 Years of Ornament*, London, The British Museum

## PATTERN MAKING AND CONSTRUCTION- II

<b>Paper No.</b>	<b>: 1244</b>	<b>PRACTICAL</b>
<b>Maximum Marks</b>	<b>: 100</b>	
<b>Credits</b>	<b>: 4</b>	
<b>Practicals</b>	<b>: 2 Practical/ week (4 periods/ practical)</b>	
<b>Practical load</b>	<b>: 24 practicals/ semester</b>	

## OBJECTIVES

1. To develop skills in different techniques of pattern development and construction for lower garments
2. To understand the principles of grading standardized skirt blocks to various sizes

## CONTENTS

## PRACTICALS

<b>UNIT I: Pattern development through draping</b>	<b>8</b>
• Basic principles and techniques of draping slim skirt and its variations	
<b>UNIT II: Pattern development through flat pattern</b>	<b>6</b>

- Styles of skirts and its components
- Pockets and yokes
- Waist bands
- Developing industrial patterns with complete set of markings in fitted and semi-fitted lower garments
- Preparation of muslin mock up for the patterns

**UNIT III: Grading standard size skirt blocks 2**

- Skirt block to various sizes

**UNIT IV: Construction of garment components 8**

- Construction of lower garment components- yokes, pockets, waist bands, hemlines

**RECOMMENDED READINGS**

- Armstrong, Helen Joseph. (2000) *Pattern Making for Fashion Design, 4<sup>th</sup> ed.* Pearson
- Crawford Connie Amaden. (1989) *The Art of Fashion draping, 2<sup>nd</sup> ed.* New York, Education Ptc. Ltd. Fairchild Publications.
- Jaffe Hilde and Nuric Relic. (1993) *Draping for Fashion Design*, New Jersey, Fashion Institute of Technology

**TEXTILE FINISHING AND EVALUATION**

<b>Paper No.</b>	:	<b>1245</b>	<b>PRACTICAL</b>
<b>Maximum Marks</b>	:	<b>100</b>	
<b>Credits</b>	:	<b>4 Practical</b>	
<b>Practicals</b>	:	<b>3 Practical /week (3 periods/Practical)</b>	
<b>Practical Load</b>	:	<b>36 practicals/ semester</b>	

**OBJECTIVES**

1. To apply and evaluate various textile finishes
2. To assess the effect of different finishes on fabric properties

**CONTENTS**

**Section A: Textile Finishing PRACTICALS**

1. Evaluation of various Fabrics desized and Scoured with agents in terms of Absorption time and wettability 2
2. Application of various bleaching agents on different fibers and their evaluation in terms of whiteness index and strength 2

3. Mercerisation of cellulosic fabrics with and without tension and their evaluation in terms of strength, luster and dyeability 3
4. Application of various flame retarding agents and their evaluation in terms of LOI, flaming time, char length. 2
5. Application of suitable water repellent and oil repellent finishes on different fibers and their evaluation in terms of wettability, water repellency. 2
6. Application of anti-creasing finishes and evaluation of their efficacy in terms of crease recovery angle, tensile strength and tear strength 3
7. Chlorination of wool and its effect on dimensional stability and dyeability. 2

### **Section B: Textile Testing**

1. Fiber Testing- Fiber Length 2
2. Yarn Testing- Yarn count, yarn Length, Crimp, tpi 5
3. Fabric Testing- Tensile strength, tear strength, Bursting Strength, fabric drape, Bending length, Crease recovery, Abrasion resistance 8

### **RECOMMENDED READINGS**

- Derek, Heywood (Ed) (2003) *Textile Finishing*, UK, Society of Dyers and Colorists.
- Marsh, J.T. (1979) *An Introduction to Textile Finishing*, Bombay, B.I. Publications.
- Rouette, H.K. (2001) *Encyclopedia of Textile Finishing, Volumes 1 to 3*, Berlin, Springer.
- Schindler, W. D. and Hauser, P.J. (2004) *Chemical Finishing of Textiles*, The Textile Institute, England, Woodhead Publishing Ltd.
- Trotman, E. R. (1984) *Dyeing and Chemical Technology of fibers*, Sixth edition, England, Charles Griffin and Company Ltd.
- Vigo, Tyrone L. (1994) *Textile Processing and Properties, Preparation, Dyeing, Finishing and Performance*, Amsterdam, Elsevier Science B.V.

