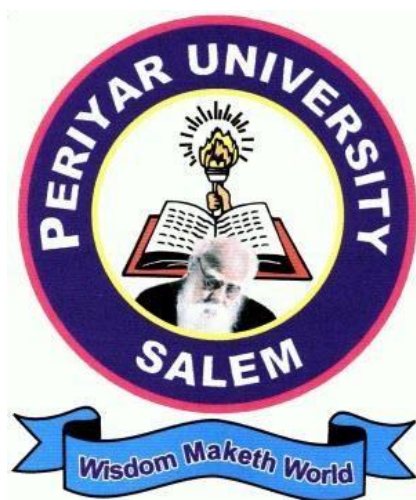


PERIYAR UNIVERSITY

PERIYAR PALKALAINAGAR

SALEM – 636 011



DEGREE OF MASTER OF SCIENCE

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR

M.Sc. COSTUME DESIGN AND FASHION

FOR THE STUDENTS ADMITTED FROM THE

ACADEMIC YEAR 2026-2027 ONWARDS

M.Sc. COSTUME DESIGN AND FASHION

CBCS PATTERN & OBE REGULATIONS AND SYLLABUS

PROGRAMME OUTCOMES (POs)

On successful completion of the programme, graduates will be able to:

1. Apply advanced scientific, technical, and managerial knowledge in textiles, apparel, fashion design, and allied industries.
2. Analyze, design, and develop innovative textile materials, garments, and fashion products using creativity, sustainability, and emerging technologies.
3. Conduct independent research, product development, and technology-driven innovation to solve complex problems in the textile and fashion sectors.
4. Utilize modern digital technologies including CAD, Artificial Intelligence (AI), Industry 4.0, digital marketing, data analytics, and smart manufacturing systems.
5. Establish and manage entrepreneurial ventures, consultancy services, fashion brands, research organizations, and technology-based enterprises.
6. Demonstrate leadership, professional ethics, teamwork, communication, and lifelong learning while contributing to the sustainable development of the global textile and fashion industry.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Upon successful completion of the programme, graduates will be able to:

PSO1. Apply advanced knowledge of textile science, fibre technology, technical textiles, textile processing, and apparel manufacturing for industrial and research applications.

PSO2. Design, develop, and evaluate innovative apparel products using advanced fashion design principles, draping, garment engineering, CAD, and digital fashion technologies.

PSO3. Utilize advanced textile testing, quality evaluation, statistical quality control, and international standards for quality assurance in textile and apparel industries.

PSO4. Conduct independent research, analyze experimental data, develop innovative products, and publish scientific findings using appropriate research methodologies.

PSO5. Apply Artificial Intelligence, Industry 4.0, digital manufacturing, automation, smart textiles, data analytics, and emerging technologies in textile and apparel industries.

PSO6. Implement sustainable manufacturing practices, eco-friendly processing, circular economy concepts, ESG principles, and environmental compliance in textile and fashion businesses.

PSO7. Manage apparel production, merchandising, sourcing, retail operations, supply chain systems, quality management, and export-import activities using modern management techniques.

PSO8. Demonstrate entrepreneurial, leadership, consultancy, project management, and innovation skills to establish successful fashion enterprises and technology-based startups.

PSO9. Communicate effectively through technical writing, presentations, teamwork, professional ethics, and multidisciplinary collaboration in academic, research, and industrial environments.

PSO10. Pursue higher education, doctoral research, professional certifications, consultancy, and lifelong learning while contributing to national and global advancements in textile and fashion technology.

GRADUATE ATTRIBUTES

The programme nurtures graduates who are:

1. Advanced Textile Scientists

Analyze and evaluate textile fibres, yarns, fabrics, functional materials, technical textiles, and sustainable textile processing technologies for diverse industrial applications.

2. Innovative Fashion Designers

Develop creative, functional, and sustainable fashion products by integrating design principles, advanced apparel technologies, digital tools, and emerging fashion trends.

3. Research and Innovation Professionals

Conduct scientific research, product development, experimentation, data analysis, and technology transfer to address challenges in textile and fashion industries.

4. Digital and AI Practitioners

Apply CAD, 3D visualization, Artificial Intelligence, Industry 4.0, automation, digital merchandising, data analytics, and virtual technologies in textile and apparel applications.

5. Sustainable Fashion Leaders

Implement sustainable manufacturing practices, circular economy principles, environmental management systems, ESG practices, and ethical sourcing throughout the textile and apparel value chain.

6. Apparel Manufacturing and Quality Specialists

Plan, monitor, and optimize apparel production, quality assurance, industrial engineering, lean manufacturing, Six Sigma, compliance systems, and supply chain management.

7. Entrepreneurs and Business Leaders

Establish and manage fashion enterprises, consultancy services, startups, export businesses, retail organizations, and innovative textile ventures through strategic leadership and entrepreneurship.

8. Professional Managers and Effective Communicators

Demonstrate leadership, teamwork, communication, project management, negotiation, and decision-making skills in multidisciplinary and multicultural professional environments.

9. Globally Competent Professionals

Adapt to international standards, global trade practices, export-import management, international merchandising, and cross-cultural business environments.

10. Lifelong Learners

Pursue continuous professional development, higher education, doctoral research, certifications, and lifelong learning to remain competitive in rapidly evolving textile and fashion industries.

RULES AND REGULATIONS

I. ELIGIBILITY

A candidate seeking admission to the First Year of the Master of Science (M.Sc.) Degree Programme in Costume Design and Fashion shall have passed B.Sc. Costume Design and Fashion, B.Sc. Textile and Fashion Designing, B.Sc. Fashion Technology, B.Voc. Textiles and Apparel Design, or any Bachelor's Degree related to Textiles, Apparel, Costume Design, Fashion Design, or an equivalent qualification recognized by the Syndicate of Periyar University.

II. DURATION

The programme shall extend over a period of two academic years comprising four semesters.

III. ELIGIBILITY FOR THE DEGREE

A candidate shall be eligible for the award of the Degree of Master of Science in Costume Design and Fashion if he/she has:

- Undergone the prescribed course of study for a period of not less than four semesters in an institution affiliated to and approved by the University.
- Successfully completed all the prescribed courses, internship, research project, and other programme requirements.
- Passed all the examinations prescribed under these regulations.

IV. SUBJECTS OF STUDY

The subjects of study and the detailed syllabus for the M.Sc. Costume Design and Fashion programme are given in the Annexure.

V. REQUIREMENTS FOR EXAMINATION

The University shall conduct theory examinations for a duration of three hours for all theory courses prescribed in each semester.

Practical examinations shall be conducted for three or four hours, wherever applicable.

The Research Project and Viva-Voce Examination shall be conducted during the Fourth Semester based on the dissertation submitted by the candidate. The Viva-Voce shall be conducted by one Internal Examiner and one External Examiner appointed by the University.

VI. SCHEME OF EXAMINATION

The Scheme of Examination for the programme is given in the Annexure.

All practical examinations, internships, industrial training, project work, dissertation evaluation, and viva-voce examinations shall be conducted and evaluated by the institution with Internal and External Examiners appointed in accordance with University regulations.

VII. PASSING REQUIREMENTS

Theory Courses

Internal Assessment: 25 Marks;

External Examination: 75 Marks;

Total: 100 Marks

A candidate shall be declared to have passed a theory course if he/she secures:

- A minimum of 12 marks out of 25 in Internal Assessment.
- A minimum of 38 marks out of 75 in the External Examination.
- A minimum of 50 marks out of 100 in aggregate.

Practical Courses

Internal Assessment : 40 Marks

External Examination : 60 Marks

Total : 100 Marks

A candidate shall be declared to have passed a practical course if he/she secures:

- A minimum of 20 marks out of 40 in Internal Assessment.
- A minimum of 30 marks out of 60 in the External Examination.
- A minimum of 50 marks out of 100 in aggregate.

Research Project and Viva-Voce

Internal Assessment : 150 Marks

External Evaluation and Viva-Voce : 50 Marks

Total : 200 Marks

A candidate shall be declared to have passed the Research Project and Viva-Voce if he/she secures:

- A minimum of 75 marks out of 150 in Internal Assessment.
- A minimum of 25 marks out of 50 in External Evaluation and Viva-Voce.
- A minimum of 100 marks out of 200 in aggregate.

