**Bharathiar University – Coimbatore – 641046**

**B.Sc. Apparel Manufacturing & Merchandising Degree Course**

*(For the students admitted during the academic year 2018-2019 Batch onwards)*

**Scheme of Examination**

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<tr>
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<th>SUBJECT CODE</th>
<th>STUDY OF THE COMPONENT</th>
<th>COURSE TITLE</th>
<th>HOURS PER WEEK</th>
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List of Elective papers (Colleges can choose any one of the paper as electives)

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@ No University Examinations. Only Continuous Internal Assessment (CIA)

# No Continuous Internal Assessment (CIA). Only University Examinations.
Semester – I  Core Paper I - Textile Fibres & Yarns

OBJECTIVE:
To facilitate the students to understand the structural features, investigation techniques of textile fibres, and their influence on the behaviour of textiles.

Unit I

Unit II
Methods of filament spinning. Semi synthetic fibres: Regenerated and modified cellulose - Viscose rayon process flow - HWM fibres - End uses –Brief study of Bamboo, Lyocell, Soya bean fibres.

Unit III

Unit IV

Unit V

OUTCOMES:
Upon completion of the course, the students will be able
• To understand the molecular conformations of textile fibres
• To carryout structural investigations techniques
• To understand the moisture, tensile and elastic behaviour of textile fibres

References:
1.  Mishra, S.P. A Text Book of Fibre Science and Technology, New Age International (P) Ltd
5. Identification of Textile Materials, The Textile Institute, Manchester.

**Semester I Core II - Knitting Technology**

**OBJECTIVES:**
To make the students to understand
- Fundamentals of knitting
- Types of knitting processes in detail
- Functioning of components of knitting machine

**Unit – I**

**Unit-II**
Knitting terms and definitions - Principal weft knit stitches - Knit, tuck and miss stitch formation and properties - Representation of weft knit stitches – Study of Basic weft knit structures - Needle gating - Description of circular Rib & Interlock knitting machine – Characteristics of basic weft knit structures – Circular knitting GSM and production calculations.

**Unit-III**
Single jersey knit fabric structures, their cam and needle order: Plain jersey, Pique, Thick pique, Honey comb, Pearl and Twill. Rib fabric structures, their cam and needle order: 1x1 rib, 2x2 rib, Drop needle, Royal rib, Polka rib, Double half cardigan, Double cardigan, Milano rib, Waffle, Flat back, Swiss double pique and French double pique. Interlock fabric structures, their cam and needle order: Interlock, Eight lock, Ottoman rib, Pin tuck, Texi pique and Ponte di Roma.

**Unit-IV**
Jacquard knitting - Needle selection techniques – Pattern jack, Pattern wheel, Pattern drum and

Unit-V

OUTCOMES:
Upon completion of this course, the student shall be able to understand the
- Principle of knitting by different types of knitting machines
- Structure and properties of fabric produced by different knitting machines

References:
1. D.B. Ajgaokar, Knitting Technology
2. David J.Spencer, Knitting Technology
3. Chandrasekara Iyer et al., Circular knitting technology
4. Dr. Samuel Raz, Flat Knitting
5. Dr. S.Raz, Warp Knitting Technology
6. Peter Lord et al., Fabric forming systems

Semester I Core III - Knitting Technology Practical

OBJECTIVE:
To train the students in analyzing the cloth to identify construction parameters and prepare design, draft and peg plan.

Part A

1. Calculate the speed of single jersey knitting machine through gearing Diagram.
2. Calculate the speed of rib knitting machine through gearing diagram.
3. Trace the diagram of different cams in the conventional/modern knitting machine with
   Also mention the importance of each cam.
4. Trace the take down mechanism and set the mechanism for maximum and minimum
5. Trace the positive feeder mechanism available in the modern knitting machine and set the
   mechanism for two different feed lengths.
6. Develop a pattern for flat knitting and set the machine accordingly.
7. Develop a pattern for circular knitting and set the machine accordingly.

**Part B - Sample Development**

1. Pique  
2. Double Pique  
3. Lacoste  
4. Pearl  
5. Twill  
6. Two Thread Fleece  
7. Mini Jacquard Design  
8. Auto Striper  
9. Rib Waffle  
10. Flat Back Rib  
11. Rib drop needle  
12. Interlock  

**and Analysis of the Following Particulars:**

- A) Course and Wale density  
- B) Loop length  
- C) Areal Density (GSM)  
- D) Tightness factor  
- E) Technical Graph  
- F) Cam Order  
- G) Needle Order  

*(Any one of the above designs shall be given)*

**OUTCOMES:**

Upon completion of the lab the student will be able

- Identify the constructional parameters of fabric  
- Construct design, draft and peg plan for weaving the fabric  
- Analyse the blend composition of yarn used in the fabric and the type of finish applied in the fabric
Semester – I  Allied Paper I - Computer Application Practical

OBJECTIVES:
The student should be made to:

- Be familiar with the use of MS Office software.
- Be exposed to presentation and visualization tools

1. Prepare your Class Time Table using Table options in MS-Word.
2. Prepare an interview call letter and send using Mail Merge in Ms-word.
3. To create a Cheque leaf using Ms-word. Apply Various Fonts.
4. Create a line & bar chart for given data using Ms-word.
5. Prepare students Mark statement Using Ms-Excel.
6. Prepare a Employee Salary list using Ms-Excel.
7. Prepare a Power Point presentation about a product. Apply Animation and slide Timing.
8. Create a Mail id and use various mail features.
9. Search the given topic using search engine and prepare a report using Ms-word.
10. Design a T-shirt and Apply Patterns.
11. Create a jewellery design.
12. Design a Precious stone.
13. Design a wedding invitation.
14. Write HTML Code to display the registration form.
15. Design a web page with hyperlinks linking all pages

OUTCOMES:
At the end of the course, the student should be able to:

- Apply good programming design methods for program development.