## **SEMSTER 3**

### **DYEING, PRINTING AND COLOUR MEASUREMENT**

<b>Paper No.</b>	:	<b>1341</b>	<b>THEORY</b>
<b>Maximum Marks</b>	:	<b>100</b>	
<b>Credits</b>	:	<b>4</b>	
<b>Teaching Periods</b>	:	<b>4/week</b>	
<b>Teaching Load</b>	:	<b>45-50 periods/ semester</b>	

## OBJECTIVES

1. To understand the concept of color and its measurement
2. To study the theories, mechanism and use of various dyes and auxiliaries
3. To understand the concept of dyeing and printing of various substrates
4. with different classes of dyes

CONTENTS	PERIODS
<b>UNIT I: Color specification and measurement</b>	<b>4</b>
Color theory, color strength, optical density, K/S, L a*b*, L c*h* values, metamerism	
<ul style="list-style-type: none"><li>• Computer color matching system</li><li>• Commercial formulation of dyes</li></ul>	
<b>UNIT II: Dyeing</b>	<b>16</b>
<ul style="list-style-type: none"><li>• Dye fiber interaction</li><li>• Role of fiber structure in dyeing</li><li>• Theories of dyeing - kinetics and thermodynamics</li><li>• Application of dyes on various substrates<ul style="list-style-type: none"><li>- Mechanism of dyeing for various dye-fiber systems</li><li>- Effect of dyeing parameters and auxiliaries</li><li>- Dyeing of blends</li><li>- Dyeing with natural dyes</li></ul></li><li>• Mass coloration of manmade fibers</li><li>• Dyeing defects</li></ul>	
<b>UNIT III: Dyeing machines</b>	<b>5</b>
<ul style="list-style-type: none"><li>• Machines used for dyeing at the cottage and industrial level for fiber, yarn and fabric</li></ul>	
<b>UNIT IV: Chemistry and use of dyeing and printing auxiliaries</b>	<b>4</b>
<ul style="list-style-type: none"><li>• Water, wetting agents, electrolytes, solvents, dispersing agents, oxidizing and reducing agents, cationic fixing agents, sequestering agents, retarding agents, carriers, hygroscopic agents, stabilizers, discharging agents etc.</li><li>• Thickening agents- natural, modified and synthetic</li><li>• Suitability to the dyestuff and procedure of application</li></ul>	
<b>UNIT V: Printing</b>	<b>16</b>
<ul style="list-style-type: none"><li>• Methods of printing<ul style="list-style-type: none"><li>- Printing with block, roller, screen (flat bed, rotary), transfer, digital, flock, laser</li><li>- New developments in printing machines</li></ul></li><li>• Styles of printing<ul style="list-style-type: none"><li>- Direct style, dyed style, resist or reserve style, discharge style</li><li>- Application of various classes of dyes on different fibers</li><li>- Printing with natural dyes</li></ul></li></ul>	

- Finishing and after treatment of printed goods
- Printing defects

#### **UNIT VI: Color fastness of dyed and printed goods**

**3**

- Effect of washing, perspiration, crocking, light, dry-cleaning and bleaches

#### **RECOMMENDED READINGS**

- Chakraverty, R.R. and Trivedi, S.S. (1979) *Technology of Bleaching and Dyeing ( Vols I & II)*, Ahmedabad, Mahajan Brother
- Clarke, W (1977) *An Introduction to Textile Printing*, London, Butterworth and Co. Ltd.
- Duff, D.G. and Sinclair, R.S. (1990) *Giles Laboratory Course in Dyeing, 4<sup>th</sup> ed.*, West Yorkshire, England, Society of Dyers and Colorists
- Miles, L.W.C. (1994) *Textile Printing, 2<sup>nd</sup> ed.*, West Yorkshire, England, Society of Dyers and Colorists
- Park, J. (1993) *Instrumental Color Formulation: A Practical Guide*, West Yorkshire, England, Society of Dyers and Colorists
- SERI 2000, (2002) *Colors From Nature: Silk Dyeing Using Natural Dyes*, New Delhi, Oxford and IBH Publishing Company
- Shenai, V.A. (1979) *Technology of Printing, Vol II*, Bombay, India, Sevak Publications
- Shenai, V.A. (1987) *Chemistry of Dyes and Principles of Dyeing, Vol II*, Bombay, India, Sevak Publications
- Shenai, V.A. (1980) *Chemistry of Textile Auxiliaries, Vol II*, Bombay, India, Sevak Publications
- Storey, Joyce (1974) *Textile Printing*, London, Thames and Hudson
- Shore, John (Ed) (1990) *Colorants and Auxiliaries: Organic Chemistry and Application Properties, Vol. 1 & 2*, West Yorkshire, England, Society of Dyers and Colorists

#### **REFERENCES**

- Aspland, J.R. (1997) *Textile Dyeing and Coloration*, USA, AATCC
- Lewis, D.M. (1992) *Wool Dyeing*, West Yorkshire, England, Society of Dyers and Colorists
- Rouette, H.K. (2001) *Encyclopedia of Textile Finishing*, Vol 1-3, Berlin, Springer
- Shore, John (Ed) (1995) *Cellulosic Dyeing*, West Yorkshire, England, Society of Dyers and Colorists

## FASHION WORLD

<b>Paper No.</b>	<b>:</b>	<b>1342</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

### OBJECTIVES

- To understand the dynamics of fashion in relation to its retail
- To analyze the process of origin and merchandising of fashion in the fashion industry
- To study the functions of different components of fashion
- To review various forms of fashion promotion for fashion labels and brands
- To comprehend the cost and price mechanisms as exists in the fashion industry