Pattern of Question Paper

Time: 03 Hours

Maximum: 75 Marks

Part A – (15 x 1 = 15 Marks)

Answer all questions

(a), (b), (c), (d) Multiple Choice questions

(03 questions from each unit)

Part B – (2 x 5 = 10 Marks)

Answer any TWO questions out of FIVE

(01 question from each unit)

Part C – (5 x 10 = 50 Marks)

Answer all questions

Either (or) Type FIVE questions

(01 question from each unit)

M.Sc. COSTUME DESIGN AND FASHION

Course of Study and Scheme of Examination

Sem	Course group	Subject Title	Hours/ week	Exam hours	Int. marks	Ext. marks	Total Mark	Credit	Pg. No
I	Core I	Advanced Textile Science	6	3	25	75	100	5	01
	Core II	Sustainable Development for Textiles	6	3	25	75	100	5	04
	Core III	Fashion Art and Design Concept	6	3	25	75	100	5	07
	Core practical I	Advanced Garment Construction Practical	6	4	40	60	100	4	09
	Elective I (Select any one)	Boutique and Store Planning	4	3	25	75	100	3	11
		Design Research							13
	SEC I	Digital Fashion Illustration Practical	2	3	40	60	100	2	15
			30				600	24	

Sem	Course group	Subject Title	Hours/ week	Exam hours	Int. marks	Ext. marks	Total Mark	Credit	Pg. No
II	Core IV	Technical Textiles	6	3	25	75	100	5	17
	Core V	Nanotechnology in Textiles	6	3	25	75	100	5	20
	Core practical II	CAD in Textile Designing Practical	6	3	40	60	100	5	23
	Core practical III	Advanced Draping Techniques Practical	5	3	40	60	100	4	26
	Elective II (Select any one)	Garment Quality and Cost Control	4	3	25	75	100	3	28
		Apparel Merchandising and Marketing							31
	NMEC I	Visual Arts	2	3	25	75	100	2	34
	Value Education	Human Rights	1	3	25	75	100	1	--
			30				700	25	

Students should attend internship for 15 days and viva voce will be conducted in III Semester

Sem	Course group	Subject Title	Hours/ week	Exam hours	Int. marks	Ext. marks	Total Mark	Credit	Pg. No
III	Core VI	Research Methodology And Statistics In Textiles	6	3	25	75	100	5	36
	Core VII	Textile Testing	6	3	25	75	100	5	39
	Core Practical IV	Textile Testing Practical	6	3	40	60	100	5	42
	Core Practical V	Fashion Portfolio Practical	6	3	40	60	100	4	44
	Elective III (Select any one)	Digital Marketing	4	3	25	75	100	3	46
		Visual Merchandising							49
	NMEC II	Cosmetology and Fashion Photography Practical	2	-	40	60	100	2	52
		Internship				*C/HC		1	--
			30				600	25	

*C/HC - Commended/Highly commended

Sem	Course group	Subject Title	Hours/ week	Exam hours	Int. marks	Ext. marks	Total Mark	Credit	Pg. No
IV	Core VIII	Advanced Textile Processing	6	3	25	75	100	5	54
	Core IX	AI in Apparel Manufacturing	6	3	25	75	100	5	57
	Core X	Research Project& Viva-Voce	16	-	150	50	200	5	--
	SEC II	Professional Competency Skill- Personality Development	2	3	25	75	100	2	60
		Extension Activity	-	-				1	--
		Total	30	-			500	18	
							2400	92	

Electives: Candidates are eligible to select any one of the two choices in elective courses.

Internship/Industrial Activity: The Students should undergo internship/Industrial Activity at least for a minimum of 15 days after II Semester.

Extension Activity: The Students should be insisted to involve in extension activity and should report the activity to the Department.

SEMESTER – I
CORE I
ADVANCED TEXTILE SCIENCE

COURSE OBJECTIVES

Upon successful completion of this course, students will be able to:

- Understand the classification, properties, applications, and recent advancements in natural, regenerated, synthetic, high-performance, and sustainable textile fibres.
- Analyze the structure, manufacturing processes, properties, and applications of conventional, specialty, and functional yarns used in textile and apparel industries.
- Acquire knowledge of advanced fabric formation technologies, including weaving, knitting, and nonwoven manufacturing techniques.
- Develop an understanding of smart textiles, functional textiles, and innovative textile materials for technical and industrial applications.
- Create awareness of sustainable textile technologies, emerging trends, and future developments in advanced textile science.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Classify textile fibres based on origin, structure, properties, and end-use applications.	K2
CO2	Analyze the characteristics and applications of natural, regenerated, synthetic, sustainable, and high-performance fibres	K4
CO3	Explain yarn formation techniques, texturization, fancy yarns, sewing threads, and recent yarn innovations	K2
CO4	Describe advanced weaving, knitting, and nonwoven fabric manufacturing technologies and their applications	K2
CO5	Apply the concepts of smart, functional, composite, and sustainable textiles in apparel and technical textile products	K3
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

Unit I – Natural Fibers and Sustainable Textiles

Natural fibers - Classification of textile fibers based on origin and morphology. Cotton, wool, silk, flax, and other bast fibers: grading, distinctive properties, and end uses. Emerging sustainable fibers: coffee ground fibers, nettle, lotus, pineapple fibers, banana fibers, and other agro-based fibers. Environmental and sustainability aspects in fiber selection.

Unit II – High Performance and Functional Fibers

Properties, manufacture and applications of high-performance fibres including glass, carbon, ceramic, aramid, UHMWPE and advanced polymeric fibres. Functional fibres such as chitosan, alginate, super-absorbent, optical, melamine, hollow, micro and nano-fibres. Recent developments in smart, conductive, antimicrobial, flame-retardant and moisture-management fibres for technical applications.

Unit III – Yarn Technology

Principles of yarn structure and yarn formation. Texturization: objectives, advantages, and methods such as false-twist, air-jet, stuffer-box, and knit-de-knit techniques. Fancy and specialty yarns including slub, boucle, loop, spiral, chenille, core-spun, covered, and composite yarns. Sewing thread manufacture, classification, properties, and applications. Innovations in high-strength, stretch, recycled, functional, and smart yarns.

Unit IV – Weaving and Fabric Formation

Fundamentals of weaving and fabric construction. Shuttle and shuttleless looms: working principles and applications. Modern looms including air-jet, water-jet, rapier, projectile, multiphase, and circular looms. Fabric parameters such as yarn count, EPI, PPI, cover factor, density, dimensional stability, and quality control.

Unit V – Knitting and Nonwoven Technologies

Knitting technology: weft and warp knitting, machine classification, fabric structures, properties, defects, and applications. Advances in 3D knitting, seamless garments, whole-garment knitting, spacer fabrics, sportswear, medical textiles, and smart knitted structures. Nonwoven fabrics: definition, classification, fiber requirements, web formation methods including dry-laid, wet-laid, air-laid, spunbond, meltblown, and electro-spinning. Bonding techniques and applications in hygiene, medical, filtration, geotextiles, automotive, protective, and sustainable nonwoven products.

REFERENCES

- Mondal, M. I. H. (Ed.). (2021). Fundamentals of natural fibres and textiles. Woodhead Publishing.
- Nayak, R. (Ed.). (2022). Sustainable fibres for fashion and textile manufacturing. Woodhead Publishing.
- Ahmad, S., Rasheed, A., & Nawab, Y. (Eds.). (2020). Fibers for technical textiles. Springer.
- Paul, R. (Ed.). (2019). High performance technical textiles. Wiley.
- Ul-Islam, S., & Butola, B. S. (Eds.). (2020). Advances in functional and protective textiles. Woodhead Publishing.
- Gandhi, K. (Ed.). (2019). Woven textiles: Principles, technologies and applications (2nd ed.). Woodhead Publishing.
- Maity, S., Rana, S., Pandit, P., & Singha, K. (Eds.). (2021). Advanced knitting technology. Woodhead Publishing.
- Russell, S. J. (2022). Handbook of nonwovens (2nd ed.). Woodhead Publishing.
- Jaffe, M., & Menczel, J. D. (Eds.). (2019). Thermal analysis of textiles and fibers. Woodhead Publishing.
- Shishoo, R. (Ed.). (2020). Market-driven innovations in textile materials, technologies and products. Woodhead Publishing.

SEMESTER – I

CORE II

SUSTAINABLE DEVELOPMENT FOR TEXTILES

COURSE OBJECTIVES

- Analyze the principles of sustainable development, green manufacturing, and waste management practices in the textile and apparel industry.
- Evaluate eco-friendly textile processing technologies, sustainable fibres, natural dyes, enzymes, and environmentally responsible chemical management.
- Examine organic fibre production systems, carbon footprint assessment, and sustainable manufacturing practices in textile and apparel production.
- Assess recycling, upcycling, circular economy principles, and resource-efficient approaches for sustainable textile value chains.
- Critically evaluate ethical manufacturing practices, environmental regulations, and corporate social responsibility in the global textile and fashion industry.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Explain the principles of sustainability, green manufacturing, and waste management in the textile and apparel industry.	K2
CO2	Evaluate eco-friendly textile processing technologies, sustainable fibres, natural dyes, enzymes, and environmentally preferred chemicals.	K4
CO3	Analyze organic fibre production systems, carbon footprint assessment, and sustainable textile manufacturing practices.	K4
CO4	Assess recycling, up-cycling, and circular economy concepts for sustainable textile production and consumption.	K5
CO5	Critically evaluate ethical manufacturing, environmental compliance, sustainability standards, and corporate social responsibility in the textile and apparel industry.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I: Overview of Sustainable Development

Introduction, definition, and concepts of sustainable development. Principles of Sustainable Development and Sustainable Development Goals (SDGs). Difference between conventional chemical manufacturing and green manufacturing. Sustainable chemical management, rules and recommendations for chemical use, and waste management practices in the textile and apparel industry.

UNIT II: Eco-friendly Processing of Textiles

Modern approaches to eco-friendly wet processing of woven and knitted textiles. Restricted and hazardous textile chemicals (ZDHC, REACH, and RSL concepts). Eco-friendly fibres. Enzymes—classification and role of enzymes in textile processing. Natural dyes—classification, extraction methods, applications, and natural mordants: classification and processing techniques.

UNIT III: Organic and Sustainable Textiles

Organic fibre production and certification systems. Production and processing of organic cotton, wool, silk, bamboo, regenerated fibres (Lyocell), PLA (Polylactic Acid) fibres, and recycled PET fibres. Carbon footprint assessment in the textile and apparel industry. Sustainable manufacturing practices and environmental impact assessment.

UNIT IV: Recycling, Upcycling, Life Cycle Assessment, and Circular Economy

Recycling—definition, methods, processes, and importance. Upcycling—definition, principles, applications, advantages, and limitations. Life Cycle Assessment (LCA)—definition, stages, significance, and applications in textiles. Circular economy—definition, benefits, five pillars, circular design principles, resource efficiency, and implementation in the textile and apparel industry.