Semester II Core  Paper IV - Woven Fabrics & Designs

OBJECTIVES:
The main objective of this course is to enable the students to understand

- Preparatory processes involved in the production of fabric
- Basics of weaving processes

Unit – I
Unit – II

Unit – III
Passage of material through a plain power loom – Basic mechanisms of a loom – Primary, secondary & auxiliary motions – Tappet shedding – Cone over pick & under pick mechanisms – Beat up mechanism – Types of let off & take up mechanisms – Fabric defects, causes & remedies.

Unit – IV
Introduction to weaves – Weave diagram – Plain weave & derivatives – Twill weave & derivatives –
Satin & sateen weaves – Honeycomb – Huck a back. Objects of doby & jacquard mechanisms –
Types of doby & jacquard – Study of negative & positive dobbies – Study of single cylinder &
double cylinder jacquard mechanisms.

Unit – V
Shuttle less looms: Introduction - Advantages - Types of shuttle less looms. Introduction to non

OUTCOMES:
Upon completion of the course, the students will be able to
- Explain the preparatory processes involved in the production of fabrics
- Explain the principles of different fabric production methods
- Identify various fabric defects and their causes and remedies

References:
OBJECTIVES:
- To acquaint student of the operational sequence in wet processing of different textile materials
- To impart knowledge in the field of pre-processing, processing and post-processing of textile substrate
- To impart fundamental knowledge of colour science and assessment of dyed and printed goods

Unit – I

Unit – II

Unit – III

Unit – IV

Unit – V

OUTCOMES:
At the completion of the course, the student would be able to develop a thorough knowledge on
- Chemical processing of textile materials
- Dyeing and printing methods and principles of colour application
- Assessment of fastness properties of dyed and printed goods

References:
1. Technology of textile processing (vol 1-2), Sevak Publications – V.A.Shenai
2. Dyeing and chemical technology of textile fibres, Charles Griffin & Co – E.R.Trotman
4. The Bleaching and Dyeing of Cotton Material 1983, Weaver’s Service Cent Prayag R.S.,
6. Processing of Manmade Fibres 1975, MIR Publishers, Moscow.- Usenko V,

Semester II Core VI – Practical II - Textile Wet Processing Practical

OBJECTIVE:
To train the students in pre treatment and wet processing of textile materials

1. Estimation of water hardness by EDTA method.
2. Combined Scouring & Bleaching of grey cotton woven / knitted fabrics and estimate the loss percentage.
3. Dye the given cotton sample with natural dyes.
4. Dye the given cotton sample with cold brand reactive dyes.
5. Dye the given cotton sample with hot brand reactive dyes.
6. Dye the given cotton sample with vinyl sulphone dyes.
7. Dye the given cotton sample with reactive H-E dyes.
8. Dye the given silk material with acid / basic dyes.
9. Dye the given wool material with acid / basic dyes.
10. Dye the given polyester sample using carriers.
11. Dye the given fabric for the given pattern using Tie & Dye Technique.
12. Develop a batik motif and print on the given sample.
13. Prepare the print paste with pigment colour and print on the given fabric.
14. Print the given fabric with reactive dyes by Resist Style.
15. Prepare the Print Paste with reactive dyes and print on the given fabric by discharge style.
OUTCOME:
Upon completing this practical course, the student would be able to desize, bleach, dye, print and finish the fabric with different types of chemicals and colourants.

Semester II Allied II - Woven Fabric Analysis & Designing Practical

OBJECTIVE:
To train the students in analyzing the cloth to identify construction parameters and prepare design, draft and peg plan.

Part A
To analyse the following particulars of woven fabrics
- Woven structural analysis: Design, draft, peg plan, denting plan.
- Warp particulars: Material of warp - ends per length - count, direction of twist, Crimp percentage, cover factor, warp pattern.
- Weft particulars: Material of weft - picks per unit length - count, direction of twist, twist per length, Crimp percentage, cover factor and warp pattern.
- Fabric particulars: Total Cover factor, Weight of fabric and thickness.
- Loom requirements: Shedding mechanism, heald count, and count.
1. Plain and Twill fabrics
2. Demonstration - production of plain and twill fabrics
3. Satin/Sateen and Honey comb fabrics
4. Demonstration - production of satin/sateen and honey comb fabrics
5. Huck-a-Buck
6. Extra thread figuring fabric(s)

Part B
1. Basics of Raster and vector images, types, image formats and colour concepts.
2. Development of dobby designs (part –I) based on instructiveness of weave.
3. Development of dobby designs (part –II) based on instructiveness of weave and colour order.

OUTCOMES:
Upon completion of the lab the student will be able
- Identify the constructional parameters of fabric
• Construct design, draft and peg plan for weaving the fabric
• Analyse the blend composition of yarn used in the fabric and the type of finish
   applied in the fabric

Semester – III  Core Paper VII - Garment Machineries and Equipments

OBJECTIVE:
• To acquaint students of the basic production machinery and equipments
  used in apparel construction

Unit I
Introduction to garment industry process details. Spreading machine: Types and working
procedures. Cutting machines: Types of cutting machines and its application – Detailed study on
band knife, straight knife, drills & notches.