### CONTENTS

### PERIODS

<b>UNIT I: Review of contemporary fashion</b>	<b>8</b>
<ul style="list-style-type: none"><li>• Development of costume in the 20<sup>th</sup> century fashion</li><li>• Couture</li><li>• Ready –to –wear</li></ul>	
<b>UNIT II: Creation of fashion</b>	<b>12</b>
<ul style="list-style-type: none"><li>• Fashion forecasting, seasons, cycles</li><li>• Interpreting themes</li><li>• Line development &amp; organization of a line</li><li>• Range planning, unusual designs</li><li>• Assortment planning</li></ul>	
<b>UNIT III: Segmentation of fashion</b>	<b>12</b>
<ul style="list-style-type: none"><li>• Role of a designer</li><li>• Role of a producer / manufacturer, contractor, jobber and merchandiser</li><li>• Sourcing (market levels)</li><li>• Retailers</li><li>• Consumers</li><li>• Fashion centers</li></ul>	
<b>UNIT IV: Fashion Promotion &amp; Branding</b>	<b>9</b>
<ul style="list-style-type: none"><li>• Visual merchandising (Shows, events, displays)</li><li>• Brand name and trade mark</li><li>• Packaging</li><li>• Product life cycle of certain brands</li></ul>	

## UNIT V: Costing and Pricing

7

- Factors affecting price determination
- Methods of accounting (cost and retail method)
- Cost sheet
- Retail pricing strategy

## REFERENCES

1. Aspelund Karl (2009), *Fashioning Society*, Fairchild Publication
2. Dickerson K.G., (2003), *Inside the Fashion Business*, 7<sup>th</sup> Edition , Pearson Education
3. Kieser S.J. and Garner M.B., (2008), *Beyond Design*, 2<sup>nd</sup> Edition , Fairchild Publication
4. Marion Frances Wolbers, (2009), *Uncovering Fashion*, Fairchild Books
5. Phaidon, (1998), *The Fashion Book*, Phaidon Press
6. (1989), *Revolution in Fashion 1715-1815*, The Kyoto Costume Institute
7. Sengupta .H. (2005) *Indian Fashion*, Pearson Education

## DYEING, PRINTING AND COLOUR MEASUREMENT

<b>Paper No.</b>	<b>:</b>	<b>1343</b>	<b>PRACTICAL</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Practical</b>	<b>:</b>	<b>3 practicals /week (3 periods/ practicals)</b>	
<b>Practical Load</b>	<b>:</b>	<b>36 practicals/semester</b>	

## OBJECTIVES

1. To measure and interpret color values of dyed and printed goods
2. To study the effect of various dyes and auxiliaries on color yield and dyeing quality
3. To dye and print natural and manmade fibers with different classes of dyes and its evaluation

## CONTENTS

## PRACTICALS

<b>UNIT I: Color measurement and its interpretation using computer color matching system</b>	<b>2</b>
<b>UNIT II: Dyeing of yarns/ fabrics of different fibers and fiber blends:</b>	<b>16</b>
<ul style="list-style-type: none"><li>• Application of various dyes</li><li>• Dyeing with natural dyes and mordents</li><li>• Effect of dyeing parameters and their evaluation using spectrophotometer</li></ul>	
<b>UNIT III: Preparation of screens for printing</b>	<b>2</b>
<b>UNIT IV: Printing in different styles using suitable dyes</b>	<b>15</b>
<ul style="list-style-type: none"><li>• Direct style: direct, reactive, azoic, vat, acid, printing with pigments</li><li>• Discharge style</li></ul>	



- Reserve style
- Dyed style
- Transfer printing.

## RECOMMENDED READINGS

- Chackraverty, R. R. and Trivedi, S. S. (1979) *Technology of Bleaching and Dyeing (Vols I & II)*, Ahmedabad, Mahajan Brothers.
- Clarke, W (1977) *An Introduction to Textile Printing*, London, Butterworth and Co. Ltd.
- Duff, D.G. and Sinclair, R.S. (1990) *Giles Laboratory Course in Dyeing, 4<sup>th</sup> ed.* West Yorkshire England, Society of Dyers and Colorists.
- Johnson, A. (1989) *The Theory of Colouration of Textiles, 2<sup>nd</sup> ed.* West Yorkshire, England, Society of Dyers and Colorists.
- Miles, L.W.C. (1994) *Textile Printing, 2<sup>nd</sup> ed.*, West Yorkshire, England, Society of Dyers and Colorists.
- Park, J. (1993) *Instrumental Color Formulation: A Practical Guide*, West Yorkshire, England, Society of Dyers and Colorists.
- SERI 2000, (2002) *Colours From Nature : Silk Dyeing Using Natural Dyes*, New Delhi, Oxford and IBH Publishing Company
- Shenai, V.A. (1979) *Technology of Printing, Vol. II*, Bombay, India, Sevak Publications.
- Shenai, V.A. (1987) *Chemistry of Dyes and Principles of Dyeing, Vol. II*, Bombay, India, Sevak Publications.
- Shenai, V.A. (1980) *Chemistry of Textile Auxiliaries, Vol. II*, Bombay, India, Sevak Publications.
- Storey, Joyce (1974) *Textile Printing*, London, Thames & Hudson.
- Shore, John (Ed) (1990) *Colourants and Auxiliaries: Organic Chemistry and Application Properties, Vol. 1&2*, West Yorkshire, England, Society of Dyers and Colorists.