UNIT V: Ethical Manufacturing and Corporate Social Responsibility

Ethical issues in the textile and fashion industry. Environmental impacts of textile and apparel manufacturing. Ethical sourcing of sustainable fashion products and accessories. Environmental, Social and Governance (ESG) principles and sustainability reporting. Corporate Social Responsibility (CSR), international sustainability standards, and responsible business practices in the textile and apparel industry.

REFERENCES

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- Miraftab, M., & Horrocks, A. R. (Eds.). (2007). Ecotextiles: The way forward for sustainable development in textiles. Woodhead Publishing.
- Blackburn, R. S. (Ed.). (2009). Sustainable textiles: Life cycle and environmental impact. Woodhead Publishing.

- Tobler-Rohr, M. I. (Ed.). (2011). Handbook of sustainable textile production. Woodhead Publishing.
- Skelly, J. K. (2003). Water recycling in textile wet processing. Woodhead Publishing.
- Trivedi, R. K. (2010). Handbook of environmental laws, acts, guidelines, compliances and standards (Vol. 1). B. S. Publications.
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- Gwilt, A. (2020). A practical guide to sustainable fashion (2nd ed.). Bloomsbury Publishing.

SEMESTER – I
CORE III
FASHION ART AND DESIGN CONCEPT

COURSE OBJECTIVES

- Analyze the principles of creativity, visual aesthetics, and design thinking in fashion art and design.
- Develop advanced fashion illustrations by integrating art media, fashion anatomy, rendering techniques, and design principles.
- Critically evaluate historical, cultural, and contemporary influences on fashion design concepts and illustration.
- Create innovative fashion concepts using advanced illustration methods, digital visualization, and emerging design technologies.
- Assess the contributions of national and international designers in shaping contemporary fashion art and design practices.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze various art media, rendering techniques, and visual communication methods used in fashion illustration.	K4
CO2	Evaluate fashion evolution, fashion theories, design concepts, and creative processes in fashion art.	K5
CO3	Apply advanced knowledge of human anatomy, body proportions, and design principles to develop professional fashion illustrations.	K3
CO4	Create innovative fashion illustrations and design concepts using traditional and digital visualization techniques.	K6
CO5	Critically evaluate the design philosophies and creative contributions of renowned Indian and international fashion designers.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Art Media and Creative Visualization

Art media and their applications in fashion illustration. Pencils, coloured pencils, oil pastels, watercolours, poster colours, acrylic colours, fabric colours, markers, collage, frottage, montage, mixed media, digital illustration tools, and creative visualization techniques.

UNIT II – Fashion Design Process and Creative Development

Origin and evolution of fashion. Fashion movements from ancient civilizations to contemporary fashion. Fashion cycles, fashion theories, design thinking, creative process, fashion terminology, perspective drawing, grid rendering, and concept development.

UNIT III – Fashion Anatomy and Design Principles

Human anatomy for fashion illustration. Skeletal and muscular structure. Male, female, and children's body proportions. Facial features, torso, arms, and legs. Elements and principles of design. Colour theory, visual balance, proportion, rhythm, harmony, emphasis, and composition in fashion illustration.

UNIT IV – Advanced Fashion Illustration

History and evolution of fashion illustration. Contemporary fashion illustration techniques. Eight-head, ten-head, and twelve-head fashion figures. Stylization and exaggeration in fashion drawing. Fashion illustration using traditional and digital media. Roles of fashion, textile, graphic, industrial, and accessory designers.

UNIT V – Contemporary Fashion Design Concepts

Fashion concepts based on age, gender, culture, occupation, lifestyle, socio-economic status, climate, and sustainability. Contemporary fashion trends and global fashion movements. Design philosophies and signature styles of renowned Indian and international fashion designers. Emerging technologies in fashion design, digital fashion, virtual garments, and AI-assisted creative design.

REFERENCES

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SEMESTER – I
CORE PRACTICAL I

ADVANCED GARMENT CONSTRUCTION PRACTICAL

COURSE OBJECTIVES

- Develop advanced skills in transforming fashion designs into garment patterns through drafting and pattern development techniques.
- Apply material estimation, marker planning, garment costing, construction, and presentation techniques in apparel production.
- Demonstrate professional skills in garment fitting, quality evaluation, alteration, and defect analysis.
- Construct functional, fashionable, and specialized garments that meet diverse consumer and industrial requirements.
- Develop innovative garment solutions for adaptive, protective, and sustainable apparel applications.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Design, draft, construct, and evaluate children's garments using professional construction techniques.	P4
CO2	Design, draft, construct, and evaluate women's garments with appropriate fit, quality, and finishing.	P4
CO3	Design, draft, construct, and evaluate men's garments following industrial standards.	P4
CO4	Develop adaptive and special-purpose garments based on user requirements and ergonomic principles.	P5
CO5	Create complete protective garments by integrating functional design, material selection, construction, and quality evaluation.	P5
P1 – Imitation; P2 – Manipulation; P3 – Precision; P4 – Articulation; P5 – Naturalization		

Designing, Constructing and Evaluating the Garment

- 1. Children's Garments:** Frock/ Middy & MiddyTop/ Boy shirt
- 2. Women's Garments:** Salwar and Kameez/ Maxi
- 3. Men's Garments:** Shirt/ Kurtha
- 4. Adaptive Clothing:** Persons with physical disabilities/ Elderly people/ Maternity wear or Lactation wear
- 5. Protective Clothing:** Medical protective suit with Gloves, Face mask, Head cover, Shoe/foot covers

REFERENCES

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- Zarapkar, K. R. Zarapkar System of Cutting. Navneet Publications Ltd., Silvassa.
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SEMESTER – I
ELECTIVE I
BOUTIQUE AND STORE PLANNING

COURSE OBJECTIVES

- Analyze the concepts, principles, and business practices of boutique management and fashion retailing.
- Evaluate store planning, space management, visual merchandising, and customer experience strategies for fashion retail environments.
- Examine retail operations, inventory management, branding, and promotional techniques used in boutiques.
- Assess digital retailing technologies, sustainable store concepts, and omnichannel retail strategies in the fashion industry.
- Develop strategic knowledge of boutique planning and retail management for successful fashion entrepreneurship.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Explain the concepts, functions, and business models of boutique management and fashion retailing.	K2
CO2	Analyze store planning, space utilization, visual merchandising, and customer experience strategies.	K4
CO3	Evaluate retail operations, inventory management, branding, and sales promotion techniques used in fashion boutiques.	K5
CO4	Assess boutique design concepts, visual merchandising principles, and retail store planning strategies.	K5
CO5	Critically evaluate digital retailing, sustainable boutique practices, and emerging technologies in fashion retail management.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

Prerequisite

- Basic knowledge of fashion, textiles, garment products, and retail business concepts.
- **Open-source / professional software and tools for boutique planning and store presentation (Anyone):** Canva / SketchUp / AutoCAD (Basic) / Floor Planner / Adobe Illustrator / Pinterest / MS Excel / POS Billing Software.

UNIT – I: Boutique and Fashion Retailing

Introduction to boutique and fashion retailing – role and importance of boutiques in fashion business – types of boutiques and fashion stores – boutique location selection and basic business setup – understanding customer preferences and buying behaviour in fashion retailing.

UNIT – II: Boutique Space Management

Boutique floor planning and space management – store layout techniques including grid, free-flow, and boutique layouts – planning of trial rooms, display areas, billing counters, and customer movement – basics of lighting, colour schemes, and ambience creation for boutiques.

UNIT – III: Window Display

Window display and product presentation techniques – mannequin styling and merchandise arrangement – inventory management and stock organization – customer service practices and sales promotion techniques – basics of boutique branding and store image development.

UNIT – IV: Boutique Design and Visual Merchandising

Principles of boutique design. Store image and brand identity. Visual merchandising concepts and techniques. Window display planning, interior display systems, product presentation strategies, signage, point-of-purchase displays, and promotional planning. Role of visual merchandising in enhancing customer experience and retail performance.

UNIT – V: Digital Fashion

Digital fashion retailing and online boutiques – sustainable and eco-friendly boutique concepts – use of social media and digital marketing in fashion retail – smart visual merchandising and technology-based store displays – changing consumer preferences and emerging trends in boutique management.

REFERENCES

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- Dillon, S. (2018). The Fundamentals of Fashion Management. Bloomsbury Publishing.

SEMESTER – I
ELECTIVE I
DESIGN RESEARCH

COURSE OBJECTIVES

- Analyze design research methodologies and identify appropriate primary and secondary sources for fashion design research.
- Evaluate design concepts through creative research, idea generation, and concept development techniques.
- Examine material exploration, three-dimensional experimentation, and design development processes for innovative fashion solutions.
- Develop research-based design collections through critical analysis, refinement, and evaluation of creative ideas.
- Communicate design concepts effectively using professional visualization, illustration, presentation, and documentation techniques.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Explain design research concepts, research methodologies, and primary and secondary sources used in fashion design.	K2
CO2	Analyze research findings to develop mood boards, storyboards, concept boards, and creative design directions.	K4
CO3	Evaluate three-dimensional research approaches, material exploration, draping, and garment manipulation techniques.	K5
CO4	Develop research-based design concepts and refine them into cohesive fashion collections.	K6
CO5	Critically communicate and present design ideas using professional illustration, visualization, and presentation techniques.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Introduction to Design Research

Design research—definition, objectives, scope, and importance. Types of design briefs. Research methodologies in fashion design. Primary and secondary research sources. Theme selection, concept development, and sources of inspiration.

UNIT II – Research Compilation and Concept Development

Methods of compiling design research. Sketchbooks, drawing, collage, juxtaposition, deconstruction, cross-referencing, and research analysis. Mood boards, storyboards, concept boards, trend analysis, and visual research documentation.