Unit II
Classification of garment manufacturing machines & applications. Studies on different sewing
machine – Lockstitch machine (chain stitch formation) - Features of advanced lock stitching
machines. Overlock machine – Classification - Three thread overlock machine – Stitch forming
elements. Brief study on double needle lock stitch machine, flat lock machines.

Unit III
Sewing machine shapes - Sewing machine bed types-Description and application of each bed –
Flat bed - Cylinder bed - Post bed – Applications. Feed mechanisms – Types - Drop feed –
Compound feed - Unison feed – Drop and variable top feed -Differential bottom and variable top
feed (description of each type of feed mechanisms with sketch).

Unit IV
Requirements – Guides – Types (edge & curve guide) - Compensating foot - Specialized presser
foot – Stitching jig- hem folders - Slack feeding and elastication – Cutting aids (threads, elastic
and tapes) - Stacker. Simple automatics - Button hole – Button sew – Bar tack machine - Label
sewers. Types and parts of machine needles – Needle sizes - Details of stand, table and motor for
sewing machines.

Unit V
Introduction to various machines for garment finishing – Fusing – Sucking – Ironing - Packing.
Pressing-Purpose of pressing –Categories of pressing-The means of pressing-pressing equipment
and methods-Iron and steam presses. Packaging-Types of package forms-Types of packaging
materials-Quality specification of packaging materials-Merchandising packaging-Shipment
packaging-Selection of package design.

OUTCOME:
Upon completion of the course, the students would understand the fundamental principles
and working of garment production machinery and the interrelationship of assembly methods
References

Semester – III  Core Paper VIII - Pattern Making & Grading

OBJECTIVE:
- To introduce students about pattern making tools from the scientific and technological viewpoint in garment industry.
- To equip students with comprehensive pattern making skills

Unit I
Introduction – Concept of basic pattern and grading – Different types of block pattern. Methods of pattern making with special reference to pattern drafting - Pattern making tools – Various pattern production terms–Standard body measurements for men”s wear, women”s wear and kids wear of different countries. Style wise component parts of a garment.

Unit II
Pattern positioning and lay out – Concept of pattern layout - Rules and methods of pattern layout – Adjusting the patterns to fabric. Fitting: Definition – Principles for a good fit– Checking the fit of a garment – Solving fitting problems in various garments.

Unit III

Unit IV
Procedure to draft the ¼th patterns for Ladies wear: Blouse, kameez, salwar, midi, midi top. Style detailing – Skirt, Plackets, Pockets, Pants, Sleeve, Collar, Necklines.

Unit V

OUTCOME:
The course would help the students to develop better understanding on how clothing should be designed, so as to provide not only good fit but also enhance body image

References:
3. Winifred Aldrich, Metric Pattern Cutting for Men”s Wear, Blackwell Science Ltd, England
9. Gerry Cooklin, Master Patterns and Grading for Women”s Outsizes, Blackwell Science Ltd, England
Semester –III  Core Paper IX - Principles of Management

OBJECTIVE: To provide an insight on the fundamentals of management and techniques . Apparel

Unit I

Unit II
Planning - Meaning and purpose of planning – Steps in planning – Types of planning - Objectives and policies – Objectives, policies, procedures and methods, nature and types of policies.

Unit III

Unit IV

Unit V
Controlling – Need for co-ordinating – Meaning and importance of control - Control process – Types of control - Decision making – Process of decision making – Types of decisions – Problems involved in decision making.

OUTCOME:
The student would understand the framework and scope of management and functions.

References
7. Dingar Pagore, Principles Of Management
8. L.M. Prasath, Principles Of Management

Semester III - Core Paper X - Stitches & Seams Practical

OBJECTIVE:
To train the students in construction of garments

List of Experiments

2. Prepare at least five different stitch and seam samples by using different sewing machines and furnish the machine threading diagram along with stitch density and thread consumption details.
3. Developing seams of various types - superimposed, bound lapped, flat felt and piping
4. Develop the samples of components such as Draft the Pattern, Cut & Construct the Following Components for the Given Measurement:
   1. Different Neck Lines (At Least 3 Types)
   2. Different Collars (At Least 3 Types)
   3. Different Sleeves (At Least 3 Types)
   4. Different Plackets (At Least 3 Types)
   5. Different Pockets (At Least 3 Types)
   6. Slits

OUTCOME:
Upon completion of this practical course, the students can carry out different types of stitching, button holing and button stitching and would have hands on experience on different machines used for garment manufacture.

Semester – III  Allied Paper III  - Pattern Making Practical

OBJECTIVE:
To train the students in pattern making of apparels.

List of Experiments

Men ’s Wear
1. Basic t-shirt with half sleeve.  2. Polo t-shirt with half sleeve  3. T-shirt with full sleeve.
7 Vest with and without sleeve. 8. Night dress 9. Men’s Hood
Jacket. 10. Men’s Kimono

**Kid’s Wear**


**Women’s Wear**


**OUTCOME:**

Upon completion of this practical course, the student would have practical experience on pattern making of garments

**Semester III Skill Based Subject I - Accountancy for Merchandisers**

**OBJECTIVE:**

To Equip the students by analysing Final Accounts, Statement of Depreciation and Bill of Exchange.