## REFERENCES

- Aspland, J.R. (1997) *Textile Dyeing and Colouration*, USA, AATCC.
- Lewis, D.M. (1992) *Wool Dyeing*, West Yorkshire, England, Society of Dyers and Colorists.
- Rouette, H.K. (2001) *Encyclopedia of Textile Finishing, Vol. 1-3*, Berlin, Springer
- Shore, John (Ed) (1995) *Cellulosic Dyeing*, West Yorkshire, England, Society of Dyers and Colorists.

	<b>FASHION ILLUSTRATION</b>	<b>PRACTICAL</b>
<b>Paper No.</b>	<b>:</b>	<b>1344</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>
<b>Credits</b>	<b>:</b>	<b>4</b>
<b>Practical</b>	<b>:</b>	<b>2 practicals /week (4 periods/ practicals)</b>

**Practical Load : 24 practicals/semester**

**OBJECTIVES**

- Explore a range of materials and processes used in illustrating techniques
- To develop creative skills in illustrating styles and formats
- To produce a portfolio of design techniques and their ideas

**CONTENTS**

**PRACTICALS**

**Section A- Design- Materials, techniques and processes**

**UNIT I: Concept of form and shape:-dot –to – form** **1**

**UNIT II: Design Collection** **1**

- Nature
- Architecture
- Religion

**UNIT III: Media & Rendering** **2**

- color mixing & color ways
- various textures – fabric simulation

**UNIT IV: Classification of design/motif** **2**

- big & small
- enlargement & reduction
- according to growth of the motif

**UNIT V: Concept of design repeat** **2**

- motif / all over pattern
- placement of motif

**Section B- Illustrating Fashion**

**UNIT I: Sketching** **4**

- Basic anatomy-male, female, kids
- Fashion Figure proportions
- Live model drawing
  - heads
  - hands
  - feet
- Drawing from photographs

**UNIT II: Basic garment shapes** **2**

- Illustrating garment details and accessories in various media

- Drawing the fashion images as per themes
- Imaginative approach to fashion figures

### **UNIT III: Commercial application**

**4**

- Free hand figure drawing techniques
- Analyzing stylization- Exaggeration
- Developing own style with line drawing and color

### **UNIT IV: Presentation Techniques**

**6**

- Layout techniques
- Story board techniques

### **RECOMMENDED READINGS**

- Allen A. and Seaman J. (1996) *Fashion Drawing -The Basic Principles*, London, B. T. Batsford Ltd..
- Drudi E. and Paci T.(2001) *Figure drawing for fashion design*, Amsterdam, The Pepin Press
- Grosicki, Z. J. (1989) *Advanced Textile Design (4th ed) – Watson's*, London, Newnes- Butterworths.
- Ireland J. I. (2007) *New Fashion Figure Templates*, Singapore, Page one publishing Pvt Ltd

## **INTERNSHIP**

<b>Paper No.</b>	<b>:</b>	<b>1345 (a)</b>
<b>Max. Marks</b>	<b>:</b>	<b>50</b>
<b>Teaching Periods</b>	<b>:</b>	<b>2 / week</b>
<b>Teaching Load</b>	<b>:</b>	<b>24 / Semester</b>

### **I INTERNSHIP**

#### **OBJECTIVES**

- To gain hands on experience of working in the areas related to Fabric and Apparel Sciences like textile testing, apparel manufacturing and marketing, textile processing, textile conservation, etc.

The students could work with Government agencies, international agencies, NGO's and private organizations associated with production, testing and marketing textile products. The students must participate in the ongoing activities of the organization as advised by the faculty, collect the required information and prepare a written report to be presented in the department.

## **DISSERTATION**

<b>Paper No.</b>	<b>: 1345 (b)</b>
<b>Maximum Marks</b>	<b>: 100</b>
<b>Credits</b>	<b>: 4</b>
<b>Teaching Periods</b>	<b>: 4/week</b>
<b>Teaching Load</b>	<b>: 45-50 periods/semester</b>

### **II DISSERTATION**

#### **OBJECTIVES**

- To undertake an independent piece of research in the area of Fabric and Apparel science related to the historical or contemporary issues that contribute to the advancement of knowledge.

The topic chosen should show originality in conceptualization/selection, exhibit systematic habits and regularity of work, thoroughness in methodology and statistical analysis, overall research competence and ability to put research findings in context. The research work should contribute to the advancement of knowledge in the field. The student must be guided and supervised by a member of the teaching faculty of the department. The research culminated must reflect the student's independent work.

## **SEMSTER 4**

### **QUALITY ASSURANCE IN TEXTILES AND APPAREL**

<b>Paper No.</b>	<b>:</b>	<b>1441</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

#### **OBJECTIVES**

1. To impart awareness about the need and scope of quality assurance
2. To be informed about the standards existing all over the world and certifying bodies.