UNIT III – Three-Dimensional Design Research

Three-dimensional approaches to design research. Model making, draping, fibre and fabric exploration, textile manipulation, recycled garment development, material experimentation, and sustainable design exploration.

UNIT IV – Design Development

Design development from research findings. Bridging research and design. Design elements, creative thinking techniques, idea generation, design refinement, collection planning, editing, and evaluation of fashion collections.

UNIT V – Design Communication

Design communication methods. Fashion sketching, technical drawing, rendering techniques, templates, collage, layout and composition, fashion illustration, visual presentation, and digital communication of design concepts.

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SEMESTER – I
SKILL ENHANCEMENT COURSE I
DIGITAL FASHION ILLUSTRATION PRACTICAL

COURSE OBJECTIVES

- Develop professional digital fashion illustrations using industry-standard software, digital drawing techniques, and visualization methods.
- Apply digital colouring, rendering, fabric simulation, and fashion styling techniques to create realistic garment presentations.
- Create research-based fashion concepts through digital mood boards, inspiration boards, presentation sheets, and theme development.
- Produce a comprehensive digital fashion portfolio demonstrating creativity, technical proficiency, and professional presentation skills.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Develop professional digital fashion figures, garment sketches, facial features, and styling elements using digital illustration software.	P4
CO2	Apply digital colouring, rendering, fabric textures, surface ornamentation, and accessory illustration techniques in fashion presentations.	P4
CO3	Create theme-based fashion illustrations with mood boards, colour boards, inspiration boards, and presentation layouts.	P5
CO4	Produce and present a professional digital fashion portfolio integrating advanced illustration techniques and visual communication skills.	P5
P1 – Imitation; P2 – Manipulation; P3 – Precision; P4 – Articulation; P5 – Naturalization		

Prerequisite

- Basic knowledge of fashion drawing, garment components, and computer fundamentals.
- **Open-source / professional software and tools for digital fashion illustration (Anyone):**
Canva / Adobe Illustrator / Adobe Photoshop / CorelDRAW / Krita / SketchBook / Procreate / ibis Paint / Mobile Drawing Applications / Graphic Tablet (Optional)

Practical Exercises

Exercise I – Digital Fashion Figure and Garment Illustration

- Familiarization with digital illustration software and tools
- Digital fashion figure drawing (male and female croquis)
- Digital facial features, hairstyles, and fashion styling
- Digital garment sketching

Exercise II – Digital Rendering and Fashion Styling

- Digital colouring and rendering techniques
- Fabric texture rendering and surface design applications
- Fashion accessories illustration

Exercise III – Theme-Based Fashion Presentation

- Development of theme-based fashion illustrations
- Preparation of mood boards, inspiration boards, colour boards, and presentation sheets

Exercise IV – Digital Fashion Portfolio

- Compilation of digital fashion illustrations
- Portfolio development
- Professional digital presentation and portfolio evaluation

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SEMESTER – II
CORE IV
TECHNICAL TEXTILES

COURSE OBJECTIVES

- Understand the classification, properties, and recent developments of fibres used in technical textiles.
- Explain the structure, characteristics, and applications of technical textiles used in medical, agricultural, industrial, construction, and transportation sectors.
- Develop knowledge of protective, sports, and smart textiles for specialized applications.
- Analyze the functional requirements and performance characteristics of various technical textile products.
- Create awareness of emerging trends, innovations, and future opportunities in the technical textile industry.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Explain the scope, classification, fibres, and applications of technical textiles.	K2
CO2	Describe the fibres, properties, functions, and applications of medical and agro textiles.	K2
CO3	Analyze the characteristics and applications of buildtech, geotech, and indutech textiles.	K4
CO4	Explain the materials, properties, and applications of protective and mobiltech textiles.	K2
CO5	Evaluate the applications of sportech, smart textiles, and intelligent textile materials in advanced textile products.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Introduction to Technical Textiles and Advanced Technical Fibres

Technical Textiles: Definition, developments in fibres used in technical textiles, Applications of technical textiles, Globalization, market trends, and future prospects of the technical textile industry.

Technical Fibres: High – Strength and high-modulus organic fibres, high chemical and combustion - Resistant organic fibres, high performance inorganic fibres, ultra-fine and novelty fibres.

UNIT II – Medical and Agro Textiles

Medical Textiles: Classification – fibres Used. Non –Implantable, implantable, Extra Corporeal Devices, Health Care and Hygienic Products. **Agro Textiles** – Introduction, fibres used, classification, functions, properties, characteristics, and applications in agriculture, horticulture, floriculture, and crop protection.

UNIT III – BuildTech, GeoTech and InduTech

Build Tech - Introduction, Fibres Used, types functions and properties, characteristics and applications in Architecture and in Building Construction. **Geotextiles** – Introduction, Fibres Used, types functions and properties characteristics and applications in its Field. **Indu Tech**—Introduction, Fibres Used, types functions and properties, characteristics and applications – Industrial filtration and dust collection textiles.

UNIT IV – Protective and MobilTech Textiles

Protective Textiles: Introduction, Fibres Used, types functions and properties, characteristics and applications fire protective clothing, heat resistant garments, water proof Materials, ballistic resistant vest. Biological and Chemical Vest, Military protective Clothing. **Mobiltech Textiles**—Introduction, Fibres Used, types functions and properties, characteristics and applications of mobile tech, Applications in road vehicles, railways, aerospace, marine, and automotive sectors.

UNIT V – Sports, Smart and Intelligent Textiles

Sports Textiles: Introduction, fibers used, Types, functions and properties, Characteristics and Applications of Sports Tech. **Smart and intelligent textiles**—classification, active, passive, and ultra-smart textiles; phase change materials, shape memory polymers, chromic materials, conductive textiles, wearable textiles, and their applications.

REFERENCES

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- Mattila, H. R. (2006). Intelligent Textiles and Clothing. Woodhead Publishing, Cambridge.
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- Shishoo, R. (Ed.). (2005). Textiles in Sport. Woodhead Publishing.

SEMESTER – II
CORE V
NANO TECHNOLOGY IN TEXTILES

COURSE OBJECTIVES

After completing this course, students will be able to:

- Analyze the fundamental principles, synthesis techniques, and properties of nanomaterials used in textile applications.
- Evaluate advanced characterization techniques for determining the structure, morphology, and functional properties of textile nanomaterials.
- Examine the development and performance of nanofibres, nanocomposites, and carbon-based nanomaterials for advanced textile applications.
- Assess the application of metallic and functional nanomaterials in developing multifunctional and high-performance textile products.
- Critically evaluate emerging nanotechnologies, industrial applications, sustainability, and safety aspects of nanotechnology in the textile and apparel industry.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze the principles, synthesis methods, and functional properties of nanomaterials used in textile engineering.	K4
CO2	Evaluate advanced characterization techniques for analysing the structure and properties of textile nanomaterials.	K5
CO3	Examine the production, properties, and applications of nanofibres, nanocomposites, and carbon-based nanomaterials in textiles.	K4
CO4	Assess the performance of metallic and metal oxide nanoparticles in imparting multifunctional properties to textile materials.	K5
CO5	Critically evaluate industrial applications, environmental impacts, safety concerns, and future developments of nanotechnology in textiles.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Fundamentals of Nanotechnology

Introduction to nanotechnology and nanoscale materials. Classification, structure, and properties of nanomaterials. Approaches to nanomaterial synthesis (top-down and bottom-up). Physical, chemical, and biological methods of nanoparticle synthesis. Role of nanotechnology in advanced textile materials, functional apparel, and technical textiles.

UNIT II – Characterization of Nanomaterials

Principles of nanomaterial characterization. Surface and morphological analysis using Scanning Electron Microscopy (SEM), Field Emission Scanning Electron Microscopy (FESEM), Transmission Electron Microscopy (TEM), and Atomic Force Microscopy (AFM). Structural characterization using X-ray Diffraction (XRD). Spectroscopic techniques including Fourier Transform Infrared Spectroscopy (FTIR) and UV–Visible Spectroscopy. Particle size analysis using Dynamic Light Scattering (DLS) and zeta potential measurement.

UNIT III – Nanofibres and Nanostructured Textile Materials

Introduction to nanofibres, properties, and applications. Electrospinning technology—principle, process parameters, and nanofibre production. Carbon-based nanomaterials including carbon nanotubes (CNTs) and graphene. Nanocomposites and nanocoatings for textile applications. Smart textiles, wearable textiles, and recent developments in nanostructured textile materials.

UNIT IV – Metallic and Functional Nanomaterials in Textiles

Metallic and metal oxide nanoparticles used in textiles, including silver, zinc oxide, titanium dioxide, silica, copper oxide, and magnesium oxide nanoparticles. Methods of synthesis and incorporation into textile substrates. Functional textile finishes such as antimicrobial, UV-protective, self-cleaning, water-repellent, flame-retardant, and anti-odour finishes. Performance evaluation, durability, safety, and environmental aspects of nanomaterials.

UNIT V – Applications of Nanotechnology in Textile Processing

Applications of nanotechnology in textile processing and finishing. Nano-finishing techniques, nano-coatings, and multifunctional textile finishes. Nano-enabled protective clothing, medical textiles, filtration textiles, and smart wearable systems. Green synthesis of nanoparticles, sustainable nanotechnology, industrial commercialization, regulatory and safety aspects, and future trends in nanotechnology for textiles.