**Unit – I**


**Unit – II**


**Unit – III**

Final accounts – nature – matching principles – limitations –difference between trading profit and loss account –p/l account and balance sheet – adjustments in final accounts

**Unit – IV**

Depreciation – meaning – types – straight line methods or fixed installments or equal Installment method. Diminishing balance or reducing installment method. Revaluation Method (simple problems only)
Unit – V

**Note for the question paper setting:** Problems and theory Questions shall be 60% and 40%.

**OUTCOMES:**
- Recognize and understand ethical issues related to the accounting profession.
- Prepare financial statements in accordance with Generally Accepted Accounting Principles.

**References**
2. T.S.Grewal – *Introduction to Accountancy* – S.Chand & Company Ltd.,

**Semester IV Core Paper - XI - Textiles Testing & Quality Assurance**

**OBJECTIVE:**
To infuse understanding of yarn, fabric and apparel testing methods

**Unit I**

**Unit II**
Unit III

Unit IV

Unit V

OUTCOMES:
The student will have knowledge on
- Methods by which the physical and mechanical properties of textile materials and products are measured and investigated
- Sampling and yarn quality parameters testing
- Fabric and garment quality parameters testing

References
1. J.E. Booth, Principles of Textile Testing
3. B.P. Saville Physical testing of Textiles
4. P. Angappan & R. Gopalakrishnan, Textile testing
5. Pradeep V Metha & Satish k. Bhardwaj, Managing Quality in Apparel Industries
Semester IV Core Paper XII - Garment Construction

OBJECTIVES:
To develop knowledge of apparel construction processes

Unit I

Unit II
Stitches and seams: basic principles of stitch formation – classification of stitches based on federal standards -- detailed study of application of all stitches - comparison of stitches.

Unit III

Unit IV
Detailed study on various stitching, sewing and assembly defects - causes & remedies: skip stitch, unbalanced, puckering, gathering, needle defects, thread problems – quality of threads and its impact on sewing quality – sew ability and its influencing factors – needle cutting index.

Unit V

OUTCOMES:
The student will have knowledge on
- Overview of the manufacturing process and the industrial equipment used in garment construction.
- Sound knowledge of apparel pre-processing
- Understood different apparel production systems

References:
1. Apparel Manufacturing – Hand Book – Jacob Solinger
2. Technology Of Clothing Manufacture – Herold Carr & B.Latham
3. Knitted Clothing Technology – T.Bracken Berry
4. Technology Of Stitches & Seams – Coats Viyella Limited
5. Apparel Manufacturing Management System – Roche Daniel
6. Knitting and Apparel Manufacture – Sureshkumar, SSMITT Stores
Semester IV Core Paper - XIII – Basics of Apparel Merchandising

OBJECTIVE:
The objectives of this unit are to:

- Describe the challenges in apparel business.
- Define the concept of Apparel Merchandising
- Explain merchandising as a apparel business process.
- Outline the classification of merchandising.

UNIT I

UNIT II

UNIT III

UNIT IV
Work of merchandiser- role of merchandiser in garment Industry, apparel industry, super market and retail sales,, Concepts of merchandising, concepts and apparel product lines, dimensions of product change, determination and development of product line and product range.

UNIT V

OUTCOMES:
The student will have knowledge on

- Merchandising is a sub set of activities dealing with merchandise management
- It involves planning, buying and selling functions.
- To separated planning and buying functions with separate teams handling these functions in co-ordination.

References
1. Building Buyer Relationships, *Daragho’ Reilly, Jullian J. Gibbs*
2. Inside the Fashion Business, Mc Millan Publishing Co...

Semester IV- Core Paper XIV-Practical IV- Garment Construction Practical

OBJECTIVE:
To train the students in construction of garments

Draft the Pattern, Cut & Construct Then and develop and construct the following.

OUTCOME:
Upon completion of this practical course, the student will be able to sew and finish different types of wears.

Semester IV Core Paper XV - Textile Testing – Practical

OBJECTIVE:
To impart knowledge of fabric and garment quality parameters testing.

1. Determination of count of yarn using wrap reel & weighing scale.
2. Identification of Fibre using microscope and by chemical test.
6. Determination of Bursting Strength Tester for the Knitted Fabric
8. Determination of the Fabric Pilling Property for the given Fabric and grade it by Grey Scale
and No of Pills.
9. Analysis of Blend composition of given fabrics.
12. Determination of colour fastness of given sample to washing by using launderometer.
13. Determination of colour fastness of given sample to rubbing by using crockmeter
14. Determination of colour fastness of given sample to perspiration by using Perspirometer
15. Determination of dimensional stability% of a given fabric/garment to washing.

OUTCOMES:
Upon completion the students will be able to
- Measure important characteristics of fabric and garment
- Interpret the results obtained during evaluation of fabrics

Semester IV - Skill Based Subject II – Fashion Business

OBJECTIVE:
To acquaint the student with the history of fashion, its elements, traditional costumes and accessories.

Unit I

Unit II

Unit III

Unit IV

Unit V
Advertisement and Promotions: Advertising: purpose – methods - types of advertising media - Sales promotion methods - Trade fairs and fashion shows as sales promotion techniques - Feedback to production and marketing departments - Use of computers as a tool for effective merchandising - Fashion auxiliary services.

OUTCOME:
Upon completion of the course, the student would develop an understanding of fashion evolution and fashion designing.