#### **CONTENTS**

#### **PERIODS**

**UNIT I: Concept and scope of quality in fabrics and apparel**

**8**

- Quality and consistency among textile products- TQM, Target markets, Product attributes.
- Quality and consumer safety.

**UNIT II: Quality Control organizations, standards and regulations** **8**

- AATCC, ASTM, ISO, BIS, INDA, GINETEX, etc.
- Eco-labels, silk mark, wool mark, other international labels
- Regulations on Apparel Labeling- Care labels, Fibre ID labels.
- Regulations on Apparel Industry Practices.

**UNIT III: Assurance of quality** **16**

- Fiber
  - Identification and testing
  - Fibre length, evenness, fineness, tensile strength, crimp, moisture regain and their implications on quality
- Yarn
  - Appearance and grading
  - Yarn count, tensile strength, elongation and elastic recovery
  - Twist, crimp, fineness, uniformity- standards available and their implications on quality
- Fabric
  - Compactness of fabric structure
  - Strength properties- Tensile, bursting, tear
  - Color fastness properties
  - Dimensional stability
  - Performance properties- resistance to abrasion, pilling, wrinkling, burning.
  - Quality parameters for fabrics suitable for various end uses-apparel, household textiles, industrial textiles.

**UNIT IV: Inspection and managing quality** **10**

- Fabric Inspection procedure and fabric defects.
- Tools for managing quality
- Evaluating Garment quality
  - Critical control points
  - Components of garments

**UNIT V: Quality control in Wet Processing** **6**

- Toxicology of synthetic colorants and finishing chemicals
- Harmful effects of dyes and chemicals
- Ecological concerns and eco-friendly processing of textiles
  - Effluent treatment plants
  - Carbon footprint assessment

## RECOMMENDED READINGS

- Ashenhurst (1998) *Textile Calculations and Structure of Fabric*, Abhishek Publishing.
- Bhardwaj, S.K. and Mehta, P.V. (1998) *Managing Quality in the Apparel Industry*, New Delhi, New Age International.
- Booth, J.E. (1996) *Principles of Textile Testing*, 3<sup>rd</sup> ed., New Delhi, CBS Publisher and Distributors.
- Kothari, V.K., Behera, B.K., (1996) *Quality Control in Textiles and Apparel Industry-A & B*, Delhi, Department of Textile Technology, IIT – Proceedings of Workshop- 3-5 October.
- Kudolph Sara J., (1998) *Quality Assurance of Textiles and Apparel*, Fairchild publication.
- Saville, B.P., (2000) *Physical Testing of Textiles*, Textiles Institute.
- Skinkle, H. John (1972) *Textile Testing*. 2<sup>nd</sup> ed., Bombay, Taraporevala Sons.
- Stamper, Anita A., (2005) Linda B Donnell, *Evaluating Apparel Quality* (2<sup>nd</sup> ed.), Fairchild Publication.

## TEXTILE CONSERVATION AND DOCUMENTATION

<b>Paper No.</b>	<b>:</b>	<b>1442 (a)</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/ week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

## OBJECTIVES

1. To understand textile documentation methods and their collection
2. To appraise the role of museum in conservation and exhibition
3. To develop technical and analytical skills for textile conservation

## CONTENTS

## PERIODS

### UNIT I: Museums

- Importance, History, Types, Textile Museums in India, Role of conservator **2**

### UNIT II: Basic Textile Technology

**6**

- Fibers and their properties
- Fabric Construction
- Finishes
- Dyeing and printing

### UNIT III: Basics of Conservation

**8**

- Principles
- Materials
- Types-Preventive and Curative
- Factors deteriorating textiles- light, temperature, humidity, pests and pollution and micro organisms
- Damages that can occur
- Restoration

#### **UNIT IV: Collection Maintenance**

**8**

- Workspace and Equipment
- Housekeeping
- Checking and monitoring
- Materials and supplies
- Handling
- Packing Unpacking
- Moving
- Rolling
- Labeling
- Cleaning
- Dealing special problems

#### **UNIT V: Storage and Display**

**8**

- General requirements for storage
- Types- Flat, rolled, framed or mounted for textiles
- Garments- boxes, hanged
- General requirements for display
  - Showcases and galleries
  - Frames
  - Mannequins
  - Hangers and other supports
  - Accessories

#### **UNIT VI: Project Work**

**15**

- Museum study
- Examination of textiles- fibers, weave, type of textile based on technique of manufacture
- Collection of conservation quality materials
- Analysis of documentation procedures of collection in college, sample documentation

- Analysis of environmental conditions in work area
- Survey of external and internal environmental factors of any selected museum
- Cleaning methods- stain removal
- Restoration methods- darning, patching, lining samples
- Hands on- flat, rolled and framed storage for textiles
- Hands on- box and hanging storage for costumes
- Special techniques for special items
- Textile and Costume display techniques