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SEMESTER – II
CORE PRACTICAL II

CAD IN TEXTILE DESIGNING PRACTICALS

COURSE OBJECTIVES

- Develop advanced weave structures and textile designs using CAD software for woven fabric development.
- Design creative woven textile products, including striped, checked, and jacquard-based designs, using professional CAD software.
- Create innovative saree borders, pallus, bodice designs, and presentation layouts using textile and graphic design software.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Develop basic and advanced woven structures using textile CAD software.	P4
CO2	Create striped, checked, and jacquard-inspired woven textile designs using professional CAD tools.	P5
CO3	Produce digitally designed saree borders, pallus, bodice layouts, and presentation sheets using textile design software.	P5
P1 – Imitation; P2 – Manipulation; P3 – Precision; P4 – Articulation; P5 – Naturalization		

Prerequisite

Basic knowledge of woven fabric construction, weave notation, drafting, and textile design.

Software (Any One): WeavePoint, WeaveIt Pro, DB Weave, Dobby Weave, Jacquard Design Software, Adobe Illustrator, Adobe Photoshop

Practical Exercises

Exercise I – Woven Structure Development Using CAD

Create the following weave structures using Textile CAD software:

- Plain weave
- Twill weaves (2/1, 1/2, 3/1, 1/3, 2/2, 2/3)
- Pointed twill
- Herringbone twill
- Combined twill
- Huck-a-back weave
- Ordinary and Brighton honeycomb weaves
- Mock leno weave

Exercise II – Decorative Woven Design Development

- Develop woven designs using Textile CAD software for:
- Striped fabrics (Pin stripe, Bengal stripe, Bar stripe, Barcode stripe)
- Checked fabrics (Checkerboard, Madras checks, Tartan checks)
- Jacquard-inspired woven motifs (optional)

Exercise III – Saree Design Using CAD

- Design and develop a complete saree collection comprising:
- Saree border
- Pallu
- Bodice design
- Colourway and presentation layout

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SEMESTER – II
CORE PRACTICAL III

ADVANCED DRAPING TECHNIQUES PRACTICAL

COURSE OBJECTIVES

- Develop advanced draping skills by preparing muslin (calico), understanding fabric grain, and translating design concepts into three-dimensional garment forms.
- Apply professional draping techniques to construct skirts, blouses, trousers, and knitwear with appropriate fit, balance, and silhouette.
- Demonstrate advanced bias draping techniques to create innovative garment styles with enhanced fit, movement, and aesthetic appeal.
- Produce professionally draped garment prototypes by integrating pattern development, fitting, and garment evaluation techniques.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Prepare muslin, identify grain lines, and develop accurate draped garment foundations.	P4
CO2	Drape, fit, and construct skirts, blouses, trousers, and knit garments using advanced draping techniques.	
CO3	Apply bias draping techniques to develop innovative garment designs with appropriate balance and silhouette.	P5
CO4	Produce and evaluate professionally draped garment prototypes with industry-standard fit and finishing.	P5
P1 – Imitation; P2 – Manipulation; P3 – Precision; P4 – Articulation; P5 – Naturalization		

Practical Exercises

Exercise I – Foundation Draping Techniques

- Preparation of muslin (calico)
- Identification and application of grain lines
- Draping along straight grain, cross grain, and bias grain
- Visual comparison of muslin and fashion fabrics

Exercise II – Advanced Draping of Garments

Develop and construct the following garments using draping techniques:

- Skirts (Kilt, Dirndl, Straight, A-line, Bias Circle)
- Yoked skirt with gathers or flare
- Blouses (Peasant blouse, Gibson Girl blouse, Tunic with bell sleeves)

Exercise III – Draping of Trousers and Knitwear

Develop and construct:

- Harem trousers
- Wide-leg trousers with front tucks
- Cotton knit top with ribbed neckline

Exercise IV – Advanced Bias Draping

Develop garments using bias draping techniques:

- Bias-draped camisole
- Bias chemise with princess line
- Fit analysis, refinement, and final evaluation of draped garments

REFERENCES

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SEMESTER – II
ELECTIVE II
GARMENT QUALITY AND COST CONTROL

COURSE OBJECTIVES

- To provide knowledge on the concepts, principles, and scope of garment quality and cost control in apparel manufacturing.
- To develop understanding of quality assurance systems, inspection methods, and modern digital technologies in garment quality management.
- To enable students to analyze production control processes and implement efficient manufacturing practices.
- To familiarize students with sustainable quality practices, compliance requirements, and supply chain transparency in the apparel industry.
- To equip students with cost control techniques, budgeting methods, and emerging technologies for effective apparel business management.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Understand and explain quality control concepts and establish quality standards for materials and garment production processes	K2
CO2	Apply quality inspection methods, statistical quality control, and digital monitoring systems in apparel manufacturing	K3
CO3	Demonstrate production control skills using lean manufacturing and integrated production management techniques	K2
CO4	Evaluate sustainable apparel practices, compliance standards, and transparency tools in garment production.	K5
CO5	Analyze manufacturing costs and apply modern cost control strategies to improve productivity and profitability	K4
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Fundamentals of Garment Quality Control

Quality control—definition, objectives, principles, and scope. Quality Management Systems (QMS), Total Quality Management (TQM), and ISO 9001 in apparel manufacturing. Establishing merchandising standards, raw material quality specifications, supplier quality management, sustainable material assessment, digital quality standards, traceability systems, Digital Product Passports (DPP), and Industry 4.0 applications in garment quality control.

UNIT II – Quality Assurance and Inspection Systems

Quality assurance systems and processing quality specifications. Training of quality control personnel. Quality standards and inspection procedures. Quality control of finished garments. Government regulations related to apparel quality. Quality control in packaging, warehousing, and shipping. Statistical Quality Control (SQC), Acceptance Sampling, Acceptable Quality Level (AQL), sampling plans, industry-wide quality standards, AI-based defect detection, computer vision inspection systems, IoT-based quality monitoring, and digital quality audits.

UNIT III – Production Planning and Control

Fundamentals of production planning and control. Functions and objectives of production control. Production analysis, quality specifications, quantitative specifications, and apparel manufacturing activities. Coordination of departmental functions, documentation, and record management. Lean manufacturing, Six Sigma, Theory of Constraints (TOC), production data analytics, Key Performance Indicators (KPIs), 3D sampling, virtual prototyping, Digital Twin technology, digital workflow management, and integrated apparel manufacturing systems.

UNIT IV – Sustainable Quality Management and Compliance

Production control systems, types of production control forms, basic production systems, principles for selecting production systems, evaluation of production systems, flow process grids, and production flow analysis. Sustainable apparel quality parameters, circular fashion concepts, environmental and social compliance audits, chemical management, Restricted Substances List (RSL), Zero Discharge of Hazardous Chemicals (ZDHC), Higg Index, WRAP, BSCI, blockchain for supply chain transparency, Environmental, Social and Governance (ESG) reporting, and regulatory compliance.

UNIT V – Cost Control and Digital Manufacturing Systems

Cost control—objectives, functions, and importance. Types of manufacturing costs and expenses. Apparel manufacturing cost categories. Sales, purchasing, production, and administrative cost control. Cost ratio analysis, manufacturing budgets, cash flow management, standard cost sheets, break-even analysis, activity-based costing (ABC), digital cost management systems, quality cost analysis, Enterprise Resource Planning (ERP) systems, Business Intelligence (BI), AI-based demand forecasting, predictive analytics, inventory optimization, smart factory applications, risk management, supply chain resilience, and emerging trends in garment quality and cost control.

REFERENCES

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SEMESTER – II
ELECTIVE II
APPAREL MARKETING AND MERCHANDISING

COURSE OBJECTIVES

- Analyze the concepts, functions, and strategic role of merchandising and marketing in the global apparel industry.
- Evaluate the responsibilities, competencies, and decision-making processes of fashion buyers and merchandisers.
- Examine merchandising planning, budgeting, assortment planning, and inventory management strategies for fashion retailing.
- Assess digital merchandising, e-retailing, supply chain coordination, and consumer-driven merchandising practices.
- Critically evaluate emerging technologies, sustainability, and global trends influencing apparel marketing and merchandising.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze merchandising concepts, terminology, functions, and merchandising systems in the apparel industry.	K4
CO2	Evaluate the roles, competencies, and strategic responsibilities of fashion buyers and merchandisers in global fashion businesses.	K5
CO3	Assess merchandising planning, budgeting, assortment planning, inventory management, and retail coordination strategies.	K5
CO4	Analyze merchandising operations, supply chain integration, digital retailing, and omnichannel merchandising practices.	K4
CO5	Critically evaluate sustainability, data-driven merchandising, AI applications, and emerging trends in apparel marketing and merchandising.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Fundamentals of Apparel Merchandising

Concepts, scope, functions, and terminology of apparel merchandising. Types of merchandising—fashion merchandising, export merchandising, retail merchandising, visual merchandising, and omnichannel merchandising. Roles and responsibilities of merchandisers. Apparel merchandising process. Global apparel market and merchandising environment.

UNIT II – Fashion Buying and Merchandising Management

Roles and responsibilities of fashion buyers and merchandisers. Competencies and skill sets of successful buyers and merchandisers. Buying cycle and merchandise planning. Private-label versus branded merchandising. Global sourcing strategies. Vendor selection, supplier relationship management, negotiation techniques, ethical sourcing, and sustainable procurement.

UNIT III – Merchandising Planning and Retail Management

Organization and structure of buying and merchandising departments. Coordination among buyers, merchandisers, sourcing teams, production, quality assurance, logistics, and retail operations. Merchandise planning, assortment planning, range planning, inventory management, category management, demand forecasting, allocation strategies, and Key Performance Indicators (KPIs).

UNIT IV – Merchandise Budgeting and Supply Chain Management

Merchandise budgeting—sales budgeting, stock budgeting, intake planning, markdown budgeting, margin planning, and Open-to-Buy (OTB) systems. Purchase order management, merchandise allocation, replenishment systems, supplier performance evaluation, logistics, distribution management, and supply chain coordination. AI-driven merchandising analytics and demand planning.