References
1. Fashion Merchandising, Elian Stone,
2. Inside the Fashion Business.. Mc Millan Publishing Co.,
3. Apparel Merchandising
4. Fashion : Concepts to Consumers

Semester V Core XVI - Apparel Production Management

OBJECTIVES:
- To emphasis on the improved methods of material control in apparel production
- To acquaint student with quality concepts for implementing quality in apparel production

Unit – I

Unit– II

Unit – III

Unit – IV

Unit V
Function, Qualitative and Quantitative Analysis of Production - Coordinating Departmental Activities - Flow Process and Charts For Garment - Scheduling Calculations - Assigning Operators Optimally - Setting Up Complete Balanced Production Lines To Produce Given Amount Of Garments

OUTCOME:
The course will enable students to practise better methods in apparel production and planning to take informed business decisions in the apparel industry

References:

1. Technology Of Clothing Manufacture – Carr & Latham
2. Apparel Manufacturers Handbook – Jacob Solinger
3. Introduction To Clothing Manufacture – Gerry Cooklin
4. Introduction To Production Management – A. J. Chuter
5. Personal Management And Industrial Relations – Tripathi
6. Industrial Engineering And Management – OP. Khanna

Semester V Core XVII – Advanced in Apparel Manufacturing

OBJECTIVE:
To acquaint the students of the concepts of business, merchandising, sourcing and export documentation, Know about the software’s in merchandising.

Unit I
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 II
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.
Upon completion of this course, the student shall be able to apply

- Concept of marketing and merchandising in the apparel industry in India
- Procedure involved in the export of apparel

References
1. Building Buyer Relationships, Daragh Reilly, Jullian J. Gibbs
2. Inside the Fashion Business, Mc Millan Publishing Co.,
3. Fashion Merchandising, Elian Stone,
5. Apparel Merchandising, Robin Mathe, Book Enclave Publishers, Jaipur

Semester V Core Paper - XVIII - Fashion Accessories & Trims

OBJECTIVE:
- To acquaint students of the different trims, components, accessories and embellishments used as fashion accessories
- To make them acquire skills essential to evaluate the performance of accessories

Unit I
Accessory and its importance – the concept – the difference between accessories and trims – specifications – standards pertaining to accessory – types of accessories and trims. sourcing of accessory – single sourcing – multiple sourcing – advantages and disadvantages of sourcing –
vendor evaluation – rating – vendor based rationalization

Unit II
Sewing threads and its applications – quality control in sewing thread – types of thread packages – embroidery threads – quality requirements – appliqué works – sequence works, beads, crystals & stones

Unit III

Unit IV

Unit V

OUTCOMES:
Upon completion of the course, the students would be able
- To develop a thorough understanding of the different accessories and embellishments their performance, properties and application
- To independently hint accessories apt for different garment styles

References:
1. Technology of clothing manufacture – Carr & Latham
2. Apparel manufacturers handbook – Jacob Solinger
3. Introduction to clothing manufacture – Gerry Cooklin
5. Singer creating Fashion Accessories – Cy. De Cosse Incorporated, IAFL Publications
Semester V Core Paper - XIX - Garment Costing

OBJECTIVE:
To facilitate better understanding of apparel costing and Budgeting.

Unit – I
Principles of costing - requirements of good costing system - cost unit - types of costs - Elements of cost - direct material cost - direct expenses - direct wages - indirect materials - indirect expenses - indirect labour - overheads - prime cost - work cost - cost of production - total cost. INCO terms & its relationship with costing

Unit – II
Budgeting: The budgeting process: Budgeting principles for the apparel industry- Fixed vs. variable budget - Master budget-laminations of budgets- any justification effort -Planned Vs Actual Cost.

Unit III

Unit – IV
Estimation of factory cost for Woven & Knitted - vest, briefs , shorts, t-shirts, pajamas, children’s wear, ladies wear, Woven Shirt, Woven Tops & Bottom. Various factors to be considered in costing for domestic products & international products

Unit – V
Determining Pricing of apparel products: Price elasticity of demand and supply, sample costing- marginal revenue and marginal cost, cost plus pricing methods:, Full cost pricing, conversion cost pricing, differential cost pricing ,variable cost pricing, direct cost pricing derivation of cost of apparel products-woven/knits.

OUTCOMES:
At the end of this course, the students would have knowledge on
- Cost accounting and cost elements
- Cost elements involved in fabric and apparel costing
- Ascertaining apparel product standard that maximise quality while balancing cost restrictions

References
Semester V - Allied Paper IV - Computer Aided Pattern Making – Practical

OBJECTIVE:
To train the students in CAD used for pattern making of garments

CAD software is used to practice the following on the styles mentioned,

1. Create Pattern on computer screen, adding details to patterns.
2. Saving, extracting & editing patterns from stock library of Patterns.
3. Grading patterns on different size scale.
5. Estimating lay length and calculating marker efficiency.
6. Fit analysis of the given pattern.

Styles
1. Men’s Basic T Shirt
2. Raglan with Pocket
3. Men’s Polo T Shirt
4. Men’s Trouser
5. Men’s T-Shirt with hood
6. Men’s Inner Garment – Vests RN / RNS
7. Briefs
8. Ladies Skirt
9. Women’s Nightwear
10. Kid’s Wear – Romber
11. Kid’s Wear – A Line frock
12. Children’s Suits and Pyjama

OUTCOME:
Upon completion of the course, the student will have practical experience on pattern making of different wears and maker planning and optimization

Semester V - Skill Based Subject III - Total Quality Management

OBJECTIVE :
To facilitate the understanding of Quality Management principles and process.