## RECOMMENDED READINGS

- King, Rosalie Rasso (1985) *Textile Identification- Conservation and Preservation*, New Jersey, Noyes Publications
- Landi, Sheila (1985) *The Textile Conservator's Manual*, London, Butterworths and Co.
- Mc Lean Catherine C. and Cannel, Patricia, (Eds) (1986) *Textile Conservation*, The Conservation Center, Los Angeles Country Museum of Art
- Schweppe Helmut (1987) *Practical Information for Identification of Early Synthetic Dyes*, Washington DC, Conservation Analytical Laboratory, Smithsonian Institute
- Science for conservators, Crafts Council Conservation Teaching Series,---An Introduction to materials, 1983- Cleaning, 1984- Adhesives and coatings
- Thomson, Garry, (ED) (1984) *Problems and Ethics of Textile Conservation*, London, Butterworths and Co.
- Thompson G (1979) *The Museum Environment*, Butterworths, U.K
- Torracca G (1978) *Solubility and Solvents for Conservation Problems*, ICCROM

## REFERNCES

- Journal of Indian Museums, Museums Association of India, National Museum, New Delhi

## EXTENSION PROGRAMME DESIGNS

<b>Paper No.</b>	<b>:</b>	<b>1442 (b)</b>	<b>THEORY</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/ week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/ semester</b>	

## OBJECTIVES

1. To extend outreach activities among identified target groups
2. To inculcate a sound understanding of the applicability and relevance of various teaching aids for usage in the above mentioned extension areas
3. To enhance their effectiveness in the usage of teaching aids for identified socio-economic target groups

## CONTENTS

## PERIODS



**UNIT I: Facilitators in extension programme (methods and materials) 15**

- Non-verbal Communication-types (proxemics and kinesics)and significance
- Verbal Communication-acquiring language skills for speaking, writing, improving language competencies etc.
- Development of A/V aids for various target groups
- Selection of various A/V aids based on factors like-suitability, impact, frequency, cost etc.
- Learning theories
- Developing public speaking skills

**UNIT II: Programme planning 8**

- Identification of problem
- Decision making about problem
- Establishing recommendations for future economic and social development of the target group

**UNIT III: Programme implementation 10**

- Situation and need analysis
- Determining programme objectives
- Determining a plan of work
  - Identifying target groups
  - Drawing out a plan of action
  - Audio-visual aids to be used
  - Collaborating partners
  - Learning experiences sought
- Participation of the people
  - Need for involvement of people
  - Planning with/for people
  - Case study
- Role of specialist
- Persuasion method

**UNIT IV: Programme evaluation 6**

- Types
- Purpose
- Contribution to programme planning
- Process and monitoring
- Feedback
- Case studies of NGO's and extension programmes

**RECOMMENDED READINGS**

- Kumar, B. and Hansra (2000) *Extension Education for Human Resource Development*

- Lynton, R and Pareek, U. (1990) *Training for Development*, New Delhi, Sage Publication, New Delhi, Concept Publishers
- Patel, V.C. (1987) *Women Entrepreneurship- Developing New Enterprises*, 2<sup>nd</sup> edition, Ahmadabad
- Rao, V.L. (1986) *Industrial Entrepreneurship in India*, Allahabad, Chug Publication
- Rather B.S. (1999) *Entrepreneurship in 21<sup>st</sup> Century*, New Delhi, Dhamija Publication
- Ray, G.L. (1999) *Extension Communication and Management*, 4<sup>th</sup> edition, Calcutta, Naya Prakash.
- Rogger E. H. (1983) *Diffusion of Innovation*, New York, Free Press
- Supe S. V., (1989), *An Introduction to Extension Education*, oxford IBH Publishing Co. Pvt. Ltd., New Delhi, US Department of Agriculture, New Delhi
- Waghmare S. K., (1989), *Teaching Extension Education*, Federal Extension Service

### **TEXTILES FOR HOME AND HOSPITALITY**

<b>Paper No.</b>	:	<b>1442 (c)</b>	<b>THEORY</b>
<b>Maximum Marks</b>	:	<b>100</b>	
<b>Credits</b>	:	<b>4</b>	
<b>Teaching Periods</b>	:	<b>4/ week</b>	
<b>Teaching Load</b>	:	<b>45-50 periods/ semester</b>	

#### **OBJECTIVES**

1. To acquire knowledge of history and contemporary concepts of textiles in home and hospitality sector.
2. To understand the nature and potential of these Indian textiles in the global scenario
3. To study the fabrics, finishes, detailed design and selection criteria for textiles used in home and hospitality.
4. To gain knowledge regarding the use, care and maintenance of various classes of textiles used in home and hospitality.

### **CONTENTS**

### **PERIODS**

#### **UNIT I: Home Textiles**

**14**

- Classification of home textiles \_ Bedding and bed furnishings, kitchen and table linen, bathroom furnishings, floor coverings, window treatments and upholstery fabrics
- Cultural and historical perspectives
- Period styles in home furnishings
- Contemporary trends and forecast for the future
- Innovations in home textiles including high performance materials and use of finishes to enhance functionality.

**UNIT II: Textiles for hospitality** **10**

- Sectors( hospitals, travel and tourism, modes of travelling, restaurant and hotels)
- Influence of the fashion, economy and technology on textiles for hospitality.