UNIT V – Digital Merchandising and Emerging Trends

Digital merchandising, e-retailing, omnichannel retailing, product information management (PIM), digital product lifecycle management (PLM), inventory optimization, drop shipping, social commerce, AI-based recommendation systems, consumer analytics, sustainability in merchandising, circular retailing, and future trends in apparel marketing and merchandising.

REFERENCES

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SEMESTER – II
NON MAJOR ELECTIVE COURSE I
VISUAL ARTS

COURSE OBJECTIVES

- To develop fundamental drawing, sketching, and colouring skills.
- To introduce Indian traditional art forms and decorative painting techniques.
- To create artistic and decorative products using craft and 3D art methods.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Demonstrate drawing, sketching, shading, colouring, and design visualization techniques using appropriate art media.	P3
CO2	Create artworks inspired by Indian traditional painting styles using suitable materials and techniques.	P4
CO3	Develop decorative craft and three-dimensional art products for creative and interior applications.	P5
P1 – Imitation P2 – Manipulation P3 – Precision P4 – Articulation P5 – Naturalization		

Practical Exercises

Exercise I – Basic Drawing and Colouring Techniques

- Drawing basic lines, shapes, and patterns
- Reduction and enlargement of motifs
- Pencil shading and colour rendering
- Still-life and object drawing
- Dry and wet colouring techniques
- Design tracing methods

Exercise II – Indian Traditional Painting

Create artworks using any of the following traditional art forms:

- Warli Art
- Kalamkari Painting
- Mandala Art and decorative patterns

Exercise III – Creative Craft and Three-Dimensional Art

Develop any of the following decorative products:

- Terracotta mural art
- Pebble painting
- Canvas-based decorative artwork

REFERENCES

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SEMESTER – III

CORE VI

RESEARCH METHODOLOGY AND STATISTICS IN TEXTILES

COURSE OBJECTIVES

To make the students

- Analyze research methodologies, research designs, and ethical principles applicable to textile and apparel research.
- Evaluate research problems, variables, hypotheses, sampling techniques, and data collection methods for scientific investigations.
- Apply appropriate statistical techniques and analytical tools for interpreting research data and drawing valid conclusions.
- Develop technical writing skills for preparing research proposals, dissertations, journal articles, and scientific presentations using appropriate referencing and citation styles.
- Critically evaluate research findings and statistical evidence to support decision-making in textile and apparel research.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze research concepts, methodologies, research problems, and ethical issues in textile and apparel research.	K4
CO2	Evaluate research variables, hypotheses, research designs, and sampling techniques for scientific investigations.	K5
CO3	Analyze and interpret quantitative and qualitative data using appropriate data collection and statistical methods.	K4
CO4	Develop research proposals, technical reports, dissertations, and scientific publications using appropriate referencing and citation standards.	K6
CO5	Apply descriptive and inferential statistical techniques to analyze research data and support evidence-based decision-making.	K3
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Fundamentals of Research Methodology

Research—meaning, objectives, scope, significance, and types of research. Research process. Literature review—sources, search strategies, systematic review, critical analysis, and research ethics. Research problem formulation—identification, selection, scope, objectives, characteristics of a good research problem, and limitations. Introduction to research ethics and responsible conduct of research.

UNIT II – Research Design and Experimental Planning

Research variables and types of variables. Concepts of control, confounding variables, hypotheses, experimental and non-experimental research, experimental and control groups, treatments, and experimental units. Research designs—exploratory, descriptive, diagnostic, experimental, and hypothesis-testing designs. Principles of experimental design, sampling techniques, sample size determination, and survey design.

UNIT III – Data Collection and Data Analysis

Methods of data collection. Primary and secondary data sources. Observation, interviews, questionnaires, schedules, surveys, and experimental methods. Data editing, coding, classification, tabulation, and validation. Data presentation using tables, charts, graphs, and statistical software. Interpretation of research findings.

UNIT IV – Scientific Writing and Research Publication

Technical writing and scientific communication. Research proposals, dissertations, theses, journal articles, review papers, conference papers, posters, and technical reports. Referencing styles (APA, MLA, Chicago, IEEE), citation management, indexing, impact factor, h-index, plagiarism, intellectual property rights (IPR), copyright, patents, and ethics in scholarly publishing.

UNIT V – Statistical Analysis for Textile Research

Descriptive statistics—percentage, mean, median, mode, variance, standard deviation, standard error, skewness, kurtosis, and rank correlation. Inferential statistics—t-tests (one-sample, independent, paired), Chi-square test, ANOVA, correlation and regression analysis (linear and multiple), non-parametric tests (sign test, rank test, concordance test). Statistical process control, control charts for variables and attributes, process capability analysis, and interpretation of statistical results.

REFERENCES

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SEMESTER – III
CORE VII
TEXTILE TESTING

COURSE OBJECTIVES

- Understand the principles, standards, and environmental conditions governing textile testing and quality evaluation.
- Analyze the physical and mechanical properties of fibres, yarns, and fabrics using standard textile testing instruments and international testing methods.
- Evaluate colour fastness, appearance, and performance characteristics of textile materials using standardized testing procedures and instrumental assessment techniques.
- Apply national and international textile testing standards for quality assurance and product evaluation.
- Interpret textile testing results for quality control, product development, and research applications.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Explain the principles of textile testing, standard atmospheric conditions, and national and international testing standards used in textile quality evaluation.	K2
CO2	Evaluate the physical and mechanical properties of textile fibres using standardized testing instruments and modern fibre characterization techniques.	K5
CO3	Analyze yarn quality parameters using conventional and computerized yarn testing methods.	K4
CO4	Evaluate the physical, mechanical, and comfort properties of woven and knitted fabrics using standard laboratory testing procedures.	K5
CO5	Assess colour fastness properties using standard testing methods and instrumental colour measurement techniques for textile quality assurance.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Fundamentals of Textile Testing

Introduction to textile testing—definition, objectives, importance, and classification of textile testing. Quality assurance and quality control. National and international testing standards (BIS, ASTM, ISO, AATCC). Standard atmospheric conditions for textile testing. Humidity and moisture relationships. Moisture content and regain. Measurement of humidity using wet and dry bulb hygrometer and sling hygrometer. Determination of moisture content and regain by conditioning oven method.

UNIT II – Fibre Testing

Cotton fibre length determination by Baer Sorter. Fibre fineness by Sheffield Micronaire. Fibre maturity by caustic soda swelling method. Fibre strength by Stelometer. Determination of trash and lint by Shirley Trash Analyzer.

UNIT III – Yarn Testing

Yarn numbering systems. Yarn count determination using Quadrant Balance. Yarn strength testing (CRT, CRE, CRL principles), Single Yarn Strength Tester, Lea Strength Tester. Yarn twist measurement. Yarn evenness and imperfections using Uster Evenness Tester. Yarn hairiness, yarn crimp.

UNIT IV – Fabric Testing

Fabric weight (GSM), cover factor, thickness, tensile strength, tearing strength, bursting strength, abrasion resistance (Martindale), pilling resistance (ICI Pill Box), stiffness (Shirley Stiffness Tester), drape, crease recovery, air permeability (Shirley Air Permeability Tester), dimensional stability, comfort properties, and introduction to Kawabata Evaluation System (KES) and FAST fabric evaluation systems.

UNIT V – Colour Fastness and Instrumental Evaluation

Importance of colour fastness. Factors affecting colour fastness. Colour fastness to rubbing (dry and wet), perspiration (acid and alkaline), washing, water, light, pressing, sublimation, dry cleaning, and chlorinated water. Grey scales for colour change and staining. Instrumental colour measurement using spectrophotometers.

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- ISO. (Latest ed.). ISO Standards for Textile Testing. International Organization for Standardization.
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SEMESTER – III
CORE PRACTICAL IV
TEXTILE TESTING PRACTICAL

COURSE OBJECTIVES

- Develop practical skills in conducting standard textile testing procedures for fibres, yarns, and fabrics under standard atmospheric conditions.
- Perform physical, mechanical, and dimensional testing of textile materials using standard laboratory instruments.
- Evaluate colour fastness properties and interpret textile testing results in accordance with national and international testing standards.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Perform fibre, yarn, and fabric testing using standard laboratory equipment and testing procedures.	P4
CO2	Evaluate the physical, mechanical, and dimensional properties of textile materials through standard testing methods.	P5
CO3	Assess colour fastness properties and interpret textile testing results using appropriate testing standards and grey scale evaluation.	P5
P1 – Imitation P2 – Manipulation P3 – Precision P4 – Articulation P5 – Naturalization		

PRACTICAL EXERCISES

Exercise I – Yarn and Fabric Physical Testing

- Determination of lea strength using lea strength tester
- Determination of yarn crimp percentage
- Determination of fabric weight (GSM)
- Determination of fabric thickness
- Determination of fabric shrinkage

Exercise II – Fabric Mechanical Performance Testing

- Determination of tensile strength
- Determination of tearing strength
- Determination of bursting strength

- Determination of fabric stiffness
- Determination of crease recovery
- Determination of abrasion resistance
- Determination of fabric drape

Exercise III – Colour Fastness Evaluation

- Colour fastness to rubbing (Crockmeter)
- Colour fastness to perspiration (Perspirometer)
- Colour fastness to laundering (Laundrometer)
- Colour fastness to pressing
- Assessment and interpretation of colour change and staining using Grey Scale standards

REFERENCES

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SEMESTER – III
CORE PRACTICAL V
FASHION PORTFOLIO PRACTICAL

COURSE OBJECTIVES

- Develop professional fashion portfolios by integrating fashion forecasting, cultural inspirations, and innovative design concepts.
- Apply appropriate design principles in the selection of colours, fabrics, trims, accessories, and garment components for cohesive fashion collections.
- Produce complete garment collections and professionally present them through portfolio documentation, garment construction, and fashion presentation.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Develop professional fashion portfolios incorporating concept development, forecasting, and design presentation techniques.	P4
CO2	Create coordinated fashion collections through appropriate selection of colours, fabrics, trims, accessories, illustrations, and garment components.	P5
CO3	Produce finished garments and present complete fashion portfolios through professional documentation and fashion presentation.	P5
P1 – Imitation P2 – Manipulation P3 – Precision P4 – Articulation P5 – Naturalization		

PRACTICAL EXERCISES

Exercise I – Fashion Portfolio Development

- Develop a fashion portfolio based on Fashion Forecasting.