Unit I
Unit II

Unit III
Control charts: concepts and uses – Control limits – Control charts for Variables and Attributes: X Charts – R chart – P chart – NP chart – C chart – Acceptance sampling – Types of sampling plans: Single, Double and Multiple Sampling plans – OC curves – AQL and LTPD – Sampling errors and sampling risks – Producer’s risk and Consumer’s risk

Unit IV

Unit V

OUTCOME:
The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

References
1. Dr. S.P. Gupta, “Statistical Methods”
Semester VI - Core Paper - XX International Trade & Documentation

OBJECTIVE:
Trade procedures and documentation formalities are a critical part of International Business Management. This subject aims at imparting knowledge of trade procedures and documentation formalities.

Unit – I

Unit – II

Unit – III

Unit – IV

Unit – V

OUTCOMES:
At the end of this course, the students would have knowledge on
- Evaluate and justify the various documents for processing export and import orders.
- Understand the implications of foreign trade policy.
- Evaluate the legal implications in the area of exports and imports.
- Assess the various terms and conditions of export finance.

References:

3. How To Start Export.
4. CBI Booklets – Netherland
5. ECG C Services And Guidelines
6. AEPC Booklets

**Semester VI - Core Paper -XXI Apparel Retailing**

**OBJECTIVE:**
To introduce students to the concept of Retail, Retailing strategies and legal issues of Retail sector in Apparel Industries.

**Unit I**
Retail & Retailing – Meaning & definition – Scope of apparel retailing – Retailing terminologies – Types of retailers and retail formats – Global retailing scenario – Retailing scenario in India – Functions of retailers

**Unit II**
Retail strategies : Operational excellence, Product differentiation, Customer intimacy – Growth strategies – Market expansion strategies – Store planning – Location planning – Store design – Store design & retailing image mix – Space mix – Effective retail space management – Store layout – Floor space management

**Unit III**
Retail merchandising – Merchandise planning – Merchandise hierarchy – Buying function – Category management – Mark up & Mark down – Shrinkage in merchandising management – Gross margin return on inventory – Supply chain management in apparel retailing – ERP in apparel industry

**Unit IV**
Unit V

OUTCOME:
The students would have knowledge on Retail Management, types of retailing, strategies and retail management.

References
2. “Retail management “
3. Retail Merchandising – part I
5. Fundamentals of retailing – Madan, Tata Mcgraw, New Delhi
6. Retailing Management – Levy, Diamond Publications, Delhi

Semester VI - Core Paper XXII - Entrepreneurship and Small Business Development

OBJECTIVE:
Study of this subject provides an understanding of the scope of an entrepreneur, key areas of development, financial assistance by the institutions, methods of taxation and tax benefits.

Unit I
Entrepreneurship: Concept and Definitions; Entrepreneurship and Economic Development; Classification and Types of Entrepreneurs; Entrepreneurial Competencies; Factor Affecting Entrepreneurial Growth – Economic, Non-Economic Factors; EDP Programmes; Entrepreneurial Training; Traits/Qualities of an Entrepreneurs; Entrepreneur; Manager Vs. Entrepreneur.

Unit II
Opportunity / Identification and Product Selection: Entrepreneurial Opportunity Search and Identification; Criteria to Select a Product; Conducting Feasibility Studies; Project Finalization; Sources of Information.

Unit III
Small Enterprises and Enterprise Launching Formalities : Definition of Small Scale; Rationale; Objective; Scope; Role of SSI in Economic Development of India; SSI; Registration; NOC from Pollution Board; Machinery and Equipment Selection; Project Report Preparation; Specimen of Project Report; Project Planning and Scheduling using Networking Techniques of PERT / CPM; Methods of Project Appraisal.

Unit IV
Role of Support Institutions and Management of Small Business : Director of Industries; DIC; SIDO; SIDBI; Small Industries Development Corporation (SIDC); SISI; NSIC; NISBUD; State Financial Corporation SIC; Marketing Management; Production Management; Finance
Unit V
Incentives and subsidies – Subsidied services – subsidy for market. Transport – seed capital assistance – Taxation benefit to SSI role of entrepreneur in export promotion and import substitution.

OUTCOME:
The students will have confidence and entrepreneurial skills essential for the successful launch and scaling-up of an enterprise

References

Semester VI – Skill based Subject - Export Sampling and Product Development Practical

OBJECTIVE:
To train the students in Export sampling and apparel product development including sourcing of fabrics and designing of apparel

Students Will Be Given Export Order Or Export Enquiry And They Are Asked To Design The Samples As Per The Specification Given And Also Prepare A Report Containing The Following Details.

1. Yarn Details & Composition
2. Yarn Consumption per Garment
4. Size Details
5. Factory Cost of Garment

(Totally 6 Export Orders & 6 Export Enquiries Related To Following Styles Shall Be Given)

( Men’s Basic T Shirt / Men’s Crew Neck Shirt / Men’s Polo T Shirt / Men’s High Neck Shirt / Men’s Boxer Short / Men’s Bermuda Short / Men’s Trouser / Men’s Full Arm Shirt / Men’s V – Neck Shirt / Men’s Collar Neck Shirt / Men’s Inner Garment – Vests Rn / Rns / Men’s Under Garment: Briefs With Inner Waist Band Or Outer Waist Band Of Various Models - Trunk Type. / Ladies Skirt With Pleats / Ladies Blouse / Ladies Basic Bodice / Women’s Nighties / Kid’s
Wear Of Various Styles / Children’s Suits And Pyjama)

OUTCOMES:
Upon completion of this course, the student would be able to

- Source the fabric and design the apparel for specific end uses
- Sew and finish the apparel for specific end uses

Semester V Elective I – A - Fashion & Apparel Marketing

OBJECTIVE:
To impart knowledge on principles marketing, marketing research. Domestic and international market.