**UNIT III: Selection, use, care, storage and maintenance** **14**

- Various parameters of selecting textiles for home, hospitals, travel and tourism.
- Quality testing of materials
- Care labels
- Maintenance at domestic and commercial levels.

**UNIT IV: Manufacturing and production capacity of textiles for home and hospitality** **10**

- Product and market positioning, supply and distribution structure of major centers (mill and decentralized sectors)

**RECOMMENDED READINGS**

- (1999) *Terence Conran's New House Book*, London, Chancellor Press
- Howes, Karen (1997) *Making the Most of Bedrooms*, London, Conran Octopus
- Lebeau, Caroline (2004) *Fabrics- the Decorative Art of Textiles*, London, Thames and Hudson
- Merivale, Margaret E.D. (1943) *Furnishing the Small Home*, London, Studio
- Nieswand, Nonie (1998) *Bedrooms and Bathrooms*, London, Conran Octopus
- Ranall, Charles T. (2002) *Encyclopedia of Window Fashions*, California, Randall International
- Sheridan Michael (1955) *Furnisher's Encyclopedia*, London, National Trade Press
- Starey, Walter Rendell E.D. (1945) *Furnishing with Color*, New York, American Studio Books
- Tomrley, C.G. (1939) *Furnishing Your Home*, London, George Allen and Unwin
- Wingate, Isabel B. (1949) *Textile Fabrics and Their Selection*, New York, Prentice Hall
- Yates, Simon (1999) *Encyclopedia of Chairs*, London, Quantum Book

**FASHION MERCHANDISE RETAIL**

<b>Paper No.</b>	<b>:</b>	<b>1442 (d)</b>	<b>THEORY</b>
<b>Max. Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>	
<b>Teaching Load</b>	<b>:</b>	<b>45-50 periods/semester</b>	

**OBJECTIVES**

1. To understand the concepts of merchandising and retailing

2. To study the principles of merchandise management and financial planning
3. To study in detail various components of a retail store

<b>CONTENTS</b>	<b>PERIODS</b>
<b>UNIT I: Introduction to fashion retailing</b>	<b>3</b>
<ul style="list-style-type: none"> <li>• Economic significance</li> <li>• Trends in retail industry</li> <li>• Classification of retail institutions on the basis of ownership, retail strategy mix, non store sales.</li> </ul>	
<b>UNIT II: Retail location</b>	<b>4</b>
<ul style="list-style-type: none"> <li>• Importance of location to retailer</li> <li>• Trading area analysis</li> <li>• Site selection</li> </ul>	
<b>UNIT III: Retail organization</b>	<b>5</b>
<ul style="list-style-type: none"> <li>• Setting up of retail organization</li> <li>• Organisational patterns</li> <li>• Personnel management</li> </ul>	
<b>UNIT IV: Merchandise planning and management</b>	<b>8</b>
<ul style="list-style-type: none"> <li>• Assortment planning</li> <li>• Buying plan, buying techniques, placing an order</li> <li>• Market logistics</li> </ul>	
<b>UNIT V: Financial planning</b>	<b>8</b>
<ul style="list-style-type: none"> <li>• Methods of accounting- cost and retail method</li> <li>• Forecasting and budgeting- dollar control and unit control</li> <li>• Financial inventory control</li> </ul>	
<b>UNIT VI: Visual merchandising</b>	<b>7</b>
<ul style="list-style-type: none"> <li>• Components of a store image</li> <li>• Atmosphere- interior and exterior</li> <li>• Store layout and traffic flow</li> <li>• Interior displays</li> <li>• Customer services</li> </ul>	
<b>UNITVII: Retail promotion</b>	<b>5</b>
<ul style="list-style-type: none"> <li>• Advertising</li> <li>• Sales promotion and personal selling</li> <li>• Planning a retail strategy mix</li> <li>• Customer relationship management</li> </ul>	
<b>UNITVIII: Pricing in retail</b>	<b>4</b>

- Factors affecting retail price strategy
- Development of retail price strategy

## UNIT IX: Retail control

2

### RECOMMENDED READINGS

- Constantino. M. (1998) *Fashion Marketing and P.R.I*, London, BT Batsford
- Diamond. E. (2005) *Fashion Retailing a Multi Channel Approach*, Prentice Hall
- Donnellan, John. (1999) *Merchandise Buying & Management*, Fairchild
- Darke Mary Frances., Spooone Jaince Harrison, Greenwald Herbert (1992) *Retail Fashion Promotion & Advertising*, Macmillan
- Evans J.R., Burman B. (1989) *Retail Management- a Strategic Approach*, New York, McMillan
- Grace E. (1978) *Introduction to Fashion Merchandising Management*, New Jersey, Prentice Hall
- Jackson Tim (2001) *Mastering Fashion and Merchandising Management*, London, McMillan Press
- Harder Frances (2004) *Fashion for Profit*
- Mongenstein M., Harriet S. (1986) *Modern Retailing- Principles and Practices*, John Wiley and Sons
- Sidney, Packard, Winters A., Aneirod, Natha (1983) *Fashion Buying and Merchandising*, New York, Fairchild publications
- Stone Elaine (1985) *Fashion Merchandising*, McGraw Hill Inc.
- Stone Elaine (1985) *Fashion Buying*, McGraw Hill Inc.
- Swanson K.K., Everett Judith C. (2000) *Promotion in Merchandising Environment* Fairchild
- Winters A. Aurthur, Goodman S. (1988) *Fashion Advertising and Promotion, 6<sup>th</sup> edition*, New York, Fairchild Publications.