Exercise II – Cultural Fashion Portfolio

- Develop a fashion portfolio inspired by Indian Tradition.

Exercise III – Creative Fashion Portfolio

- Develop a fashion portfolio based on Individual Creativity.

Each portfolio shall include the following:

- Design Development Board
- Theme Board
- Story Board
- Mood Board
- Inspiration Board
- Customer Profile
- Flat Sketches
- Fashion Illustration Board
- Component Board
- Colour Board
- Fabric Board
- Accessories Board
- Ornament Board
- Garment Construction
- Professional Photoshoot and Fashion Presentation

REFERENCES

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SEMESTER – III
ELECTIVE III
DIGITAL MARKETING

COURSE OBJECTIVES

- Analyze digital marketing strategies and consumer behaviour in the textile and fashion industry.
- Evaluate digital branding, e-commerce, social media marketing, and online advertising techniques for fashion businesses.
- Apply digital marketing tools, analytics, and customer relationship management to enhance brand performance and customer engagement.
- Assess emerging technologies, including Artificial Intelligence (AI), marketing automation, and data-driven decision-making in digital fashion marketing.
- Develop integrated digital marketing campaigns for sustainable growth of textile and fashion brands.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze digital marketing concepts, consumer behaviour, branding strategies, and digital marketing channels in the textile and fashion industry.	K4
CO2	Evaluate fashion e-commerce systems, website management, user experience, and digital retail strategies.	K5
CO3	Develop integrated social media marketing strategies, digital content, influencer campaigns, and brand storytelling for fashion businesses.	K6
CO4	Assess search engine optimization, search engine marketing, online advertising, and digital campaign management techniques for fashion brands.	K5
CO5	Critically evaluate digital marketing performance using analytics, CRM, AI-powered marketing tools, and sustainable digital branding strategies.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Digital Marketing for Fashion Business

Introduction to digital marketing—concepts, scope, evolution, and digital marketing ecosystem. Traditional marketing versus digital marketing. Digital marketing channels. Consumer behaviour in the online fashion marketplace. Digital branding strategies. Customer journey mapping. Omnichannel marketing. Artificial Intelligence (AI) applications in digital marketing.

UNIT II – Fashion E-Commerce and Digital Retailing

Fashion e-commerce business models. Website planning and development. Product catalogue management. User experience (UX) and user interface (UI) design. Mobile commerce. Online payment systems. Digital retail management. Product Information Management (PIM). Inventory integration. Digital customer experience and personalization.

UNIT III – Social Media Marketing and Content Strategy

Social media platforms for fashion businesses—Instagram, Facebook, Pinterest, YouTube, LinkedIn, and emerging platforms. Content marketing and digital storytelling. Fashion photography and videography. Influencer and creator marketing. Community management. Social media campaign planning. AI-assisted content creation. Marketing automation tools.

UNIT IV – Search Marketing and Online Advertising

Search Engine Optimization (SEO). Search Engine Marketing (SEM). Google Ads. Pay-Per-Click (PPC) advertising. Display advertising. Email marketing. Affiliate marketing. Retargeting strategies. Digital advertising campaign planning. Keyword research. Conversion optimization. Performance marketing.

UNIT V – Digital Analytics and Fashion Brand Management

Web analytics using Google Analytics 4 (GA4). Key Performance Indicators (KPIs). Customer Relationship Management (CRM). Marketing dashboards. Online reputation management. AI-driven consumer insights. Fashion trend forecasting using digital tools. Sustainable and ethical digital marketing. Case studies of successful global fashion brands. Emerging trends in digital fashion marketing.

REFERENCES

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SEMESTER – III
ELECTIVE III
VISUAL MERCHANDISING

COURSE OBJECTIVES

- Analyze the principles, strategies, and consumer behaviour associated with visual merchandising in fashion retailing.
- Evaluate exterior, interior, and window display techniques for enhancing retail brand image and customer experience.
- Apply visual merchandising principles, retail space planning, and display technologies to create innovative retail environments.
- Assess the impact of digital technologies, sustainability, and experiential retailing on contemporary visual merchandising.
- Develop creative visual merchandising solutions for fashion retail stores using professional planning and presentation techniques.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze the principles, objectives, and strategic role of visual merchandising in fashion retailing.	K4
CO2	Evaluate exterior visual merchandising techniques, storefront design, and consumer engagement strategies.	K5
CO3	Assess interior display planning, retail space utilization, and merchandising presentation techniques.	K5
CO4	Design innovative window displays and in-store visual merchandising solutions using appropriate retail display strategies and digital technologies.	K6
CO5	Critically evaluate fixtures, signage, props, mannequins, sustainability practices, and emerging trends in visual merchandising.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Fundamentals of Visual Merchandising

Introduction to visual merchandising—concepts, objectives, scope, history, and importance. Roles and responsibilities of visual merchandisers. Consumer behaviour and retail psychology. Store formats and retail environments. Exterior and interior merchandising concepts. Store layouts. Design elements and principles—line, colour, texture, balance, lighting, composition, and space planning. Virtual and digital visual merchandising.

UNIT II – Exterior Visual Merchandising

Storefront architecture and façade design. Store identity and branding. Exterior signage, marquees, banners, awnings, and wayfinding systems. Entrance design and accessibility. Lighting techniques. Seasonal and promotional displays. Outdoor visual communication. Digital signage, LED displays, interactive technologies, and consumer engagement strategies.

UNIT III – Interior Visual Merchandising

Interior retail presentation and space planning. Selling and non-selling areas. Display zones, focal points, planograms, merchandise presentation, colour coordination, category presentation, product grouping, customer circulation, retail atmospherics, lighting design, and sensory merchandising. Visual merchandising for luxury and lifestyle retailing.

UNIT IV – Window Display and Experiential Retailing

Window display planning and design. Types of window displays. Theme development, colour schemes, budgeting, installation techniques, and display calendars. In-store merchandising techniques including colour blocking, product blocking, vertical, horizontal, cross, and symmetrical merchandising. Digital displays, interactive retail technologies, augmented reality (AR), virtual reality (VR), and experiential retail environments.

UNIT V – Visual Merchandising Tools and Emerging Trends

Display fixtures, mannequins, props, signage, graphics, and display materials. Selection and evaluation of display systems. Sustainable visual merchandising materials and eco-friendly displays. Smart retail technologies, artificial intelligence (AI) in visual merchandising, retail analytics, omnichannel retail presentation, visual merchandising performance evaluation, and future trends in fashion retail.

REFERENCES

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SEMESTER – III

NMEC II

COSMETOLOGY AND FASHION PHOTOGRAPHY PRACTICAL

COURSE OBJECTIVES

- Develop professional skills in skincare, haircare, cosmetology, grooming, and beauty therapy techniques.
- Apply advanced makeup, hairstyling, fashion grooming, and presentation techniques suitable for bridal, fashion, and media applications.
- Produce professional cosmetology and fashion photography portfolios through creative styling, photographic presentation, and digital image enhancement.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Perform professional cosmetology procedures including skincare, haircare, manicure, pedicure, and grooming techniques.	P4
CO2	Create complete fashion and bridal looks by applying makeup, hairstyling, saree draping, nail art, and styling techniques.	P5
CO3	Produce a professional cosmetology and fashion photography portfolio incorporating styling, fashion presentation, photography, and digital image enhancement.	P5
P1 – Imitation P2 – Manipulation P3 – Precision P4 – Articulation P5 – Naturalization		

Prerequisite

- Basic knowledge of beauty care, grooming, fashion styling, and photography.
- Software/Tools (Any One): Canva, Adobe Photoshop, Adobe Lightroom, Snapseed, Digital Camera / DSLR / Mirrorless Camera, Mobile Photography Applications

PRACTICAL EXERCISES

Exercise I – Professional Cosmetology and Grooming

Perform the following cosmetology procedures:

- Skin analysis and skincare
- Cleansing, toning, exfoliation, facial treatments
- Hair washing, conditioning, and basic haircare
- Manicure and pedicure
- Professional grooming

Exercise II – Fashion Makeup and Styling

Develop complete fashion looks using:

- Day and evening makeup
- Bridal makeup
- Hair styling (braiding, curling, straightening, buns)
- Saree draping
- Nail art
- Fashion and party styling

Exercise III – Fashion Photography Portfolio

Prepare a professional portfolio including:

- Before-and-after makeover documentation
- Bridal and fashion makeover presentation
- Fashion photography using appropriate lighting, posing, and composition
- Digital photo editing and enhancement
- Final cosmetology and fashion photography portfolio presentation

REFERENCES

- Gupta, R. (2018). Complete Beautician Course. Diamond Pocket Books.
- Handa, P. (2016). Be Your Own Beautician. Diamond Pocket Books.
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- Kelby, S. (2020). The Digital Photography Book (Vol. 1). Rocky Nook.