Unit I
Meaning and classification of marketing, Fashion marketing, fashion market – size and structure, marketing environment – micro and macro marketing environment, trends in marketing environment

Unit II
Marketing function – assembling, standardization and grading and packaging, product planning and development, importance of fashion products, nature of fashion products. The fashion industry and new product development, product-mix and range planning, fashion and related cycles.

Unit III
Fashion advertising and preparation of advertising for apparel market, advertising media used in apparel market – advantages and limitations, advertising department – structure and functions, advertising agencies- structure and functions. Advertising budget

Unit IV
Fashion sales promotional programmed for apparel marketing, communication in promotion, personal selling, point of purchase, sales promotion – objectives and methods, Marketing research – definition, scope and process – areas of research

Unit V
Pricing policies and strategies for apparel products, Importance of price policies, Functions and factors influencing pricing – internal and external, pricing strategies for new products, methods of setting prices

OUTCOME:
The students will have understanding on principles of marketing, factors affecting domestic and international market, fashion trends and consumer behaviour.
References
1. Marketing – R S N P illai and Bhagavathi, S Chand and company ltd, New Delhi, 1987
5. Fashion Marketing – Mike Easey, Black well Science Ltd, 1995
6. Advertising – C N Sonatakki, Klyani Publishers New Delhi, 1989
Semester V Elective I – B: Business Communication

**OBJECTIVES:**
- To make learners acquire listening and speaking skills in both formal and informal contexts.
- To help them develop their reading skills by familiarizing them with different types of reading strategies.

**Unit I**

**Unit II**
Functions of a business letter - Foreign words used in correspondence – The layout planning – Enquiries and replies – Orders and execution – Credit and status enquiries.

**Unit III**
Complaints – Collection letters – Circular – Sales letters - Bank and insurance correspondence – Import and export correspondence - Agency correspondence – Correspondence of a company secretary.

**Unit IV**

**Unit V**
Agenda and minutes of meeting – Advertisement – Speech making – Interviews- Information technology of the future - Telex - Teleconferencing - Fax-Internet – Multimedia.

**OUTCOMES:**
Learners should be able to speak convincingly, express their opinions clearly, initiate a discussion, negotiate, and argue using appropriate communicative strategies.

**Reference**
2. Krishna Mohan, Developing communication skills.
3. Champa Tickoo & Jaya sasikumar, Writing with a purpose.
4. F.T.wood, A Remedial English Grammar for Foreign Students
5. Basic business communication – Lesikar & Flatiley , Jaico Publications, Chennai
7. Business communication – Locker, Excel books, Delhi
Semester V Elective I – C Clothing Care.

OBJECTIVES:
To educate the students in techniques and machinery for dyeing and finishing of garments and to impart knowledge on different garment care techniques

Unit I

Unit II
Laundry equipment and reagents: Study of laundry equipment and laundry reagents - soaps - detergents - cleaning action of soaps, indigenous cleaning agents - rita nut - shikakai - green gram - bran solution – study of modern and industrial cleaning agents

Unit III

Unit IV
Stain Removal: Principles of laundering - stain removal - various solvents for stain removing blood, tea, rust; oil/grease etc. – different methods of washing - application of friction by hand rubbing - scribing - tumble wash

Unit V
Washing Machine And Care Labels: Study of different types of house hold/industrial washing machines- rotary -swirling - pressure - tumble wash etc; the various systems of care labelling- washing instruction. bleaching instruction-drying instruction-ironing instruction-dry cleaning instruction. placement of labels on garments.

OUTCOMES:
The students would have knowledge on Dyeing techniques for apparel
- Applying of different finishes on garments
- Machinery and equipments for garment care

References
2. Denkar, “Household Textiles and Laundry Work”, Atma Ram and Sons, Delhi, 1993
5. Mary Schenck Woolman, “Clothing: Choice, Care, Cost” Kessinger Publishing,
Semester VI - Elective II - A - Research Methods

OBJECTIVES:
This course aims at providing the required skill to apply the statistical tools in problems.

Unit I

Unit II
Scaling Techniques and Sampling -Scaling Techniques and Attitude Measurement- Online Data Sources and Research. - Sample types - Sample size and sampling errors Sample Design: Defining the Universe and Sampling Unit- Sampling Frame- Sample Design - Probability and Non-probability Sampling Methods - Sample Size Determination.

Unit III
Data Collection and Processing-Data collection –methods -Primary and Secondary Data- Data collection - tools Questionnaire- Questionnaire Designing and Testing; Interview Schedule ; Observation Methods; Qualitative Research - Data Collection and Survey Errors – Data Processing -Editing, Coding, Tabulation.

Unit IV

Unit V
Interpretation, Report Preparation and Presentation-Interpretation and report writing - steps in writing reports - layout of report- types and Principles of report writing - Graphical representation of results

OUTCOME:
The students will have a fundamental knowledge of the concepts of probability. Have knowledge of standard distributions which can describe real life phenomenon. Have the notion of sampling distributions and statistical techniques used in management problems.