### TEXTILE DESIGN DEVELOPMENT AND COMPUTER APPLICATION

<b>Paper No.</b>	<b>:</b>	<b>1443</b>	<b>PRACTICAL</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>	
<b>Credits</b>	<b>:</b>	<b>4</b>	
<b>Practicals</b>	<b>:</b>	<b>3 practicals/week ( 3 periods/Practical)</b>	
<b>Practical Load</b>	<b>:</b>	<b>36 practicals /semester</b>	

### OBJECTIVES

- To conceptualize design and its implementation
- To develop creative and technical skills in designing
- To design and develop structural and applied design for product developme

**CONTENTS**

**PRACTICALS**

## **Section –A: Textile Design Development**

### **UNIT I: Design development** **4**

- Conceptualizing theme board/ mood board
- Interpreting theme board in line with elements of design

### **UNIT II: Grammar of Design** **7**

- Families of design
- Classification of design/motif
- Concept of design repeat

### **UNIT III: Design Application** **9**

- Structural designs
  - Woven designs – concept of design repeat, translation in the form of peg plans and drafts, understanding basic and decorative weaves, color ways, calculation of yarn requirement, sample development of woven fabrics
  - Knitted designs – concept of design repeat, patterning in knits, sample development of knitted fabrics creating new textures
- Applied design
  - Concept of design repeat, factors affecting design application
  - Design and development of blocks, stencils and screens

### **UNIT IV: Product development** **4**

- Using select themes to make product line of yardage fabric for apparels and household textiles.

## **Section –B: Computer Aided Design**

### **UNIT I: Introduction to CORELDRAW** **2**

- Introduction about the Toolbox
- Development of Prints

### **UNIT II: Drawing the details of the following in Corel draw and applying various texture and effects –** **6**

- Fashion details/Silhouette
  - Collar
  - Sleeves
  - Pockets
  - Skirts
  - Trousers
  - Silhouette
  - Accessories
- Illusion effects – created by fashion details, elements of design, color, textures.

–Draping the above created details on fashion figures

**UNIT III: Introduction to PHOTOSHOP** **2**

- Selection of a theme.
- Creating Mood board, Color palette (Color ways 3 in each)

**UNIT IV: Product Collection based on theme** **2**

- Garment collection/ home furnishing collection

**RECOMMENDED READINGS**

- Auberville, M. Dupont (1989) *Classic Textile Design*, London, Bracken Books
- (1992) *Choice: Publication of the Association of College and Research Libraries*, A Division of the American Library Association, Volume 30, Issues 1-6, American Library Association
- Doshi Saryu (Ed.) (1983) *An Age of Splendor- Islamic Art in India*, Bombay, Marg Publication
- Duggal , V. *A General Guide to Computer Aided Design and Drafting* , Mailmax Publications, New York
- Grosicki, Z.J. (1989) *Advanced Textile Design (4<sup>th</sup> Ed) - Watson's*, London, Newness Butterworths.
- Meller S and Eiffer. J (1991) *Textile Design*, London, Thames and Hudson
- Schoeser, Mary (1995) *International Textile Design*, UK, Laurence King Publishing
- Wilson Eva (1994) *8000 Years of Ornament*, London, the British Museum Press

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- (1994) *Textile Design II, Traditional Arabesque*, Singapore, Page One Publishing
- (1994) *Textile Design III, Traditional Stripes and Lattices*, Singapore, Page One Publishing
- (1994) *Textile Design IV, Traditional Sarasmic*, Singapore, Page One Publishing
- Rosthstein Natalie (1990) *Silk Designs the 18<sup>th</sup> century*, Boston, Bulfinch Press Book
- Smart, V. (1997) *Roop Samhita Collection of Textile Designs, 3<sup>rd</sup> ed.* Surat, Roopayan
- Swarup Shanti (1983) *Flora and Fauna in Mughal Art*, D. B. Bombay, Taraporevala and Sons

## **DISSERTATION**

<b>Paper No.</b>	<b>: 1444</b>
<b>Maximum Marks</b>	<b>: 150 (both for III &amp; IV)</b>
<b>Credits</b>	<b>: 4</b>
<b>Teaching Periods</b>	<b>: 4/week</b>
<b>Teaching Load</b>	<b>: 45-50 periods/semester</b>

### **OBJECTIVES**

- To continue the research work initiated in Semester III. Submit the Dissertation at the end of IV Semester.

The student will be guided and supervised by a member of the teaching faculty of the concerned department. However, the dissertation in which the research culminates should reflect the student's own work.