SEMESTER – IV
CORE VIII
ADVANCED TEXTILE PROCESSING

COURSE OBJECTIVES

The students will be able

- Analyze advanced wet processing techniques for natural and synthetic textile fibres using sustainable processing technologies.
- Evaluate advanced natural dye extraction, dyeing technologies, and eco-friendly coloration methods for textile applications.
- Apply modern textile printing and functional finishing technologies for high-performance and value-added textile products.
- Assess advanced textile effluent treatment technologies and sustainable wastewater management practices in textile processing.
- Examine emerging innovations in textile processing, including nanotechnology, biotechnology, plasma technology, and advanced oxidation processes.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze preparatory wet processing techniques and sustainable enzyme-based treatments for various textile fibres.	K4
CO2	Evaluate advanced natural dye extraction, eco-friendly dyeing methods, and emerging coloration technologies.	K5
CO3	Apply advanced textile printing technologies and sustainable printing processes for textile product development.	K3
CO4	Evaluate functional textile finishing technologies and appropriate application methods for performance enhancement.	K5
C05	Assess textile effluent characteristics and advanced wastewater treatment technologies for sustainable textile processing.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Advanced Preparatory Wet Processing

Wet processing sequence for cotton, wool, silk, polyester, and blended textiles. Advanced preparatory processes including desizing, scouring, bleaching, and bio-preparation. Enzyme-based pretreatments, low-liquor ratio processing, ozone treatment, plasma pretreatment, ultrasonic processing, and sustainable wet processing technologies.

UNIT II – Advanced Natural Dyeing and Dye Extraction

Advanced natural dyeing technologies. Exhaust dyeing, biomordanting, enzyme-assisted dyeing, supercritical carbon dioxide (SC-CO₂) dyeing, nanotechnology in natural dyeing, fermentation-assisted dyeing, ultrasonic dyeing, microwave-assisted dyeing, irradiation technologies, aerodynamic dyeing, and laser-assisted surface modification. Dye extraction techniques including aqueous, solvent, acid, alkali, enzymatic, ultrasound-assisted, microwave-assisted, and supercritical fluid extraction.

UNIT III – Advanced Textile Printing Technologies

Role of binders, thickeners, and auxiliaries in textile printing. Pigment printing, sublimation printing, natural dye printing, digital textile printing, inkjet printing, Direct-to-Film (DTF) printing, Direct-to-Garment (DTG) printing, screen printing, flexographic printing, plasma-assisted printing, enzyme-based printing, 3D printing, and sustainable printing technologies.

UNIT IV – Advanced Functional Textile Finishing

Nanotechnology in textile finishing. Microencapsulation. Plasma technology. Sol-gel finishing. UV-protective finishes. Antimicrobial finishes. Self-cleaning finishes. Water and oil repellent finishes. Flame-retardant finishes. Anti-odour finishes. Wrinkle-resistant, abrasion-resistant, moisture-management, and bio-functional finishes. Methods of application including exhaustion, padding, spraying, foam finishing, coating, transfer coating, and layer-by-layer deposition.

UNIT V – Advanced Textile Effluent Treatment

Characteristics and composition of textile effluents. Water consumption and water footprint in textile wet processing. Physical, chemical, biological, and membrane-based treatment technologies. Advanced oxidation processes (AOPs) including ozonation, photocatalysis, Fenton oxidation, electrochemical oxidation, UV/H₂O₂, and sonochemical treatment. Zero Liquid Discharge (ZLD), water recycling, resource recovery, sludge management, and sustainable wastewater management in textile industries.

REFERENCES

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- Muthu, S. S. (Ed.). (2017). Sustainable Innovations in Textile Chemical Processes. Springer.

SEMESTER – IV
CORE IX
AI IN APPAREL MANUFACTURING

COURSE OBJECTIVES

- Analyze Artificial Intelligence (AI), Machine Learning (ML), Deep Learning (DL), and Industry 4.0 technologies applied in apparel manufacturing.
- Evaluate AI-driven applications in apparel design, product development, production planning, quality assurance, and smart manufacturing.
- Apply intelligent digital technologies to improve productivity, quality, sustainability, and decision-making in apparel manufacturing.
- Assess AI-enabled automation, computer vision, robotics, and digital manufacturing systems for apparel production.
- Critically evaluate emerging AI technologies, ethical issues, and future developments in smart apparel manufacturing.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze Artificial Intelligence, Machine Learning, Deep Learning, Industry 4.0, IoT, and cyber-physical systems used in apparel manufacturing.	K4
CO2	Evaluate AI-based applications in apparel design, CAD, pattern engineering, body scanning, 3D visualization, and mass customization.	K5
CO3	Assess AI-driven production planning, scheduling, process optimization, predictive maintenance, and lean manufacturing systems.	K5
CO4	Evaluate AI-enabled computer vision, intelligent quality control, robotics, and automated inspection systems in apparel manufacturing.	K5
CO5	Critically evaluate smart factories, digital twins, AI-enabled supply chains, sustainability, Generative AI, and future trends in apparel manufacturing.	K5
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Fundamentals of Artificial Intelligence in Apparel Manufacturing

Overview of apparel manufacturing systems. Fundamentals of Artificial Intelligence (AI), Machine Learning (ML), Deep Learning (DL), Computer Vision, and Data Science. Industry 4.0, Industry 5.0, Internet of Things (IoT), Cyber-Physical Systems (CPS), cloud computing, edge computing, and digital transformation in apparel manufacturing. Opportunities, challenges, and limitations of AI adoption.

UNIT II – AI in Apparel Design and Product Development

AI-assisted fashion forecasting. Intelligent CAD systems. Pattern engineering and automated grading. Body scanning and virtual fitting. 3D garment visualization. Digital sampling. Product Lifecycle Management (PLM). Mass customization. Personalized apparel production. Generative AI for apparel design. Large Language Models (LLMs) for design ideation. AI-assisted trend analysis and design recommendation systems.

UNIT III – AI for Production Planning and Process Optimization

AI in production planning and control. Demand forecasting. Production scheduling. Assembly line balancing. Marker planning and fabric utilization optimization. Predictive maintenance. Lean manufacturing. Intelligent workflow optimization. Digital manufacturing execution systems (MES). Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) applications in apparel production.

UNIT IV – Intelligent Quality Control and Automation

Computer vision for apparel inspection. Image processing techniques. Automated defect detection and classification. AI-based measurement and fit assessment. Colour and shade evaluation. Robotics in sewing and material handling. Intelligent cutting systems. Collaborative robots (Cobots). Explainable AI (XAI) for quality decision support. AI-driven quality analytics and predictive quality management.

UNIT V – Smart Apparel Manufacturing and Emerging Technologies

Smart factories. Digital twins. RFID-enabled production monitoring. AI-enabled supply chain management. Digital Product Passport (DPP). Sustainability and resource optimization using AI. Blockchain for apparel traceability. Generative AI in manufacturing and product development. Ethical AI. Cybersecurity in smart manufacturing. Future trends in intelligent apparel manufacturing.

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SEMESTER – IV
SKILL ENHANCEMENT COURSE II
PROFESSIONAL COMPETENCY SKILL – PERSONALITY DEVELOPMENT

COURSE OBJECTIVES

The students will be able

- Analyze personality traits, leadership qualities, emotional intelligence, and self-management skills required for professional success.
- Evaluate the role of attitude, motivation, interpersonal relationships, and ethical behaviour in career and organizational effectiveness.
- Develop communication, leadership, teamwork, problem-solving, conflict management, and professional etiquette for workplace excellence.
- Apply critical thinking, decision-making, stress management, and time management techniques in professional environments.
- Enhance employability through professional networking, résumé development, interview preparation, digital professional branding, and career planning.

COURSE OUTCOMES

Course Outcomes	On completion of this course, students will be able to	Knowledge Level
CO1	Analyze personality theories, self-awareness, emotional intelligence, and SWOT analysis for professional development.	K4
CO2	Evaluate the influence of attitude, motivation, interpersonal relationships, and ethical behaviour on professional effectiveness.	K5
CO3	Apply leadership, communication, teamwork, conflict management, critical thinking, and decision-making skills in professional contexts.	K3
CO4	Assess professional competencies including body language, stress management, time management, workplace ethics, and organizational behaviour.	K5
CO5	Develop employability skills through résumé writing, LinkedIn profile development, group discussions, interview techniques, psychometric assessment, and professional presentations.	K6
K1–Remember, K2–Understand, K3–Apply, K4 –Analyze, K5– Evaluate, K6–Create		

UNIT I – Self-Awareness and Personality Development

Concept and dimensions of personality. Personality theories (Freud, Erikson, Big Five Personality Traits). Emotional Intelligence (EQ). Self-awareness and self-assessment. SWOT analysis. Success and failure factors. Goal setting, personal vision, and professional development planning.

UNIT II – Attitude, Motivation and Professional Behaviour

Attitude and its impact on professional success. Positive mindset and growth mindset. Motivation theories and self-motivation. Intrinsic and extrinsic motivation. Professional ethics, values, integrity, workplace behaviour, and emotional resilience.

UNIT III – Leadership and Interpersonal Effectiveness

Self-esteem and confidence building. Assertive communication. Interpersonal relationships. Leadership styles and qualities. Team building. Conflict resolution. Critical thinking. Creative and lateral thinking. Decision-making and problem-solving techniques.

UNIT IV – Professional Excellence and Workplace Skills

Business communication. Body language. Presentation skills. Time management. Stress management. Work-life balance. Organizational behaviour. Workplace etiquette. Cross-cultural communication. Networking skills. Digital professionalism and personal branding.

UNIT V – Career Development and Employability Skills

Career planning and lifelong learning. Résumé and curriculum vitae preparation. LinkedIn profile development. Portfolio preparation. Group discussions. Personal, technical, and behavioural interviews. Psychometric assessments. Mock interviews. Professional presentation skills. Freelancing, entrepreneurship, and workplace readiness.

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