References
Upon completion of this course the student will be able to apply the following methodologies in apparel industry.

Semester VI - Elective II - B Industrial Engineering Techniques

OBJECTIVES:

- To enable the students to learn about Basics of industrial engineering
- Different tools of industrial engineering and its application in apparel industry

Unit I
Introduction: Definition, purpose, available techniques, Aspects, physical facilities & operating facilities, scientific management, resources productivity. Work Study: Definition, objectives, Techniques, method study, work measurement, Purpose of work study, steps, different phases.

Unit II
Method Study: Definition, Steps, Selection of problems, Collection of facts and consideration about objectives, Recording techniques, Elements of a process analysis, Operation process chart, Different process charts, Critical examination.

Unit III
Work Measurement :Definition ,Uses, Techniques, Time Study, Measuring Instruments, Elements in time study, factors, alignment chart, Performance rating methods, observed time & normal time , allowances, Standard time, Work sampling Predetermined Motion Time study, Motion time data for assembly operations, Work factor system, method time measurement.

Unit IV

Unit V

OUTCOMES:
Upon completion of this course the student will be able to apply the following methodologies in apparel industry.

- Method study, work measurement
- Layout study and line balancing
- Statistical process control
References
1. Industrial Engineering and Management by O. P. Khanna,
2. Textile Mill Management by Ormerod,
3. Engineering Economics by Kleinfeld,
4. Managerial Economics by M.V.Palyee, K.C. Sankaranarayan & J.T. Payyappilly,
5. Essentials of Engineering Economics by Kasner,
6. Management in a Global Perspective by K’oonze & Weihrich,
7. Quantitative Approach to Management by Levin, Rubin, et. al.,

Semester VI Elective II - C Eco Textiles

OBJECTIVES:
- To make the student acquire sound knowledge of the material characteristics required for ECO clothing.
- To acquaint student of the mechanism, chemistry and evaluation of chemical finishes for the ECO textiles.

Unit I

Unit II

Unit III

Unit IV

Unit V
Testing of Textiles to Eco-Standard Specifications: Introduction. Test methods for testing the banned chemicals – free formaldehyde, pesticides, pentachlorophenol, heavy metals, azo dyes containing aromatic amines & benzidine and halogenic carriers.

OUTCOME:
The students would develop and understanding of the materials, mechanism, chemistry and evaluation of ECO garments

References

Semester - VI - Elective III – A - Resource Management Techniques

OBJECTIVES:
To enable the students to learn about Planning of Resources in Production Management of Apparel Industries.

Unit I – Introduction about Operation Research

Unit II – Techniques of Transportation and Assignment
Transportation Model – Initial basic Feasible Solutions – Optimum solution for Non-degeneracy Model – Assignment Model.

Unit III – Network Model

Unit IV- Inventory Models

Unit V – Simulation and Decision Tree

OUTCOME:
The students would develop and understanding of the efficient use of Resources in Apparel industries.

References

Semester VI Elective III – B – Intimate Apparel Manufacturing Techniques

OBJECTIVE:
To acquaint student on the design, material, accessories and sewing aspects of intimate garments

Unit I
Intimate apparels – Definition, classification, materials-fiber, fabric and accessories; physical and physiological requirements of intimate apparels

Unit II
Design analysis, measurements, pattern drafting of men’s intimate apparel – Long johns, tank top, tanga, boy shorts, knickers, bikini underwear, thong, boxer briefs, boxer shorts and jock strap.

Unit III
Design analysis, measurements, pattern drafting of women’s intimate apparel – waist petticoats, panties, camisoles, tube top, shape wear, bikini and bra.

Unit IV
Intimate apparel accessories - Bra wire, hook and eye tape, ring and slider, buckle, plastic bone, elastics and sewing threads

Unit V
Sewing of intimate apparels - seams, stitches, machines; lamination; moulding and welding technique.

OUTCOME:
Upon completion of this course, the students will have the skills essential to design and develop intimate apparels

Textbook:

Reference:
Semester VI Elective III - C  Apparel Brand Management

OBJECTIVE:
To introduce students to the concept of brand, brand building, branding strategies and legal issues in brand management

Unit I
Introduction: Brand – introduction, functions, brand significance; branding – types and strategies international apparel brands - identification of perspectives and challenges to build brand- Indian garment brands and prospects of Indian brands

Unit II
Brand Appraisal: Brand appraisal – Definition and methods - exploration, market, customer, competition analysis, reasoning of brands importance and methods involved - laddering, emotional and rational, Brand mapping – circle, prism and triangle

Unit III
Positioning: Positioning – definition, types – benefit, usage, features, users, price, value technology, tradition, perceptual map – product class and customer segment; positioning strategies – non functional values, brand loyalty and pyramid; positioning strategies of international garment retailers

Unit IV
Identity And Extension: Brand identity and articulation – name, colour, design, logo and symbols, brand service advertising and cross cultural influence; brand extension – need and types; labelling and licensing of apparel products – types, license agreement, and international property rights; need for developing brand names and labels for apparel manufactured and exported from India

Unit V
Brand Measurement: Brand measurement- definition, need and methods – audit, track, brand overtime – managing brand image - need, concepts of management, forces affecting brand and maintenance of brand, Study on brands and brand management of Indian Garment

OUTCOME:
The students would have knowledge on consumer behaviour, brand identity and brand equity management

References
5. Branding – Vanaiken, Jaico Books, Delhi
7. Personal Branding – Montoya, Jaico Books, Chennai